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AND OF NUMEROUS DISTINGUISHED FAMILIES, PATRONS OF THIS WORK.

COMPILED, DIGESTED, AND ARRANGED,
BY JOHN WILKES, OF MILLAND HOUSE, IN THE COUNTY OF SUSSEX, ESQUIRE;
ASSISTED BY EMINENT SCHOLARS OF THE ENGLISH, SCOTCH, AND IRISH, UNIVERSITIES.

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1810.

Non audiendi sunt homines imperiti, qui humano ingenio majorem, vel inutilem, et rebus gerendis adverſam πολυμαθειαν *criminantur. Eſt scilicet quædam Scientiarum cognatio et conciliatio; unde et* Εγκυκλοπαιδειαν *vocant Græci; ut in unâ perfectus dici nequeat, qui cæteras non attigerit.*—Morhofi Polyhistor, l. i. c. i. s. i.

Those inexperienced perſons, who make it a charge of accuſation againſt variety and extenſive learning, that it exceeds the compaſs of human ability, or is uſeleſs, or that it is an impediment to tranſacting buſineſs, deſerve no attention. For there is between the Sciences a degree of natural and cloſe connexion; from which the Greeks uſe the term "Encyclopædia;" so that no one can be perfect in any one Science, who has not attained to ſome knowledge of the reſt.

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DESCRIPTION OF THE FRONTISPIECE ILLUSTRATING ARCHITECTURE AND ASTRONOMY.

ARCHITECTURE IS REPRESENTED IN A FEMALE FORM, SITTING UPON THE PEDESTAL OF A PILLAR, WITH VARIOUS TOOLS AND INSTRUMENTS AROUND HER, CAREFULLY INSPECTING THE ACCURACY AND INGENUITY OF A DESIGN WHICH LIES IN HER LAP. AT HER SIDE THE FIGURE OF REASON, WITH A HELMET ON HER HEAD, PALLAS'S SHIELD IN HER LEFT HAND, AND MERCURY'S CADUCEUS IN HER RIGHT.

ASTRONOMY IS PERSONIFIED BY A BEAUTIFUL FEMALE AS URANIA, WITH A SILVER CRESCENT, CLOTHED IN AN AZURE MANTLE SPANGLED WITH STARS; HER EYES INTENSELY FIXED UPON THE STARRY FIRMAMENT; WITH AN ASTROLABE IN HER RIGHT HAND, AND A SCROLL, CONTAINING ASTRONOMICAL FIGURES, IN HER LEFT.

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ARABIA.

ARABIA, a country of Aſia, famous from the remoteſt antiquity for the independence of its inhabitants during the vaſt conqueſts of the Aſſyrians, Perſians, Greeks, and Romans; and, in latter times, for being the centre of an empire equal, if not ſuperior, in extent to any that ever exiſted. This country was, in the earlieſt ages, called *Arabah*. Concerning the etymology there are various conjectures. It has moſt generally been derived from the Hebrew word ארב, ſignifying, *the weſt*, *mixture*, or *traffic*; but, according to M. Volney, *Arab*, in the ancient language of theſe countries, ſignifies a *ſolitude* or *deſert*. In its largeſt extent, Arabia lies between the 12th and 35th degrees of north latitude, and the 36th and 61ſt of eaſt longitude. Its greateſt length from north to ſouth is about 1430 miles, and its breadth from eaſt to weſt is 1200. It is bounded on the weſt by Paleſtine, part of Syria, the iſthmus of Suez, and the Red Sea, called by the Arabs the ſea *Al Kolzom*; on the eaſt by the Euphrates, the Perſian gulf, and bay of Ormos; on the north, by part of Syria, Diyar-Becr, Irak, and Khuzetan; and on the ſouth by the ſtraits of Babel-Mandel and the Indian ocean. It grows narrower as we approach the frontiers of Syria and Diyar-Becr: and, by reaſon of the proximity of the Euphrates to the Mediterranean, may be looked upon as a peninſula, and that one of the largeſt in the whole world. Arabia Proper is much narrower, including little more than what was comprehended by the ancients under the name of Arabia Felix, and here the Arabs have been ſettled almoſt ſince the flood. The firſt diviſion of the peninſula of Arabia was into *Arabah* and *Kedem*, as we learn from ſcripture; the firſt of which implies the weſt, and the other the eaſt, denoting the ſituation of the two countries. Ptolemy was the firſt who divided this peninſula into three parts, Arabia Petræa, Arabia Deſerta, and Arabia Felix, which diviſion has generally prevailed ſince his time.

Arabia Petræa, on the eaſt, was bounded by Syria and Arabia Deſerta; on the weſt, by Egypt, or rather the iſthmus of Suez which ſeparates Aſia from Africa, and the Heroopolitan gulf or weſtern arm of the Red Sea; on the north, by Paleſtine, the lake Aſphaltites, and Cœloſyria; and on the ſouth by Arabia Felix. This tract did not admit of much cultivation, the greateſt part being covered with dry ſands, or riſing into rocks, interſperſed here and there with ſome fruitful ſpots. Its metropolis was Petra, which by the Syrians was ſtyled *Rakam*, and in Scripture *Joktheel*. Several other cities of Arabia Petræa are mentioned by Ptolemy; but as it is very improbable ſuch a barren country ſhould abound with large cities, we muſt look upon them as inconſiderable places.

Arabia Deſerta was bounded on the north by the Euphrates, which ſeparated it from Meſopotamia; on the weſt, by Syria, Judæa, and Arabia Petræa; on the eaſt, by a ridge of mountains which ſeparated it from Babylonia and Chaldea; on the ſouth by Arabia Felix, from which it was likewiſe ſeparated by ſeveral ridges of hills. By far the greateſt part of this kingdom, as well as the former, was a dreary deſert, diverſified only with plains covered with ſand, or mountains conſiſting of naked rocks and precipices; nor were they ever, unleſs ſometimes at the equinoxes, refreſhed with rain. The few vegetables which they produced were ſtinted by a perpetual drought, and the nouriſhment afforded them by the nocturnal dews was greatly impaired by the heat of the ſun in the day-time. Throughout the deſerts were found huge mountains of ſand, formed by the violence of the winds that continually blew over them in the day-time, though they ceaſed in the night. Wells and fountains were for the moſt part exceedingly rare; yet, notwithſtanding the ſterility of theſe countries, the vaſt plains of ſand were interſperſed with fruitful ſpots, which appeared here and there like ſo many iſlands in the midſt of the ocean. Theſe being rendered extremely delightful by their verdure, and the more ſo by the neighbourhood of thoſe frightful deſerts, the Arabs encamped upon them; and, having conſumed every thing they found upon one, removed to another, as is the cuſtom of their deſcendants the Bedoweens at this day. Theſe fruitful ſpots were likewiſe frequent in Lybia, and by the Egyptians called *anaſes*, or *abaſes*, as we learn from Strabo. The barren part of Arabia Felix, bordering upon the Red Sea, was in like manner interſperſed with abaſes; which probably gave the name of *Abaſeni* to a nation ſettled there, and in the adjacent fertile region. A body of theſe, it is ſaid, croſſing the ſtraits of Babel-Mandel, paſſed into Ethiopia, which from them received the name of *Abaſſia*. From this account of Arabia Deſerta, we may reaſonably conclude, that the towns ſaid by Ptolemy to have been ſituated in it were places of very little conſequence.

Arabia Felix was bounded on the north by the two kingdoms juſt deſcribed; on the ſouth, by the Red Sea; on the eaſt and weſt, by part of that ſea, together with the Arabian and Perſian gulfs. In Strabo's time, it was divided into five provinces, by the oriental hiſtorians called *Yaman*, *Hejaz*, *Tehâma*, *Najd*, and *Yamama*. In this diſtrict ſtood ſeveral towns, particularly Nyſa, famous for being the birth-place of Bacchus; and Muſa, or Muza, a celebrated emporium or harbour, where the Arabian merchants reſorted with their frankincenſe, ſpices, and perfumes. Theſe two were ſituated in the province of Yaman. In that of Hejaz ſtood the ſtill more famous cities of Mecca and Medina; alſo Thaiſa or Taiſa, Gjudda or Jodda, Yanbo or Al Yanbo, and Madian, the Modiana of Ptolemy, and the Midian or Madian of Scripture. Of the time when theſe kingdoms were firſt peopled, we have no certain accounts. The moſt conſiderable nations inhabiting Arabia Petræa, in the early ages, were the Iſhmaelites, the Nabatei or Nabatheans, the Cedræi or Kedareni, and the Agareni or Hagareni; and of theſe the Iſhmaelites were the moſt powerful, if they did not comprehend all the reſt; and, if the Hagareni were not the ſame people with them, they muſt at leaſt have been nearly related. Kimchi, an oriental hiſtorian, inſinuates, that they were originally the children of Hagar by an Arab, after ſhe had left Abraham. In after-ages, the names of all the nations ſituated here were abſorbed in that of *Saracens*, by which the Iſhmaelites are diſtinguiſhed in the Jeruſalem Targum. A nation alſo mentioned by Pliny, called *Arraceni*, and *Sarraceni* by Ptolemy and Dioſcorides, which was probably no other than the Iſhmaelites above mentioned. In Arabia Deſerta ſeveral tribes reſided, all of whom were very obſcure, except the Aiſitæ and Agræi. The former are ſuppoſed by Bochart to have been Job's countrymen, and the latter to have been the ſame with the Hagareni, Arraceni, or Sarraceni, above mentioned. Arabia Felix was inhabited by many different tribes; the moſt remarkable of which were the Sabæi, Gerræi, Minæ or Minnæi, Atramitæ, Maranitæ, Catabani, Aſcitæ, Homeritæ, Sapphoritæ, Omanitæ, Saraceni, Nabathæi, Thamydeni, and Bnizomenæ; but neither their limits nor ſituation can now be determined with any preciſion.

According to the oriental hiſtorians, the Arabs are to be divided into two claſſes; viz. the *old loſt Arabians*, and the *preſent*. The moſt famous tribes among the former were thoſe of Ad, Thâmud, Taſm, Jadês, Jorham, Amalek, Amtem, Haſbem, Abil, and Bar. Concerning theſe, though now entirely loſt and ſwallowed up among other tribes, there are ſome remarkable traditions, of which the following may ſerve as a ſpecimen. The tribe of Ad deduced their origin from Ad the ſon of Aws, or Uz, the ſon of Aram, the ſon of Shem, who, after the confuſion of tongues, ſettled in Al Abkaf, or the winding ſands in the province of Hadramant, on the confines of Yaman, where his poſterity greatly multiplied. Their firſt king was Sheddâd, the ſon of Ad, who built a ſtately palace and made a delightful garden in the deſerts of Aden, which he deſigned as an imitation of the celeſtial paradiſe. This garden he called *Irem*: and, when it was finiſhed, he ſet out with a great retinue to take poſſeſſion of it; but, having ſome thoughts of aſſuming divine honours, he was deſtroyed by a tempeſt from heaven, while yet a day's journey from his paradiſe. The garden and palace are ſaid to have been preſerved, as a monument of divine vengeance. After the death of Sheddâd, the kingdom of Ad was governed by a long ſeries of princes, concerning whom many fables are related by the eaſtern writers. The concluſion of their hiſtory, however, is as follows. "The Adites, in proceſs of time, falling into idolatry, God ſent the prophet Hûd, ſuppoſed to be the ſame with Heber, to preach to and reclaim them. But they refuſing to acknowledge his miſſion, or to obey him, God ſent an hot and ſuffocating wind, which blew ſeven nights and eight days, and, entering at their noſtrils, paſſed through their bodies, and deſtroyed them all, a very few only excepted, who had liſtened to Hûd, and retired with him to another place." Others relate, "that, before this terrible cataſtrophe, they had been previouſly chaſtiſed with a three years drought; and therefore they ſent Kail Ebn Ithar, and Morthed Ebn Sdaa, with 70 other principal men, to Mecca, then in the hands of the tribe of Amalek, whoſe prince was Moawiyah Ebn Becr, to pray for rain. Kail having begged of God that he would ſend rain to the people of Ad, three clouds appeared, a white, a red, and a black one; and a voice from heaven ordered him to chooſe which he would. Kail failed not to make choice of the laſt, thinking it would be laden with moſt rain; but, when this cloud came over them, it proved to be fraught with a violent tempeſt, which deſtroyed them all.

The *preſent Arabs*, according to their own hiſtorians, are ſprung from Kahtan, the ſame with Joktan, the ſon of Eber; and Adnan, deſcended from Iſhmael the ſon of Abraham. The former of theſe they call the *genuine* or *pure* Arabs, and the latter the *naturalized* or *inſititious* Arabs. Joktan the ſon of Eber had 13 ſons, who ſome time after the confuſion of tongues, ſettled in Arabia, extending themſelves from Meſha to Sephar, in the ſouth-eaſtern part of that peninſula. According to the Arabian hiſtorians, he had 31 ſons, all of whom left Arabia and went into India, except two, viz. Yarab and Jorham; the former of whom, they ſay, gave the name both to their country and language. Iſhmael and his mother Hagar, having been diſmiſſed by Abraham, entered into the wilderneſs of Paran, as related in the book of Geneſis. The ſacred hiſtorian informs us, that during his reſidence in the wilderneſs he married an Egyptian; and the Arabian writers ſay that he alſo took to wife the daughter of Modad king of Hejaz, lineally deſcended from Jorham the founder of that kingdom. By the Egyptian he was probably the father of the Scenite or wild Arabs; and having allied himſelf to the Jorhamites, he is conſidered by the Arabians as the father of the greateſt part of their nation.

Kahtan, or Joktan, is ſaid to have firſt reigned, and worn a diadem, in Yaman; but the particulars of his reign we no where learn. He was ſucceeded by Yarah already mentioned, he by Yaſhab, and Yaſhab by Abd Shems. He was ſucceſsful in his expeditions againſt his enemies, carried off great ſpoils, and took many of them priſoners. He is ſaid to have built the city of Saba or Mareb, and above it a ſtupendous mound or building which formed a vaſt reſervoir, containing all the water that came down from the mountains. By means of this reſervoir the kings of Yaman not only ſupplied the inhabitants of Saba and their lands with water, but likewiſe kept the territories they had ſubdued in greater awe, as by cutting off their communication with it they could at any time greatly diſtreſs them. Abd Shems was ſucceeded by his ſon Hamyar, from whom the tribe of Hamyar is ſaid to take its name; and he by a ſeries of 17 kings, concerning whom we have no remarkable particular, except that from one of them, called *Africus*, the continent of Africa took its name. The laſt of theſe was ſucceeded by a daughter named *Balkis* or *Belkis*, whom ſome will have to be the queen of Sheba who viſited Solomon. After Balkis came Malea, ſurnamed *Naſherolneam* on account of his magnificence and liberality. Having had bad ſucceſs in an expedition, where his army was overwhelmed by torrents of ſand, he cauſed a brazen ſtatue to be erected with the following inſcription in the old Hamyaritic character. "There is no paſſage behind me, no moving farther; the ſon of Sharhabil." He was ſucceeded by Shamar Yaraaſh, ſo called on account of his being affected with a conſtant tremor. To this prince the city of Samarcand is ſaid to owe its exiſtence. After Shamar Yaraaſh we have a liſt of 15 kings, of whom nothing remarkable is recorded, except of one Abu Carb Aſaad, who adorned the Caaba or temple of Mecca with tapeſtry, and firſt introduced Judaiſm among the Hamyarites. He was put to death by his ſubjects, probably on account of religion. The laſt of the 15 kings above mentioned was called *Abrahah*, who was ſucceeded by his ſon Sabban. He had that famous ſword called *Samſannah*, which afterwards came into the hands of the khalif Al Raſhid. This prince was ſucceeded by Dhu Shanater, who had ſix fingers on each hand. He was abandoned to unnatural luſt, and dethroned for abuſing ſome of the nobleſt youths in the kingdom. To him ſucceeded Yuſef, who lived about 70 years before Mahomet. He perſecuted all thoſe who would not turn

Jews, putting them to death by various tortures, the moſt common of which was throwing them into a glowing pit of fire; whence he had the appellation of the *lord of the pit.* This perſecution is taken notice of in the Koran. The laſt of the Hamyaritic monarchs was Dhu Jadan, according to Abulfeda; but, according to others, the Yuſef juſt mentioned was ſurnamed *Dhu Nowas* on account of his flowing curls, and was the laſt who reigned in an uninterrupted ſucceſſion. He was a bigotted Jew, and treated his ſubjects with ſuch barbarity, that they were obliged to aſk the aſſiſtance of Eleſbas or Eleſbaan, king of Ethiopia, againſt him. Dhu Nowas, not being able to make head againſt the Ethiopians, he forced his horſe into the ſea, and loſt his life and crown together.

The king of Ethiopia, having thus become maſter of Yaman, eſtabliſhed there the Chriſtian religion, and fixed Abryat, an Ethiopian, upon the throne. He was ſucceeded by Abraha-Ebn-Al-Sabah, ſurnamed the *Slitnoſed*, from a wound he had formerly received in it. He was ſucceeded by two other Ethiopian princes; but at laſt Seif Ebn Dhu Yazan, of the old royal family of Hamyar, having obtained aſſiſtance from the king of Perſia which had been denied him by the emperor Heraclius, recovered his throne, and drove out the Ethiopians; but was himſelf ſlain by ſome who were left behind. The ſucceeding princes were appointed by the Perſians, till Yaman fell into the hands of Mahomet.

We have already mentioned the vaſt mound or reſervoir made by Abd Shems, from which he ſupplied the city of Saba with water. This building ſtood like a mountain above the city, and was by the Sabæans eſteemed ſo ſtrong, that they were under no fear of its ever falling. The water roſe almoſt to the height of 20 fathoms; and was ſecured on every ſide by a work ſo ſolid, that many of the inhabitants had their houſes upon it. About the time of Alexander the Great, however, a terrible inundation happened. According to the Arabian hiſtorians, God, being diſpleaſed at the pride and inſolence of the inhabitants of this city, reſolved to humble them; and for this purpoſe ſent a mighty flood, which broke down the mound by night whilſt the inhabitants were aſleep, and carried away the whole city, with the neighbouring towns and people. This inundation is ſtyled in the Koran, the *inundation of Al-Harm*; and occaſioned ſo terrible a deſtruction, that from thence it became a proverbial ſaying to expreſs a total diſperſion, "that they were gone and ſcattered like Saba." By this accident no leſs than eight tribes were forced to remove their habitations; ſome of which gave riſe to the kingdoms of Hira and Ghaſſan.

The kingdom of Hira was founded by Malec, a deſcendant of Cahlan the brother by Hamyar; but, after three deſcents, the throne came by marriage to the Lakhmians, who were deſcendants of Lakhm the ſon of Amru, the ſon of Abd Ems. Theſe princes, whoſe general name was *Mondar*, preſerved their dominion, notwithſtanding ſome ſmall interruption from the Perſians, till the khalifat of Abubecr, when Al Mondar Magrur, the laſt of them, loſt his life and crown by the arms of Khaled-Ebn-Al-Walid. This kingdom continued 622 years and eight months, according to Ahmed Ebn Yuſef. Its princes were under the protection of the kings of Perſia, and were their lieutenants over the Arabs of Irak, as the kings of Ghaſſan were for the Roman emperors over thoſe of Syria.

The kingdom of Ghaſſan was founded by the tribe of Azd, who, according to ſome, ſettling in Syria Damaſcena, near a water called *Ghaſſan*, from thence took their name. Having driven out the Dajaamian Arabs, who before poſſeſſed the country, they made themſelves maſters of a conſiderable territory. Here they maintained themſelves, according to Abulfede, 613 years, when the laſt of their kings ſubmitted to the khalif Omar, and embraced the Mahometan religion; but, afterwards taking a diſguſt, they ſoon returned to Chriſtianity, and took refuge in Conſtantinople.

The kingdom of Hejaz was founded by Jorham the ſon of Kahtan, where princes of his line reigned till the time of Iſhmael, who married the daughter of Modad one of thoſe princes. Some authors relate that Kidar, one of Iſhmael's ſons, had the crown reſigned to him by his uncles the Jorhamites: but, according to others, the deſcendants of Iſhmael expelled that tribe. After the expulſion of the Jorhamites, the government of Hejaz ſeems not to have continued long in the hands of one prince, but to have been divided among the heads of tribes, almoſt in the ſame manner as the Arabs of the deſert are governed at this day. The tribe of Khozaab, after the inundation of Saba, fled into Hejaz, and ſettled in a valley near Mecca. Here they founded an ariſtocracy, aſſuming to themſelves both the government of the city of Mecca, and the cuſtody of the Caaba or temple. They continued maſters of this city and territory, as well as preſidents of the Caaba, for many ages; and were at length ſucceeded therein by the tribe of Koreiſh. After the Koreiſh had poſſeſſed themſelves of Mecca, they kept up the ſame form of government which prevailed there before.

Theſe are the moſt memorable events recorded by the Arabian hiſtorians, previous to the time of Mahomet, who eſtabliſhed the Mohammedan religion and government. A ſubject ſo curious and important as the eſtabliſhment of Mahometaniſm, which has been profeſſed for more than eleven centuries by very many millions of the human race, perhaps by one-third of the inhabitants of the globe, and which at preſent prevails from the Ganges to Morocco, excluſive of a vaſt number of large and populous iſlands, and every country where the tribes of Malays ſettle, in one direction; and from the ſouthern extremity of Arabia, to the borders of Hungary, in another, deſerves to be particularly noticed and explained.

Mahomet, or more properly, Mohammed, ſtyled *The Impoſtor*, from being the founder of this ſingular and ſpreading faith, was born in the year 569 of the Chriſtian æra. According to the Eaſtern hiſtorians, he was deſcended in direct line from Iſhmael. Kedar, or, as the Arabians call him *Kidâr*, after his father Iſhmael's death, communicated his name to the greateſt part of Arabia Petræa. He was ſucceeded in his authority and poſſeſſions by his ſon Hamal; Hamal by Nabet, and Nabet by Salaman. After Salaman came Al Homeiſa, then Al Yaſa, whoſe ſon Odad was ſucceeded by Odd the father of Adnan. Counting ten generations forward in the ſame line, we come at laſt to Fehr, who ſeems to have diſtinguiſhed himſelf by ſome glorious actions, as he was denominated *Koreiſh*, on account of his bravery. He is to be conſidered as the root of the politeſt and moſt celebrated tribe of the Arabs. He had three ſons, Gâleb, Mohâreb, and Al Hâreth. From Mohâreb the Banu Mohâreb, denominated likewiſe *Sheibân*, took their origin; from Al Hâreth, the Banu Al Kholoj; and from Gâleb, in a direct line, came Mahomet. Gâleb was the father of Lowa; and he of Caab, whoſe ſon Morrah had for his immediate deſcendant Kelâb the father of Koſa. It was this Koſa who aggrandized the tribe of the Koreiſh, by becoming the prince and governor of Mecca. He was ſucceeded by his ſecond ſon Abd Menâf, to whom the *prophetic light*, which is ſaid to have manifeſted itſelf in his face, gave the right of primogeniture. Abd Menaf was ſucceeded by his ſon Amni, ſurnamed *Hâſhem*, "or one that broke bread," on account of his ſingular generoſity in providing and diſtributing bread, during a famine at Mecca. In ſo great veneration is the memory of Hâſhem held by the Arabs, that from him the family of Mahomet are called *Hâſhemites*; and he who preſides over Mecca and Medina, who muſt always be of the race of Mahomet, has to this day the title of the "Prince of the Hâſhemites." Hâſham died at Gaza in Syria, and was ſucceeded by his ſon Abdal Motalleb or Mataleb. He is ſaid to have been extremely affable and eaſy of acceſs, as well as juſt and generous to a great degree. The well which God ſhewed to Hagar in the wilderneſs, is ſaid to have been miraculouſly diſcovered to Motalleb, about 500 years after it had been filled up by Amru, prince of the Jorhamites. This well is by the Arabs called *Zemzem*; which ſome derive from her calling to Iſhmael, when ſhe ſpied it, in the Egyptian tongue, *Zem, Zem*, i. e. Stay, Stay; though others aſcribe it to a different origin. The water of this well, which is on the eaſt ſide of the Caaba, in Mecca, is highly reverenced; being not only drunk with particular devotion by the pilgrims, but alſo ſent in bottles to moſt parts of the Mahometan dominions.

Abdallah, the father of Mahomet, was a younger ſon of Abdal Motalleb, and remarkable for his beauty. In his 24th or 25th year, he married Amina, the daughter of Wâheb, the ſon of Abdal Menâf. She is repreſented as the moſt beautiful, prudent, and virtuous, woman of her tribe; and conſequently the moſt worthy of ſuch an extraordinary perſon as Abdallah. He died young, and, in his father's life-time, left his widow and infant ſon in very mean circumſtances. Abdal Motalleb was, therefore, obliged to take care of his grandſon Mahomet; which he not only did during his life, but at his death enjoined his eldeſt ſon Abu Taleb to provide for him for the future. Abu Taleb was extremely kind to his nephew, and inſtructed him in the buſineſs of merchandiſe; for which purpoſe he took him into Syria when he was but thirteen years of age, recommending him to Khadijah, a noble and rich widow, for her factor; in whoſe ſervice he behaved ſo well, that ſhe married him, and thus raiſed him to an equality with the richeſt in Mecca.

Though Mahomet had probably formed a deſign of introducing his new religion pretty early, he did not avow it till the fortieth year of his age. The grand article of his faith was, the unity of the divine nature, which he pretended was violated by the Jews and Chriſtians no leſs than by the Pagans; for which reaſon, he reſolved to make an attempt to reſcue the world from the ignorance and ſuperſtition which prevailed at that time. This reformation he intended ſhould begin in his own family; and therefore, having retired with his houſehold to a cave in mount Hara, near Mecca, he there opened the ſecret of his miſſion to Khadijah: acquainting her that the angel Gabriel had juſt appeared to him, and told him that he was appointed the apoſtle of God. Khadijah, her couſin Waraka Ebn Nawfal, Ali the ſon of Abu Taleb, and Abu Becr, a man of very conſiderable authority among the Koreiſh, were the firſt converts to his new doctrine, and promiſed to ſupport him in it, at the hazard of their lives. Mahomet, therefore, entered upon his apoſtolic function with uncommon diligence, and ſoon gained over his uncle Hamza, and Omar Ebn Al Khattab, a perſon very much eſteemed, and who before had been his violent oppoſer. The Koreiſh, however, came to a reſolution to proſcribe all who ſhould embrace Mahomet's doctrine. In conſequence of this reſolution, the *Moſlems*, as his followers were called, were treated with great ſeverity; and the Koreiſh entered into a ſolemn league or covenant againſt the Haſhemites, and the family of Abdal Motalleb in particular, engaging themſelves to contract no marriages with them, nor to have any manner of communication with them otherwiſe; and, to give this the greater weight, they reduced it into writing, and laid it up in the Caaba. Upon this, the tribe became divided into two factions; and all the family of Haſhem, both Moſlems and unbelievers, repaired to Abu Taleb as their head; except only Abdal Uzza, the ſon of Abdal Motalleb, who, out of hatred to his nephew, went over to the oppoſite party. After this, the authority of Abu Taleb was ſcarcely ſufficient to protect Mahomet from the fury of the Koreiſh, who made frequent attempts upon his life.

The two factions into which the tribe of Koreiſh was divided, ſubſiſted for five years, when they were put an end to by a very ſtrange accident. Mahomet told his uncle Abu Taleb, that God had manifeſtly ſhewed his diſapprobation of the covenant entered into againſt them, by ſending a worm to eat out every word of their covenant except the name of God. With this particular Abu Taleb immediately acquainted the Koreiſh; offering, in caſe it proved falſe, to deliver up his nephew to them; but, if it ſhould prove true, he inſiſted that they ought to lay aſide their animoſity, and annul the league they had made againſt the Haſhemites. To this they acquieſced; and, going to inſpect the writing, found it to be as Abu Taleb had told them; the words "In thy name, O God," being the only ones which remained. On ſo remarkable a proof of the divine diſpleaſure, the league was immediately annulled, and all acts of hoſtility between the two parties ceaſed. After this event, Mahomet remained with his uncle Abu Taleb, who ſurvived the reconciliation only about eight months. The ſame year alſo died Khadijah, Mahomet's wife. Her death, as well as that of his uncle, proved a great detriment to his affairs; for the Koreiſh, notwithſtanding the former reconciliation, began now to perſecute him with more violence than ever. He was therefore obliged to fly for ſhelter to Al Tayef, and was expoſed to great danger: however, he gained many converts, and amongſt them ſix of the Jewiſh tribe of Khazraj; who, on their return home, failed not to ſpeak much in commendation of their new religion, and exhorted their fellow-citizens immediately to embrace it. Theſe converts of the tribe of Khazraj are by the Arab writers called *Al Anſar*, *Al Anſarii*, or *Anſars*; that is, aſſiſtants, favourers, ſupporters, &c. becauſe they aſſiſted and ſupported the prophet when he was purſued to the very brink of deſtruction. They firſt met Mahomet on a little hill called *Al Akabah*, where a temple ſtood, and where they firſt took an oath to exert themſelves in ſupport of their new apoſtle and his religion. An uninterrupted friendſhip and harmony reigned for a long time amongſt the members of the Jewiſh tribes of Khazraj, Koreidha, and Nadir, whoſe great progenitor, ſay the Arabs, was Aaron the ſon of Amram. Mahomet therefore inſinuating himſelf into the good opinion of the Anſars, they readily embraced his religion, and proved of very conſiderable ſervice to him.

The Koreiſh, finding that Mahomet had conſiderably extended his influence, and hearing of the league concluded with the Anſars, reſolved, in a council, to put an end to his life. To accompliſh this with the greater ſafety, they agreed that a man ſhould be choſen out of every tribe, and that each ſhould have a blow at him; that ſo the guilt of his death might fall equally on all the tribes; and thus the Haſhemites would be prevented from revenging the death of their kinſman, as they were much inferior in power to the reſt of the tribes put together. Mahomet now directed his companions to repair to Medina, where they might be aſſured of protection. This they accordingly did: but he himſelf, with Abu Becr and Ali, remained behind. The conſpirators, therefore, aſſembled at the prophet's door; but he, to amuſe them, ordered Ali to lie down in his place, and to wrap himſelf up in his green cloak; this Ali complied with, and Mahomet eſcaped to the houſe of Abu Becr. The conſpirators, in the mean time, perceiving through a crevice Ali wrapped up in the green cloak, took him for Mahomet, and watched there till morning, when Ali aroſe, and they found themſelves deceived. The prophet then retired with Abu Becr to a cave in mount Thur, a little ſouth of Mecca, where he had ſtill a more narrow eſcape, and with great difficulty ſet out for Medina. The Koreiſh, being informed of the route he had taken, ſent a party after him, under the command of Soraka Ebn Malec; but, as the Arab hiſtorians tell us, Soraka's horſe fell down when he attempted to ſeize Mahomet. Upon this he recommended himſelf to the prophet's prayers, and remounted his horſe without hurt. His companions, however, urging him to make another attempt, his horſe fell down with him a ſecond time; upon which he returned to Mecca, without offering any farther violence to Mahomet, who arrived without more moleſtation at Medina, and was received with the greateſt demonſtrations of joy.

From the circumſtance of this flight, which happened in the 622d year of Chriſt, the fifty-fourth year of Mahomet's met's age, and the tenth of his miniſtry, his followers, the Mahometans, compute their time; and the era is called in Arabic, Hegira, "*the Flight*."

On Mahomet's arrival at Medina, his firſt care was to build a moſque for his religious worſhip, and a houſe for himſelf. The city of Medina, at that time, was inhabited partly by Jews and partly by heretical Chriſtians, that formed two factions which perſecuted each other with great violence. This gave Mahomet ſuch an opportunity of propagating his new religion, that in a ſhort time the city was entirely at his command. Here he ſtrengthened himſelf by marrying Ayeſha the daughter of Abu Becr; and gave his own daughter Fatima in marriage to Ali, the ſon of Abu Taleb. The next point he had in view was the union of the Mohajerin, or thoſe who fled from Mecca on account of their religion, with the Anſars above-mentioned. To facilitate this, after his moſque and houſe were finiſhed, he eſtabliſhed among the Moſlems a fraternity, the principal ſtatute of which was, that they ſhould be conſidered as brethren, and moſt cordially love, and mutually cheriſh, one another, to the utmoſt of their power. This reconciliation took place at the end of the firſt year of the Hegira.

Mahomet, now finding himſelf at the head of a very formidable party, began to make repriſals on his enemies the Koreiſh. His firſt exploit was the taking of a caravan attended with a ſmall guard; and this being accompliſhed by a party conſiſting only of nine men, contributed greatly to encourage the Moſlems. But what moſt eſtabliſhed Mahomet's affairs, and was indeed the foundation of all his future greatneſs, was his gaining the battle of Bedr; of which we have the following account. The prophet being informed that Abu Sofian Ebn Harb, who was at the head of the Koreiſh, eſcorted a caravan with only thirty or forty men, he reſolved to intercept it. To this he was excited by the riches of the caravan, which conſiſted of the choiceſt merchandiſe of Syria, carried on the backs of a thouſand camels. But Abu Sofian, having notice of Mahomet's motions, diſpatched a courier to Mecca, requeſting ſuccours from his countrymen. Upon this, Mahomet drew together all his forces, which amounted to no more than 313, while his enemies conſiſted of near a thouſand. The Moſlems, however, advanced to battle with a fearleſs confidence, their leader having poſſeſſed their minds with an aſſurance that paradiſe awaited thoſe who died fighting for the cauſe of their prophet; the gratifications of which were held out to be ſuch as beſt ſuited the amorous complexions of the Arabians. Houries of black-eyed girls, reſplendent in beauty, blooming youth, and virgin purity; every moment of pleaſure was there to be prolonged to a thouſand years, and the powers of the man were to be increaſed an hundred fold, to render him capable of enjoying ſuch felicity. To thoſe who ſurvived, rich ſpoils, and the poſſeſſion of beautiful female captives, were to be their rewards on earth. Thus prepoſſeſſed, they propoſed, before the battle began, that three champions, from each party, ſhould engage each other in ſingle combat. In this the Moſlem champions were victorious, and the event greatly diſcouraged the Koreiſh. Mahomet now attacked them with ſuch bravery, that they were ſoon put to flight, leaving ſeventy dead on the ſpot, and having many more taken priſoners. The loſs on Mahomet's ſide was only fourteen men; and among the priſoners taken was Al Abbas, the prophet's uncle. Though this action may ſeem of little conſequence in itſelf, it was of very great advantage to Mahomet's affairs. He was immediately treated with the higheſt reſpect by the Najaſhi, or king of Ethiopia, who received a particular account of the victory ſoon after it was gained; while the ſuperſtitious Moſlems did not fail to look upon it as an evident declaration of heaven in their favour.

The Koreiſh, to be revenged on Mahomet for their late defeat, ſent Amru Ebn Al As, who afterwards conquered Egypt, with ſome other of their principal people, on an embaſſy to the king of Ethiopia, to intereſt him in their quarrel, and to entreat him to deliver up the Moſlem refugees then at his court. But the bad ſucceſs that had attended the arms of the Koreiſh, joined to the excuſes made by the refugees, not only influenced the Najaſhi from delivering them up, but alſo prompted him to diſmiſs the ambaſſadors, and return the preſents they had brought him. In the mean time, Abu Sofian, who had ſworn never to uſe perfumes or enjoy women till he had another battle with Mahomet, ſet out from Mecca with a body of 200 horſe. He advanced to a poſt within three miles of Medina, where he burnt a barn, with a man in it, that was winnowing wheat. Mahomet moved immediately towards him, with a detachment of cavalry; but Abu Sofian was ſo intimidated at his approach, that he fled with precipitation, leaving behind him all the ſacks of flour that had been provided for the ſubſiſtence of his troops. Inſtead therefore of coming to an engagement, as he had ſworn, he contented himſelf with alarming the country, and pillaging ſuch as he ſuſpected of favouring Mahometaniſm. This year Mahomet conquered the tribes called *Bana Solaim*, *Ghatfan*, and the *Banu Kainoka*; and took a rich caravan belonging to the Koreiſh, acquiring 25,000 dirhems for his own ſhare of the plunder.—Thus ended the ſecond year of the Hegira.

In the year of Chriſt 625, being the third of the Hegira, the Koreiſh aſſembled an army of 3000 men, among whom were 200 horſe and 700 armed with coats of mail. The command was given to Abu Sofian, who was attended by his wife Henda Bint Otba, and ſat down at a village ſix miles from Medina. Mahomet marched out againſt them at the head of only 900 men; of theſe 200 were curaiſſiers; but had only one horſe beſides his own in the whole army. He diſtributed three ſtandards among his troops; of which one was given to the tribe of Aws, another to that of Khazraj, and the third to Mohajerin. The grand ſtandard was carried before the prophet by Moſaab Ebn Omar. With theſe forces Mahomet formed a camp near Ohod, a mountain about four miles north of Medina, which he contrived to have on his back; and, the better to ſecure his men from being ſurrounded, he placed fifty choſen archers in the rear, with ſtrict orders not to quit their poſt. The army of the Koreiſh was drawn up in form of a creſcent, the right wing being commanded by Khaled Ebn Al Walid, afterwards ſo terrible to the Greeks; the left by Acrema Ebn Abu Jahl; and the centre by Abu Sofian. The corps de reſerve was headed by Abu Sofian's wife, accompanied by fifteen other matrons, who performed the office of drummers, lamenting the fate of their countrymen ſlain at Bedr, in order to animate the troops to battle. The attack was begun by the Moſlems, who fell upon the enemy with ſuch fury, that their centre immediately began to give way. Ali ſlew Arta the enemy's great ſtandard-bearer; which ſtruck them with ſuch terror, that they ſoon betook themſelves to flight, falling foul upon their own corps de reſerve. Victory had now been no longer doubtful, notwithſtanding the vaſt inferiority of Mahomet's troops, had not the fifty archers, contrary to the prophet's expreſs command, quitted their poſt. Upon this Khaled, perceiving the Moſlem army to be greatly expoſed, attacked them in the rear with ſuch bravery, that he turned the fortune of the day. After putting the troops in diſorder, he cried out with all his might, "Mahomet is ſlain;" which had ſuch an effect upon the Moſlems, that they immediately fled, nor could the utmoſt endeavours of the prophet himſelf afterwards rally them. He was therefore obliged to quit the field of battle; in doing which he was very near loſing his life, being ſtruck down by a ſhower of ſtones, and wounded in the face by two arrows, which occaſioned the loſs of two of his fore-teeth. Of the Moſlems ſeventy were ſlain; among whom were Hamza the prophet's uncle, and Moſaab the ſtandard-bearer. Amongſt the wounded were Abu Becr, Omar, and Othman; but, as ſoon as they underſtood that the prophet was ſafe, they returned to the charge with great intrepidity, and, after an obſtinate diſpute, carried him off. The good retreat made by theſe champions ſo diſcouraged the troops of Abu Sofian, that they did not purſue the flying enemy, but contented themſelves with remaining maſters of the field of battle; nor did that general, though he exulted in his victory, make any farther uſe of it than to give Mahomet a challenge to meet him the next year at Bedr, which was accepted; but, after his return to Mecca, he deſired a truce with the Moſlems, which was readily granted.

The next year (A.D. 626.) Mahomet, beſides ſeveral other leſs conſiderable ſucceſſes, reduced a fortreſs belonging to the Jewiſh tribe of Al Nadir, who had revolted. At this time he forbade his followers the uſe of wine, or to play at games of chance, on account of the diſturbances and quarrels which were often excited by that means among them. This year alſo he marched his army to Bedr, to meet Abu Sofian, as he had promiſed the year before: but, that general's heart failing him, he returned home without facing the prophet; and this act of cowardice the Moſlems did not fail to impute to a terror ſent immediately from God. The year following, however, the Koreiſh, in conjunction with the tribe of Ghatfan, and the Jews of Al Nadir and Koreidha, aſſembled an army of 12,000 men, with which they formed the ſiege of Medina; thus threatening Mahomet and his followers with utter deſtruction. On the enemy's approach, Mahomet ordered a deep ditch to be dug round the city, and went out to defend it with 3000 men. The Arabs having inveſted the town, both ſides remained in a ſtate of inactivity for ſome time; which was ſo well employed by Mahomet, that he found means to corrupt ſome of the leading men in the enemy's camp. The good effects of this ſoon appeared; for a champion having advanced to the Moſlem entrenchments, and challenged the beſt man in their army to fight him in ſingle combat, the challenge was accepted by Ali, who ſlew him and another that came to his aſſiſtance; after which, thoſe who had been corrupted by Mahomet deſerted their camp; ſo that the reſidue were obliged to raiſe the ſiege, and return home.

Mahomet now continued to be ſucceſsful, gradually reducing the Arab tribes one after another. In 628, he ſent an agent to Conſtantinople, deſiring leave of the Greek emperor to trade with his ſubjects, which was immediately granted. The ſame year alſo he concluded a peace with the inhabitants of Mecca, and obtained liberty to perform his devotions at the Caaba. In 1629, he began to think of propagating his religion beyond the bounds of Arabia, and ſent meſſengers to ſeveral neighbouring princes to invite them to embrace Mahometaniſm; but, before ſending the letters, he cauſed a ſilver ſeal to be made, on which were engraved the following words: "MAHOMET THE APOSTLE OF GOD." This ſeal, he believed, would procure the letters a more favourable reception at the courts of thoſe princes whither they were directed. The firſt he addreſſed was Khoſru Parviz, king of Perſia; who, finding that Mahomet had put his own name before his, tore the letter, and diſmiſſed the meſſenger very abruptly. He alſo ſent a letter to the ſame purpoſe to Conſtantinople; but, though the emperor Heraclius diſmiſſed his meſſengers honourably, he refuſed to abandon the Chriſtian faith. Beſides theſe, he wrote other letters, which he diſtributed among thoſe whom he thought moſt likely to acknowledge him for an apoſtle. We do not find, however, that, by means of letters, he ever introduced his religion into a foreign country. While Mahomet was thus employed, he very narrowly eſcaped being poiſoned by a Jeweſs, who wanted, as ſhe ſaid, to make an experiment whether he was a prophet or not. This was done by communicating ſome poiſon to a ſhoulder of mutton, of which one of his companions, named Baſhar Ebn Al Bara, eating heartily, died upon the ſpot; and Mahomet himſelf, though he lived three years after, never enjoyed perfect health. Notwithſtanding this misfortune, however, he ſtill continued his enterpriſes. The year 630 was uſhered in by the converſion of Khalid Ebn Al Walid, Amru Ebn Al As, and Othman Ebn Telha, three of the moſt conſiderable perſons among the Koreiſh; and this ſoon enabled him to become maſter of the whole peninſula of Arabia. This year alſo the inhabitants of Mecca took it into their heads to violate the treaty concluded with Mahomet; for the tribe of Becr, who were the confederates of the Koreiſh, attacking thoſe of Khozaab, who were in alliance with Mahomet, maſſacred twenty of them, and were aſſiſted by a party of the Koreiſh themſelves. The conſequence of this violation was eaſily foreſeen, and Abu Sofian made himſelf a journey to Medina, in order to heal the breach, and renew the truce: but in vain; for Mahomet refuſed to ſee him. Upon this he applied to Abu Becr, Ali, Omar, and Fatima, to intercede with the prophet; but ſome of them giving him rough anſwers, and others none at all, he was obliged to return to Mecca as he came. Mahomet gave orders to ſet off immediately, and take the Meccans by ſurpriſe, who were by no means in a condition to receive them. As he drew near to Mecca, he ſet up his ſtandard, and advanced in order of battle to Mar Al Dharan, where the whole army encamped. Here he ordered 10,000 fires to be lighted, and committed the defence of the camp to Omar, who cut off all communication with the town, ſo that the Meccans could receive no certain advice of their number. Among others that came from Mecca to reconnoitre the Moſlem camp, Abu Sofian, Hakem Ebn Hezam, and Bodail Ebn Warka, fell into Omar's hands; and, being conducted to Mahomet, were obliged to embrace Mahometaniſm, in order to ſave their lives.

The rumour of this expedition had not a little terrified the Koreiſh, though they were not apprized that the prophet had reſolved upon a war; but perceiving now, upon the report of Abu Sofian, who had been ſent back to them, that the enemy was at their gates, they were thrown into the utmoſt conſternation. Of this Mahomet reſolved to take the advantage. He therefore firſt diſpatched Hakem and Bodail to the Meccans, inviting them to take an oath of allegiance to him, and become converts to his new religion; after which, he made the following diſpoſition of his forces: Al Zobier was ordered to advance with a detachment towards the town, on the ſide of mount Cada. Saad Ebn Obad, prince of the tribe Khazraj, marched with another detachment towards the height of Coda, which commands the plain of Mecca. Ali commanded the left wing, conſiſting of Anſars and Mohajerin. The prophet put into his hands the great ſtandard of Mahometaniſm, with orders to poſt himſelf upon mount Al Hajun, and to plant the ſtandard there; ſtrictly enjoining him not to ſtir from thence till he himſelf arrived, and till a proper ſignal ſhould be given him from Saad for that purpoſe. Khaled led the right wing, conſiſting of the Arabs lately converted, with which he was to poſſeſs himſelf of the plain of Mecca. Abu Obeidah commanded in the centre, which conſiſted entirely of infantry; the prophet himſelf remained in the rear, to diſpatch his orders to the different generals, as occaſion ſhould require. He expreſsly prohibited Khaled, and all his other officers, to act offenſively, unleſs they were firſt attacked. Things being thus prepared, the army, upon the ſignal given, put itſelf in motion. The prophet mounted his camel with great alacrity, and was that day clothed in ſcarlet. Al Zobier purſued the route aſſigned him without oppoſition; nor did Saad diſcover the fainteſt traces of an enemy. Ali took poſſeſſion of his poſt without the loſs of a man; and in like manner Abu Obeidah ſeized on the ſuburbs. Khaled, however, in his march to the plain, was attacked by a large body of Koreiſh and their confederates, whom he defeated, putting twenty-eight of them to the ſword; he purſued them into the town, and maſſacred a great number of the inhabitants; which ſo terrified the reſt, that the prophet ſoon became maſter of the city, with the loſs only of two men. Mahomet made his public entry into it exactly at ſun-riſing. When the firſt tumult was over, he went in proceſſion round the Caaba ſeven times, touching the corner of the black ſtone with the wand in his hand, as often as he paſſed it, with great devotion. Then he entered the Caaba; where, obſerving ſeveral idols in the form of angels, and the ſtatues of Abraham and Iſhmael, with the arrows of divination in their hands, he cauſed them all to be deſtroyed. Afterwards entering into the interior part of the Caaba, he repeated with a loud voice the form uſed at this day by the Mahometans, "Allah Akbar, God is great, &c." turning towards every part of the temple. Then he prayed between the two pillars there, with two inclinations, as well as without the Caaba; ſaying to thoſe that attended him, "This is your Kebla, or the place towards which you are to turn your faces in prayer."

Having thus ſubdued the Koreiſh, and purged the Caaba of 360 idols, the prophet's next care was to ingratiate himſelf with the people. Sending therefore for ſome of the principal inhabitants, he aſked them what kind of treatment they expected from him, now he had conquered them? To this they replied, "None but what is favourable, O generous brother:" upon which he diſmiſſed them, ſaying, that from that moment they were a free people. He reſtored the keys of the Caaba to Othman Ebn Telha, who was in poſſeſſion of them before; and who was ſo much affected by this unexpected generoſity, that he immediately became a proſelyte. Next day the prophet declared Mecca an aſylum for all who would embrace his new religion; and publicly declared that he would maintain, to the utmoſt of his power, the inviolable ſecurity of the place. He was then ſolemnly inaugurated; after which he proſcribed, according to ſome, ſix men and four women, according to others, eleven men and one woman; but of theſe only three men and one woman were put to death; the reſt being pardoned on embracing Mahometaniſm.

The ninth year of the Hegira, being that of Chriſt 631, is called by the Mahometans the year of *Embaſſies*; for the Arabs, who had waited the iſſue of the war between Mahomet and the Koreiſh, no ſooner ſaw the prophet victorious, than they began to come in to him in great numbers, and ſend embaſſies to make their ſubmiſſions to him, both while at Mecca and after his return to Medina; and thus good fortune continued without interruption to the year 632, when this famous impoſtor breathed his laſt, having reduced under his ſubjection the whole peninſula of Arabia, and being ready to break into the neighbouring kingdoms in order to ſatisfy his ambition.

The death of Mahomet occaſioned ſuch a conſternation in Mecca, that the governor hid himſelf, fearing to be called in queſtion for his former conduct; and the inhabitants conſidered themſelves deſtitute of all protection. They now began to meditate a revolt; but were prevented by Sohail Ebn Amru, a principal man of the Koreiſh. The tumults of Medina, however, were not ſo eaſily appeaſed. The news of this event was no ſooner publiſhed there, than a number of people aſſembled before the prophet's door, crying out, "How can our apoſtle be dead? Our interceſſor, our mediator, has not entirely left us! He is taken up into heaven, as was Iſa (Jeſus); therefore he ſhall not be buried." This was confirmed by Omar; who drew his ſword, and ſwore, that, if any perſon affirmed Mahomet to be dead, he would cut off his hands and feet. "The apoſtle of God (ſays he) is not dead: he is only gone for a ſeaſon, as Moſes the ſon of Amram was gone from the people of Iſrael for forty days, and then returned to them again." The populace therefore kept the body above ground, even after the belly began to ſwell. Upon hearing of theſe tranſactions, Abu Becr immediately poſted from Al Souah, and expoſtulated with him in the following manner: "Do you worſhip Mahomet, or the God of Mahomet? If the latter, he is immortal, and liveth for ever; but, if the former, you are in a manifeſt error, for he is certainly dead." The truth of this aſſertion he immediately evinced from ſeveral paſſages of the Koran, in ſo clear and concluſive a manner, that he not only ſatisfied Omar, but calmed the minds of the people.

The prophet having left no directions concerning a ſucceſſor, very warm diſputes aroſe between the Mohajerin and the Anſars about the right of electing a khalif. The former inſiſted on having that right, becauſe they had attended Mahomet in his flight to Medina; and the others, becauſe they had ſupported him when expelled from his native city, &c. In ſhort, the diſputes became ſo violent, that an open rupture muſt have commenced, had not they been terminated by a propoſal that each party ſhould chooſe a khalif. This amuſed them for the preſent; but, not proving perfectly agreeable to the Mohajerin, Abu Becr propoſed two perſons, Omar and Abu Obeidah, offering to ſwear allegiance to him on whom the ſuffrages of both ſhould fall. At length Omar voluntarily ſwore fealty to Abu Becr, and, his example being followed by all the Moſlems on the ſpot, he was acknowledged both by the Mohajerin and Anſars as the rightful ſucceſſor of Mahomet. Theſe tranſactions, however, were not reliſhed by Ali, who, as ſon-in-law to the prophet, had undoubtedly the beſt title to the ſucceſſion. He expoſtulated with Abu Becr about the manner of his election, which had been effected without his knowledge; and received for anſwer, that the exigence of affairs would not admit of deliberation; and that, had not the election been ſo ſudden, the oppoſite party would have wreſted the power entirely out of their hands. Ali was in Fatima's apartment when Abu Becr was elected khalif; and, upon the arrival of the news, expreſſed great diſſatisfaction. He found himſelf, however, obliged to ſubmit; for the new khalif ſent Omar with orders to burn the houſe where he and his friends were aſſembled, in caſe he did not concur in ſupporting the election.

Soon after Abu Becr's acceſſion, many of the Arabs refuſed to pay the tribute impoſed upon them by Mahomet, and even attempted to ſhake off his yoke altogether. This ſo alarmed the khalif and his ſubjects at Medina, that, fearing a general revolt, they ſent all not able to bear arms into the faſtneſſes of the rocks and mountains, and put themſelves in as good a poſture of defence as the ſhort time would permit. In the mean time Khaled was diſpatched with an army of 4500 men to reduce the rebels; and ſoon coming up with them, gave them a total defeat, brought off a vaſt quantity of plunder, and made many of their children ſlaves. Nor was he content with this; for being ſent by Abu Becr to Malec Ebn Noweirah, an eminent perſon among the Arabs, and famous for his ſkill in poetry as well as his horſemanſhip and bravery, to bring him over by fair means, he immediately ordered his head to be ſtruck off. By this means, indeed, he extinguiſhed the ſeeds of rebellion; but rendered himſelf exceedingly obnoxious to Abu Becr, who would have put him to death, had not Omar ſtrongly interceded for him: for Khaled had greatly exceeded his commiſſion, as Malec had already returned to Mahometaniſm. About the ſame time another body of rebels committed great diſorders in the province of Bahrein. Againſt theſe Abu Becr diſpatched Al Ola at the head of a conſiderable army, who ſoon obliged them to return to Mahometaniſm; having put great numbers to the ſword, and plundered their country in a dreadful manner.

Abu Becr having now no enemy to contend with in Arabia, and being free from all apprehenſions of a competitor, reſolved to turn his arms againſt the Greek emperor. Some ſlight ſkirmiſhes had happened, in the lifetime of Mahomet, between the Moſlems and Greek Chriſtians; in one of which Zeid, a Moſlem commander, had been killed. To revenge his death, his ſon Oſama was on the point of making an irruption into Syria at the time of Mahomet's deceaſe. This enterpriſe the khalif encouraged him to go on with; and it was executed by Oſama with great ſucceſs. The khalif next ſent Khaled at the head of a powerful army to invade Irak, and put an end to the kingdom of Hira. In this alſo he was attended with his uſual ſucceſs. The king Al Mondar Al Maghrur loſt his life in defence of his dominions; and the kingdom was totally deſtroyed, after it had exiſted 622 years and eight months.

The inhabitants became tributaries; and, according to Eutychius, the tribute collected on this occaſion amounted to 70,000 pieces of money. This, according to Al Makin, was the firſt tribute-money ever brought to Medina.

The exigence of the khalif's affairs, however, did not ſuffer Khaled long to remain in Irak. Before the departure of the army under his command, Abu Becr had come to a reſolution to invade Syria; and, finding his deſign approved by the principal officers of his court, he ſent circular letters to the petty princes of Yaman, the chief men of Mecca, &c. informing them of his intention to take Syria out of the hands of the infidels; acquainting them, at the ſame time, that a war for the propagation of the true religion was an act of obedience to God. To theſe letters they paid a proper regard; and in a very ſhort time they all appeared at Medina at the head of their reſpective troops, and pitched their tents round the city. Here they ſtaid till the Moſlem army deſtined to act againſt Syria was completely formed, and in a capacity to begin its march. The khalif having viewed the troops from the top of an hill, and prayed to God for ſucceſs, attended the generals ſome way on foot. As the generals were on horſeback, they could not forbear expreſſing their uneaſineſs at the khalif's thus demeaning himſelf; but he told them, that it ſignified little whether they walked on foot or rode, as they had all the ſame views, viz. the ſervice of God, and the propagation of religion. At parting, he addreſſed Yezid Ebn Abu Sofian, who had the ſupreme command, in the following manner: "Take care, Yezid Ebn Abu Sofian, to treat your men with tenderneſs and lenity. Conſult with your officers on all preſſing occaſions, and encourage them to face the enemy with bravery and reſolution. If you ſhall happen to be victorious, deſtroy neither old people, women, nor children. Cut down no palm-trees, nor burn any fields of corn. Spare all fruit-trees, and ſlay no cattle but ſuch as you ſhall take for your own uſe. Adhere always inviolably to your engagements, and put none of the religious perſons you ſhall meet with in monaſteries to the ſword. Offer no violence to the places they ſerve God in. As for thoſe members of the ſynagogues of Satan *who ſhave their crowns*, cleave their ſkulls, and give them no quarter, except they embrace Iſlamiſm (Mahometaniſm), or pay tribute."

Heraclius, the Greek emperor, was greatly alarmed at the approach of the Moſlem army; however, he made all neceſſary preparations for his defence, and ſent out a detachment to reconnoitre the enemy. Theſe having fallen in with the Arabs, a battle enſued, in which the Greeks were defeated with the loſs of 1200 men, while the Arabs loſt only 120. This was ſucceeded by a great many ſkirmiſhes, in which the Moſlems were generally victorious. The rich ſpoils taken on theſe occaſions were ſent as a preſent to the khalif; who, having acquainted the inhabitants of Mecca with his good ſucceſs, they were ſo elated, that they furniſhed him with a ſtrong reinforcement, which was immediately ordered into Syria. Khaled's next exploit was the reduction of Boſtra, a very rich and populous city of Syria Damaſcena. Having left a garriſon of 400 men in Boſtra, and being joined by Abu Obeidah's forces, he laid ſiege to Damaſcus with an army of 45,000 men. This ſo alarmed the emperor, that he diſpatched 100,000 choſen troops commanded by one Werdan, to the relief of that city. Khaled, on hearing of the approach of this formidable army, was for marching immediately with all his forces, and giving them battle; but this was oppoſed by Obeidah, as it would enable the inhabitants of Damaſcus to procure freſh ſupplies both of arms and proviſions, and conſequently render the reduction of the place more difficult. It was, therefore, agreed, that a body of troops ſhould be detached under Derar Ebn Al Wazar, an excellent officer, to fight the enemy, whilſt the ſiege was carried on by the two generals.

Khaled, fearing leſt Derar's furious zeal and hatred to the Greek Chriſtians ſhould prove fatal to his troops, told him before his departure, that, though they were commanded to fight for the propagation of their religion, yet they were not allowed to throw away the lives of their men; and therefore ordered him to retire to the main body of the army, in caſe he found himſelf preſſed by a ſuperior force. But Derar, deaf to his ſalutary admonition, with his ſmall body of troops ruſhed upon the whole Chriſtian army, notwithſtanding the vaſt diſproportion of numbers. He charged them, however, with ſuch bravery, that he penetrated to the ſpot where the general gave his orders, killed the ſtandard-bearer, and carried off the ſtandard itſelf, in which was a croſs richly adorned with precious ſtones. Nay, he would in all probability have put Werdan's army to flight, had not the general's ſon, the commandant of Hems, arrived in the heat of the engagement with a reinforcement of 10,000 men; with which he attacked the Moſlems ſo briſkly in the rear, that he forced them to retire, and took Derar himſelf priſoner. This ſo diſcouraged the Moſlems, that they would have taken to their heels, had not Rafi Ebn Omeirah animated them with the following words: "What! do not you know, that whoever turns his back upon his enemies offends God and his prophet? and that the prophet declared the gates of paradiſe ſhould be open to none but ſuch as fought for religion? Come on! I will go before you. If your captain be dead, or taken priſoner, yet your God is alive, and ſees what you do." This exhortation had the deſired effect; and, his troops, returning to the charge, maintained their ground with unparalleled bravery, till Khaled arrived with a conſiderable body of infantry, and 1000 horſe. This event turned the fortune of the day. A party of the imperial army went over to the Moſlems, and the reſt were defeated. Derar was alſo retaken, and carried off in triumph. However, Werdan, having collected the ſhattered remains of his forces, and received a reinforcement from the emperor, found his army ſtill amounted to 70,000 men, with which he reſolved to make another ſtand for the relief of Damaſcus. They were attended with ſtill worſe ſucceſs in this ſecond attempt than they had been before; being utterly defeated with the loſs of 50,000 men, in conſequence of which the city ſurrendered. This event happened in the year 634; and the very day that Damaſcus was taken, Abu Becr died of a conſumption, in the 63d year of his age. He was ſucceeded by Omar, and the firſt title aſſigned him was, *The khalif of the khalif of the apoſtle of God.* But the Arabs, conſidering, that by the additions to be continually made at the acceſſion of every new khalif, the title would become too long, they with one voice ſaluted him *Emperor of the believers*; which hereditary title deſcended afterwards to his ſucceſſors by a kind of right.

The new khalif was no ſooner ſettled, than he placed Abu Obeidah in the chief command of the army of Syria, being greatly diſpleaſed with the ſanguinary diſpoſition of Khaled. He alſo commanded Abu Obeidah to have an eye upon Paleſtine, and to invade it as ſoon as opportunity offered. Khaled bore his diſgrace with great magnanimity: and ſwore, that though he always had the greateſt regard for Abu Becr, and the utmoſt averſion to Omar, yet he would ſubmit to God's will, and obey the new khalif as the lawful ſucceſſor of Mahomet. The Moſlem forces in the mean time, having made proper diſpoſitions for improving the advantages they had gained, Abu Obeidah ſent a detachment of 500 horſe to *Dair Abil Kodos*, about 30 miles from Damaſcus, to plunder the Chriſtians there. He next ſet about reducing the principal fortreſſes in Syria, and ſoon became maſter of Kinnifrin, Baalbec, Adeſtan, Shaizar, and Hems; on the news of which, the Greek emperor Heraclius, reſolving if poſſible to put a ſtop to the unprovoked ravages of the Moſlems, ſent againſt them an army of 240,000 men, commanded by one Manuel, whom the Arabs call *Mahan*. But this vaſt multitude was utterly defeated by Khaled; upon whom Abu Obeidah conferred the ſupreme command, on account of his ſuperior ſkill in military affairs. This battle was fought near a village called *Yermouk*; and, according to the Arabian

bian hiſtorians, the Chriſtians had 150,000 men killed and 40,000 taken priſoners, while the Moſlems loſt no more than 4030.

The defeat at Yermouk was immediately followed by the loſs of the whole province of Paleſtine. The reduction of Jeruſalem was one of its firſt conſequences; and Omar, being appriſed of the ſucceſs of his arms, immediately ſet out to viſit that holy place, at the requeſt, it is ſaid, of the inhabitants. The khalif was attended in his journey by a numerous retinue. He rode upon a red camel, and carried with him two ſacks of proviſion and fruits. Before him he had a leather bottle, very neceſſary in theſe deſert countries to put water in; and behind him a wooden platter. Before he left the place where he reſted, he conſtantly ſaid the morning prayer; after which he addreſſed himſelf to his attendants in a devout ſtrain, uttering ſome pious ejaculations. Then he communicated his proviſion to them; every one of his fellow-travellers eating with him out of the ſame platter, without the leaſt diſtinction. His clothes were made of camel's hair, and were in a very tattered condition; nor could any thing be more mean or ſordid than the figure he made. On the road he adminiſtered juſtice among his ſubjects: concerning which we have ſeveral anecdotes; but that moſt to his honour is the following: Having obſerved ſome poor tributaries expoſed to the heat of the ſun, a very cruel puniſhment in thoſe hot countries, for not being able to pay the ſum demanded of them, he ordered them to be releaſed; telling his attendants, that he once heard the apoſtle of God ſay, "Do not afflict men in this world; for thoſe who do ſo, God ſhall puniſh in hell-fire at the day of judgment." His orders were immediately executed, to the great grief of the oppreſſors; and the khalif continued his route. On the confines of Syria he was met by Aub Obeidah attended by an eſcort, who conducted him to the Moſlem camp, where he was received with the utmoſt demonſtrations of joy; and from thence to Jeruſalem. The morning after his arrival, he ſaid prayers and preached to the troops. After the concluſion of his ſermon, he pitched his tent within ſight of the city: then he ſigned the articles of capitulation; by which the inhabitants were intitled to the free exerciſe of their religion, the poſſeſſion of their property, and of his protection.

Before the khalif left Syria, he divided that country into two parts; one of which, that lay between Haûran and Aleppo, he committed to the care of Abu Obeidah, giving him the ſtricteſt orders to reduce it as ſoon as poſſible. Yezid Ebn Abu Sofian was commanded to take upon him the care of the other, which comprehended Paleſtine, and the ſea-coaſt, and to make himſelf abſolute maſter of it, having a body of troops aſſigned him for that purpoſe. He alſo directed Amru Ebn Al As to invade Egypt, then in a very languiſhing condition. After having made theſe diſpoſitions for extending his conqueſts, he ſet out for Medina, where he arrived in perfect health, to the great joy of the inhabitants.

Soon after Omar's departure, Yezid advanced to Cæſaſarea; but found the place ſo ſtrong, that he was obliged to continue ſome time in a ſtate of inaction. Abu Obeidah, in the mean time, advanced towards Aleppo, the citadel of which was at that time the ſtrongeſt in Syria. The citizens were ſtruck with the utmoſt conſternation at his approach. They had at that time two governors, who were brothers, and reſided in the caſtle, at a little diſtance from the city. The names of theſe two governors, who were of very different diſpoſitions, were Youkinna, and John. Their father, by the emperor Heraclius's appointment, preſided over all that tract which lay betwixt Aleppo and the Euphrates; and, after his death, the chief management of affairs devolved upon Youkinna, his brother John ſpending his time moſtly in devotion and acts of piety. He would therefore gladly have prevailed on Youkinna to purchaſe a peace from the Arabs with money, rather than make his country a ſcene of blood and rapine; but this not ſuiting the martial genius of Youkinna, he armed a conſiderable number of the citizens, and diſtributed money among them. He then told his men that he intended to act offenſively againſt the Arabs, and even to engage them if poſſible before they drew near. Having animated his troops, he put himſelf at the head of 12,000 of them, and marched forwards to get intelligence of the enemy's motions. Abu Obeidah, in the mean time, had ſent before him Caab Ebn Damarah, with 1000 men; giving him expreſs orders not to fight till he had received information of the enemy. Youkinna's ſpies diſcovered Caab and his men reſting themſelves and watering their horſes without the leaſt apprehenſion of danger; of which Youkinna being appriſed, he placed one part of his troops in ambuſcade, and with the other attacked the Moſlems. The Arabs behaved with their uſual valour; and at firſt repulſed the Chriſtians, notwithſtanding their ſuperiority in numbers: but, being attacked by the troops that lay in ambuſh, they were forced to retire; having 170 killed, and almoſt all the reſt wounded.

After Youkinna's departure, the inhabitants of Aleppo, conſidering the calamities that awaited them if their city ſhould be taken by ſtorm, ſubmitted without delay to Abu Obeidah, and were taken under the protection of the khalif. This being communicated to Youkinna, he returned home with all poſſible expedition, leſt an attempt ſhould be made on the caſtle in his abſence. On his arrival at Aleppo, he was ſo incenſed againſt the inhabitants, that he threatened them with death if they did not diſannul the treaty with the Arabs, and deliver up the authors of it into his hands. This demand not being complied with, he fell upon the citizens with great fury, and killed 300 of them; among whom was his brother John, whoſe head he cauſed to be ſtruck off, charging him with being the author and abettor of the late pernicious ſcheme. He would have made a much greater ſlaughter, had not the Moſlem army at that inſtant arrived before the town; upon which Youkinna retired into the caſtle with a conſiderable body of troops: but, before this could be effected, he was obliged to ſuſtain an attack from the Arabs, in which he loſt 3000 men. The action was no ſooner ended than the inhabitants of Aleppo brought out 40 of Youkinna's men, and as a proof of their fidelity delivered them into Abu Obeidah's hands. Of theſe, ſeven embraced Mahometaniſm, and the reſt were beheaded.

Abu Obeidah now inveſted the citadel; and, having ſurrounded it with all his forces, made a moſt vigorous aſſault. The beſieged defended themſelves with great bravery, and after a very warm diſpute drove the enemy back to their camp. This encouraged Youkinna to make a ſally the following night. The fires being then out in the Moſlem camp, and the beſiegers not expecting ſuch an unſeaſonable viſit, 60 of them were killed on the ſpot, and 50 taken priſoners. Youkinna, however, being briſkly attacked by Khaled, who ſoon drew together a body of troops to purſue him, loſt about 100 men in his retreat. The next day, Youkinna cauſed the priſoners to be beheaded in ſight of the Moſlem camp; and, receiving advice that a ſtrong party of Arabian cavalry was ſent out to forage, he ordered a body of his horſe to attack them; which they accordingly did, killed 130, ſeized all their camels, horſes, &c. and then retired to the mountains. Here they propoſed to remain concealed till the following night, and then return to the caſtle; but Abu Obeidah detached Khaled and Derar with a body of troops to purſue the Greeks, and revenge the late affront. Khaled, being informed of the route the Chriſtians had taken, poſſeſſed himſelf of the only paſs by which they could return; and, having poſted there a party of his men, they took 300 of the Greeks priſoners, and put all the reſt to the ſword. The next morning, to retaliate Youkinna's cruelty, the priſoners were all brought out and beheaded in ſight of the garriſon. Notwithſtanding this diſaſter, Youkinna made ſeveral ſallies, wherein he killed a great number of the Moſlems, and haraſſed them to ſuch a degree, that Abu Obeidah found himſelf obliged to remove his camp to a greater diſtance from the caſtle; by which manœuvre he likewiſe hoped that Youkinna would be leſs upon his guard. Herein, however, he was miſtaken: for the Greek commander, by the prudent meaſures he took, eluded all ſurpriſe; and, though Abu Obeidah continued the ſiege for four months, he had no hopes of making himſelf maſter of it until a reinforcement arrived.

Among the troops ſent by Omar on this occaſion, there was an Arab of a gigantic ſize, called *Dames*, who was a man of great courage and reſolution. Obſerving the little progreſs made in the ſiege, he bethought himſelf of a ſtratagem by which the fortreſs might be taken. He therefore deſired Abu Obeidah would aſſign him a party conſiſting only of thirty men; which at Khaled's requeſt was readily granted. Then he begged the general to raiſe the ſiege, and retire about three miles from the caſtle, which was likewiſe complied with. The following night Dames, who had poſted himſelf with his party very near the citadel, found means to ſeize a Greek, from whom he learned that Youkinna, after the ſiege was raiſed, had exacted large ſums of money from the citizens, on account of the treaty they had concluded with the Arabs; and that he was one of thoſe who had endeavoured to make their eſcape from the oppreſſion of ſuch a tyrant, by leaping down from the wall. This man Dames took under his protection; but beheaded five or ſix others who fell into his hands, and could give no account of themſelves. He then covered his head and ſhoulders with a goat's ſkin, and took a dry cruſt in his hand, creeping on the ground till he got cloſe to the foot of the wall. If he heard any noiſe, or ſuſpected any perſon to be near, he made a noiſe with his cruſt like a dog gnawing a bone; his companions ſometimes walking, and ſometimes creeping after him in the ſame manner. He had before diſpatched two of his men to Abu Obeidah, to deſire that a detachment of horſe might be ſent him by break of day to ſupport his ſmall party, and facilitate the execution of the plan he had formed. At laſt Dames found an opportunity of raiſing ſeven men upon his ſhoulders, who ſtood one upon another till the higheſt reached the top of the wall. Here he ſeized a watchman whom he found aſleep, and threw him over the wall. Two others, whom he found in the ſame condition, he ſtabbed with his dagger, and threw them over likewiſe. Then he let down his turban, and drew up the ſecond of his brethren, as they two did the third, and by their help Dames himſelf and all the reſt were enabled to mount the wall. He then privately ſtabbed the centry at each of the gates, and put his men in poſſeſſion of every one of them. The ſoldiers of the garriſon, however, were at laſt alarmed, and ſurrounded the Arabs, who were on the point of periſhing, when Khaled appeared at the head of a detachment of cavalry. On ſight of that general, who had long been terrible to the Chriſtians, the beſieged threw down their arms and ſurrendered at diſcretion. Youkinna, and ſome of the principal officers, turned Mahometans, in order to ſave their lives; and the caſtle, being taken by ſtorm, was pillaged by the Moſlems. Dames acquired great glory by this exploit; and, out of complaiſance to him, the army did not depart from Aleppo till he and his men were cured of their wounds.

After the reduction of the citadel of Aleppo, Abu Obeidah intended to march to Antioch; but was diverted by Youkinna, who was now become a violent enemy to the Chriſtians. He told the Moſlem general, that his conqueſt of that part of the country would be incomplete without taking Azaz, a place of great importance, where Theodorus, Youkinna's couſin-german, was commandant. This fortreſs he propoſed to become maſter of, by putting himſelf at the head of 100 Arab horſe dreſſed in the Greek habit, who were to attend him to Azaz. Upon his arrival there, he was to aſſure Theodorus that he was ſtill in reality a Chriſtian, and had taken that opportunity to eſcape from the Moſlem camp. But, to make his ſtory more probable, Abu Obeidah was to ſend after him a detachment of 1000 horſe, who were to purſue him as far as Morah, a village in the neighbourhood of Azaz, with orders to poſt themſelves there; from whence, if ſuch a meaſure ſhould be neceſſary, they might eaſily advance to Azaz, to facilitate the conqueſt of that place. To this ſcheme Abu Obeidah agreed; but Youkinna, with all his men, were immediately taken priſoners by Theodorus, who had been informed of the whole affair by a ſpy in the Moſlem camp. The fortreſs, however, was ſoon reduced, and Youkinna regained his liberty; but was ſoon after taken priſoner a ſecond time, and brought before Heraclius, who then reſided at Antioch. He told the emperor, that he had only pretended to embrace Mahometaniſm, with a view to do his imperial majeſty the more eſſential ſervice; and ſo far gained upon him, that he was ſoon after appointed governor of that city; the conſequence of which was, that the Arabs were put in poſſeſſion of it by his treachery.

On the reduction of Antioch, Abu Obeidah ſent an account of his ſucceſs to Omar; and, receiving an order to invade the mountainous parts of Syria, he aſked his general officers which of them would command the body of troops deſtined for that purpoſe. Meiſarah Ebn Meſrouk having offered his ſervice, the general gave him a black ſtandard, with the following inſcription, in white letters: "There is but one God; Mahomet is the apoſtle of God." The troops aſſigned him for this purpoſe conſiſted of 300 Arabs, and 1000 black ſlaves, commanded by Dames. Meiſarah, at the head of this little army, with ſome difficulty aſcended the mountains, and, with much more, advanced to that part where the emperor's forces were poſted. For ſome time they could not meet with a ſingle perſon to give them the ſmalleſt intelligence of the enemy's number; but at laſt they took a Greek priſoner, who informed them, that the imperial army conſiſted of 30,000 men. The priſoner refuſing to profeſs Mahometaniſm, they cut off his head, and then marched towards the imperial camp. The Greeks, hearing of their approach, advanced to meet them; and the Moſlems, being ſurrounded on all ſides, were on the point of being all cut off, when Khaled appeared at the head of 3000 horſe, and after him Ayab Ebn Ganem with 2000 more. At the approach of the horſe under the command of the terrible Khaled, the Greeks retired, leaving all their tents, with their rich furniture and effects, to the Arabs. In this engagement, one of Omar's favourites, named *Abdallah Ebn Hodaſa*, was taken priſoner, and ſent directly to Conſtantinople. The khalif was ſo much concerned at this, that he ſent to Heraclius, deſiring his releaſe; which the emperor not only complied with, but made him many valuable preſents, ſending at the ſame time a jewel of immenſe value as a preſent to the khalif. This Omar offered to the jewellers of Medina, but they were ignorant of its value: the Moſlems therefore begged him to keep it for his own uſe; but this he ſaid he could not be anſwerable for to the public. It was therefore ſold, and the money depoſited in the public treaſury.

After this Khaled advanced with a body of troops as far as the Euphrates, and took Manbij, Beraa, Bales or Balis, exacting of the inhabitants 100,000 dinars for their preſent ſecurity, and impoſing on them an annual tribute for the future. He alſo made himſelf maſter of Raaban, Dulouc, Korus, the Cyrus or Cyrrhus of the ancients, and ſeveral other fortified towns. Amru Ebn Al As now likewiſe prepared for reducing ſome places in Paleſtine that ſtill held out. While he remained in this province, he had a conference with Conſtantine, the emperor's ſon, who endeavoured to perſuade him to make peace with the Chriſtians; but this he would not agree to, unleſs they would conſent to pay tribute; all hopes of an accommodation vaniſhed, and the generals on both ſides prepared for action.

The two armies however did not come to a general engagement, yet they had frequent ſkirmiſhes, in which the Arabs always got the better, and in ſome the Greeks ſuffered very conſiderably. This, together with the ſeverity of the ſeaſon, ſo dejected the ſoldiery, that they began to deſert in great numbers. Conſtantine, therefore, finding his troops diminiſh daily, and the Arabs to grow ſtronger and ſtronger, took the advantage of a tempeſtuous night to eſcape to Cæſarea. This city was ſoon after inveſted by Amru; and, in the mean time, Youkinna, having made himſelf maſter of Tripoli by treachery, ſeized fifty ſhips from Cyprus and Crete, which carried a ſupply of arms and proviſions for the emperor's troops, and had entered the port without knowing that the Arabs were maſters of the town. With theſe ſhips he undertook an expedition againſt Tyre; and, telling the inhabitants that he brought a ſupply of arms and proviſions for Conſtantine's army, he was received with great kindneſs. Here he had not been long, before he was betrayed by one of his own ſoldiers, and put under arreſt, with 900 of his men. He was however ſet at liberty by thoſe to whoſe care he was committed; and he then opened the gates of the city to Yezid, by whom it was inveſted. Conſtantine, having got intelligence at Cæſarea of the loſs of Tripoli and Tyre, was ſo diſheartened, that he ſet ſail from that city with all his family and the greateſt part of his wealth; upon which the citizens made the beſt terms they poſſibly could with Amru. The ſurrender of Cæſarea was followed by that of all the other cities and fortreſſes in the province; and thus the Arabs drove the Greeks out of the whole country of Syria, extending from the Mediterranean to the Euphrates. This conqueſt was completed in the 18th year of the Hegira, and in ſix years after it had been undertaken.

There now happened ſuch violent ſtorms of hail in the peninſula of the Arabs, that a conſiderable extent of territory was laid waſte, and a great number of animals of various kinds deſtroyed. An epidemical diſtemper likewiſe raged at Medina, which ſpread all over the neighbouring territory, and ſwept away great numbers of people. Syria alſo was viſited by a dreadful plague; ſo that the Moſlems loſt there 25,000 men, among whom were Abu Obeidah himſelf, Yezid Ebn Abu Sofian, Serjabil, and many other perſons of diſtinction. In ſhort, ſo great was the mortality occaſioned by the plague, both in Arabia and Syria, that the Arabs ſtyle the 18th year of the Hegira the *year of deſtruction*.

Amru Ebn Al As, having thus executed the khalif's orders in Syria, ſet out on his expedition againſt Egypt. His firſt attempt was on Tarma, a town ſituated on the iſthmus of Suez. This he reduced after a month's ſiege; and, having viewed its ſituation, he formed a deſign of cutting through the iſthmus, and uniting the Mediterranean with the Red Sea: but this project was not reliſhed by the khalif, who thought it might facilitate the entrance of the Chriſtians into the peninſula of Arabia. From Tarma he marched to Meſr, the Memphis of the ancient geographers; which, after a ſiege of ſeven months, was delivered up to him by the treachery of Al Mokawkas the governor. From Meſr he continued his march towards Alexandria, and, having defeated the emperor's troops, he cloſely inveſted that city. While his army lay before this capital, Amru himſelf had the misfortune to be taken priſoner and carried into the town. Being brought before the governor, he aſked him why he committed ſuch ravages and depredations in the Chriſtian territories? To this Amru boldly anſwered, "We are come to oblige you either to profeſs Mahometaniſm, or pay tribute to the khalif; to one of which conditions you muſt ſubmit, or be put to the ſword." A Greek, who ſtood by, told the governor that Amru was certainly the Moſlem general, and therefore deſired him to ſtrike off his head. The governor, however, not only ſaved his life, but, to ſhew his generoſity, diſmiſſed him without ranſom. This was ſoon followed by the loſs of Alexandria, and by the conqueſt of the whole kingdom: after which, Amru diſpatched Okba Ebn Nafe with a body of troops to penetrate farther into Africa; where he made himſelf maſter of all the country lying between Barka and Zoweilah, reducing alſo that part of the continent which now forms the piratical kingdom of Tripoli.

While the Arabs thus extended their conqueſts in the weſt, they were no leſs ſucceſsful in the eaſt. We have already noticed Khaled's having been ſent into Irak to reduce the kingdom of Hira, and of his being recalled to aſſiſt in the conqueſt of Syria. As the kings of Hira were tributaries of the Perſian monarchs, the deſtruction of them neceſſarily brought on a war with the Perſians. After the departure of Khaled, the command of the forces was divided between Abu Obeid Ebn Maſud, Al Mothanna Ebn Haretha, Amru Ebn Haſem, and Salit Ebn Kis. Abu Obeid having paſſed a river contrary to the advice of the other generals, was killed, and his troops in great danger; however, Al Mothanna made an excellent retreat, and repaſſed the river without any conſiderable loſs. After this he fortified himſelf in his camp till he received a conſiderable reinforcement from the khalif; when the Moſlem army marched to Dir Hind, and thence continued to make frequent excurſions, ravaging that part of Irak that lay next to the Euphrates. A body of 12,000 Perſian horſe was now diſpatched againſt the Moſlems, under the command of Mahran. At firſt the Perſians had the advantage, and obliged the Arabs to retire; but they were ſoon rallied by Al Mothannah, and the battle laſted from noon till ſun-ſet. Al Mothannah, engaging Mahran in ſingle combat, laid him dead at his feet; upon which the Perſians fled. After this a powerful army was diſpatched by the Perſians under the command of Ruſtam; but he alſo was killed, and his troops were entirely diſperſed. At the ſame time, Abu Muſa, another Moſlem general, defeated a formidable body of troops under the command of Al Harzaman, a noble Perſian, at Ahwaz. The khalif alſo diſpatched Saad Ebn Abu Wakkas, to diſlodge the Perſians from ſome diſtricts they poſſeſſed in the neighbourhood of the Euphrates. Saad, having 12,000 men, advanced to Kadeſia, a city bordering upon the deſerts of Irak, where he defeated an army of 120,000 Perſians, and made himſelf maſter of the opulent city of Al Madayen; which was ſo rich, if we may credit the Arabian writers, that Saad took out of it three thouſand millions of dinars, amounting to two thouſand and twenty-five millions of pounds ſterling; an enormous and almoſt incredible ſum.

In the twentieth or twenty-firſt year of the Hegira the Arabs invaded Meſopotamia, under Aiyad Ebn Ganem; and the city of Edeſſa ſubmitted on the firſt ſummons. From Edeſſa he marched to Conſtantia, ſuppoſed to be the Nicephorium of the ancients. This he took by ſtorm, as likewiſe Daras, where he maſſacred all the people; which ſo terrified the reſt of the fortified towns, that they ſubmitted without reſiſtance. At the ſame time Al Mogheirah Ebn Shaabah, one of the khalif's generals, made himſelf maſter of Shiz, a place famous for the birth of Zerduſht the Perſian philoſopher; and he over-ran the whole province of Aderbijan. He likewiſe poſſeſſed himſelf of all the country of Armenia bordering on mount Taurus; and even penetrated into Cappadocia. Saad alſo made himſelf maſter of Ahwas, the capital of Khuzeſtan (the ancient Suſiana); at the ſame time that Al Nooman conquered the greateſt part of Khoraſan. But, while Omar's troops were thus irreſiſtibly over-running the fineſt countries in the world, a period was put to his conqueſts and his life, by a Perſian named *Abu Lulua*, who ſtabbed him thrice in the belly while he was performing his devotions at Medina. The reaſon of this was ſaid to be, becauſe the khalif refuſed to remit ſome part of the tribute, which, according to the Mahometan cuſtom, he was obliged to pay for the free exerciſe of his religion. The Arabs, perceiving that he had mortally wounded their ſovereign, immediately ruſhed upon him; but the aſſaſſin defended himſelf ſo deſperately, that he killed ſeven of them, and wounded thirteen; he then ſtabbed himſelf, and expired. Omar languiſhed three days of his wounds, and died in the 11th or 12th year of his reign, and after his death Othman Ebn Affan was choſen; though Ali had a better title, and ſeems to have been the moſt virtuous and braveſt warrior among them. He was inaugurated in the 24th year of the Hegira, coincident with the year 645 of the Chriſtian era.

Othman was no ſooner ſettled on the throne, than he ordered Al Mogheirah to complete the conqueſt of Hamadan; which he eaſily accompliſhed, and at the ſame time reduced Bira, a ſtrong caſtle in Meſopotamia, which either had never ſubmitted, or had revolted on the departure of the Moſlem troops from that province. Another army, under Abdallah Ebn Amar, was alſo diſpatched into Perſia, to deprive Yezdejerd, the Perſian monarch, of the poor remains of his dominions; and this was done ſo effectually, that he was obliged to fly to Sijeſtan, and abandon Perſia altogether.

In the 27th year of the Hegira, the iſland of Cyprus was reduced by Moawiyah; who ſoon after conquered the iſland of Aradus, and took Ancyra; after which he reduced Rhodes, broke in pieces the famous Coloſſus, and ſold the metal of it to a Jew of Edeſſa. In the mean time another of the Arab commanders entered Iſauria, where he committed dreadful depredations, plundered many towns and villages, put a great number of people to the ſword, and carried off 5000 priſoners. In the 31ſt year of the Hegira, the Moſlem general Habib made an irruption into that part of Armenia which was ſtill unconquered, defeated a body of the emperor's troops, purſuing them as far as mount Caucaſus, and laying waſte all the neighbouring territory. About the ſame time alſo, Abul Abar, who had been conſtituted admiral by Moawiyah, gave the emperor Conſtans a ſignal defeat at ſea, on the coaſt of Lycia, in which ſuch a number of Chriſtians were killed, that the ſea was dyed with their blood.

But, while Othman was thus carrying every thing before him abroad, he neglected to ſecure the affections of his ſubjects at home, which ſoon proved his ruin. Sedition was induſtriouſly propagated through all the provinces of the empire, and articles of accuſation were brought againſt him. The chief of theſe were, That he had recalled one who had been baniſhed by the prophet; that he had removed Saad, an officer of diſtinguiſhed bravery, and ſupplied his place by one who drank wine, and was otherwiſe of a ſcandalous life; that he had ſquandered away vaſt ſums among his favourites; that he had removed Amru from the government of Egypt, to which he had preferred his own foſter-brother; and, laſtly, that he had preſumed to ſit on the top of Mahomet's pulpit, whereas Abu Becr had always ſat on the higheſt ſtep and Omar on the loweſt. To theſe accuſations the khalif pleaded guilty, and promiſed to make all the reparation in his power; but his condeſcenſion only ſerved to increaſe the inſolence of the rebels. They were however appeaſed by Ali; and public tranquillity would have been reſtored, had it not been for Ayeſha, one of Mahomet's widows, who procured the deſtruction of the khalif by the following ſcheme. Being deſirous of raiſing one of her favourites, named Telha, to the dignity of khalif, ſhe prevailed on Merwan, the ſecretary of ſtate, to write a letter to the prefect of Egypt, enjoining him to put to death Mahomet Ebn Abu Becr, by whom it was ſent, and who, it was pretended, was to be his ſucceſſor. This letter Merwan took care ſhould be diſcovered: and Mahomet, taking it for a genuine order of the khalif, publiſhed the ſuppoſed injury all over the neighbouring countries. He then marched with a body of rebels to Medina, where the innocent khalif was beſieged in his palace; and, notwithſtanding all his proteſtations, nothing leſs than his death could ſatisfy the enraged multitude. In this ſituation Othman ſent to Ali for aſſiſtance; who commanded his two ſons Haſan and Hoſein to defend the palace-gates. This they did for ſome time with great bravery, till, finding the khalif famiſhing for want, they abandoned their poſts; upon which the rebels made themſelves maſters of the palace, and murdered Othman, in the 82d year of his age, after he had reigned twelve years. His body remained three days unburied; and was at laſt thrown into a hole, without the leaſt funeral ſolemnity.

The arms of the Moſlems had hitherto been ſo ſucceſsful, and their conqueſts ſo rapid, as not only to have vied with Alexander, but to have bid fairer for univerſal monarchy than any nation either before or ſince. The ruin of mighty empires generally originates from the impoſſibility of keeping them united. Diviſions ariſe; civil wars break out; and, the kingdom being weakened by inteſtine feuds, the common enemy takes advantage of them to ruin the whole fabric. If we conſider Mahomet, as in truth he was, not an enthuſiaſt, but a politician, and the founder of an empire; we ſhall find him in that capacity ſuperior perhaps to any that ever exiſted. The empire of Alexander the Great, which aroſe with ſtill more rapidity than that of the Arabs, had no ſupport but from his own ambition and perſonal qualifications. While he lived, he was without a rival, becauſe all were afraid of him; but, when he died, the bands of union, whereby his empire had been held together, were immediately diſſolved. His captains were not inſpired with the ſame veneration for his ſon, who was unborn at the time of his death, that they had for the father; and therefore they fought not to conquer for him, but for themſelves; and the conſequence was, that the kingdom fell to pieces the moment he died. The ſame thing happened to Jenghiz Khan, Tamerlane, and others, who made vaſt conqueſts in a ſhort time. They erected mighty kingdoms indeed; but their duration was but momentary. The empire of the Romans was founded on a kind of enthuſiaſtic deſire of aggrandizing the city of Rome: patriotiſm became faſhionable; and, as the city never ceaſed to exiſt, thoſe who conquered always had the ſame end in view, namely, to exalt the republic more and more. This empire, therefore, was not only very extenſive, but very durable; though, as it was impoſſible that mankind could always continue to venerate a city, the ſame diviſions that ruined other ſtates at laſt brought this to an end. The foundation of Mahomet's empire ſeemed to be ſtill more firm. He was not only the king, but, we may ſay, the god, of his people. Whatever enthuſiaſm heroes may ſhew in defending their country, experience has taught us, that it is greatly inferior to what is manifeſted by thoſe who fight in defence of religion. This enthuſiaſm Mahomet had taken care not only to bring over to his ſide, but to exalt to its higheſt pitch, by inculcating upon his followers, that their rewards in the next world ſhould be proportionable to the fury with which they fought in this. To live at peace, except with thoſe who ſubmitted to his will, did not at all enter into his plan; and he who made no conqueſts, or at leaſt did not ſtrive to make them, was no true believer. By this means, let his dominion be ever ſo much extended, the temptation to making freſh conqueſts was ſtill equally ſtrong: and not only the commanders of armies, but every private perſon, had the moſt powerful motives to urge him towards the conqueſt of the whole world, had that been poſſible. The only thing Mahomet ſeems to have failed in was, the appointment of the ſucceſſion to the apoſtleſhip; and why he was deficient in this is inconceivable. From this fatal omiſſion proceeded the diviſions which ruined his empire before it was ſcarcely erected, and of which we are now to give the hiſtory.

Though the prophet had been ſo deficient as not to name a ſucceſſor at his death; yet his ſon-in-law Ali was always of opinion that the ſucceſſion belonged of right to him; and that it ought to be, like that of other kingdoms, hereditary. This diſpoſition to render the apoſtleſhip hereditary in his family, was, in all probability, what diſguſted the Moſlems with Ali; againſt whom they could otherwiſe have no objection: for he was endowed with every amiable quality, and poſſeſſed ſuch unparalleled ſtrength and courage, that he never declined a combat to which he was challenged, nor ever failed to come off victorious; for which reaſon he was ſtyled the *Lion of God*.

On the death of Othman, however, notwithſtanding the prejudices againſt Ali, as none other could pretend ſo good a right to the khalifate, the Arabs immediately took the oaths of allegiance to him, though with an intention to break it as ſoon as poſſible, as was fully evinced by the event. The diſturbances which happened on Ali's acceſſion, were owing partly to the machinations of Ayeſha, who, as we have ſeen, having got Othman murdered, on purpoſe to raiſe Telha to the dignity of khalif, and now, finding Ali unanimouſly choſen, reſolved to deſtroy him alſo. She therefore pretended great concern for the death of the late khalif, and accuſed Ali of being his murderer: but, being reproved by one of the Moſlems for endeavouring to blacken an innocent perſon, when ſhe could not but know herſelf guilty, ſhe replied, that Othman's infidelity had indeed made her his enemy, but that ſhe had forgiven him upon his repentance. At the time of Ali's inauguration ſhe was at Mecca, where ſhe enjoyed a very conſiderable ſhare of influence and authority. At her inſtigation, Telha Ebn Obeidallah, and Zobeir Ebn Al Awam, began to repreſent to Ali, that the murderers of Othman ought to be brought to condign puniſhment; offering themſelves at the ſame time for that purpoſe. This they did merely to ſow diſſention, for they themſelves had been deeply concerned in the murder; and Ali, ſufficiently aware of their intention, told them it was impoſſible till the empire ſhould be more ſettled. Finding themſelves diſappointed in this attempt, they next begged the government of Cufa and Baſra, that they might with greater facility extinguiſh any rebellion that ſhould happen. Here again Ali was aware of their intention; and refuſed their requeſt, under pretence that he ſtood in need of perſons of their great capacity, as counſellors, about his perſon. Then they deſired leave to perform a pilgrimage to Mecca, which the khalif could not refuſe; and they were no ſooner got there, than they openly raiſed an army againſt him, without any provocation at all.

This, however, was not the only ſource of diſcord. Ali had been diſpleaſed with the governors of provinces appointed by Othman; and therefore diſmiſſed them immediately after his acceſſion. This was very impolitic; but he was prompted to it by that raſhneſs and want of prudence which is inſeparable from, or rather is the very eſſence of, great courage. The conſequence of this was, that Moawiyah, governor of Syria, was, immediately upon his diſmiſſion by Ali, proclaimed khalif by the troops under his command. Thus the Moſlems were divided into two factions; the one under Moawiyah and Ayeſha, who adhered to the houſe of Ommiyah, to which Othman and Moawiyah belonged; and the other to Ali. The adherents of the houſe of Ommiyah were called *Motazalites*, or *ſeparatiſts*.

Ali, finding how matters were ſituated, and that a very ſtrong party was formed againſt him, endeavoured to ingratiate himſelf as much as poſſible with the Koreiſh; and to raiſe an army againſt Ayeſha, who had now taken the field, and even reduced the city of Baſra. He made an animated ſpeech to the people on hearing this bad news, and deſired their aſſiſtance. But though he was very much beloved on account of his perſonal merit, and was the beſt orator of the age, he could not with all his eloquence prevail upon them to give a deciſive anſwer in his favour. At laſt Ziyad Ebn Hantelah ſtepped up to Ali, and ſaid, “Whoſoever retreats, we will advance.” Upon this, two *anſars*, doctors of the law, ſtood up, and pronounced Ali innocent of the death of Othman; which deciſion ſoon induced the anſars and the body of the people to eſpouſe his cauſe. He then left Medina at the head of 900 men, and advanced to Arrabah, where he was joined by ſeveral other parties. From this place he wrote to the people of Cufa and Medina, preſſing them to ſend him farther aſſiſtance, and to diſpoſe the Motazalites to an accommodation. From Medina he received a large ſupply of horſes, arms, and other neceſſaries; and from Cufa he obtained a reinforcement of 8000 men. Encouraged by this ſeaſonable ſupply, Ali advanced towards Baſra, where the troops of Ayeſha were ready to receive him. Both parties ſeemed averſe to an engagement; and Ayeſha was very much intimidated at the ſight of Ali's army, which, nevertheleſs, was inferior to her own. A battle at laſt commenced, in which Ayeſha was defeated and taken priſoner. The only remarkable effort made by the troops of Ayeſha, was in defence of her perſon: it is ſaid, that ſeventy men, who held her camel by the bridle, had their hands cut off ſucceſſively; and that the pavilion in which ſhe ſat was ſo full of darts and arrows, that it reſembled a porcupine. Ayeſha was treated very kindly by Ali, who at firſt ſet her at liberty, but afterwards confined her to her houſe at Medina, and commanded her to interfere no more with ſtate-affairs, though he ſtill allowed her to perform the pilgrimage to Mecca.

After this victory, Ali had no enemies to contend with either in Arabia, Irak, Egypt, Perſia, or Khoraſan. A ſtrong party, however, ſtill remained in Syria, headed by Moawiyah, who founded his claims to the khalifate on a pretended declaration of Othman that he ſhould be his ſucceſſor. In this defection he was joined by Amru Ebn Al As, who had obtained a promiſe of the government of Egypt, provided Moawiyah could be advanced to the dignity of khalif. Ali, with his uſual good nature, endeavoured to bring theſe rebels to a ſenſe of their duty, and often ſent propoſals of accommodation to Moawiyah; but he ſtill remained inflexible. Perceiving, therefore, that it would be neceſſary to invade Syria, he entered that country with an army of 90,000 men; while Moawiyah's conſiſted of 120,000. The two armies came in ſight of each other towards the cloſe of the 36th year of the Hegira, when only ſome ſkirmiſhes happened between them, wherein neither party ſuſtained any conſiderable loſs. The firſt month of the 37th year was ſpent in fruitleſs negociations; but in the ſecond month they began to fight in different parties, without hazarding a general engagement. Theſe battles continued until Moawiyah's loſs amounted to 45,000 men, and Ali's to 25,000; among whom were twenty-ſix who had been intimate friends of Mahomet himſelf, and were dignified with the title of the *Companions*. The moſt famous of theſe was Ammar Ebn Yaſer, Ali's general of horſe, who was upwards of ninety years of age, and was highly eſteemed by both parties. This loſs ſo exaſperated Ali, that he charged the Syrians with great fury, broke them, and challenged Moawiyah to fight him in ſingle combat. This challenge Moawiyah declined, inſiſting that it was not a fair one, as Ali could not but be ſenſible of his ſuperiority in ſtrength. As the challenge was given in the hearing of both armies, Amru inſiſted that Moawiyah could not in honour refuſe it; but the coward made no other reply than that Amru aſpired to the khalifate himſelf, and wanted to enjoy it after his death. The battle being now renewed, Moawiyah's forces were puſhed to their camp; which certainly had been taken, had not Amru bethought himſelf of the following ſtratagem: He ordered ſome of his men to fix copies of the Koran to the points of their lances, and carry them to the front of the battle, crying out at the ſame time, “This is the book that ought to decide all differences between us; this is the book of God between us and you, that abſolutely prohibits the effuſion of Moſlem blood.” This produced the deſired effect. The khalif's troops threw down their arms, and even threatened him with death if he did not ſound a retreat; which he therefore was obliged to do, and thus had a deciſive victory wreſted out of his hands.

According to this new mode of deciſion, the two parties were each to chooſe their arbitrator; but even this was not allowed to Ali, though Moawiyah had liberty to chooſe Amru Ebn Al As. The troops of Irak, not content with offering ſo groſs an affront to the khalif, inſiſted on naming for his arbitrator Abu Muſa Al Aſhari; a very weak man, and one who had already betrayed him. The conſequence of this appointment was, that Ali was depoſed by both the arbitrators; and he accordingly dropped his title to the khalifate, but without putting himſelf in Moawiyah's power. He retired to Cufa; where 12,000 of the troops that had forced him to accept of the arbitration, pretending to be offended with the ſtep he had taken, revolted from him. Theſe were called *Kharejites*, that is, rebels or revolters; and *Mohakkemites*, or judiciarians, becauſe they affirmed that Ali had referred to the judgment of men what ought to have been only referred to the judgment of God; and, therefore, that, inſtead of keeping the peace he had made with Moawiyah, he ought to have purſued his enemies, who were likewiſe the enemies of God. Ali ſaid, That, as he had given his word, he ought to keep it; and, in ſo doing, he only followed what was preſcribed by the law of Mahomet. The Kharejites contended, That God was the only judge between him and Moawiyah, and that conſequently he had committed an enormous ſin, of which he ought ſincerely to repent. Ali replied, That, if any ſin had been committed on this occaſion, it was by themſelves, who had forced him to take the ſteps of which they now complained. Irritated by this anſwer, they choſe for their general Abdallah Ebn Waheb, who appointed for their rendezvous Naharwan, a town ſituate between Waſet and Bagdat, where they aſſembled an army of 25,000 men. Ali, having tried gentle methods ineffectually, at laſt marched againſt them in perſon. Before he attacked them, however, he planted a ſtandard without the camp, and made proclamation, that whoever would repair to it ſhould have quarter, and whoever would retire to Cufa ſhould find an aſylum there. This had ſuch an effect, that Abdallah's army was ſoon reduced to 4000 men, with whom he ruſhed upon the khalif's forces, but nearly all of them were cut in pieces.

Had Ali marched againſt Moawiyah immediately after the defeat of the Kharejites, he had probably reduced him entirely: but, by allowing his troops to remain inactive, they deſerted him, and Moawiyah's party had an opportunity of gathering more ſtrength; and though Moawiyah often made incurſions into the territories of Ali, he now choſe to act only on the defenſive. At laſt the Kharejites, imagining that it would be for the good of the Moſlem affairs that Moawiyah, Ali, and Amru, were dead, diſpatched aſſaſſins to murder all three. Moawiyah was wounded, but recovered; Amru's ſecretary was killed by miſtake; but Ali was wounded with a poiſoned ſword, which occaſioned his death. The aſſaſſin was taken, and Ali would have pardoned him had he recovered, but ordered him to be put to death if he died, that he might, as he ſaid, "have an immediate opportunity of accuſing him before God." Even in this he manifeſted his uſual clemency, by ordering the aſſaſſin to be diſpatched at one blow, and without torture of any kind.

Thus fell Ali, the moſt virtuous of all the Mahometan khalifs, after he had reigned near five years, and lived ſixty-three. He was preſſed by thoſe about him to nominate a ſucceſſor; but this he declined, ſaying, he would follow the example of the Apoſtle of God, who had not named any: and, as his ſon Haſan inherited his father's piety, though not his courage, he was declared khalif without any oppoſition. Moawiyah, however, behaved in ſuch a manner towards him, as betrayed his hoſtile intentions; and thoſe about Haſan preſſed him to declare war immediately. Haſan, who was of a mild and peaceable diſpoſition, could hardly be perſuaded to do this; and, though he at laſt took the field, yet he immediately perceived his incapacity to diſpute the empire with Moawiyah; and therefore reſigned it, in ſpite of all the remonſtrances of his friends, to a traitor, who cauſed him after ſome years to be poiſoned by his wife.

Moawiyah, on becoming maſter of the Moſlem empire, found himſelf under a neceſſity of reducing the Kharejites, who were his enemies, and had raiſed a conſiderable army. To oppoſe theſe rebels, the khalif would have diſpatched Haſan, but, that prince refuſing, he ſent the Syrian troops againſt them, who were defeated: however the Cufans, being at laſt perſuaded to take up arms, ſoon extinguiſhed the rebellion, and ſettled Moawiyah firmly on the Moſlem throne. In the 48th year of the Hegira, Moawiyah ſent his ſon Yezid with a powerful army to beſiege Conſtantinople. In this expedition he was attended by three or four of the Companions, who, notwithſtanding their age, were prompted by zeal to undergo incredible fatigues. Concerning the particulars of this expedition we are in the dark: only that it proved unſucceſsful; and in it Abu Ayub, who had fought by Ma[illegible]met at the battles of Bedr and Ohod, loſt his life. His tomb is held in ſuch veneration by the Moſlems, that the ſultans of the Ottoman family gird their ſwords on before it, on their acceſſion to the throne. In the 54th year of the Hegira, the Arabs made an irruption into Bukharia, and defeated a Turkiſh army that oppoſed them. The Turks loſt a great number of men; and the queen, who commanded in perſon, with great difficulty made her eſcape. She had only time to put on one of her buſkins; the other fell into the hands of the Arabs, who valued it at no leſs than 2000 dinars. About this time alſo, according to the Greek hiſtorians, a treaty was concluded between the emperor and the Moſlems, whereby the latter were allowed to keep the territories they had ſeized; in conſideration of which they were to pay 3000 pounds weight of gold, fifty ſlaves, and as many horſes. To theſe diſhonourable conditions they were obliged to ſubmit, in conſequence of their unſucceſsful expedition to Conſtantinople, and ſome other defeats they had received. This peace was to continue for thirty years. The next year, Moawiyah, having conferred the government of Khoraſan upon Saad, Othman's grandſon, that general paſſed the Jihun, or Amu, the Oxus of the ancients, and advanced with a body of troops to Samarcand, which opened its gates to him on his approach; ſoon after which he defeated an army of Uſbeck Tartars, and marched directly to Tarmub, which alſo ſurrendered without oppoſition. The 57th year of the Hegira was remarkable for vaſt ſwarms of locuſts, which did incredible damage in Syria and Meſopotamia: and great diſcontents on account of the khalif's having nominated for his ſucceſſor his ſon Yezid, a perſon of ſcandalous life, and unworthy of the throne. The 58th year of the Hegira was diſtinguiſhed by the death of Ayeſha, Mahomet's widow; and the 60th by that of Moawiyah, after having reigned, from Haſan's reſignation, nineteen years, three months, and five days; but concerning his age authors are not agreed. He was interred at Damaſcus, which was made the reſidence of the khalifs as long as the houſe of Ommiyah continued on the throne.

Yezid was proclaimed, in conſequence of his nomination, the ſame day his father died. His inauguration was performed on the new moon of the month Rajeb, correſponding to April 7, 680. Immediately after his election, he wrote to Al Walid, governor of Medina, to ſeize Hoſein, the remaining ſon of Ali, and Abdallah Ebn Zobeir, in caſe they refuſed to acknowledge his right. He accordingly tendered the oath of allegiance to Hoſein, who returned an evaſive anſwer, and found means to eſcape. As for Abdallah, he delayed, under various pretences, for twenty-four hours, and then made his eſcape to Mecca. Hither Hoſein followed him; but received an invitation from the people of Cufa, who promiſed to aſſiſt him in vindicating the rights of his father Ali and himſelf. In the mean time, Yezid, being informed of Al Walid's negligence in ſuffering Abdallah and Hoſein to eſcape, ſuperſeded him, appointing in his room Amru Ebn Saad, at that time commandant of Mecca. The new governor diſpatched againſt Abdallah, Amer Ebn Zobeir, Abdallah's own brother, who mortally hated him: but Abdallah, having engaged Amer in the field, defeated and took him priſoner, which greatly raiſed his reputation at Medina.

While Abdallah was thus ſtrengthening himſelf at Mecca and Medina, Hoſein was doing the ſame at Cufa. On the firſt notice of their inclinations, he had ſent to them Moſlem Ebn Okail, to whom, as repreſentative of the ſon of Ali, they had taken an oath of allegiance, and were now very preſſing on Hoſein to honour their city with his preſence. Beſides this, Hoſein was ſupported by the forces of Irak, who retained a great veneration for the memory of his father, and had all along conſidered the government of Moawiyah as an uſurpation. Notwithſtanding theſe ſteps in favour of Hoſein, the deliberations of the conſpirators were carried on with ſuch ſecrecy, that Al Nooman the governor was a ſtranger to them, even after the Cufans had determined to enter upon action with an army of

18,000

18,000 men. Yezid, being diſpleaſed with his conduct, removed him, and appointed for his ſucceſſor Obeidallah Ebn Ziyad. This governor entered the city in the evening, and was received with all poſſible demonſtrations of joy by the Cufans, who miſtook him for Hoſein, owing to a black turban reſembling that which Hoſein uſually wore. His firſt care was to extinguiſh the ſedition that had been excited by Moſlem. For this purpoſe, he employed a truſty ſervant to perſonate a ſtranger come out of Syria to ſee the inauguration of Hoſein, and to get admiſſion into Moſlem's houſe, to penetrate all his councils. This commiſſion was faithfully executed; and Obeidallah, underſtanding that Moſlem lodged in the houſe of one Sharik, who was then ſick, ſent a meſſenger to Sharik, letting him know that he intended to viſit him on a certain day. Sharik came to a reſolution to receive him, and appointed Moſlem a place in the corner of the room, whence he might ruſh out upon Obeidallah and kill him. The viſit was accordingly made; but, Moſlem's heart failing him, the governor eſcaped; Hani, however, in whoſe houſe Moſlem was firſt lodged, was impriſoned by Obeidallah. Upon the news of this, Moſlem aſſembled about 4000 men, and beſieged Obeidallah in the caſtle. The governor, however, made a ſpeech to Moſlem's followers; which had ſuch an effect, that they all deſerted him except about thirty. By the favour of the night, Moſlem eſcaped to a poor woman's cottage in the neighbourhood; but, being betrayed by her ſon, Obeidallah ſent a detachment of eighty horſe to ſeize him. Moſlem made a gallant reſiſtance, and thrice cleared the houſe of his enemies; but being at laſt overpowered, and grievouſly wounded, he was taken and brought to Cufa. While on the road, he endeavoured to ſend an account of his bad ſucceſs to Hoſein, but without ſucceſs. When arrived at the caſtle, he was brought before the governor, and beheaded with Hani, and both their heads were ſent as a preſent to Yezid.

Hoſein, in the mean time, was preparing to ſet out for Cufa, having received the moſt favourable advices from Moſlem, of whoſe fate he was ignorant, and who had ſent him a liſt of 140,000 men that were ready to obey his orders. This the wiſeſt of his friends repreſented as a deſperate enterprize, and intreated him to defer his journey till he ſhould be better aſſured of ſucceſs: but Hoſein was deaf to all advice, and no arguments could reſtrain him. The conſequences may eaſily be imagined; Obeidallah diſpatched 5000 men againſt him; with orders not to offer any violence to him, provided he ſubmitted. To theſe terms the infatuated Hoſein would not agree: he offered, indeed, to return home, if Obeidallah would permit; but that not being granted, he deſperately engaged the troops of Obeidallah; and, after a long reſiſtance, was cut in pieces, with all his men.

In the 61ſt year of the Hegira, Yezid appointed Salem Ebn Ziyad governor of Khoraſan, with orders to make an irruption into the Turkiſh territories. He advanced with a conſiderable body of troops to Khowarazm, the principal city of the Turks in thoſe parts, from which he is ſaid to have extorted the immenſe ſum of 50,000,000 pieces of money; from whence advancing to Samarcand, he forced the inhabitants of that city alſo to pay him an immenſe ſum; and then retired, with little loſs, into the province he governed.

In the mean time Abdallah Ebn Zobeir, finding himſelf, by the death of Hoſein, at the head of the partizans of the houſe of Haſhem, who were greatly oppreſſed by Yezid, began in earneſt to aſpire to the khalifate. As he had never owned the authority of Yezid, he now openly declared againſt him, and was proclaimed khalif at Medina ſoon after the arrival of Hoſein's family in that place. Upon his inauguration, to render himſelf more popular, he expatiated on the circumſtances of Hoſein's death, which was very tragical, and repreſented the Cufans as the moſt abandoned and perfidious people upon earth. The citizens of Mecca and Medina flocked to him in great numbers, and he ſoon found himſelf at the head of a conſiderable force. The people of Medina alſo, having freſh intelligence of Yezid's diſſolute manner of life, renounced their allegiance to him, and formally depoſed him in a very ſingular manner. After they had aſſembled in the moſque, one of them ſaid, "I lay aſide Yezid as I do this turban," and immediately threw his turban on the ground. Another ſaid, "I put away Yezid as I do this ſhoe," caſting away his ſhoe at the ſame time. Theſe examples being followed by others, there was a large heap of ſhoes and turbans almoſt inſtantly formed. They then diſmiſſed Yezid's governor, and baniſhed from the city all the friends and dependents of the houſe of Ommiyah. Theſe, to the number of near a thouſand, took refuge in the houſe of Merwan Ebn Al Hakem, where they were ſo cloſely beſieged by Abdallah's party, that they were obliged to ſend to Yezid for aſſiſtance. The khalif diſpatched Moſlem Ebn Okba to Medina, with a conſiderable body of troops, to quell the diſturbances. He ordered him to ſpare Ali the ſon of Hoſein, and his family; but he was to ſummon the town to ſurrender, which, if they refuſed, he was to take it by ſtorm, and give it up to be plundered by the ſoldiers. The inhabitants of Medina, being now ſenſible of their danger, ſuffered the friends of the houſe of Ommiyah to depart, on extorting a promiſe from them not to appear in arms againſt the reigning faction. Moſlem, in the mean time, advanced at the head of 5000 foot and 12,000 horſe; and, having ſummoned the city, according to his inſtructions, upon its refuſal he made the neceſſary preparations for an aſſault. The garriſon made a vigorous defence; but, moſt of the Anſars and principal officers being killed, the Arabs propoſed a capitulation. Moſlem, however, would hearken to no terms, and inſiſted on their ſurrendering at diſcretion; which being refuſed, he entered the city by ſtorm. Ali was treated with great reſpect, but all the men that had carried arms were put to the ſword, and Moſlem ſuffered his troops to raviſh 1000 women, and to pillage the city for three days ſucceſſively.

After the reduction of Medina, Moſlem proceeded to Mecca, where Abdallah then reſided; but he died by the way; and the command of the army devolved upon Hoſein Ebn Thamir Al Selwi. This general advanced to Mecca, which he beſieged for forty days, battering the town with ſuch fury, that he beat down a great part of the temple, and burnt the reſt; nor would the city itſelf have eſcaped the ſame fate, had not an account arrived of the death of Yezid, who died in the ſixty-fourth year of the Hegira, anſwering to the year 684 of the Chriſtian era, having lived thirty-nine, and reigned three years and ſix or eight months.

Yezid was ſucceeded by his ſon Moawiyah II. who was proclaimed khalif at Damaſcus the ſame day that his father died; but, being of a weakly conſtitution, and unable to bear the fatigues of government, he reſigned the crown ſix weeks after his inauguration, and died ſoon after, without naming a ſucceſſor. This abdication left the Moſlem empire abſolutely without a maſter, and great commotions enſued. On the death of Yezid, Obeidallah Ebn Ziyad, governor of Baſra, repreſented to the citizens that they ought to name a protector, till a new khalif ſhould be choſen; and, if the perſon elected ſhould be diſagreeable to them, they might then remain in a ſtate of independence under their own protector. The inhabitants, perceiving the drift of this ſpeech, complimented him with that honour; which he accepted with ſeeming reluctance; but, ſending a deputy to Cufa, the inhabitants of that city not only refuſed to acknowledge his authority, but threw duſt and gravel at his meſſenger. This coming to the ears of the people of Baſra, they not only deprived Obeidallah of the dignity they had conferred upon him, but even expelled him the city. Nor could he prevail upon the Najari, a tribe of Anſars, to eſpouſe his cauſe, nor even upon his own relations; nay, ſo odious had he rendered himſelf on account of his cruelties, particularly the death of Hoſein the ſon of Ali, that his brother Abdallah was unable to protect him from the fury of the populace, though he kept him concealed in women's clothes, and diſtributed among the mob 200,000 pieces of money. He was therefore obliged to leave the city; and, immediately after his departure, the mob plundered his houſe, and purſued him, ſo that he was forced to exchange his camel for an aſs, and thus in diſguiſe eſcaped into Syria.

In the mean time, Hoſein Ebn Thamir, being returned into Syria, gave a faithful account of the ſituation of affairs in Arabia, to Merwan Ebn Al Hakem. He alſo acquainted him of the offer he had made to Abdallah of the oath of allegiance, which the latter had refuſed. On this account he adviſed Merwan to take care of himſelf, and the reſt of the houſe of Ommiyah, who had fled to Damaſcus after their expulſion from Medina. Merwan was now inclined to ſubmit to Abdallah; but was diverted from it by Obeidallah, who inſiſted that no ſuperior ought to be acknowledged by Merwan, who was at the head of the Koreiſh. The people of Damaſcus had conſtituted Dahak Ebn Kais their protector, who was in the intereſt of Abdallah. The Baſrans were at this juncture entirely in tumult and confuſion, not being able to agree about a protector after the expulſion of Obeidallah; ſo that at laſt they wrote to Abdallah, offering him the government of their territory. This he accepted, but could not be prevailed upon to ſtir from Mecca; nor could Merwan be perſuaded to ſuffer any of the Syrians to perform the pilgrimage to Mecca, leſt they ſhould join Abdallah, and thereby contribute to his excluſion from the throne. In the midſt of this confuſion, Abdallah might have eaſily ſecured the khalifate to himſelf, had he not, with the utmoſt imprudence as well as inhumanity, given orders for the extermination of the houſe of Ommiyah. This ruined his affairs; for, they being now obliged to provide for their own ſafety, Merwan was proclaimed khalif at Damaſcus: and thus the whole Moſlem empire was rent into two potent factions; the one under Merwan, and the other under Abdallah.

We have already obſerved, that Dahak Ebn Kais inclined to favour Abdallah. This he continued to do after Merwan was proclaimed khalif, inſomuch that a battle enſued between his followers and thoſe of Merwan, in which Dahak was defeated and killed; and Merwan became maſter of all the province of Syria. Soon after this victory, Merwan advanced with a conſiderable body of troops towards Egypt; but ſent before him Amru Ebn Said with a detachment, in order to facilitate his paſſage. That general having defeated Abdalrahman, Abdallah's lieutenant, in ſeveral actions, he at laſt ſurrendered the whole country to Merwan for a ſum of money, and retired with the Arabs under his command to Hejaz. The Syrian troops, therefore, immediately took poſſeſſion of that country, and obliged the inhabitants to take an oath of allegiance to Merwan; who, having appointed his ſon Abdalazziz to preſide over Egypt, returned with the greateſt part of his forces to Damaſcus. Here he was informed that Abdallah had ſent againſt him his brother Muſab with a conſiderable army. Merwan, therefore, diſpatched Amru Ebn Said to attack him on his march; who, when he came up with him, gave him a total defeat, and diſperſed his troops in ſuch a manner, that Muſab found it impoſſible to rally them again.

In the 65th year of the Hegira, the inhabitants of Cufa, pretending to be ſeized with remorſe of conſcience for their treachery to Hoſein the ſon of Ali, raiſed an inſurrection againſt both the khalifs, and aſſembled a body of 16,000 men, under the command of Soliman, who was to revenge the death of Hoſein upon Obeidallah Ebn Ziyad and his adherents. But, while Soliman and his troops remained yet inactive, Al Mokhtar, who had ſerved under Abdallah, and was diſguſted at not being promoted, arrived at Cufa; and, repreſenting Soliman as totally unfit for ſuch an enterprize, offered to take the command upon himſelf. This, however, was refuſed; and, as Al Mokhtar had no opinion of Soliman's military capacity, he found means to draw off 2000 of his troops; while 10,000 more choſe rather to violate their oaths, than run the riſk of being cut to pieces by a ſuperior enemy. Soliman, nevertheleſs, put a good face upon the matter; and, telling his troops that they were to fight for another world, and not this, ſet forward to invade Syria with only 4000 men. Being advanced as far as Ekfas upon the Euphrates, he found that he had loſt 1000 men by deſertion; nor was he joined by the Separatiſts of Baſra and Al Madayen, who had promiſed him a reinforcement. Firmly perſuaded, however, that his cauſe was the cauſe of heaven, Soliman continued his march all night, and next day arrived at the tomb of Hoſein, where his men performed their devotions with great enthuſiaſm. Continuing ſtill to advance, he received a friendly letter from Abdallah Ebn Yezid, governor of Cufa, adviſing him to return, and repreſenting to him the folly of engaging ſo powerful an army as would be ſent againſt him; but Soliman, imagining that he was only recalled in order to ſupport Abdallah Ebn Zobeir in his pretenſions to the khalifate, perſiſted in his reſolution of penetrating into Syria. He told his troops, that they would never be nearer the two Hoſeins in heaven than they were at preſent; and that, ſhould they at this time meet with death, they would be in a ſtate of repentance, and conſequently could never die in a better time. After this ſpeech, continuing ſtill to advance, he was at laſt met by Obeidallah at the head of 20,000 horſe, who, after an obſtinate engagement, cut to pieces Soliman and all his troops. Soon after this action, the khalif Merwan died, having reigned only eleven months. He is ſaid to have been poiſoned by his wife Zeinab, Moawiyah's widow. Her he had married, with a promiſe that her ſon Khaled ſhould ſucceed him; but, afterwards altering the ſucceſſion in favour of his own ſon Abdalmalec, young Khaled reproached him with his breach of promiſe: upon this Merwan calling him *baſtard*, the child complained to his mother; who, to be revenged for this affront, is ſaid to have poiſoned him, or ſmothered him with a pillow.

In the beginning of the khalifate of Abdalmalec, Al Mokhtar, who had been impriſoned by the governor of Cufa, was releaſed at the interceſſion of Abdallah Ebn Omar, who married his ſiſter. The year following, having put himſelf at the head of the Shiite ſectaries, he ſent propoſals of alliance to Abdallah Ebn Zobeir; but he, ſuſpecting his ſincerity, cut off near 3000 of his men. Upon this, Al Mokhtar, fearing the houſe of Ali might be intimidated, ſent a letter to Mahomet Ebn Hanifyah, head of that family, in which he offered his aſſiſtance with a powerful army. This offer Mahomet declined, declaring himſelf only for pacific meaſures; yet, though he and all the reſt of Ali's family behaved in the moſt peaceable manner, Abdallah did not think himſelf ſecure till they owned his authority. He therefore impriſoned them, together with ſeventeen of the principal citizens of Cufa, whom he threatened to burn, if they did not, within a limited time, take the oath of allegiance to him. Al Mokhtar, being informed of the ſituation they were in, ſent a detachment of 750 horſe to Mecca, under Abu Abdallah, to releaſe them. That general not only executed his orders with great bravery, but took Abdallah himſelf priſoner, and would have cut him to pieces on the ſpot, had he not been releaſed at the interceſſion of Mahomet, who adjuſted the differences to the mutual ſatisfaction of all parties. After this reconciliation, Abu Abdallah diſtributed among 4000 of Ali's friends a ſum of money brought for that purpoſe, to indemnify them for the loſſes they had ſuſtained. Thus the family of Ali were happily delivered, when only two days of the time granted them by Abdallah remained, and a quantity of wood and other combuſtibles were collected to conſume their bodies.

The Cufans, having received advice that Merwan had ſent Obeidallah with a powerful army to beſiege their city, and even given him permiſſion to plunder it in caſe it ſhould be taken, appointed Yezid Ebn Ares, a man of undaunted courage, to oppoſe him; but, Merwan dying before Obeidallah could execute his commiſſion, an end was put to the expedition. The memory of it, however, ſtill remained; and Al Mokhtar, to whom Obeidallah was perſonally

ſonally obnoxious, aſſembled a body of troops to act offenſively againſt him, and even againſt the Syrian khalif himſelf, in caſe he ſhould ſupport Obeidallah. Among other preparations for this enterprize, Al Mokhtar cauſed a portable throne to be made, telling his troops, that, "it would be of the ſame uſe to them that the ark was to the children of Iſrael." It was therefore carried on a mule at the head of the army, and the following prayer ſaid before it: "O God! grant that we may live long in thy obedience; help us; and do not forget us, but protect us." This expedient was ſo well adapted to the enthuſiaſts who compoſed Al Mokhtar's army, that they attacked Obeidallah's camp with great intrepidity, and gained a complete victory. Obeidallah himſelf was killed, and his head ſent to Al Mokhtar. By this victory the ſectaries were rendered ſo formidable, that Niſibis, and ſeveral other cities, ſurrendered to them. They now began to entertain thoughts of depoſing both the khalifs, and placing on the Moſlem throne one of the family of Ali; but all their towering hopes were ſoon fruſtrated, by the defeat and death of Al Mokhtar, by Muſab, brother to Abdallah Ebn Zobeir. Al Mokhtar, after his defeat in a general engagement by Muſab, fled to the caſtle of Cufa, where he defended himſelf for ſome time; but, being at laſt killed, his men, to the number of 7000, ſurrendered at diſcretion, and were all put to the ſword for the outrages they had committed.

The next year, the 68th of the Hegira, the Azarakites, ſo denominated from Nafe Ebn Al Azarak, the founder of their ſect, having aſſembled a conſiderable force, made an irruption into Irak. They advanced almoſt to the gates of Cufa, and penetrated to Al Madayen. Being ſworn enemies of the houſe of Ommiyah, and acknowledging no government ſpiritual or temporal, they committed terrible ravages in every part of the Moſlem territories through which they paſſed. They carried their exceſſes to ſuch a pitch as to murder all the people they met with, to rip open women with child, and commit every ſpecies of cruelty that could be invented. The governor of Mawſel and Meſopotamia, being informed of theſe outrages, marched againſt them with a body of troops, and carried on a war with them for eight months. During this period, their leader, Nafe Ebn Al Azarak, died; and was ſucceeded by Katri Ebn Al Fojat, under whom they continued their depredations. Muſab, not being pleaſed with his lieutenant's management of the war, recalled him, and ſent in his place Omar Ebn Abdallah Temimi, who gave the Azarakites a total overthrow at Naiſabur in Khoraſan, put great numbers to the ſword, and purſued the reſt as far as Iſpahan and the province of Kerman. Having here received a reinforcement, they returned into the province of Ahwaz, and did incredible damage to the country. But Omar, advancing againſt them a ſecond time, they retired to Al Madayen. Omar purſued them thither alſo, upon which they fled into the province of Kerman, and thence gradually diſperſed themſelves.

The next year, being the 69th of the Hegira, Abdalmalec left Damaſcus to march againſt Muſab. In his abſence he left Amru Ebn Said governor of the city; but he immediately ſeized upon it for himſelf, which obliged the khalif to return. After ſeveral ſkirmiſhes between ſome of the khalif's troops and thoſe of Amru, a pacification was concluded at the interceſſion of the women: but Abdalmalec barbarouſly put Amru to death with his own hand, notwithſtanding his promiſe to the contrary; and was immediately ſeized with ſuch a tremor, that he loſt the uſe of almoſt all his faculties, and was obliged to be laid in bed. In the mean time the palace was attacked by Yahyah, Amru's brother, at the head of 1000 ſlaves. After a warm diſpute, they forced open the gates, killed ſeveral of the guards, and were upon the point of entering the palace, when, a conſiderable ſum of money being thrown among them, they retired. So great, however, was Abdalmalec's avarice, that, after the tumult was appeaſed, he recalled all the money which had been diſtributed, and commanded it to be depoſited in the public treaſury. In the 70th year of the Hegira, the Greeks made an irruption into Syria; and Abdalmalec, having occaſion for all his forces to act againſt Abdallah Ebn Zobeir, was obliged to pay a tribute of 1000 dinars per day, according to Theophanes, and ſend every year 365 ſlaves and as many horſes to Conſtantinople. In this treaty, it was alſo ſtipulated, that the revenues of Cyprus, Armenia, and Heria, ſhould be equally divided between the khalif and the Greek emperor.

Abdalmalec, being now at leiſure to purſue his expedition againſt Muſab, marched againſt him in perſon; and, having come up with him at Maſken, a ſmall town on the frontiers of Meſopotamia, he was totally defeated and killed. After the battle, Abdalmalec repaired to Cufa, where he was received with the utmoſt ſubmiſſion; and people of all ranks came in crowds to take the oath of allegiance to him. Upon this occaſion he ordered vaſt ſums of money to be diſtributed among them, and gave a ſplendid entertainment to his new ſubjects, to which even the meaneſt were not refuſed admittance. During the repaſt, Muſab's head was preſented to the khalif; upon which one of the company took occaſion to ſay, "I ſaw Hoſein's head in this ſame caſtle preſented to Obeidallah; Obeidallah's to Al Mokhtar; Al Mokhtar's to Muſab; and now at laſt Muſab's to yourſelf." This obſervation ſo affected the khalif, that, either to avert the ill omen, or from ſome other motive, he ordered the caſtle to be immediately demoliſhed. Abdallah Ebn Zobeir, in the mean time, having received the melancholy news of the defeat and death of his brother, aſſembled the people of Mecca, and from the pulpit made a ſpeech ſuitable to the occaſion. He did his utmoſt to put Mecca in a proper poſture of defence, expecting a ſpeedy viſit from his formidable competitor, who now gave law to Irak, Syria, and Egypt, without controul.

Soon after Abdalmalec's return to Damaſcus, he appointed his brother Baſhar governor of Cufa; and Khaled Ebn Abdallah, governor of Baſra. The latter had no ſooner entered upon his office, than he removed from his command Al Mohalleb, one of the greateſt generals of the army; appointing in his room Abdalaziz, who was greatly his inferior in military ſkill. Of his diſmiſſion the Azarakites being informed, they immediately attacked Abdalaziz, entirely defeated him, and took his wife priſoner. A diſpute ariſing among the victors about the ranſom of that lady, one of them, to end it, immediately cut off her head. Upon this, Khaled was commanded to reinſtate Al Mohalleb, which he did; and, having in conjunction with him attacked the Azarakites, they forced their camp, and entirely defeated them.

In the 72d year of the Hegira, Abdalmalec having no enemy to contend with but Abdallah Ebn Zobeir, he made great preparations for an invaſion of Hejaz, giving the command of the army to Al Hejaj, one of his moſt warlike and eloquent captains. Before this army marched for Mecca, he offered his protection to all the Arabs there, that would accept of it. Abdallah, being informed of the enemy's approach, ſent out ſeveral parties of horſe to reconnoitre, and give him intelligence of their motions. Between theſe, and ſome of Al Hejaj's advanced guards, ſeveral ſkirmiſhes happened. This induced Al Hejaj to ſend to the khalif for a reinforcement; his troops, amounting to no more than 2000, were inſufficient for reducing Mecca. The khalif ordered a reinforcement of 5000 men, under the command of Tharik Ebn Amer; but, notwithſtanding this, he made but little progreſs in the ſiege for ſome time; and, while he was battering the temple, a dreadful ſtorm of thunder and lightning aroſe, which killed twelve men, and ſo diſpirited the reſt, that they refuſed to act any longer againſt the place. Al Hejaj, however, raiſed their ſpirits, by obſerving that he was a ſon of Tehama; that this was the ſtorm of Tehama, and that their adverſaries ſuffered as much as they; and the day following ſome of Abdallah's men were actually killed by the ſtorm, which gave Al Hejaj a further opportunity of animating his troops. At laſt, Abdallah having been deſerted by moſt of the inhabitants of the place, and even by his two ſons, Hamza and Kobeib, deſired to know his mother's ſentiments as to what courſe he ſhould take. He repreſented to her, that he was almoſt entirely abandoned by his ſubjects and relations; that the few who perſiſted in their fidelity could ſcarcely enable him to defend the city; and that the Syrian khalif would grant him any terms he ſhould think fit to demand. His mother inheriting an inflexible temper, and not able to bear the thoughts of ſeeing her ſon reduced to the rank of a private perſon, being herſelf the daughter of Abu Becr the firſt khalif, adviſed him by no means to ſurvive the ſovereignty, of which he was on the point of being deprived. This advice accorded with his own ſentiments, and he reſolved nobly to die. After this, he defended the city, to the amazement of the beſiegers, for ten days, though deſtitute of arms, troops, and fortifications. At laſt, being animated by deſpair, he ruſhed into the midſt of the enemy, deſtroyed a great number of them with his own hand, and was at length killed fighting valiantly for his crown. At the laſt interview with his mother, ſhe adviſed him to put off his armour, that he might not languiſh by the accumulation of trifling wounds; and, to inſpire him with greater fortitude, ſhe gave him a draught in which a pound of muſk had been infuſed. Al Hejaj ordered his head to be cut off, and his body to be affixed to a croſs; and, by reaſon of the muſk he had drunk, the body emitted a grateful odour for ſeveral days.

By the reduction of Mecca, and the death of Abdallah Ebn Zobeir, Abdalmalec remained ſole maſter of the Moſlem empire; but he ſuſtained a great loſs the next year, in having an army of 100,000 men totally cut off by the Khazarians in Armenia. The governor, however, having marched in perſon againſt them at the head of only 40,000 choſen troops, penetrated into the heart of Armenia, defeated and diſperſed a large body of the enemy, drove them into their temples, and then reduced them to aſhes. One of his generals alſo defeated an army of 80,000 Khazarians at the Caſpian gates, deſtroying a great number, and obliging the reſt to embrace the Mahometan religion. Al Hejaj, in conſequence of theſe ſervices, was made governor of Medina, Irak, Khoraſan, and Sijiſtan.

In the 76th year of the Hegira, Saleh Ebn Marj, an enthuſiaſt, and Shebib Ebn Zeid, a Kharejite, took up arms againſt the khalif. They had conſpired againſt him the year before, while on a pilgrimage to Mecca; and Al Hejaj had been ordered to ſeize them, but they found means to make their eſcape; and, having now aſſembled about 120 followers, Saleh was proclaimed emperor of the faithful at Daras, in Meſopotamia. The governor ſoon received intelligence of their motions; and ordered Adi to march againſt them with a detachment of 1500 horſe; but the rebels, notwithſtanding the ſmallneſs of their number, defended themſelves with ſuch bravery, that the khalif's troops were forced to diſmount and fight on foot. The engagement continued till night; when the rebels, finding themſelves unable to contend with ſuch numbers, retired to Mawſel. After this, Al Hejaj, being informed that they had taken poſt at Daſcara, purſued them with 5000 men. The rebels, hearing of this formidable army, abandoned their camp; but were ſo cloſely purſued, that they were forced into an engagement at Modbaj, a ſmall village on the Tigris. Saleh's forces were ſoon thrown into diſorder, and himſelf killed: but Shebib made an excellent retreat to a neighbouring caſtle; from whence he unexpectedly ſallied out at midnight on the khalif's forces, penetrated to the very heart of the camp, where he wounded the general himſelf, and diſperſed the greateſt part of his army. After this, the rebels became terrible even to Al Hejaj himſelf, whom they again defeated in ſeveral engagements; and, taking advantage of his being at Baſra, made themſelves maſters of Cufa with little oppoſition. Al Hejaj was now obliged to write to the khalif for a ſtrong detachment of Syrian troops, with which he again advanced againſt Shebib; whoſe army bearing no proportion to that of Al Hejaj, the former was totally defeated, and driven to Kerman. Having refreſhed his men in this province, he again advanced to Ahwaz, where he was attacked by one of Al Hejaj's generals at the head of the Syrian army. Shebib defended himſelf with incredible valour, and ſeveral times repulſed the khalif's forces; but, being overpowered by numbers, he was put to flight, and, in paſſing a bridge, was thrown off his horſe and drowned. His body was drawn up by a net, and the head cut off and ſent to Al Hejaj. After his death, the rebels quarrelled among themſelves, ſo that the khalif's troops deſtroyed the greateſt part of them. The remainder, under Katri Ebn Fojat, fled to Tabreſtan. Here they were kindly received by Aſhid the king, who aſſigned them a part of his territories for their habitation. But they had not been long ſettled there, before they inſiſted upon Aſhid's either embracing Mahometaniſm, or paying them an annual tribute; which he refuſing, they drove him into Irak, where he implored the khalif's protection. Aſhid afterwards conducted an army of Moſlem troops into Tabreſtan; where they fell upon the rebels with ſuch fury, that they killed Katri, cut a great number of his men to pieces, and took all the reſt priſoners.

This year, the 76th of the Hegira, money was firſt coined in Arabia. Previous to this, the dinars, or gold coins, had Greek inſcriptions; and the dirhems, or ſilver ones, Perſic inſcriptions. The firſt erection of a mint in Arabia was occaſioned by the following incident: Abdalmalec added to the letters he wrote to the Greek emperor for coins, this ſhort paſſage of the Koran, "Say, God is one;" or, "Say, there is one God;" and then inſerted the year of the Hegira, with the name of the prophet, to be inſcribed on the dinars; which gave the emperor great offence. Upon this he wrote to Abdalmalec, deſiring him to alter that manner of writing, or he would ſend him ſome coins in which the name of Mahomet ſhould be mentioned in ſuch a manner as would not prove very agreeable. Abdalmalec now reſolved to coin money of his own; and accordingly ſome dirhems were this year ſtamped by Al Hejaj, with the inſcription *Alla Samad*, "God is eternal;" which gave great offence to the ſuperſtitious Moſlems, as they imagined that the name of God would be thereby profaned by the touch of unclean perſons.

In the 77th year of the Hegira, the Arabs made an incurſion into the imperial territories, where Lazica and Bernucium were betrayed to them; and the next year they made themſelves maſters of Africa Propria, demoliſhing the city of Carthage ſo effectually that ſcarcely a veſtige of it was left. They were ſoon driven out, however, by John the Patrician, a man of great valour and experience in war; but, returning with a ſuperior force, they obliged John in his turn to fly to Conſtantinople. The 79th year of the Hegira is remarkable for nothing but the rebellion of Abdalrahman in Perſia; who drove the Khakan, or emperor of the Turks, Tartars, or Moguls, out of that country: but the following year, one of the Greek generals, named *Heraclius*, penetrated into Syria as far as Samoſata, and deſtroyed 200,000 Arabs, ravaging the country in a terrible manner; but at laſt Abdalrahman was defeated and killed by Al Hejaj, after a vaſt number of engagements, ſome ſay eighty-one, and others a hundred. In the 83d year of the Hegira, the nobility of Armenia revolting, they drove the Arabs out of that province; but Mahomet, one of the khalif's generals, entering the country with a powerful army, got the authors of the revolt into his hands, and cauſed them all to be burnt alive. Encouraged by this ſucceſs, the Moſlems invaded Cilicia under Azar; but were, to the number of 10,000, cut in pieces by Heraclius; and the next year, having again entered that country, 12,000 more of them were deſtroyed by the ſame general, and the reſt forced to fly into their own country.

In the 86th year of the Hegira, died the khalif Abdalmalec, after a reign of twenty-one years. He is ſaid to have had ſuch a fetid breath, that the flies which accidentally

tally ſettled on his lips were inſtantly ſtruck dead by it. He was ſucceeded by Al Walid, who greatly extended the Moſlem dominions. The firſt year of his reign, one of his generals, having paſſed the Oxus (now the Jihun), defeated a numerous army of Turks and Tartars. He then over-ran and entirely reduced the countries of Sogd or Sogdiana, Bagraſs, Shaſh, Targana, and the whole immenſe tract of Mawaralnahr, or great Buckharia. He alſo conquered the khan of Khowarazim, obliging him to pay an annual tribute of two millions of dinars. About the ſame time another general, Mahomet, made an irruption into India, and ſubdued a conſiderable part of that country. He alſo entirely ſubdued the kingdom of Al Sind, lying between Perſia and India. In this expedition, Derar king of Al Sind was defeated and killed, and had his head cut off by Mahomet. In the 90th year of the Hegira, the Moſlems made an irruption into Cappadocia, defeated the emperor's army who oppoſed them, and took the city of Tyana. The next year they made another incurſion into the imperial territories, whence they carried off vaſt numbers of ſlaves; and the year following Othman penetrated into the heart of Cilicia, where he made himſelf maſter of ſeveral cities, but does not appear to have long maintained his conqueſts.

In the 93d year of the Hegira, anſwering to that of Chriſt 712, Tarek Ebn Zarka made a deſcent in Spain, defeated Roderic the laſt king of the Goths, reduced the city of Toledo, and over-ran a conſiderable part of the kingdom. Being afterwards joined by Muſa, commander of the African Moſlems, the two generals made themſelves maſters of moſt of the fortreſſes, ſubjugating the whole country, and obliging it to pay tribute to the khalif. In theſe expeditions the Moſlems acquired ſpoils of an immenſe value; and, amongſt other things, an exceeding rich table, called, by the Arab writers, "the table of Solomon the ſon of David." According to them, it conſiſted entirely of gold and ſilver, and was adorned with three borders of pearls; but Roderic of Toledo, a Spaniſh hiſtorian, ſays it conſiſted of one entire ſtone, of a green colour, and of an immenſe ſize, containing no leſs than 365 feet. He adds, that it was found near the mountain called in his days *Jibal Soliman*, or the "mountain of Solomon." After Muſa and Tarik had committed dreadful depredations in Spain, they were both recalled by the khalif; but, the next year, Tarik, having undertaken another expedition into the ſame country, landed 12,000 men at Gibraltar, with which he plundered the whole province of Bætica, and over-ran the greateſt part of Luſitania. Roderic, hearing of theſe depredations, ſent againſt him an army of raw undiſciplined troops, who were eaſily defeated, and moſt of them left dead on the ſpot; which ſo animated the Arab commander, that he reſolved to make an abſolute conqueſt of Spain. About the ſame time another Moſlem general entered Piſidia with a powerful army, took the city of Antioch, and, after having ravaged the country, retired into the khalif's territories with very little loſs.

In the 95th year of the Hegira died Al Hejaj, governor of Irak, &c. after he had preſided over that country for twenty years. He exerciſed ſuch barbarities upon thoſe who were in ſubjection to him, that he is ſaid to have killed 120,000 men, and to have ſuffered 50,000 men and 30,000 women to periſh in priſon. To palliate this cruelty, he uſed frequently to ſay, That a ſevere, or even violent, government, is better than one too weak and indulgent; as the firſt only injures particular perſons, but the latter deſtroys the whole community. This year the Arabs gained a complete victory in Spain over Roderic the king of the Goths, who periſhed in the action; and Tarik poſſeſſed himſelf of immenſe treaſures, by which means he was enabled to reward both his officers and common ſoldiers. In the eaſtern parts of the world alſo, the Arabs were this year very formidable; Moſlema, an Arab general, having entered the imperial empire, ravaged the whole province of Galatia, carrying off many rich ſpoils, and a vaſt number of priſoners. The Greek emperor, hearing that Al Walid deſigned to attack him both by ſea and land, ſent ſome of his nobles to treat for peace; but without effect. The emperor therefore cauſed a great number of light ſhips to be built, and the walls to be repaired; and ordered ſuch of the citizens as had not laid up proviſions for three years, to depart the city. Al Walid in the mean time continued his warlike preparations with the utmoſt vigour, being determined to make himſelf maſter of Conſtantinople.

In the 96th year of the Hegira, however, the khalif Al Walid died; and was ſucceeded by his brother Soliman. This year the Moſlem conqueſts in the eaſt were increaſed by the reduction of Tabreſtan and Jurgan or Georgiana. In Spain, alſo, the city of Toledo, which had revolted, was reduced, with Auguſta, now Saragoſſa, and ſeveral other places. The next year Moſlema ſet out for Conſtantinople, which he beſieged without ſucceſs till the 99th year of the Hegira; at which time he was obliged to return, after having loſt 120,000 men. The ſoldiers were reduced to the greateſt extremities of hunger, being forced to live upon hides, the roots and bark of trees, the moſt nauſeous animals, and even the dead bodies of their own companions. This year alſo (the 99th of the Hegira) is remarkable for the death of the khalif Soliman. According to ſome, he was poiſoned by Yezid his brother, governor of Perſia, who was diſpleaſed with his having appointed his couſin-german, Omar Ebn Abdalaziz, as his ſucceſſor, to the excluſion of himſelf. According to others, he died of an indigeſtion. In the latter part of his reign, the Moſlems were by no means ſucceſsful in Spain: the kingdom of Navarre, founded at this time by Pelagius or Pelayo, the Arabs were never able to reduce.

The new khalif, Omar Ebn Abdalaziz, was by no means of a martial character; but is ſaid to have been very pious, and poſſeſſed very amiable qualities. He ſuppreſſed the uſual malediction, which was ſolemnly pronounced by the khalifs of the houſe of Ommiyah againſt the houſe of Ali; and always ſhewed great kindneſs to the latter. He was poiſoned by Yezid, after a ſhort reign of two years and five months. Concerning Yezid, the ſucceſſor of Omar, we find very little worth mentioning. He did not long enjoy the dignity he had ſo iniquitouſly obtained, dying after a reign of little more than four years. He died of grief for a favourite concubine named *Hababah*, who was choked by a large grape which ſtuck in her throat.

Yezid was ſucceeded by his brother Heſham, who aſcended the throne in the 105th year of the Hegira. In the ſecond and third years of his reign, ſeveral incurſions were made into the imperial territories, but generally without ſucceſs. In the 109th year of the Hegira, Moſlema drove the Turks out of Armenia and Aderbijan, and again confined them within the Caſpian gates. The next year he obliged them to take an oath to keep within their own country; but this they ſoon violated, and were again driven back by Moſlema. About this time the Arabs, having paſſed the Pyrenees, invaded France, to the number of 400,000, under the command of Abdalrahman. They advanced to Arles upon the Rhone, and defeated a large body of French that oppoſed them; and, having alſo defeated count Eudo, they purſued him through ſeveral provinces, waſted the whole country with fire and ſword, and made themſelves maſters of Tours, which they reduced to aſhes. Here a ſtop was put to their devaſtations by Charles Martel; who, coming up with them near the above-mentioned city, engaged them for ſeven days together, and gave them a total overthrow. The French general took all their baggage and riches; and Abdalrahman, with the ſhattered remains of his army, reached the frontiers of Spain with the utmoſt difficulty. To make amends for this bad fortune, however, the khalif's arms were ſucceſsful againſt the Turks, who had again invaded the eaſtern provinces.

In the 125th year of the Hegira died the khalif Heſham, after a reign of nineteen years, ſeven months, and eleven days. He was ſucceeded by Al Walid II. who is repreſented as a man of a moſt diſſolute life, and was aſſaſſinated the following year on account of his infidelity. He was ſucceeded by Yezid, the ſon of Al Walid I. who died of the plague after a reign of ſix months; and was ſucceeded by Ibrahim Ebn Al Walid, an imprudent and ſtupid prince. He was depoſed in the 127th year of the Hegira by Merwan Ebn Mahomet, governor of Meſopotamia; who, as an excuſe for his revolt, ſaid, That he intended to revenge the murder of the khalif Al Walid II. He was no ſooner ſeated on the throne, than the people of Hems rebelled. Againſt them the khalif marched with a powerful army, and ſummoned them to ſurrender. They aſſured him that they were diſpoſed to admit him into their city; and, accordingly, one of the gates being opened, Merwan entered with 300 of his troops. Theſe were immediately put to the ſword by the inhabitants; and the khalif himſelf eſcaped with great difficulty. However, he afterwards defeated them in a pitched battle, killed a great number of them, diſmantled the city, and crucified 600 of the principal authors of the revolt.

Damaſcus having followed the example of Hems, and depoſed the khalif's governor, Merwan marched thither with great celerity, entered the city by ſtorm, and brought to condign puniſhment the authors of the revolt. Peace, however, was no ſooner reſtored at Damaſcus, than Soliman Ebn Heſham ſet up for himſelf at Baſar, where he was proclaimed khalif by the inhabitants. He aſſembled an army of 10,000 men, with whom he marched to Kinniſſin, and was joined by vaſt numbers of Syrians, who flocked to him from all parts. Merwan, receiving advice of Soliman's rapid progreſs, marched againſt him with all the forces he could aſſemble, and entirely defeated him. In this engagement Soliman loſt 30,000 men; ſo that he was obliged to fly to Hems, where 9000 men more took an oath to ſtand by him to the laſt. Having ventured, however, to attack the khalif's forces a ſecond time, he was again defeated, and forced to fly back to Hems. Being cloſely purſued by Merwan, he conſtituted his brother Said governor of the city, leaving with him the ſhattered remains of his troops, whilſt he himſelf fled to Tadmor. Soon after his departure Merwan appeared before the town, which he beſieged for ſeven months. The citizens, being reduced to the laſt extremity, ſurrendered, and delivered Said into the khalif's hands. In conſideration of this ſubmiſſion, Merwan pardoned the rebels, and took them under his protection. About the ſame time, another pretender to the khalifate appeared at Cufa; but Merwan took ſuch meaſures, that he extinguiſhed the rebellion before it came to any height.

Notwithſtanding the ſucceſs that had hitherto attended Merwan, a ſtrong party was formed againſt him in Khoraſan, by the houſe of Al Abbas. The firſt of that houſe that made any conſiderable figure was named *Mahomet*, who flouriſhed in the reign of Omar Ebn Abdalaziz. He was appointed chief of the houſe of Al Abbas about the hundredth year of the Hegira; and is ſaid to have propheſied, that after his death, one of his ſons, named *Ibrahim*, ſhould preſide over them till he was killed, and that his other ſon Abdallah, ſurnamed *Abul Abbas Al Saffah*, ſhould be khalif, and exterminate the houſe of Ommiyah. Upon this Al Saffah was introduced as the future ſovereign, and thoſe preſent kiſſed his hands and feet. After the death of Mahomet, his ſon Ibrahim nominated as his repreſentative in Khoraſan, Abu Moſlem, a youth of nineteen years of age; who beginning to raiſe forces in that province, Merwan ſent againſt him a detachment of horſe, under the command of Naſr Ebn Sayer; but that general was entirely defeated by Abu Moſlem, and the greateſt part of his men killed. The next year, the 128th of the Hegira, Merwan made vaſt preparations to oppoſe Abu Moſlem, who after the late victory grew formidable to the empire; and the year following he brought ſo powerful an army into the field, that the khalif's troops could not make head againſt him; his officers in Khoraſan were therefore obliged either to take an oath of allegiance to Ibrahim, or to quit the province within a limited time.

In the 130th year of the Hegira, the khalif's general Naſr was beaten by Kahtaba, another of Ibrahim's generals, and forced to fly to Raya, a town of Dylam, according to ſome, or of Khoraſan, according to others. The next year Ibrahim having imprudently reſolved to go on a pilgrimage to Mecca, attended by a numerous retinue ſplendidly accoutered, he was ſeized and put to death by Merwan; and the year following Abul Abbas was proclaimed khalif at Cufa. As ſoon as the ceremony was ended, he ſent his uncle Abdallah with a powerful army to attack Merwan's forces encamped near Tubar, where that khalif was then waiting for an account of the ſucceſs of his troops under Yezid governor of Irak, againſt Khatahba one of Al Saffah's generals. Khatahba, receiving advice of Yezid's approach, immediately advanced againſt him, and entirely defeated him; but, in croſſing the Euphrates, the waters of which were greatly ſwelled, he was carried away by the flood, and drowned. The purſuit, however, was continued by his ſon Hamid, who diſperſed the fugitives ſo completely, that they could never afterwards be rallied. At the news of this diſaſter, Merwan was greatly diſpirited; but, ſoon recovering himſelf, he advanced, with the ſhattered remains of his army, to meet Abdallah. In the beginning of the battle, the khalif happened to diſmount; and his troops, perceiving their ſovereign's horſe without a rider, concluded that he was killed, and therefore immediately fled; nor was it in the power of the khalif to rally them again, ſo that he was forced to fly to Damaſcus: but the inhabitants of that city, ſeeing his condition deſperate, ſhut their gates againſt him. Upon this he fled to Egypt, where he maintained himſelf for ſome time; but was at laſt attacked and killed by Saleh, Abdallah's brother, at Buſir Kurides. The citizens of Damaſcus, though they had ſhamefully deſerted Merwan, refuſed to open their gates to the victors; upon which Saleh entered the city by ſtorm, and gave it up to be plundered by his ſoldiers.

By the total defeat and death of Merwan, Al Saffah became ſole maſter of the Moſlem throne; but we hear of no very remarkable events that happened during his reign; only that he maſſacred great numbers of the partiſans of the houſe of Ommiyah; and that Conſtantine Copronymus, taking advantage of the inteſtine diviſions among the Moſlems, ravaged Syria. The khalif died of the ſmall-pox in the 136th year of the Hegira, in the thirty-third year of his age; and was ſucceeded by his brother Al Manſur. In the beginning of Al Manſur's reign, hoſtilities continued againſt the houſe of Ommiyah, who ſtill made reſiſtance, but were always defeated. Abdallah, however, the khalif's uncle, cauſed himſelf to be proclaimed khalif at Damaſcus; and, having aſſembled a powerful army in Arabia, Syria, and Meſopotamia, advanced with great expedition to the banks of the Maſius near Niſibus, where he encamped. Al Manſur, being informed of this rebellion, diſpatched Abu Moſlem againſt Abdallah. This general, having harraſſed him for five months, at laſt brought him to a general action, in which he defeated him, and forced him to fly to Baſra. Notwithſtanding all his ſervices, however, Abu Moſlem was ſoon after ungratefully and barbarouſly murdered by Al Manſur, under pretence of being deficient in reſpect towards him.

After the death of Abu Moſlem, one Sinan, a Magian, or adorer of fire, having made himſelf maſter of that general's treaſures, revolted againſt the khalif; but he was ſoon defeated by Jamhur Ebn Morad, who had been ſent againſt him with a powerful army. In this expedition Jamhur having acquired immenſe riches, the covetous diſpoſition of the khalif prompted him to ſend a perſon expreſs to the army, to ſeize upon all the wealth. This ſo provoked Jamhur, that he immediately turned his arms againſt his maſter; but was ſoon defeated, and entirely reduced.

duced. The following year (the 139th of the Hegira), Abdalrahman, of the houſe of Ommiyah, after the entire ruin of that family in Aſia, arrived in Spain, where he was acknowledged khalif; nor did he or his deſcendants ever afterwards own ſubjection to the Arabian khalifs.

The 140th year of the Hegira is remarkable for an attempt to aſſaſſinate the khalif, by the Rawandians, an impious ſect, who held the doctrine of metempſychoſis, or tranſmigration. They firſt offered Al Manſur divine honours, by going in proceſſion round his palace, as the Moſlems were wont to do round the Caaba; but the khalif, highly incenſed at this impiety, ordered 100 of the principal of them to be impriſoned. Theſe were ſoon releaſed by their companions, who went in a body to the palace with an intention to murder their ſovereign: but Al Manſur being a perſon of uncommon bravery, though he was ſurpriſed with very few attendants, mounted a mule, and advanced towards the mutineers, determined to ſell his life as dear as poſſible. In the mean time, Maan Ebn Zaidat, one of the chiefs of the Ommiyah faction, who had concealed himſelf in order to avoid the khalif's reſentment, ſallied out of his retreat, and putting himſelf at the head of Al Manſur's attendants, charged the rebels with ſuch fury, that he entirely defeated them. This generoſity of Maan was ſo remarkable, that it afterwards paſſed into a proverb. On this occaſion 6000 of the Rawandians were killed on the ſpot, and the khalif delivered from aſſaſſination; he was, however, ſo much diſguſted with the Arabs on account of their treachery, that he reſolved to remove the capital of his empire out of their peninſula; and accordingly founded a new city on the banks of the Tigris, which from that time to this has been known by the name of *Bagdat*. The foundations of it were laid in the 145th year of the Hegira, and finiſhed four years after. From this time, the hiſtory of the Moſlem government and empire is continued under the article BAGDAT, which ſee.

On the removal of the ſeat of government to Bagdat, the peninſula of the Arabs ſeems all at once to have loſt its conſequence, and in a ſhort time the inhabitants ſeem even to have detached themſelves from the juriſdiction of the khalifs: for in the 156th year of the Hegira, while Al Manſur was yet living, they they made irruptions into Syria and Meſopotamia, as if to conquer theſe countries over again for themſelves; and though the Arabs, properly ſo called, continued nominally ſubject to the khalifs of Bagdat till the abolition of the khalifate by Hulaku the Tartar, yet they did not become ſubject to him when he became maſter of that city. There is even the ſtrongeſt reaſon to believe that the Arabs (i. e. the inhabitants of the peninſula properly called *Arabia)* have remained independent, not only of Hulaku, but of every other conqueror that the world hath yet produced.

"The perpetual independence of the Arabs (ſays Mr. Gibbon) has been the theme of praiſe among ſtrangers and natives. The kingdom of Yaman, it is true, has been ſucceſſively ſubdued by the Abyſſinians, the Perſians, the ſultans of Egypt, and the Turks; the holy cities of Mecca and Medina have repeatedly bowed under a Scythian tyrant; and the Roman province of Arabia embraced the peculiar wilderneſs in which Iſmael and his ſons muſt have pitched their tents in the face of their brethren. Yet theſe exceptions are temporary or local; the body of the nation has eſcaped the yoke of the moſt powerful monarchies; the arms of Seſoſtris and Cyrus, of Pompey and Trajan, could never atchieve the conqueſt of Arabia; the preſent ſovereign of the Turks may exerciſe a ſhadow of juriſdiction, but his pride is reduced to ſolicit the friendſhip of a people whom it is dangerous to provoke, and fruitleſs to attack. The obvious cauſes of their freedom are inſcribed on the character and country of the Arabs. Many ages before Mahomet, their intrepid valour had been ſeverely felt by their neighbours in offenſive and defenſive war. The patient and active virtues of a ſoldier are inſenſibly nurſed in the habits and diſcipline of a paſtoral life. The care of the ſheep and camels is abandoned to the women of the tribe; but the martial youth under the banner of the emir, is ever on horſeback, and in the field, to practiſe the exerciſe of the bow, the javelin, and the ſcymetar. The long memory of their independence is the firmeſt pledge of its perpetuity; and ſucceeding generations are animated to prove their deſcent and to maintain their inheritance. Their domeſtic feuds are ſuſpended on the approach of a common enemy; and, in their laſt hoſtilities againſt the Turks, the caravan of Mecca was attacked and pillaged by fourſcore thouſand of the confederates. When they advance to battle, the hope of victory is in the front; and, in the rear, the aſſurance of a retreat. Their horſes and camels, who in eight or ten days can perform a march of four or five hundred miles, diſappear before the conqueror; the ſecret waters of the deſert elude his ſearch; and his victorious troops are conſumed with thirſt, hunger, and fatigue, in the purſuit of an inviſible foe, who ſcorns his efforts, and ſafely repoſes in the heart of the burning ſolitude. The arms and deſerts of the Bedouins are not only the ſafeguards of their own freedom, but the barriers alſo of the Happy Arabia, whoſe inhabitants, remote from war, are enervated by the luxury of the ſoil and climate. The legions of Auguſtus melted away in diſeaſe and laſſitude; and it is only by a naval power that the reduction of Yaman has been ſucceſsfully attempted. When Mahomet erected his holy ſtandard, that kingdom was a province of the Perſian empire; yet ſeven princes of the Homerites ſtill reigned in the mountains; and the vicegerent of Choſroes was tempted to forget his diſtant country and his unfortunate maſter. The hiſtorians of the age of Juſtinian repreſent the ſtate of the independent Arabs, who were divided by intereſt or affection in the long quarrel of the Eaſt: the tribe of Gaſſan was allowed to encamp on the Syrian territory: the princes of Hira were permitted to form a city about forty miles to the ſouthward of the ruins of Babylon. Their ſervice in the field was ſpeedy and vigorous; but their friendſhip was venal, their faith inconſtant, their enmity capricious: it was an eaſier taſk to excite than to diſarm theſe roving barbarians; and, in the familiar intercourſe of war, they learned to ſee, and to deſpiſe, the ſplendid weakneſs both of Rome and of Perſia. From Mecca to the Euphrates, the Arabian tribes were confounded by the Greeks and Latins, under the general appellation of Saracens; a name which every Chriſtian mouth has been taught to pronounce with terror and abhorrence.

"The ſlaves of domeſtic tyranny may vainly exult in their national independence; but the Arab is perſonally free; and he enjoys, in ſome degree, the benefits of ſociety, without forfeiting the prerogatives of nature. In every tribe, ſuperſtition, or gratitude, or fortune, has exalted a particular family above the heads of their equals. The dignities of ſheich and emir invariably deſcend in this choſen race; but the order of ſucceſſion is looſe and precarious; and the moſt worthy or aged of the noble kinſmen are preferred to the ſimple, though important, office of compoſing diſputes by their advice, and guiding valour by their example. The momentary junction of ſeveral tribes produces an army: their more laſting union conſtitutes a nation; and the ſupreme chief, the emir of emirs, whoſe banner is diſplayed at their head, may deſerve, in the eyes of ſtrangers, the honours of the kingly name. If the Arabian princes abuſe their power, they are quickly puniſhed by the deſertion of their ſubjects, who had been accuſtomed to a mild and parental juriſdiction. Their ſpirit is free, their ſteps are unconfined, the deſert is open, and the tribes and families are held together by a mutual and voluntary compact. The ſofter natives of Yaman ſupported the pomp and majeſty of a monarch; but, if he could not leave his palace without endangering his life, the active powers of government muſt have been devolved on his nobles and magiſtrates. The cities of Mecca and Medina preſent, in the heart of Aſia, the form or rather the ſubſtance of a commonwealth. The grandfather of

Mahomet, and his lineal anceſtors, appear in foreign and domeſtic tranſactions as the princes of their country; but they reigned like Pericles at Athens, or the Medici at Florence, by the opinion of their wiſdom and integrity; their influence was divided with their patrimony: and the ſceptre was transferred from the uncles of the prophet to a younger branch of the tribe of Koreiſh. On ſolemn occaſions they convened the aſſembly of the people; and, ſince mankind muſt be either compelled or perſuaded to obey, the uſe and reputation of oratory among the ancient Arabs is the cleareſt evidence of public freedom. But their ſimple freedom was of a very different caſt from the nice and artificial machinery of the Greek and Roman republics, in which each member poſſeſſed an undivided ſhare of the civil and political rights of the community. In the more ſimple ſtate of the Arabs, the nation is free, becauſe each of her ſons diſdains a baſe ſubmiſſion to the will of a maſter. His breaſt is fortified with the auſtere virtues of courage, patience, and ſobriety: the love of independence prompts him to exerciſe the habits of ſelf-command; and the fear of diſhonour guards him from the meaner apprehenſion of pain, of danger, and of death. The gravity and firmneſs of the mind is conſpicuous in its outward demeanor: his ſpeech is ſlow, weighty, and conciſe; he is ſeldom provoked to laughter; his only geſture is that of ſtroaking his beard, the venerable ſymbol of manhood; and the ſenſe of his own importance teaches him to accoſt his equals without levity, and his ſuperiors without awe. The liberty of the Saracens ſurvived their conqueſts: the firſt khalifs indulged the bold and familiar language of their ſubjects: they aſcended the pulpit to perſuade and edify the congregation; nor was it before the ſeat of empire was removed to the Tigris, that the Abbaſſides adopted the proud and pompous ceremonial of the Perſian and Byzantine courts.

“ In the ſtudy of nations and men, we may obſerve the cauſes that render them hoſtile or friendly to each other, that tend to narrow or enlarge, to mollify or exaſperate, the ſocial character. The ſeparation of the Arabs from the reſt of mankind has accuſtomed them to confound the ideas of ſtranger and enemy; and the poverty of the land has introduced a maxim of juriſprudence, which they believe and practiſe to the preſent hour. They pretend, that in the diviſion of the earth the rich and fertile climates were aſſigned to the other branches of the human family; and that the poſterity of the outlaw Iſmael might recover, by fraud or force, the portion of inheritance of which he had been unjuſtly deprived. According to the remark of Pliny, the Arabian tribes are equally addicted to theft and merchandiſe: the caravans that traverſe the deſert are ranſomed or pillaged; and their neighbours, ſince the remote times of Job and Seſoſtris, have been the victims of their rapacious ſpirit. If a Bedouin diſcovers from afar a ſolitary traveller, he rides furiouſly againſt him, crying, with a loud voice, “Undreſs thyſelf, thy aunt (*my wife*) is without a garment.” A ready ſubmiſſion intitles him to mercy; reſiſtance will provoke the aggreſſor, and his own blood muſt expiate the blood which he preſumes to ſhed in legitimate defence. A ſingle robber, or a few aſſociates, are branded with their genuine name; but the exploits of a numerous band aſſume the character of lawful and honourable war. The temper of a people, thus armed againſt mankind, was doubly inflamed by the domeſtic licence, of rapine, murder, and revenge. In the conſtitution of Europe, the right of peace and war is now confined to a ſmall, and the actual exerciſe to a much ſmaller, liſt of reſpectable potentates; but each Arab, with impunity and renown, might point his javelin againſt the life of his countryman. The union of the nation conſiſted only in a vague reſemblance of language and manners; and in each community the juriſdiction of the magiſtrate was mute and impotent. Of the time of ignorance which preceded Mahomet, 1700 battles are recorded by tradition: hoſtility was embittered with the rancour of civil faction; and the recital, in proſe or verſe, of an obſolete feud was ſufficient to re-kindle the ſame paſſions among the deſcendants of the hoſtile tribes. In private life, every man, at leaſt every family, was the judge and avenger of its own cauſe. The nice ſenſibility of honour, which weighs the inſult rather than the injury, ſheds its deadly venom on the quarrels of the Arabs: the honour of their women, and of their *beards*, is moſt eaſily wounded; an indecent action, a contemptuous word, can be expiated only by the blood of the offender; and ſuch is their patient inveteracy, that they expect whole months and years the opportunity of revenge. A fine or compenſation for murder is familiar to the barbarians of every age: but in Arabia the kinſmen of the dead are at liberty to accept the atonement, or to exerciſe with their own hands the law of retaliation. The refined malice of the Arabs refuſes even the head of the murderer, ſubſtitutes an innocent to the guilty perſon, and transfers the penalty to the beſt and moſt conſiderable of the race by whom they have been injured. If he falls by their hands, they are expoſed in their turn to the danger of repriſals; the intereſt and principal of the bloody debt are accumulated; the individuals of either family lead a life of malice and ſuſpicion, and fifty years may ſometimes elapſe before the account of vengeance be finally ſettled. This ſanguinary ſpirit, ignorant of pity or forgiveneſs, has been moderated, however, by the maxims of honour, which require in every private encounter ſome decent equality of age and ſtrength, of numbers and weapons. An annual feſtival of two, perhaps of four, months, was obſerved by the Arabs before the time of Mahomet; during which their ſwords were religiouſly ſheathed both in foreign and domeſtic hoſtility: and this partial truce is more ſtrongly expreſſive of the habits of anarchy and warfare.

“ But the ſpirit of rapine and revenge was attempered by the milder influence of trade and literature. The ſolitary peninſula is encompaſſed by the moſt civilized nations of the ancient world: the merchant is the friend of mankind; and the annual caravans imported the firſt ſeeds of knowledge and politeneſs into the cities, and even the camps of the deſert. The arts of grammar, of metre, and of rhetoric, were unknown to the free-born eloquence of the Arabians; but their penetration was ſharp, their fancy luxuriant, their wit ſtrong and ſententious, and their more elaborate compoſitions were addreſſed with energy and effect to the minds of their hearers. The genius and merit of a riſing poet was celebrated by the applauſe of his own and the kindred tribes. A ſolemn banquet was prepared, and a chorus of women, ſtriking their tymbals, and diſplaying the pomp of their nuptials, ſung in the preſence of their ſons and huſbands the felicity of their native tribe; that a champion had now appeared to vindicate their rights; that a herald had raiſed his voice to immortaliſe their renown. The diſtant or hoſtile tribes reſorted to an annual fair which was aboliſhed by the fanaticiſm of the firſt Moſlems; a national aſſembly that muſt have contributed to refine and harmoniſe the barbarians. Thirty days were employed in the exchange, not only of corn and wine, but of eloquence and poetry. The prize was diſputed by the generous emulation of the bards; the victorious performance was depoſited in the archives of princes and emirs; and we may read in our own language the ſeven original poems which were inſcribed in letters of gold and ſuſpended in the temple of Mecca. The Arabian poets were the hiſtorians and moraliſts of the age; and, if they ſympathiſed with the prejudices, they inſpired and crowned the virtues, of their countrymen. The indiſſoluble union of generoſity and valour was the darling theme of their ſong; and, when they pointed their keeneſt ſatire againſt a deſpicable race, they affirmed, in the bitterneſs of reproach, that the men knew not how to give, nor the women to deny. The ſame hoſpitality which was practiſed by Abraham and celebrated by Homer, is ſtill renewed in the camps of the Arabs. The ferocious Bedouins, the terror of the deſert, embrace, without inquiry or heſitation, the ſtranger who dares to confide in their honour and to enter their tent. His treatment is kind and reſpectful: he ſhares the wealth or the poverty of his hoſt; and, after a needful repoſe, he is diſmiſſed on his way, with thanks, with bleſſings, and perhaps with gifts.

"The religion of the Arabs, as well as of the Indians, conſiſted in the worſhip of the ſun, the moon, and the fixed ſtars; a primitive and ſpacious mode of ſuperſtition. The bright luminaries of the ſky diſplay the viſible image of a Deity: their number and diſtance convey to a philoſophic, or even a vulgar, eye, the idea of boundleſs ſpace: the the character of eternity is marked on theſe ſolid globes, that ſeem incapable of corruption or decay: the regularity of their motions may be aſcribed to a principle of reaſon or inſtinct; and their real or imaginary influence encourages the vain belief that the earth and its inhabitants are the object of their peculiar care. The ſcience of aſtronomy was cultivated at Babylon; but the ſchool of the Arabs was a clear firmament and a naked plain. In their nocturnal marches, they ſteered by the guidance of the ſtars: their names, and order, and daily ſtation, were familiar to the curioſity and devotion of the Bedouin; and he was taught by experience to divide in twenty-eight parts the zodiac of the moon, and to bleſs the conſtellations who refreſhed, with ſalutary rains, the thirſt of the deſert. The reign of the heavenly orbs could not be extended beyond the viſible ſphere; and ſome metaphyſical powers were neceſſary to ſuſtain the tranſmigration of ſouls and the reſurrection of bodies; a camel was left to periſh on the grave, that he might ſerve his maſter in another life: and the invocation of departed ſpirits implies that they were ſtill endowed with conſciouſneſs and power. Each tribe, each family, each independent warrior, created and changed the rites and the object of his fantaſtic worſhip; but the nation, in every age, has bowed to the religion, as well as to the language, of Mecca. The genuine antiquity of the Caaba extends beyond the Chriſtian æra: in deſcribing the coaſt of the Red Sea, the Greek hiſtorian Diodorus has remarked between the Thamaudites and the Sabæans, a famous temple, whoſe ſuperior ſanctity was revered by all the Arabians; the linen or ſilken veil, which is annually renewed by the Turkiſh emperor, was firſt offered by a pious king of the Homerites, who reigned 700 years before the time of Mahomet. A tent or cavern might ſuffice for the worſhip of the ſavages, but an edifice of ſtone and clay has been erected in its place; and the art and power of the monarchs of the eaſt have been confined to the ſimplicity of the original model. A ſpacious portico incloſes the quadrangle of the Caaba; a ſquare chapel, twenty-four cubits long, twenty-three broad, and twenty-ſeven high; a door and a window admit the light; the double roof is ſupported by three pillars of wood; a ſpout (now of gold) diſcharges the rain-water, and the well Zemzem is protected by a dome from accidental pollution. The tribe of Koreiſh, by fraud or force, had acquired the cuſtody of the Caaba; the ſacerdotal office devolved through four lineal deſcents to the grandfather of Mahomet; and the family of the Haſhemites, from whence he ſprung, was the moſt reſpectable and ſacred in the eyes of their country. The precincts of Mecca enjoyed the rights of ſanctuary; and, in the laſt month of each year, the city and the temple were crowded with a long train of pilgrims, who preſented their vows and offerings in the houſe of God. The ſame rites which are now accompliſhed by the faithful Muſſulman were invented and practiſed by the ſuperſtition of the idolaters. At an awful diſtance they caſt away their garments; ſeven times, with haſty ſteps, they encircled the Caaba, and kiſſed the black ſtone; ſeven times they viſited and adored the adjacent mountains; ſeven times they threw ſtones into the valley of Mina; and the pilgrimage was atchieved, as at the preſent hour, by a ſacrifice of ſheep and camels, and the burial of their hair and nails in the conſecrated ground. Each tribe either found or introduced in the Caaba their domeſtic worſhip; the temple was adorned, or defiled, with 360 idols of men, eagles, lions, and antelopes; and moſt conſpicuous was the ſtatue of Hebal, of red agate, holding in his hand ſeven arrows, without heads or feathers, the inſtruments and ſymbols of profane divination. But this ſtatue was a monument of Syrian arts; the devotion of the ruder ages was content with a pillar or tablet; and the rocks of the deſert were hewn into gods or altars, in imitation of the black ſtone of Mecca, which is deeply tainted with the reproach of an idolatrous origin. From Japan to Peru, the uſe of ſacrifice has univerſally prevailed; and the votary has expreſſed his gratitude or fear by deſtroying or conſuming, in honour of the gods, the deareſt and moſt precious of their gifts. The life of a man is the moſt precious oblation to deprecate a public calamity; the altars of Phœnicia and Egypt, of Rome and Carthage, have been polluted with human gore. Before the religion of Mahomet took place, the cruel practice of human ſacrifices was long preſerved among the Arabs. In the third century, a boy was annually ſacrificed by the tribe of the Dumatians; and a royal captive was piouſly ſlaughtered by the prince of the Saracens, the ally and ſoldier of the emperor Juſtinian. The father of Mahomet himſelf was devoted to be burnt on the altar, and hardly ranſomed for the equivalent of 100 camels. The Arabs, like the Jews and Egyptians, abſtained from the taſte of ſwine's fleſh; and they circumciſed their children at the age of puberty; the ſame cuſtoms, without the cenſure or the precept of the Koran, have been ſilently tranſmitted to their poſterity and proſelytes; and it has been ſagaciouſly conjectured, that the artful legiſlator indulged from neceſſity the ſtubborn prejudices of his countrymen.

"Arabia was free: from the adjacent kingdoms, which were ſhaken by the ſtorms of conqueſt and tyranny, the perſecuted ſects fled to the happy land where they might profeſs what they thought, and practiſe what they profeſſed; and the religion of the Sabians and Magians, of the Jews and Chriſtians, were diſſeminated from the Perſian Gulf to the Red Sea. In a remote period of antiquity, Sabianiſm was diffuſed over Aſia by the ſcience of the Chaldeans, and the arms of the Aſſyrians. From the obſervations of 2000 years, the prieſts and aſtronomers of Babylon deduced the eternal laws of nature and providence. They adored the ſeven gods or angels who directed the courſe of the ſeven planets, and ſhed their irreſiſtible influence on the earth. The attributes of the ſeven planets, with the twelve ſigns of the zodiac, and the twenty-four conſtellations of the northern and ſouthern hemiſphere, were repreſented by images and taliſmans; the ſeven days of the week were dedicated to their reſpective deities; the Sabians prayed thrice a-day; and the temple of the moon at Haran was the term of their pilgrimage. But the flexible genius of their faith was always ready either to teach or to learn. The altars of Babylon were overturned by the Magians; but the injuries of the Sabians were revenged by the ſword of Alexander; Perſia groaned above 500 years under a foreign yoke; and the pureſt diſciples of Zoroaſter eſcaped from the contagion of idolatry, and breathed with their adverſaries the freedom of the deſert. Seven hundred years before the death of Mahomet the Jews were ſettled in Arabia; and a far greater multitude was expelled from the holy land in the wars of Titus and Adrian. The induſtrious exiles aſpired to liberty and power; they erected ſynagogues in the cities, and caſtles in the wilderneſs; and their Gentile converts were confounded with the children of Iſrael, whom they reſembled in the outward mark of circumciſion. The Chriſtian miſſionaries were ſtill more active and ſucceſsful; the Catholics aſſerted their univerſal reign; the ſects whom they oppreſſed ſucceſſively retired beyond the limits of the Roman empire; the Marcionates and Manichæans diſperſed their fantaſtic opinions and apocryphal goſpels; the churches of Yaman, and the princes of Hira and Gaſſan, were inſtructed in a purer creed by the Jacobite and Neſtorian biſhops." Such was the ſtate of religion in Arabia previous to the appearance of Mahomet.

The moſt amiable feature in the religion which Mahomet

met eſtabliſhed are, profound adoration of one God, whoſe names, or rather titles, are amazingly diverſified in the Koran; (theſe are collected, to the amount of 999, and ſerve as a manual of devotion;) the daily offering-up of prayers to him, which conſiſt of ſhort ejaculations; ſtated faſts; and a conſtant diſtribution of a large portion of perſonal property to the relief of the indigent and diſtreſſed: nor is the charity which is enjoined confined to alms-giving, but comprehends, in its fulleſt extent, general humanity and acts of beneficence to all Muſſulmans. A general reſurrection of the dead is another article of belief reiterated in the Koran. Whatever ſuperſtitious practices adhere to it, cannot be imputed to prieſtcraft, for no religion that ever was promulgated to the world, the unadulterated religion of Jeſus Chriſt excepted, ſo entirely excluded the influence of the prieſthood; it may indeed be called emphatically "the laical religion;" ſince its founder had the addreſs to obtain the moſt enthuſiaſtic regard to his dogmas, without giving wealth or conſequence to thoſe who were appointed to illuſtrate and enforce them; indeed the Koran reproaches the Chriſtians for taking their prieſts and monks for their lords beſides God. The pilgrimage to Mecca, praying toward that place, and the ablutions which are enjoined on the moſt ordinary acts and occaſions, together with the adoption of that religious ſophiſm, predeſtination, in its moſt extravagant extent, ſeem to comprehend the ſuperſtitious parts of this religion; but it has other characteriſtics which betray its ſpurious origin, and prove its deſtructive tendency.

To compenſate for the rigid faſtings which it enjoins, and the diſuſe of wine which it requires, a moſt licentious indulgence is allowed in the uſe of women; and though they may not, as has been imputed to them, deny to that ſex a future ſtate of exiſtence, yet as they conſider women merely as inſtruments of gratification, all thoſe amiable qualities, which the ſex is capable of diſplaying when its faculties are properly dilated by a judicious and liberal courſe of education, are ſuppreſſed as ſoon as formed. Another foul taint in this religion is, the abhorrence which it creates againſt all thoſe who do not embrace the ſame doctrines, and the direct tendency of that faith to conſign the human mind to a ſtate of arrogant and incurable ignorance, by conſidering the Koran as compriſing every thing worthy of being known. The Arabs, from the genial influence of their climate, as well as from habits tranſmitted through ſo many generations as to be formed into innate principles, were libidinous beyond moſt of their ſpecies, and no individual among them felt that propenſity ſtronger than their prophet; neither policy nor inclination therefore prompted him to bring his diſciples under ſevere reſtraints with reſpect to women; he ought not, however, to be denied the praiſe which is due to having in ſome meaſure tempered the luſtful fierceneſs of his countrymen, and he may be ſaid to have effected ſome reformation, when he reſtrained his followers even to four wives, when he forbade inceſtuous alliances, entitled a repudiated wife to a dower from her huſband, made adultery a capital offence, and rendered fornication puniſhable by law.

Beſides the Koran, which is the written law to the Mahometans alike as to the belief and practice of religion, and the adminiſtration of public juſtice, there is the Sunnah, or oral law, which was ſelected, two hundred years after the death of Mahomet, from a vaſt number of precepts and injunctions which had been handed down from age to age, as bearing the ſtamp of his authority. In this work the rite of circumciſion is enjoined, concerning which the Koran was ſilent, nor was it neceſſary to be there commanded, as the Arabians adhered to it before this eſtabliſhment. By the expreſs command of their founder, the Mahometans ſet apart Friday in each week for the eſpecial worſhip of God. They are ever aſſiduous to make converts to their faith, nor can they reject the moſt abject or profligate wretch, who declares his deſire of becoming a true believer, even although they know him to be ignorant alike of their language and the principles of their religion.

The ſubject of this very remarkable religion muſt not be quitted without obſerving, that the Romaniſts, in explaining the book of Revelation, inſiſt that the religion of Mahomet is pointed out by the predicted antichriſt; and they have, with much ingenuity, explained that myſtical number 666, which has been ſo variouſly unravelled, and is expreſsly ſaid to be the number of a man, or the number of the name of a man, to apply to the name of Mahomet; which, when expreſſed in the Greek, in which language the Apocalypſe was written, is ΜΑΟΜΕΤΙΣ, or ΜΟΑΜΕΤΙΣ, as Euthymius and the Greek hiſtorians Zonares and Cedrenus write it. The letters which compoſe this word, according to the Greek numeration, are thus:

Μ	40
Ο	70
Α	1
Μ	40
Ε	5
Τ	300
Ι	10
Σ	200
	666

which muſt be confeſſed to be a remarkable coincidence. *Bellarmine*, *Paſtorini's (Bp. Walmeſley's) Hiſtory of the Chriſtian Church*, p. 366.

As the Arabs are one of the moſt ancient nations in the world, having inhabited the country they at preſent poſſeſs almoſt from the deluge, without intermixing with other nations, or being ſubjugated by any foreign power, their language muſt have been formed ſoon after, if not at, the confuſion of Babel. The two principal dialects of it were, that ſpoken by the Hamyarites and other genuine Arabs, and that of the Koreiſh, in which Mahomet wrote the Koran. The firſt is ſtyled by the Oriental writers the *Arabic of Hamyar*, and the other the *pure* or *defecated*. As Yarab, grandfather of Hamyar, is ſuppoſed by the Oriental writers to have been the firſt whoſe tongue deviated from the Syriac to the Arabic, the Hamyaritic dialect according to them muſt have approached nearer to the purity of the Syriac; and conſequently have been more remote from the true genius of the Arabic than that of any other tribe. The dialect of the Koreiſh, termed by the Koran the *perſpicuous and clear Arabic*, is referred to Iſhmael as its author; who, ſay the above-mentioned writers, firſt ſpoke it; and, as Dr. Pocock believes, after he had contracted an alliance with the family of Jorham by marriage, formed it of their language and the original Hebrew. As, therefore, the Hamyaritic dialect partook principally of the Syriac, ſo that of the Koreiſh was ſuppoſed to conſiſt chiefly of the Hebrew. But, according to Jallalod'din, the politeneſs and elegance of the dialect of the Koreiſh ought rather to be attributed to their having, from the remoteſt antiquity, the cuſtody of the Caaba, and dwelling in Mecca, the centre of Arabia. Notwithſtanding this, the Arabs believe the greateſt part of their original language to be loſt; which will not ſeem improbable, when we conſider how late the art of writing became generally practiſed among them. For though it was known to Job their countryman, to the Edomites, as well as the other Arabian nations bordering upon Egypt and Phœnicia, and to the Hamyarites many centuries before Mahomet, as appears from ſome ancient monuments ſaid to be remaining in their character; yet the other Arabs, and thoſe of Mecca in particular, unleſs ſuch of them as were either Jews or Chriſtians, were to the time of Moramer perfectly ignorant of it. The ancient Arabic was undoubtedly derived from the Hebrew, and may be termed its ſiſter dialect. This is now the learned language of the Mahometans, who ſtudy it as the European Chriſtians do the Greek and Latin. See LANGUAGE.

The revival of learning in the tenth century, by Silveſter II. and afterwards among the Europeans in general, may be aſcribed to the inſtructions and writings of the Arabian doctors and philoſophers, and to the ſchools which they founded in ſeveral parts of Spain and Italy. The philoſophy of the Arabians, before Mahomet, was Sabian, and included the ſyſtem and ceremonies of that ſect of idolaters. Their phyſic ſucceeded the Grecian; and their phyſicians handed down the art to us, having made conſiderable improvements, chiefly in the pharmaceutical and chymical parts. It is certain we owe to them moſt of our ſpices and aromatics, as nutmegs, cloves, mace, and other articles of the produce of India. Moſt of the gentler purgatives were unknown to the Greeks, and firſt introduced by the Arabs, as manna, ſenna, rhubarb, tamarinds, caſſia, &c. They likewiſe brought ſugar into uſe in phyſic, where, before, only honey was uſed. They alſo found the art of preparing waters and oils, of divers ſimples, by diſtillation and ſublimation. The firſt notice of the ſmall-pox and the meaſles is likewiſe owing to them. Laſtly, the reſtoration of phyſic in Europe took its riſe from their writings. M. le Clerc has given a ſketch, and Dr. Freind an ample hiſtory, of the Arabian phyſic. We have alſo a *notitia* of all the Arabian phyſicians by Fabricius.

That the Arabs had ſome knowledge in the mechanical arts, appears from Strabo, who informs us, that the people of Tamna and the adjacent provinces had magnificent temples, and elegant houſes, built in the Egyptian taſte. The ſame author likewiſe relates, that, in Arabia Felix, beſides the huſbandmen, there were many artificers. The principal arms uſed by the Arabs were bows and arrows, darts or javelins, and broad ſwords or ſcymitars. The bows and arrows were the moſt ancient weapons; being uſed by Iſhmael himſelf, according to Scripture. It is probable alſo, that ſome of them were acquainted with every branch of the military art cultivated by their neighbours the Egyptians, Syrians, and Phœnicians.

According to the modern geography of Arabia, it is 1430 miles in length, and 1200 in breadth; ſituated between 35 and 60 degrees eaſt longitude, and between 12 and 30 degrees north latitude; and contains ſeven hundred thouſand ſquare miles. The chief towns of Arabia are Suez, Mecca, Siden, Medina, Dhafar, Mocha, Sibit, Hadramut, Caſſeen, Segur, Muſcat, Jamama, and Elcalf. The moſt remarkable mountains are thoſe of Sinai and Horeb, in Arabia Petræa, to the eaſt of the Red Sea; and that of Arafat, or *Gibel el Orphat*, in Arabia Felix. There are few fountains, ſprings, or rivers, in this country, except the Euphrates, which waſhes the north-eaſt limits of Arabia Deſerta. It is almoſt ſurrounded with ſeas; as the Indian Ocean, the Red Sea, the gulfs of Perſia and Ormus. The chief capes or promontories are thoſe of Roſalgate and Muſledon.

As a conſiderable part of this country lies under the Torrid Zone, and the Tropic of Cancer paſſes over Arabia Felix, the air is exceſſively dry and hot, and the country is ſubject to ſcorching winds, like thoſe on the oppoſite ſhores of Perſia, which often prove fatal, eſpecially to ſtrangers. The ſoil, in ſome parts, is nothing more than immenſe ſands, which, when agitated by the winds, roll like the troubled ocean, and ſometimes form mountains by which whole caravans have been buried or loſt. In theſe deſerts, the caravans, having no tracks, are guided, as at ſea, by a compaſs, or by the ſtars, for they travel chiefly in the night. Here, ſays Dr. Shaw, are no paſtures clothed with flocks, nor vallies ſtanding thick with corn; here are no vineyards or olive-yards; but the whole is a loneſome deſolate wilderneſs, no otherways diverſified than by plains covered with ſand, and mountains that are made up of naked rocks and precipices. Neither is this country ever, unleſs ſometimes at the equinoxes, refreſhed with rain; and the intenſeneſs of the cold in the night is almoſt equal to that of the heat in the day-time. But the ſouthern part of Arabia, deſervedly called *the Happy*, is bleſſed with an excellent ſoil, and, in general, is very fertile. There the cultivated lands, which are chiefly about the towns near the ſea-coaſt, produce balm of Gilead, manna, myrrh, caſſia, aloes, frankincenſe, ſpikenard, and other valuable gums; cinnamon, pepper, cardamum, oranges, lemons, pomegranates, figs, and other fruits; honey and wax in plenty, with a ſmall quantity of corn and wine. This country is famous for its coffee and its dates, which laſt are found ſcarcely any where in ſuch perfection as here and in Perſia. There are few trees fit for timber in Arabia, and little wood of any kind. Their moſt uſeful animals are camels and dromedaries; theſe are amazingly fitted by Providence for traverſing the dry and parched deſerts of this country; for they are ſo formed, that they can throw up the liquor from their ſtomach into their throat, by which means they can travel ſix or eight days without water. The camels uſually carry 800lb. weight upon their backs, which is not taken off during the whole journey, for they naturally kneel down to reſt, and in due time riſe with their load. It is an obſervation among the Arabs, that, wherever there are trees, the water is not far off; and, when they draw near a pool, their camels will ſmell it at a diſtance, and ſet up their great trot till they come to it. The Arabian horſes are well known in Europe, and have contributed to improve the breed of the Engliſh.

The Arabians, like moſt of the nations of Aſia, are of a middle ſtature, thin, and of a ſwarthy complexion, with black hair and black eyes. They are ſwift of foot, excellent horſemen, and are certainly a brave people, expert at the bow and lance, and, ſince they became acquainted with fire-arms, good markſmen. The inhabitants of the inland country are "*wild men*," and live in tents, and remove from place to place with their flocks and herds, as they have ever done ſince the days of their founder Iſhmael. But they are ſuch thieves, that travellers and pilgrims, who are led thither from all nations through devotion or curioſity, are ſtruck with terror on their approaches towards the deſerts. Thoſe robbers, headed by a chief, traverſe the country in conſiderable troops on horſeback, and aſſault and plunder the caravans; and we are told, that ſo late as the year 1750, a body of 50,000 Arabians attacked a caravan of merchants and pilgrims returning from Mecca, killed about 60,000 perſons, and plundered it of every thing valuable, though defended by a Turkiſh army. On the ſea-coaſt they are mere pirates, and make prize of every veſſel they can maſter, of whatever nation. Thus they evidently fulfil what was foretold of the deſcendants of Iſhmael, "that they ſhould be invincible, and have their hand againſt every man, and every man's hand againſt their's." The habit of the roving Arabs is a kind of blue ſhirt, tied about them with a white ſaſh or girdle; and ſome of them have a veſt of fur or ſheep-ſkin over it; they alſo wear drawers, and ſometimes ſlippers, but no ſtockings; and have a cap or turban on their head. Many of them go almoſt naked; but, as in the eaſtern countries, their women are ſo wrapped up, that nothing can be diſcerned but their eyes. Like other Mahometans, the Arabs eat all manner of fleſh, except that of hogs; and prefer the fleſh of camels, as we prefer veniſon, to other meat. They take care to drain the blood from the fleſh, as the Jews do, and like them refuſe ſuch fiſh as have no ſcales. Coffee and tea, water, and ſherbet made of oranges, water, and ſugar, is their uſual drink; for they have no ſtrong liquors.

What is called the Deſert of Sinai, is a beautiful plain near nine miles long, and above three in breadth; it lies open to the north-eaſt, but to the ſouthward is cloſed by ſome of the lower eminences of Mount Sinai; and other parts of that mountain make ſuch encroachments upon the plain as to divide it in two, each ſo capacious as to be ſufficient to receive the whole camp of the Iſraelites. From Mount Sinai may be ſeen Mount Horeb, where Moſes kept the flocks of Jethro, his father-in-law, when he ſaw the burning buſh. On thoſe mountains are many chapels and cells, poſſeſſed by the Greek and Latin monks, who, like the religious of Jeruſalem, pretend to ſhew the very ſpot where every miracle or tranſaction recorded in ſcripture happened.

Mocha, the capital of Arabia Felix, is well built, the houſes very lofty, and forts covered with a chinam or ſtucco, that give a dazzling whiteneſs to them. The harbour is ſemicircular, the circuit of the wall is two miles, and there are ſeveral handſome moſques in the city. Suez, the Arſinoe of the ancients, is ſurrounded by the deſert, and is but an ill-built place. The ſhips are forced to anchor a league from the town, to which the leading channel has only about nine feet water. Juddah, or Jodda, is the place of the greateſt trade in the Red Sea, for there the commerce between Arabia and Europe meets and is interchanged, the former ſending her gums, drugs, coffee, &c. and from Europe come cloths, iron, furs, and other articles, by the way of Cairo. The revenues of theſe, with the profits of the port, are ſhared by the grand ſignior and the xeriff of Mecca, to whom the place jointly belongs.

Mecca, the capital of Arabia Deſerta, and the metropolis of all Arabia, deſerves particular notice; as does likewiſe the city of Medina. At Mecca, the birth-place of Mahomet, is a moſque truly magnificent: its lofty roof being raiſed in faſhion of a dome, and covered with gold, with two beautiful towers at the end, of extraordinary height and architecture, make a delightful appearance, and are conſpicuous at a great diſtance. The moſque hath a hundred gates, with a window over each; and the whole building within is decorated with the fineſt gildings and tapeſtry. The number of pilgrims who yearly viſit this place is almoſt incredible, every muſſulman being obliged by his religion to come hither once in his life-time, or ſend a deputy. At Medina, about fifty miles from the Red Sea, the city where Mahomet was buried, is a ſtately moſque, ſupported by 400 pillars, and furniſhed with 300 ſilver lamps, which are continually burning. It is called the *Moſt Holy*, becauſe in it is placed the coffin of Mahomet, covered with cloth of gold, under a canopy of ſilver tiſſue, which the baſhaw of Egypt, by order of the grand ſignior, renews every year. The camel which carries it derives a ſort of ſanctity from this office, and is never to be uſed in any drudgery afterwards. Over the foot of the coffin is a rich golden creſcent, ſo curiouſly wrought, and adorned with precious ſtones, that it is eſteemed a maſter-piece of great value. Thither the pilgrims reſort, as to Mecca, but not in ſuch numbers.

The inland country of Arabia is now under the government of many petty princes, who are ſtyled xeriffs and imans, both of them including the offices of king and prieſt. Theſe monarchs appear to be abſolute, both in ſpirituals and temporals; the ſucceſſion is hereditary, and they have no other laws than thoſe found in the Koran, and the comments upon it. The northern Arabs are governed by baſhaws, ſent from Conſtantinople; but it is certain they receive large gratuities from the grand ſignior for protecting the pilgrims that paſs through their country from the robberies of their countrymen. The Arabians have no ſtanding regular army, but their kings command both the perſons and the purſes of their ſubjects, as the neceſſity of affairs requires.

ARA'BIAN HE'RESY, *ſ.* The belief that the ſoul died or ſlept till the day of judgment, and then had its reſurrection without the body.

ARABIAN HORSES. See HORSE.

ARA'BICI, a ſect who ſprung up in Arabia, about the year 207, whoſe diſtinguiſhing tenet was, that the ſoul died with the body, and alſo roſe again with it. Euſebius, lib. vi. c. 38. relates, that a council was called to ſtop the progreſs of this riſing ſect, and that Origen aſſiſted at it; and convinced them ſo thoroughly of their error, that they abjured it.

A'RABIS, *ſ.* [from *Arabia.*] In botany, a genus of the tetradynamia ſiliquoſa claſs, in the natural order of ſiliquoſæ, or cruciformes. The generic characters are—Calyx: perianthium four-leaved, deciduous; leaflets from parallel-converging; two oppoſite larger, ovate-oblong, acute, a little prominent at the baſe, gibboſe, concave; the two others linear, erect. Corolla: four-petalled, cruciform; petals ſpreading, ending in claws the length of the calyx; nectaries four, each from a little ſcale, within the bottom of the calycine leaflet, affixed to the receptacle, reflex, permanent. Stamina: filaments ſubulate, upright, two the length of the calyx, four twice as long; antheræ cordate, erect. Piſtillum: germ columnar, the length of the ſtamens; ſtyle none; ſtigma obtuſe, entire. Pericarpium: ſilique compreſſed, very long, linear, unequal, with ſwellings at the ſeeds; valves almoſt the length of the partition. Seeds: very many, roundiſh, compreſſed. —*Eſſential Character.* Nectareous glands four, one within each leaflet of the calyx, like a reflex ſcale.

Species. 1. Arabis alpina, or alpine wall-creſs: leaves ſtem-claſping, toothed. This is a perennial plant, increaſing very faſt by its creeping roots, which run obliquely near the ſurface, and ſend out fibres at every joint. The root-leaves are collected into heads, ſpreading circularly; they are oblong, whitiſh, and indented on their edges. From the middle of theſe heads ariſe the flowering ſtems, which grow near a foot high; with leaves on them placed alternately, broader at their baſe than thoſe which grow below, and cloſely embracing the ſtem. The flowers grow in looſe bunches towards the top; the petals are white, obtuſe, and entire; the calyx is yellowiſh, ſhorter by one-third than the corolla. This plant, in its wild ſtate, the more open and airy its ſituation, the higher it grows, the more it branches, and the more hairy it becomes; in the ſhade it is almoſt ſmooth, quite creeping, with a ſingle ſtem, the whole plant very pale, and drawn up. Native of the Alps, and other mountains of Europe, on rocks, in caverns, and in woods. It was cultivated in the botanic garden at Oxford, in 1658, and is now become very common in gardens; being increaſed with great facility, and eſteemed for its very early flowering, and the pretty appearance in then makes in cold abject ſituations, where few other things will thrive. It grows likewiſe on mount Saleve, in Savoy; flowering in April.

2. Arabis lucida, or ſhining wall-creſs: leaves ſtem-claſping, ſhining. A perennial plant; native of Hungary.

3. Arabis grandiflora, or great-flowered wall-creſs: ſtem naked. This is a perennial, and native of Siberia.

4. Arabis thaliana, or common wall-creſs: leaves petiolate, lanceolate, quite entire. This is an annual plant, varying much in ſize, from two inches to a foot and more. It grows frequently among the corn on ſandy ground, and alſo on walls; flowers in March and April, and ripens its ſeed in May.

5. Arabis bellidifolia, or daiſy-leaved wall-creſs: leaves ſubdentate, the radical ones obovate, thoſe of the ſtem lanceolate. Root perennial, producing ſeveral ſtems and tufts of leaves, which are dark-green, thickiſh, ſhining, ſometimes quite ſmooth, ſometimes rough, with dots ending in a ſhort hair. Native of the foot of the Alps in Switzerland and Auſtria, in moiſt places. It flowers in May and June. Jacquin deſcribes a ſmaller alpine, variety of this, under the name of *Arabis pumila.*

6. Arabis lyrata, or lyrate-leaved wall-creſs: leaves ſmooth, the radical lyrate, the ſtem-leaves linear. Root annual. The flower-ſtalks riſe near a foot high, and are terminated by white flowers. Linnæus obſerves, that this is of the ſize and habit of the fourth ſpecies, except that the root-leaves are lyrate and ſmooth, and the flowers larger. Native of North America.

7. Arabis hiſpida, or rough wall-creſs: leaves wedge-ſhaped, ſub-lyrate, hiſpid; the ſtem-leaves half-ſtem-claſping, lanceolate; ſiliques ſtiff, ancipital. This reſembles the fourth and ſixth ſpecies, but the flowers are leſs, and the root perennial. Native of the ſouth of France, Switzerland, and Auſtria; obſerved on mount Saleve, in Savoy, near Geneva, by Ray; and on St. Vincent's rocks, near Briſtol, by Hudſon, and others; flowering in May.

8. Arabis Halleri, or Haller's wall-creſs: ſtem-leaves ſub-lyrate, thoſe on the branches lanceolate, gaſhed. Native of Germany, Carniola, and Piedmont.

9. Arabis Canadenſis, or Canadian wall-creſs: ſtem-leaves lanceolate, toothed, ſmooth; flowers pendulous. Native of North America.

10. Arabis pendula, or pendulous wall-creſs: leaves ſtem-claſping; ſiliques ancipital, linear; calyxes ſub-piloſe. Native of Siberia. Cultivated in 1759 by Mr. Miller.

11. Arabis turrita, or tower wall-creſs: leaves ſtem-claſping; ſiliques bending down, flat, linear; calyxes ſubrugoſe. Root woody; marked annual by Hudſon and Withering, but in reality biennial, as Relhan has marked it. It grows on ſhady rocks, and begins to flower in April; with us in May and June. Native of Auſtria, Switzerland, Dauphiné, &c. Obſerved by profeſſor John Martyn, before the year 1732, on a wall at Lewiſham, in Kent; and on the walls of Trinity and St. John's colleges in Cambridge; on the latter of theſe it ſtill grows abundantly. Alſo on Magdalen-college walls at Oxford.

12. Arabis ſaxatilis: ſtem erect, leaves ſtem-claſping lanceolate toothed, ſiliques the length of the raceme. Root annual, round, with very few fibres. Native of the ſouth of Europe, on rocks.

13. Arabis ſcabra: root-leaves roundiſh, ſcabrous, toothed, ſtem-leaves embracing hirſute. This has many things in common with the fifth ſort. Native of the ſouth of Europe.

14. Arabis ſerpyllifolia: all the leaves elliptic, quite entire; ſtem flexuoſe. Biennial. Native of Dauphiné.

15. Arabis recta: ſtem ſtraight, leaves rectangularly toothed and ſeſſile, ſiliques from erect ſpreading. This ſort approaches near to the foregoing, and to the firſt ſpecies, but the ſtem is conſtantly ſtraight. It is annual or biennial; and grows on walls and rocks about Grenoble.

Propagation and Culture. Theſe are all hardy plants, and will thrive in any ſituation. They produce ſeeds in plenty, and may eaſily be propagated by them, either ſown in the autumn, or permitted to ſcatter on the ground. The firſt ſort is moſt known in the gardens, and, multiplying faſt by its creeping roots, few perſons are at the trouble of ſowing the ſeeds. It flowers early, and having many ſtrong ſtems from one root, it makes a pretty variety in cold ſituations, where many finer plants will not thrive; and may have place in plantations of ſhrubs, where it will grow with little care. See Cardamine.

A'RABISM, or Arabis'mus, *ſ.* An idiom or manner of ſpeaking peculiar to the Arabs, or the Arabic language.

A'RABIST, *ſ.* A perſon curious of, and ſkilled in, the learning and languages of the Arabians; ſuch were Erpenius and Golius. The ſurgeons of the 13th century are called *Arabiſts* by Severinus.

A'RABLE, *adj.* [from *aro*, Lat. to plough.] Fit for the plough; fit for tillage; productive of corn.—Having but very little *arable* land, they are forced to fetch all their corn from foreign countries. *Addiſon.*

A'RACA-PU'DA, *ſ.* in botany. See Drosera.

ARACAN', the capital of a ſmall kingdom to the N. E. of the bay of Bengal, in Aſia, ſituated in Lat. 20. 30. N. lon. 93. 0. E. It has the conveniency of a ſpacious river, and a harbour large enough to hold all the ſhips in Europe. It is ſaid by Schouten to be as large as Amſterdam; but the houſes are ſlight, being made with palm-trees and bamboo-canes, and covered with leaves of trees; but the people of higher rank are much better accommodated. They have no kitchens, chimneys, or cellars, which obliges the women to dreſs the victuals out of doors. Some of the ſtreets are on the ridges of rocks, wherein are hewn a great many ſhops. Their orchards and gardens contain all the fruits common to the Indies, and their trees are green all the year. They have only two ſeaſons, the rainy and the fair; the rainy ſeaſon is, while the ſun is on the north ſide of the line, or during our ſpring and ſummer months; the reſt of the year is their ſummer. Their common drink is toddy; which is the ſap of the cocoa-tree, and, when new, will intoxicate like wine, but ſoon grows ſour. Elephants and buffaloes are very numerous here, and are made uſe of inſtead of horſes. The Mogul's ſubjects come here to purchaſe lead, tin, and ſtick-lac; and ſometimes diamonds, rubies, and other precious ſtones. They were formerly governed by a king of their own, called the king of the *White Elephant*; but this country has been ſince conquered by the king of Pegu. They pay little or no regard to the chaſtity of their women, and the common ſailors take great liberties among them. Their religion is Paganiſm; and the idols, temples, and prieſts, are very numerous. In the king's palace, it is ſaid, are ſeven idols, caſt in gold, of two inches thick, each of a man's height, and covered over with diamonds and precious ſtones; and in his ſtables he has horſes, elephants, lions, tigers, &c. The dreſs of the natives is very ſlight, for it conſiſts chiefly of a piece of thin white gauze over their arms, breaſt, and belly, with a ſmall apron tied before. They curl their hair, and put glaſs rings in their ears, and ſtretch them to a monſtrous length. On their arms and legs they have hoops of copper, ivory, ſilver, &c. Captain Hamilton affirms, that there are but few places inhabited in this country, on account of the great number of wild elephants and buffaloes, which deſtroy the fruits of the ground; and that the tigers deſtroy the tame animals. The rich burn the dead bodies; but the poor, who are not able to buy wood, throw them into the river, to prevent their being devoured by the wild beaſts.

A'RACH, *ſ.* in botany. See Atriplex.

ARACHID'NA, or Arachidnoi'des, *ſ.* in botany. See Arachis, Glycine, and Lathyrus.

A'RACHIS, *ſ.* [*αρα, damnum vel noxa.*] In botany, a genus of the diadelphia decandria claſs, ranking in the natural order of papilionaceæ or leguminoſæ. The generic characters are—Calyx: perianthium two-parted, gaping; upper-lip ovate, ſemitrifid; the intermediate diviſion rather larger, emarginate; under-lip lanceolate, concave, acute, rather longer. Corolla: papilionaceous, reſupine; banner roundiſh, flat-deflex, very large, emarginate, longer than the calyx; wings free, ſubovate, ſhorter than the banner; keel ſubulate, incurved, the length of the calyx, very ſlightly bifid at the baſe. Stamina: filaments ten, all united at bottom, ſubulate, the length of the keel; antheræ alternately roundiſh and oblong. Piſtillum: germ oblong; ſtyle ſubulate, the length of the germ, aſcending; ſtigma ſimple. Pericarpium: legume ovate-oblong, columnar, valveleſs, gibbous, toruloſe, veined, coriaceous, one-celled. Seeds: two, oblong, obtuſe, gibbous, truncate at one end.—*Eſſential Character.* Calyx bilabiate; corolla reſupine; filaments connected; legume gibbous, toruloſe, veined, coriaceous.

Species. 1. Arachis hypogæa, or common earth or ground nut: ſtem herbaceous, procumbent. Native of the Eaſt Indies, and cultivated very abundantly in China and Cochinchina. All the European ſettlements in America now abound with the ground-nut, but it is generally ſuppoſed that it was originally brought by the ſlaves from Africa. In South Carolina there is great plenty of this plant; the inhabitants roaſt the nuts, as they are commonly called, and make uſe of them as chocolate. In the eaſtern countries they are a ſubſtitute for almonds. They abound in a thin limpid oil proper for lamps, and it is much uſed for this purpoſe in Cochinchina; it ſupplies the place alſo there of oil of olives for the uſe of the table, but is inferior to it in flavour. The ground-nut was cultivated in the Chelſea garden ſo long ſince as 1712.

2. Arachis fruticoſa, or ſhrubby earth or ground nut: ſtem ſhrubby, upright. The whole plant is viſcid; leaves like thoſe of myrtle, of different ſizes; at the ends of the branches are the flowers, collected into ſolitary heads with bractes under them; they are of a yellow colour. Native of the Eaſt Indies, Tranquebar, and the iſland of Ceylon.

Propagation and Culture. The ground-nut multiplies very faſt in hot countries. In England the ſeeds muſt be ſown on a hot-bed in the ſpring, and the glaſſes muſt be kept over the plants till the middle or end of June; after which, if the weather prove warm, they may be expoſed to the open air by degrees. The branches trail upon the ground, and, as ſoon as the flower begins to decay, the germ thruſts itſelf under ground, and there the pod is formed and ripened. See Glycine.

ARACH'NE, in fabulous hiſtory, a young maid of Lydia, ſaid to have been the inventreſs of ſpinning. She is fabled to have been ſo ſkilful in this art, as to challenge Minerva at it; who tore her work, and ſtruck her; which diſgrace driving her to deſpair, ſhe hanged herſelf. Minerva, from compaſſion, brought her to life, and transformed her into a ſpider, which ſtill employs itſelf in ſpinning.

ARACHNOI'DES, *ſ.* [from αραχνη, a ſpider, and ειδος, form.] One of the tunics of the eye, ſo called from its reſemblance to a cobweb.—As to the tunics of the eye, many things might be taken notice of; the prodigious fineneſs of the *arachnoides*, the acute ſenſe of the retina. *Derham.*—It is alſo a fine thin tranſparent membrane, which, lying between the dura and the pia mater, is ſuppoſed to inveſt the whole ſubſtance of the brain. *Chambers.*

A'RACHUS, *ſ.* in botany. See ERVUM.

ARACK', AR'RACK, or RACK, *ſ.* a ſpirituous liquor imported from the Eaſt Indies, uſed by way of dram, and in punch. The word *arack*, according to Mr. Lockyer, is an Indian name for ſtrong waters of all kinds; for they call our ſpirits and brandy *Engliſh arack*. But what we underſtand by the name *arack*, he affirms is no other than a ſpirit procured by diſtillation from a vegetable juice called *toddy*, which flows by inciſion out of the cocoa-nut tree, like the birch-juice procured among us. The toddy is a pleaſant drink by itſelf, when new, and purges thoſe who are not uſed to it: and, when ſtale, makes good vinegar. The Engliſh at Madras uſe it as leaven to raiſe their bread. Others are of opinion, that the arack, or arrack, is a vinous ſpirit obtained by diſtillation, in the Eaſt Indies, from rice or ſugar, fermented with the juice of cocoanuts. The Goa arack is ſaid to be made from the toddy, the Batavia arack from rice and ſugar; and there is likewiſe a kind of ſhrub from which arack is made.

Goa and Batavia are the chief places for arack. At Goa there are divers kinds; ſingle, double, and treble, diſtilled. The double diſtilled, which is that commonly ſent abroad, is but a weak ſpirit in compariſon with Batavia arack; yet, on account of its peculiar and agreeable flavour, is preferred to all the other aracks of India. This flavour is attributed to the earthen veſſels which they uſe at Goa to draw the ſpirit; whereas at Batavia they uſe copper ſtills.

The Parier arack made at Madras, and the Columbo and Quilone arack at other places, being fiery hot ſpirits, are little valued by the Europeans, and therefore rarely imported, though highly prized among the natives. In the beſt Goa arack, the ſpirits of the cocoa-juice do not make above a ſixth or eighth part.

The manner of making the Goa arack is this: the juice of the trees is not procured in the way of tapping, as we do; but the operator provides himſelf with a parcel of earthen pots, with bellies and necks like our ordinary bird-bottles. With theſe he climbs up the cocoa-tree; and, when he comes to the boughs, he takes out his knife, and, cutting off one of the ſmall knots or buttons, he applies the mouth of the bottle to the wound, faſtening it to the bough with a bandage; in the ſame manner he cuts off other buttons, and faſtens on his pots, till the whole number is uſed: this is done in the evening, and, deſcending from the tree, he leaves them till the next morning; when he takes off the bottles, which are moſtly filled, and empties the juice into the proper receptacle. This is repeated every night, till a ſufficient quantity is produced; and the whole, being then put together, is left to ferment, which it ſoon does. When the fermentation is over, and the liquor or waſh is become a little tart, it is put into the ſtill, and, a fire being made, the ſtill is ſuffered to work as long as that which comes over has any conſiderable taſte of ſpirit. The liquor thus procured is the low wine of arack; and this is ſo poor a liquor, that it will ſoon corrupt and ſpoil, if not diſtilled again, to ſeparate ſome of its phlegm; they therefore immediately after pour back this low wine into the ſtill, and rectify it to that very weak kind of proof-ſpirit, in which ſtate we find it. The arack we meet with, notwithſtanding its being of a proof-teſt, according to the way of judging by the crown of bubbles, holds but a ſixth, and ſometimes but an eighth, part of alcohol, or pure ſpirit; whereas our other ſpirits, when they ſhew that proof, are generally ſuppoſed to hold one-half pure ſpirit. *Shaw's Eſſay on Diſtilling.*

There is a paper of obſervations on arack, in the *Melanges d'Hiſtoire Natur.* tome v. p. 302. By fermenting, diſtilling, and rectifying, the juice of the American maple, which has much the ſame taſte as that of the cocoa, the author ſays, he made arack not in the leaſt inferior to any that comes from the Eaſt Indies; and he thinks the juice of the ſycamore and of the birch trees would equally anſwer the end.

By ſtat. 11 Geo. I. c. 30. arack on-board a ſhip within the limits of any port of Great Britain, may be ſearched for and ſeized, together with the package; or if found unſhipping or unſhipped, before entry, may be ſeized by the officers of exciſe, in like manner as by the officers of the cuſtoms. Upon an exciſe officer's ſuſpicion of the concealment of arack, and oath made of the grounds of ſuch ſuſpicion before the commiſſioners or a juſtice of peace, they may empower him to enter ſuch ſuſpected places, and ſeize the liquors, with the caſks, &c. If the officers are obſtructed, the penalty is 100l. Arack is not to be ſold but in warehouſes, entered as directed in the 5th of Geo. I. c. 21. upon forfeiture, and the caſks, &c. If permits are not returned which are granted for the removal of arack, or if the goods are not ſent away within the time limited, the penalty is treble the value. If the permits are not returned, and the decreaſe is not found to be ſufficient, the like quantity is forfeited. Permits are not to be taken out but by direction in writing of the proprietor of the ſtock, or his known ſervant, upon forfeiture of 50l. or three months impriſonment.

By ſtat. 9 Geo. II. c. 35. if arack is offered to ſale without a permit, or by any hawker, pedlar, &c. with a permit, the perſon to whom it is offered may ſeize and carry it to the next warehouſe belonging to the cuſtoms or exciſe, and bring the perſon offering the ſame before any juſtice of the peace, to be committed to priſon, and proſecuted for the penalties incurred by ſuch offence. The perſon ſeizing ſuch goods may proſecute in his own name; and on recovery is intitled to one-third part of the groſs produce of the ſale; and the commiſſioners are, if deſired, upon a certificate from the juſtice of the offender's being committed to priſon, to advance to the ſeizer 15s. per gallon for the arack ſo ſeized. Arack (except for the uſe of ſeamen, two gallons each), found in any ſhip or veſſel arrived from foreign parts, at anchor, or hovering within the limits of any port, or within two leagues of the ſhore; and not proceeding on her voyage (unleſs in caſe of unavoidable neceſſity and diſtreſs of weather, notice whereof muſt be given to the collector or chief officer of the port upon the ſhip's arrival), is forfeited, with the boxes, caſks, or other package, or the value thereof.

ARACK is alſo the name of a ſpirituous liquor made by the Tartars of Tunguſia, of mare's milk, left to ſour, and afterwards diſtilled twice or thrice between two earthen pots cloſely ſtopped, whence the liquor runs through a ſmall wooden pipe. It is more intoxicating than brandy.

A'RACUS, *ſ.* in botany. See OROBUS.

A'RAD, a city anciently lying to the ſouth of Judah and the land of Canaan, in Arabia Petræa. The Iſraelites having advanced towards the land of Canaan, Numb. xxi. 1. the king of Arad oppoſed their paſſage, defeated them, and took a great booty from them; but they deſtroyed his country as ſoon as they became maſters of the land of Canaan, Numb. xxxiii. Arad was rebuilt, and Euſebius places it in the neighbourhood of Khades, at the diſtance of twenty miles from Hebron. The Iſraelites, in their paſſage through the wilderneſs, having departed from Sepher, came to Arad, and from thence to Makkelath.

ARAD, a country, and a town, of Hungary.

A'RADOS, *ſ.* in medicine, the perturbation excited in the ſtomach by digeſting the aliment there. It alſo ſignifies any perturbation in the body.

A'RADUS, an iſland between the borders of Phœnicia and Seleucis, at the diſtance of twenty ſtadia from a dangerous coaſt; all of it a rock ſurrounded by the ſea, in compaſs ſeven ſtadia; and forming a very powerful city and republic. It is now called *Ronad*; but not a ſingle wall is remaining of all that multitude of houſes which, according to Strabo, were built with more ſtories than even thoſe of Rome. The liberty enjoyed by the inhabitants had rendered it very populous; and it ſubſiſted by naval commerce, manufactures, and arts. At preſent the iſland is deſerted; nor has tradition even retained the memory of a ſpring of freſh water in its environs, which the people of Aradus diſcovered at the bottom of the ſea, and from which they drew water in time of war, by means of a leaden bell and a leathern pipe fitted to its bottom.

A'RÆ PHILÆ'NON, or PHILÆNO'RUM, to the ſouth of the Syrtis Major; but in Peutinger more weſterly, or to the ſouth almoſt of the Syrtis Minor. In Strabo's time, the altars were not extant, but a village of the ſame name ſtood on the ſpot. On a diſpute about limits, between the Cyreneans and Carthaginians, it was agreed that two of each people ſhould ſet out on the ſame day, and that, where they ſhould happen to meet, there the limits of both ſhould be fixed. The Philæni, two brothers, Carthaginians, undertook it for Carthage: theſe, after having advanced a great many miles into the territory of the Cyreneans, were met by their antagoniſts; who, enraged at their being beforehand with them ſo far, gave them the option of either returning back, or of being buried alive on the ſpot. Like zealous patriots, they choſe the latter; and there the Carthaginians raiſed two altars in honour of the Philæni. *Salluſt*, *Valerius Maximus*.

ARÆO'STYLE, *ſ.* in architecture, a term uſed by Vitruvius, to ſignify the greateſt interval which can be made between columns.

A'RAF, among the Mahometans. See ALARAF.

A'RAFAH, *ſ.* The ninth day of the laſt month of the Arabic year, named *Dhoulhegiat*; on which the pilgrims of Mecca perform their devotions on a neighbouring mountain called *Arafat*.

A'RAFAT, or GIBEL-EL-ORPHAT, *the Mountain of Knowledge*, a mountain in Arabia, near Mecca. The Mahometans ſay, this was the place where Adam firſt met with and knew his wife Eve, after their expulſion from Paradiſe; and that here Abraham offered to ſacrifice Iſhmael, their great progenitor, and founder of their race. This mountain is reſorted to by all the devotees that come annually in pilgrimage to Mecca. The pilgrims are clad in robes of humility and mortification, with their heads uncovered; and ſeem to be very much affected, begging earneſtly for remiſſion of ſins, and promiſing to lead a new life. They continue here four or five hours, and at half an hour after ſun-ſet decamp to perform a religious duty called *Aſham nomas*. After this, they all receive the honourable title of *hadgees*, which is conferred upon them by the imam or prieſt. This being pronounced, the trumpet ſounds, and they all return to Mecca.

ARAIGNE'E, *ſ.* [French.] A term in fortification, which ſometimes denotes a branch, return, or gallery, of a mine.

A'RAL, or A'RAT, a lake in Aſia, in the kingdom of Khowarazm, lying between 42 and 47 degrees N. lat. and between 58 and 62 degrees E. lon. about 200 miles eaſt of the Caſpian ſea. Its length from north to ſouth is ſaid to near 300 miles, and its breadth from eaſt to weſt about 150. The ſhore on the weſt ſide is high and rocky, and deſtitute of good water: yet there are abundance of wild horſes, aſſes, antelopes, and wolves; as alſo a fierce creature called a *jolbart*, which the Tartars ſay is of ſuch a prodigious ſtrength as to carry off a horſe. It is ſurpriſing that this lake ſhould be quite unknown to geographers till within theſe few years. Several great rivers, which were ſuppoſed to run into the Caſpian ſea, are now known to fall into this lake, particularly the Sihun or Sirr, and the Gihun or Amo, ſo often mentioned by the oriental hiſtorians. This lake, like the Caſpian ſea, has no viſible outlet. Its water is alſo very ſalt; and for that reaſon is conveyed by the neighbouring inhabitants by ſmall narrow canals into ſandy pits, where the heat of the ſun, by exhaling the water, leaves them a ſufficient quantity of ſalt. The ſame kinds of fiſh are found in the Aral that are found in the Caſpian ſea. The former is alſo called the *Lake of Eagles*.

AR'AHUM, or HARAHUM, *ſ.* in ancient writers, denotes a place conſecrated or ſet apart for holy purpoſes. Hence the phraſe *in arabo jurare*, or *conjurare*, "to make oath in the church;" becauſe, by the Ripuarian laws, all oaths were to be taken in the church, on the relics of the ſaints.

ARA'LIA, *ſ.* in botany, a genus of the pentandria pentagynia claſs, in the natural order of hederaceæ. The generic characters are—Calyx: involucre very ſmall, of a globular umbellule; perianthium five-toothed, very ſmall, ſuperior. Corolla: petals five, ovate, acute, ſeſſile, reflex. Stamina: filaments five, ſubulate, the length of the corolla; antheræ roundiſh. Piſtillum: germ roundiſh, inferior; ſtyles very ſhort, permanent; ſtigmas ſimple. Pericarpium: berry roundiſh, ſtriated, crowned, five-celled. Seeds: ſolitary, hard, oblong.—*Eſſential Character.* Flowers in an umbellule with an involucre; calyx five-toothed, ſuperior; corolla five-petalled; berry five-ſeeded.

Species. 1. Aralia ſpinoſa, or thorny aralia or angelica-tree: arboreſcent, ſtem and leaves prickly. This riſes with a woody ſtem to the height of eight or ten feet, dividing into ſeveral branches, with branching leaves, compoſed of many divaricated wings, with oblong leaflets; the ribs of the leaves, as alſo the branches and ſtem, are armed with ſtrong crooked ſpines, rendering the places where the plants grow in plenty very difficult to paſs through. The flowers are produced in large looſe umbels, at the extremities of the branches, and, being of an herbaceous colour, make no great figure. The berry is three-cornered and three-celled. Native of Virginia, whence it was ſent to England by Baniſter, and was cultivated in 1688, by biſhop Compton, at Fulham. Mr. Ray alſo mentions, that there was then a tree of this ſpecies in the botanic garden at Chelſea, which was above the human ſtature, and thicker than a man's arm. It had not then flowered here.

2. Aralia pentaphylla, or five-leaved aralia: arboreous, prickly; leaves quinate. Native of Japan, flowering in May and June.

3. Aralia Chinenſis, or Chineſe aralia: ſhrubby; ſtem and petioles prickly; leaflets unarmed, villoſe. It differs from the firſt in having no prickles upon the ribs of the leaves, which are larger and not ſmooth. The habit alſo is different. It was found in China by Oſbeck; alſo in Cochinchina by Loureiro; it is a native of Malabar, and of Amboyna, if Rumphius's plant be the ſame. He ſpeaks of it as a tree, growing to a large ſize in the woods; whereas Loureiro ſays, that in Cochinchina it is procumbent or ſcandent. He deſcribes it at length, and remarks that it is very troubleſome to travellers with its numerous crooked prickles, as it climbs in the hedges.

4. Aralia Japonica, or Japaneſe aralia: ſhrubby, leaves lobate. Stem unarmed, upright, ſix feet high. Native of Japan; flowering in November and December.

5. Aralia racemoſa, or berry-bearing aralia: ſtem leafy, herbaceous, ſmooth. This grows three or four feet high, and divides into many irregular branches. It flowers in July, and the ſeeds ripen in October. Native of Canada, where the berries are eaten, and both leaves and roots are uſed as ſallads and pot-herbs by the Indians and French.

6. Aralia nudicaulis, or naked-ſtalked aralia: ſtem naked, leaves in pairs ternate. Stem ſo very ſhort as ſcarcely to be called any. It riſes nearly to the ſame height as the former. The flower-ſtalks ſpring immediately from the root, and are terminated by round umbels of flowers, in ſhape and colour like the foregoing, but the berries are ſmaller. This flowers towards the end of July, and the ſeeds ripen late in the autumn. The roots were formerly brought over and ſold for ſarſaparilla, and ſome of

the inhabitants of Canada make uſe of it as ſuch, but it is very different from the true ſort. Native of Virginia and Canada. Linnæus ſays, there is one very like it, and perhaps the ſame, in Java.

7. Aralia cordata, or heart-leaved aralia: herbaceous; ſtem angular, unarmed; leaves ſimple, heart-ſhaped. Native of Japan.

8. Aralia octophylla, or digitate-leaved aralia: ſtem arboreous, unarmed; leaves digitate, with eight leaflets; panicle umbelled. This is a tree ten feet in height, and ſpreading. Flowers yellow ſprinkled with red. Native of Cochinchina; where it is alſo cultivated, and uſed medicinally in dropſical caſes. Near Canton in China there grows a variety, or perhaps a diſtinct ſpecies, perfectly reſembling this in the ſtem, leaves, and habit of the flowers; but differing, in having ten ſtamens, and a ten-cleft ſtigma.

9. Aralia palmata, or palmate-leaved aralia: ſtem ſcandent, prickly; leaves five-lobed; umbels ſimple, lateral. Flower white, without any involucre. Native of China. The bark of this is alſo uſed in the dropſy, and in cutaneous diſorders. Poſſibly ſome of the above ſpecies may, on more accurate examination, be found to belong to the genus *hedera*, which in many reſpects is allied to this.

Propagation and Culture. The firſt ſort is propagated by ſeeds, which are eaſily procured from North America; but, as they ſeldom arrive here till towards the ſpring, the plants never come up the firſt year; therefore, when the ſeeds arrive, they ſhould be ſown in pots, filled with light earth, and placed in a ſhady ſituation, where they may remain until the next autumn, being careful to weed the pots conſtantly; otherwiſe, if weeds are permitted to grow till they are large, they cannot be taken out, without drawing up the ſeeds with their roots. In the autumn, the pots ſhould either be plunged into an old bed of tan, or planted in a warm border, under the ſhelter of a hedge or wall; and, if the winter proves ſevere, it will be proper to cover the pots with ſtraw or peaſe-haulm, to prevent the froſt from penetrating deep into the ground. In March the pots ſhould be plunged into a moderate hot-bed, which will bring up the plants early, ſo that they will have more time to get ſtrength before the following winter. When the plants come up, they ſhould be frequently refreſhed with water, and conſtantly kept clean from weeds: in May they ſhould be inured to the open air, and when they are removed out of the bed, they ſhould have a ſhady ſituation. Theſe plants ſhould not be diſturbed the firſt ſeaſon, but, as they are often injured by froſt when young, in October the pots ſhould be placed under a frame, where they may be ſcreened from hard froſts, but in mild weather they ſhould be conſtantly opened to enjoy the free air. The leaves of theſe plants fall away in the autumn, ſo that ſome perſons have ſuppoſed them dead, and have thrown them out of the pots. In the ſpring, before the plants begin to puſh, they ſhould be carefully ſhaken out of the pots, and ſeparated; part of them ſhould be planted ſingly into ſmall pots, and the other may be planted in a bed of light earth in a warm ſituation. If thoſe which are planted in the ſmall pots are plunged in a moderate hot-bed, it will greatly forward their growth; but they muſt be early inured to bear the open air, otherwiſe they will draw up weak. In the following ſummer they muſt have a ſhady ſituation, and the next winter ſhould be ſheltered again; the ſpring following they may be ſhaken out of the pots, and planted where they are deſigned to remain. Thoſe plants which were planted in the bed, will require protection from the froſt the firſt winter; but, if the ſurface of the ground is covered with old tanners bark, it will prevent the froſt from penetrating to their roots; and, if in hard froſts, ſome ſtraw, peaſe-haulm, or any light covering, is laid over the bed, it will ſecure their ſtems from being injured. The plants in the bed may remain there two years, by which time they will be ſtrong enough to tranſplant to the places where they are deſigned to grow. As theſe plants do not come out very early in the ſpring, they often continue growing pretty late in the autumn, which cauſes the extreme parts of their ſhoots to be very tender, whereby they often ſuffer from the early froſts in autumn, which frequently kill the upper parts of the ſhoots: but, as their woody ſtems are ſeldom injured, they put out new branches below; and, if in very ſevere winters the ſtems are deſtroyed, yet the roots will remain, and put out new ones the following ſummer. This plant may alſo be propagated by its roots; for, as they ſpread far in the ground, if they are laid open, and ſome of the ſtrongeſt are ſeparated from the plant and left in the ground, they will put out new ſtems and make new plants. Or, if part of the roots are taken off and planted on a moderate hot-bed, they will puſh out ſtems in plenty, and may be thus increaſed with eaſe. The fifth and ſixth ſpecies are eaſily propagated by ſeeds, which are generally produced in plenty. Theſe ſhould be ſown in the autumn ſoon after they are ripe, for thoſe which are ſown in the ſpring never grow the ſame year, ſo that a whole ſeaſon is gained by the ſowing in autumn. When the plants appear, they muſt be kept clean from weeds during the ſummer: and in the autumn following, when their leaves decay, the roots may be taken up, and tranſplanted where they are to remain. They are very hardy plants, ſo may be planted in any ſituation; and, as they grow naturally in woods, they may be planted in wilderneſs quarters, under trees, where, although they have no great beauty, yet they will add to the variety. Theſe two ſorts may alſo be propagated by parting their roots; the beſt time for doing this is in the autumn, ſoon after their leaves decay. Theſe ſhould be planted pretty far aſunder, for their roots ſpread to a conſiderable diſtance, where they are left undiſturbed for ſome years.

Aralia Arborea et Capitata, *ſ.* in botany. See Hedera.

ARALIAS'TRUM, *ſ.* in botany. See Panax.

A'RAM, [ארם Heb. i.e. highneſs, or deceiving.] The ſon of Shem.

Aram, or Aramæ'a Re'gio, the Hebrew name of Syria, ſo called from Aram the ſon of Shem. *Joſephus.*

Aram Beth-Rehob, was that part of Syria lying to the north of Paleſtine; becauſe Rehob was its boundary towards that quarter, allotted to the tribe of Aſher, where it joins Sidon.

Aram-Dammesek, or Syria Damascena, a principal part of Syria, and more powerful than the reſt; 2 Sam. taking its name from Damaſcus, the principal city.

Aram-Maacha, a diſtrict of Syria, at the foot of mount Hermon, on the borders of the half tribe of Manaſſeh, on the other ſide the Jordan, called the coaſt of *Maachathi.*

Aram-Naharaim, i.e. Aram, or Syria of the Rivers, or Meſopotamia, ſituated between the Euphrates and Tygris; which is the reaſon of the name.

Aram-Soba, or Zoba, which David conquered, was a country near the Euphrates, where afterwards Palmyra ſtood: the Euphrates bounded it on the eaſt, as the land of Canaan and Syria Damaſcena did on the weſt.

A'RAMONT, a town of the late province of Languedoc, in France, ſeated on the river Rhone. Lat. 43. 54. N. lon. 4. 52. E.

ARAN'DA-DE-DUERO, a town of Old Caſtile, forty-two miles eaſt of Valladolid.

ARANE'A, *ſ.* the Spider; a genus of inſects belonging to the order of aptera, or inſects without wings. Spiders have generally eight legs, with three joints in each, and terminating in three crooked claws; eight eyes, two before, two behind, and the reſt on the ſides of the head. In the fore-part of the head, at the mouth, there is a pair of ſharp crooked claws, or forceps; theſe ſtand horizontally, and, when not exerted for uſe, are concealed in two caſes contrived for their reception, in which they fold like a claſp-knife, and there lie between two rows of teeth. A little below the point of each claw there is a ſmall hole, through which Leuwenhoek ſuppoſes the ſpider emits a kind of poiſon; but Dr. Mead, in his "Eſſay on Poiſons," diſſents wholly from this opinion, having never been able, on repeated examinations, to diſcover any ſuch opening, not even in the claws of the largeſt foreign ſpider; which being above fifty times larger than any of the European ſpiders, would more eaſily have afforded a view of this opening, if nature had allotted any to this part of the animal. Beſides, repeated obſervations alſo convinced him that nothing dropped out of the claws, which went always dry while the ſpider bit any thing, but that a ſhort white proboſcis was at the ſame inſtant thruſt out of the mouth, which inſtilled a liquor into the wound. And the ſame author obſerves, that the quantity of liquor emitted by our common ſpiders when they kill their prey, is viſibly ſo great, and the wounding weapons ſo minute, that they could contain but a very inconſiderable portion thereof, if it were to be diſcharged that way. *Baker's Microſcope*, p. 196. Spiders frequently caſt their ſkins, which may be found in the webs, perfectly dry and tranſparent; and from ſuch ſkins the forceps, or claws, for they are always ſhed with the ſkins, may eaſier be ſeparated, and examined with much greater exactneſs than in the common ſpider while living.

Spiders have five tubercles, or nipples, at the extremity of the belly, whoſe apertures they can enlarge or contract at pleaſure. It is through theſe apertures that they ſpin a gluey ſubſtance with which their bellies are full. They fix the end of their threads by applying theſe nipples to any ſubſtance, and the thread lengthens in proportion as the animal recedes from it. They can ſtop the iſſuing of the threads by contracting the nipples, and re-aſcend by means of the claws on their feet, much in the ſame manner as ſome men warp up a rope. When the common houſe-ſpider begins her web, ſhe generally chooſes a place where there is a cavity, ſuch as the corner of a room, that ſhe may have a free paſſage on each ſide, to make her eſcape in caſe of danger. Then ſhe fixes one end of her thread to the wall, and paſſes on, dragging the thread along with her, till ſhe arrives at the other ſide, and there fixes the other end of it. Thus ſhe paſſes and repaſſes, till ſhe has made as many parallel threads as ſhe thinks neceſſary for her purpoſe. After this, ſhe begins again, and croſſes theſe by other parallel threads, which may be named the *woof*. Theſe are the toils or ſnares which ſhe prepares for entangling flies, and other ſmall inſects, which happen to alight upon it. But, beſides this large web, ſhe generally weaves a ſmall cell for herſelf, where ſhe lies concealed watching for her prey. Betwixt this cell and the large web ſhe has a bridge of threads, which, by communicating with the threads of the large one, both give her early intelligence when any thing touches the web, and enables her to paſs quickly in order to lay hold of it. There are many other methods of weaving, peculiar to different ſpecies of ſpiders; but, as they are all intended for the ſame purpoſe, it is needleſs to give particular deſcriptions of them. The matter of which the ſpider's threads are formed, is a viſcid juice, elaborated in the body of the animal, and emitted from papillæ ſituated at the extremity of the belly; which papillæ are furniſhed with numerous apertures that do the buſineſs of wire-drawers, as it were, in forming the threads. Of theſe apertures M. Reaumur obſerves, there are enough in the compaſs of the ſmalleſt pin's head to yield a prodigious quantity of diſtinct threads. M. Reaumur has often counted ſeventy or eighty with a microſcope, but has perceived that there were infinitely more than he could tell. In effect, if he ſhould ſay that each tip of a papilla furniſhed a thouſand, he is perſuaded he ſhould ſay much too little; conſequently the ſpider, having five papillæ, has holes for about five thouſand threads. Such is the tenuity of the threads in the larger ſort of ſpiders. But, if we examine the young produced by thoſe, we ſhall find that they no ſooner quit their egg than they begin to ſpin. Indeed their threads can ſcarcely be perceived, but the webs may: they are frequently as thick and cloſe as thoſe of houſe-ſpiders: and no wonder, there being often four or five hundred little ſpiders concurring to the ſame work. How minute muſt their holes be! the imagination can ſcarcely conceive that of their papillæ! The whole ſpider is perhaps leſs than a papilla of the parent which produced it. But there are even ſome kinds of ſpiders ſo ſmall at their birth, that they are not viſible without a microſcope. There are uſually found an infinity of theſe in a cluſter, and they only appear like a number of red points; and yet there are webs found under them, though almoſt imperceptible. What muſt be the tenuity of one of theſe threads? Mr. Leuwenhoek has computed that one hundred of the ſingle threads of a full-grown ſpider are not equal to the diameter of the hair of his beard; and conſequently, if the threads and hair be both round, ten thouſand ſuch threads are not larger than ſuch a hair. He calculates farther, that, when young ſpiders firſt begin to ſpin, four hundred of them are not larger than one which is of a full growth; allowing which, four millions of a young ſpider's threads are not ſo large as the ſingle hair of a man's beard!

Garden-ſpiders, particularly the ſhort-legged ſpecies, yield a kind of ſilk, which has by ſome been judged little inferior to that of the ſilk-worm. Mr. Bon, of Languedoc, about eighty years ago, contrived to manufacture from it a pair of ſilk ſtockings and mittens, of a beautiful natural grey colour, which were almoſt as handſome and ſtrong as thoſe made with common ſilk; and he publiſhed a diſſertation concerning the diſcovery. But M. Reaumur, being appointed by the Royal Academy to make a farther inquiry into this new ſilk-work, raiſed ſeveral objections and difficulties againſt it, which are found in the Memoirs of the Academy for the year 1710. The ſum of what he has urged amounts to this: the natural fierceneſs of ſpiders renders them unfit to be bred and kept together: four or five thouſand being diſtributed into cells, fifty in ſome, one or two hundred in others, the large ones ſoon killed and ate the leſs, ſo that, in a ſhort time, there were ſcarcely left one or two in each cell; and to this inclination of mutually eating one another, M. Reaumur aſcribes the ſcarcity of ſpiders, conſidering the vaſt number of eggs they lay. But this is not all: he even affirms, that the ſpider's bag is inferior to that of the ſilk-worm both in luſtre and ſtrength, and that it produces leſs matter to be manufactured. The thread of the ſpider's web, he ſays, only bears a weight of two grains without breaking; and that of the bag bears thirty-ſix. The latter, therefore, in all probability, is eighteen times thicker than the former; yet it is weaker than that of the ſilk-worm, which bears a weight of two drams and a half: ſo that five threads of the ſpider's bag muſt be put together to equal one thread of the ſilk-worm's bag. Now it is impoſſible theſe ſhould be applied ſo juſtly over one another as not to leave little vacant ſpaces between them, whence the light will not be reflected; and, of conſequence, a thread thus compounded muſt fall ſhort of the luſtre of a ſolid thread. Add to this, that the ſpider's thread cannot be wound off, as that of the ſilk-worm may, but muſt of neceſſity be carded; by which means, being torn in pieces, its evenneſs, which contributes much to its luſtre, is deſtroyed. In effect, this want of luſtre was taken notice of by M. de la Hire, when the ſtockings were preſented to the Academy. Again, ſpiders furniſh much leſs ſilk than the worms: the largeſt bags of theſe latter weigh four grains, the ſmaller three grains; ſo that 2304 worms produce a pound of ſilk. The ſpider-bags do not weigh above one grain; yet, when cleared of their duſt and filth, they loſe two-thirds of their weight. The work of twelve ſpiders, therefore, only equals that of one ſilk-worm; and a pound of ſilk will require at leaſt 27,648 ſpiders. But as the bags are wholly the work of the females, who ſpin them to depoſit their eggs in, there muſt be kept 55,296 ſpiders to yield a pound of ſilk. Yet will this only hold of the beſt ſpiders; thoſe large ones ordinarily ſeen in gardens, &c. ſcarcely yielding a twelfth part of the ſilk of the others. Two hundred and eighty of theſe, he proves, would not yield more than one ſilk-worm; 663,552 of them would ſcarcely yield a pound. The act of generation among ſpiders varies in different ſpecies. As theſe inſects prey upon each other except during the time of their amours, they dare not come within reach of one another but with the utmoſt caution. They may ſometimes be ſeen ſtretching out their legs, ſhaking the web, and tampering with each other by a ſlight touch with the extremity of their feet; then, in a fright, dropping haſtily down their thread, and returning in a few moments to make freſh trial by feeling. When once both parties are well aſſured of the ſex they have to deal with, the approaches of their feet, in order to feel, become more frequent, confidence takes place, and the inſtant of amorous dalliance enſues. "We cannot," ſays Lyonnet, "but admire how careful they are not to give themſelves up blindly to a paſſion, or venture on an imprudent ſtep, which might become fatal to them." A caveat this to the human kind. Liſter and Lyonnet, two accurate obſervers, ſay, that the extremity of thoſe arms, or claws, which the ſpider uſes to graſp his prey with, ſuddenly opens, as it were by a ſpring, and lets out a white body, which the male applies beneath the abdomen of the female, to fulfil the wiſh of nature. In the water-ſpider, the ſexual organs are ſituated at the hinder parts of the male, are curve, and act as it were by a ſpring; thoſe of the females are diſtinct. Nature, by a thouſand varied methods, accompliſhes her purpoſe.

Spiders frequently change their colour, which varies much, in reſpect to ſeaſon, ſex, age, &c. but they are in general more beautifully variegated in autumn; a ſeaſon not only the moſt opportune and plentiful reſpecting their prey, but the time when they arrive at their greateſt magnitude, and are in their height of vigour. The natural longevity of the ſpider is greater than ſeems to have been granted to the generality of the inſect tribes. The length of his life is not exactly aſcertained; but it probably endures for ſeveral years. The female, it is ſaid, does not begin to lay her eggs till ſhe has completed her ſecond year; and even then, her brood is not ſo numerous as when ſhe has attained her full maturity. When that period arrives, ſhe has been known to produce near a thouſand eggs in a ſingle ſeaſon. The ſpecies of aranea enumerated by naturaliſts amount to upwards of fifty; of which it may here ſuffice to mention a few of the moſt remarkable.

The faſciata, with yellow bands round the belly, and duſkiſh hairy jointed legs, is a native of Barbary, and is as large as the thumb. It inhabits hedges and thickets: its webs have large meſhes, and it reſides in the centre upon its neſt. The ſnares are ſpread for large flies, waſps, drones, and even locuſts; ſmaller inſects can eſcape thro' the meſhes. The animal which it entangles is ſoon bound with ſtrong threads; killed by the ſpider's jaws; and partly eaten, if the ſpider is hungry: the reſt is concealed under ſome neighbouring dry leaves, covered with a kind of web, and a blackiſh glue in great abundance. Its larder is ſaid to be often plentifully ſtored. Its neſt is about the ſize of a pullet's egg, divided horizontally, and ſuſpended by the threads of the inſect, which are of a ſilvery white, and ſtronger than ſilk. It carries its eggs in a little bag under its belly, from which the young ones come out, and for a time in the ſame web live in amity; but, when grown up, are mortal enemies. They never meet but they fight with violence, and their battle only ends with the death of the weakeſt. The dead body is carefully ſtored in the larder. Twelve of theſe ſpiders, by way of experiment, were ſhut up together; and, after a battle of eight days, the ſtrongeſt only remained alive.

The annexed Plate exhibits this ſpider on its neſt, in the centre of its web, feaſting on its prey, from a very exact and curious drawing.

The calycina, or ſpider with a round pale yellow belly, and two hollow points. It lives in the cups of flowers, after the flower-leaves have fallen off; and catches bees, and other flies, when they are in ſearch of honey.

The ocellata, has three pair of eyes on its thighs. It is about the ſame ſize with the tarantula, of a pale colour, with a black ring round the belly, and has two large black ſpots on the ſides of the breaſt. It is a native of China.

The ſaccata, has an oval belly, of a duſky iron colour. It lives in the ground, and carries a ſack with its eggs wherever it goes. This ſack it glues to its belly, and will rather die than leave it behind.

The diadema, is the largeſt ſpider which England produces. The abdomen is of an oval form, downy, and of a ruddy yellow colour, which is very variable in different ſeaſons; being ſometimes paler, at others very dark coloured. The upper part is beautifully adorned with black and white circles and dots, having a longitudinal band in the middle, compoſed of oblong and oval-ſhaped pearl-coloured ſpots, ſo arranged as to reſemble a fillet, ſimilar to thoſe worn by the eaſtern kings. The ground upon which this fillet and the white dots are laid, when viewed with a glaſs, and the ſun ſhining thereon, is beautiful and rich beyond all deſcription. There are varieties in colour of this ſpider when young; ſome have their abdomen purple, ornamented with white dots, the legs yellow and annulated with a deeper colour; others have their abdomen of a fine red likewiſe ornamented with white, and the legs of a fine pale green colour; annulated with dark purple or black. It inhabits the birch-tree.

The cucurbitina, has a globular yellow belly, with a few black ſpots. It lives in the leaves of trees, and incloſes its eggs in a ſoft net.

The labyrinthica, or ſpider with a duſky oval belly, a whitiſh indented line, and a forked anus. The web of this ſpecies is horizontal, with a cylindrical well or tube in the middle.

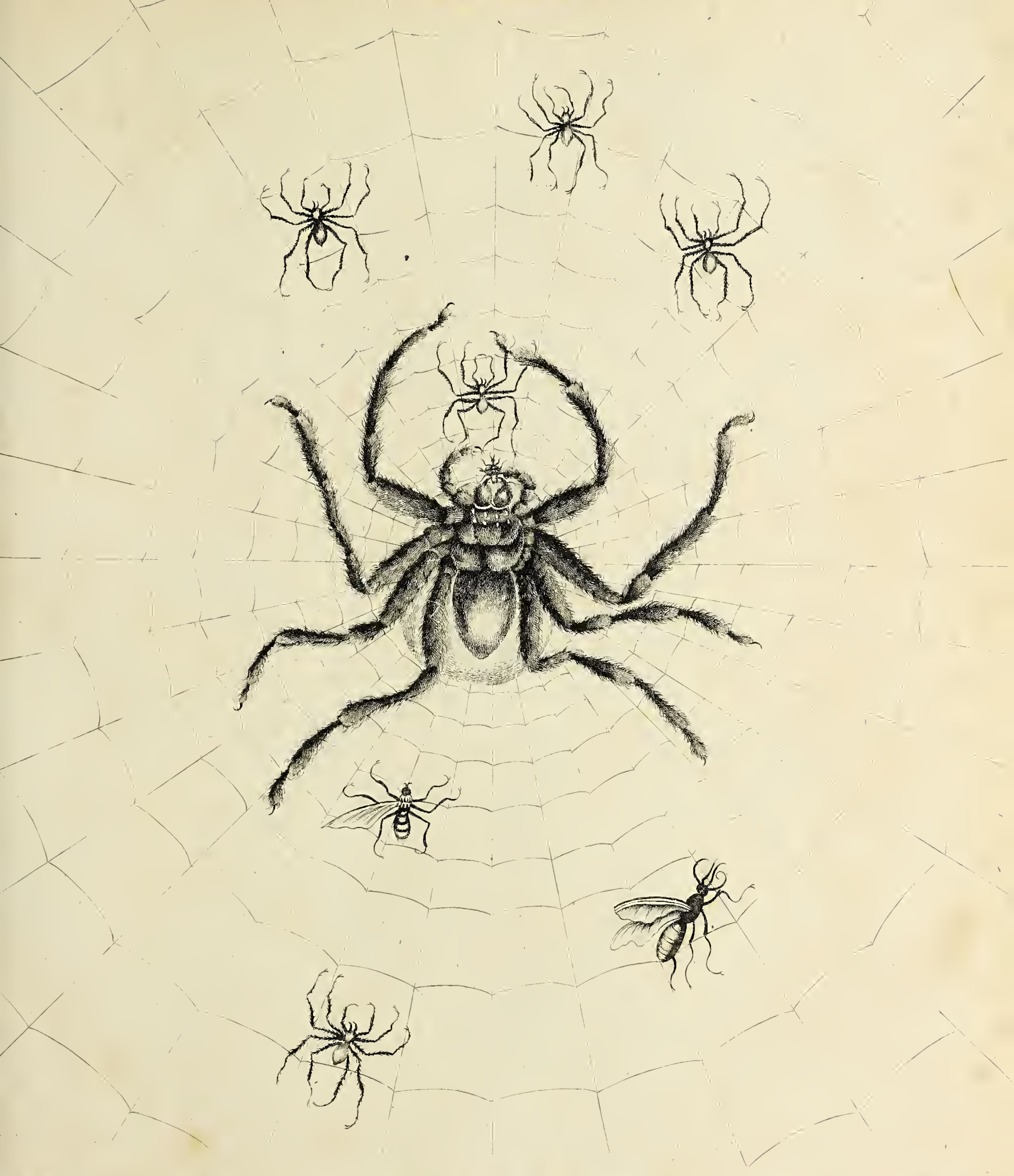
The fimbriata, has a black oblong belly, with a white line on each ſide, and duſky-coloured legs. It lives in water, upon the ſurface of which it runs with great ſwiftneſs.

The holoſericea, has an oval belly covered with a down like velvet; at the baſe, or under part, it has two yellow ſpots. It is found in the folded leaves of plants.

The viatica, or wandering ſpider, is generally of a yellow colour, more or leſs deep. Sometimes it is whitiſh, and even rather green. The abdomen is large, broad, almoſt ſquare, with two bands of dark orange, which ariſing from the thorax deſcend obliquely on the ſides towards the middle. Between the bands are a few ſmall black dots, forming a kind of triangle upon the middle of the abdomen. On the thorax are ſeen two longitudinal bands ſomewhat green, one on each ſide. The two foremoſt pair of legs are very long, and the hinder ſhort, which makes it walk ſideways like a crab. It is found upon plants, and is a lively, active, indefatigable, hunter. Without any motion of the head, which is furniſhed with immoveable eyes, it perceives all the flies that hover round about, does not ſcare them, but ſtretches over them its arms furniſhed with feathers, which prove nets in which their wings intangle. It is ſaid to ſit on its eggs, which however it often carries about with it, wrapped up in a ball of white ſilk.

The aquatica, or water-ſpider, is of a livid colour, with an oval belly, and a tranſverſe line with two hollowed points. It frequents the freſh waters of Europe. But it is in ſome ſort amphibious: for it can live on land as well as in the water, and comes often on ſhore for its food; yet it ſwims well in water, both on its belly and back: it is diſtinguiſhable by its brightneſs. In the water its belly appears covered with a ſilver varniſh, which is only a bubble of air attached to the abdomen by means of the oily humours which tranſpire from its body, and prevent the immediate contact of the water. This bubble of air is made the ſubſtance of its dwelling, which it conſtructs under water; for it fixes ſeveral threads of ſilk, or ſuch fine matter, to the ſtalks of plants in the water; and then, aſcending to the ſurface, thruſts the hinder part of its body above water, drawing it back again with ſuch rapidity, that it attaches underneath a bubble of air, which it has the art of detaining under water, by placing it underneath

ARANEA.



Ihle del.

The Fasciata, or Barbary Spider.

J. Paſs sculp

London Published as the Act directs Sept.r 12th 1795 by J Wilkes.

the threads above-mentioned, and which it binds like a covering almoſt all around the air-bubble. Then it aſcends again for another air-bubble; and thus proceeds until it has conſtructed a large aerial apartment under water, which it enters into or quits at pleaſure. The male conſtructs one for himſelf near the female; and, when love invites, he breaks through the thread walls of the female's dwelling, and the two bubbles attached to the bellies of both unite into one, forming one large nuptial chamber. The female is ſometimes laid for a whole day together ſtretched on her back, waiting for the arrival of the male, without motion, and ſeemingly as if dead. As ſoon as he enters, and glides over her, ſhe ſeems to be brought to life again, gets on her legs and runs after the male, who makes his eſcape with all poſſible ſpeed. The female takes care of the young, and conſtructs ſimilar apartments on purpoſe for them. The figure of this ſpider has nothing remarkable; and would be overlooked among a crowd of curioſities, if the ſpectator be unacquainted with its ſingular art of conſtructing an aerial habitation under water, and thus uniting together the properties of both elements. It lodges during the winter in empty ſhells, which it dexterouſly ſhuts up with a web.

The tarantula, has moſt commonly the breaſt and belly of an aſh-colour; the legs are likewiſe aſh-coloured, with blackiſh rings on the under part; the fangs or nippers are red on the inner ſide, the reſt being blackiſh: two of its eyes are larger than the other, red, and placed in the front; four other eyes are placed in a tranſverſe direction towards the mouth; the other two are nearer the back: it has two antennæ or feelers. It is a native of Italy, Cyprus, Barbary, Corſica, Perſia, and the Eaſt Indies. It lives in bare fields, where the lands are fallow, but not very hard; and, from its antipathy to damp and ſhade, chooſes for its reſidence the riſing part of the ground facing the eaſt. Its dwelling is about four inches deep, and half an inch wide; at the bottom it is curved, and there the inſect ſits in wet weather, and cuts its way out if water gains upon it. It weaves a net at the mouth of the hole. Theſe ſpiders do not live quite a year. In July they ſhed their ſkin, and proceed to propagation; which from a mutual diſtruſt, as they frequently devour one another, is a work undertaken with great circumſpection. They lay about ſeven hundred and thirty eggs, which are hatched in the ſpring; but the parent does not live to ſee her progeny, having expired early in the winter. The ichneumon fly is their moſt formidable enemy.

The bite of the tarantula is ſaid to occaſion an inflammation of the part, which in a few hours brings on ſickneſs, difficulty of breathing, and univerſal faintneſs. The perſon afterwards is affected with a delirium, and ſometimes is ſeized with a deep melancholy. The ſame ſymptoms return annually, in ſome caſes, for ſeveral years, and at laſt terminate in death. Muſic, it has been pretended, is the only cure. A muſician is brought, who tries a variety of airs, till at laſt he hits upon one that urges the patient to dance; the violence of which exerciſe produces a proportionable agitation of the vital ſpirits, attended with a conſequent degree of perſpiration, the certain conſequence of which is a cure. Such are the circumſtances that have been generally related, and long credited, concerning the bite of this animal. Kircher, in his *Muſurgia*, gives a very particular account of the ſymptoms and cure, illuſtrated by hiſtories of caſes. Among theſe, he mentions a girl, who, being bitten by this inſect, could be cured only by the muſic of a drum. He then proceeds to relate, that a certain Spaniard, truſting to the efficacy of muſic in the cure of the frenzy occaſioned by the bite of the tarantula, ſubmitted to be bitten on the hand by two of theſe creatures, of different colours, and poſſeſſed of different qualities. The venom was no ſooner diffuſed about his body, than the ſymptoms of the diſorder began to appear; upon which, harpers, pipers, and other muſicians, were ſent for, who by various kinds of airs endeavoured to rouſe him from that ſtupor into which he was fallen: but here it was obſerved, that the bites of the two inſects had produced contrary effects; for by one he was incited to dance, and by the other he was reſtrained therefrom; and in this conflict of nature the patient expired. Kircher, to account for the cure of the bite of the tarantula by muſic, ſays of the poiſon, That it is ſharp, gnawing, and bilious; and that it is received and incorporated into the medullary ſubſtance of the fibres. With reſpect to the muſic, he ſays, That the ſounds of chords have a power to rarefy the air to a certain harmonical pitch; and that the air thus rarefied, penetrating the pores of the patient's body, affects the muſcles, arteries, and minute fibres, and incites him to dance; which exerciſe begets a perſpiration, in which the poiſon evaporates. And, unſatisfactory as this theory appears, the belief of it has prevailed among the ableſt of modern phyſicians. Sir Thomas Brown, ſo far from diſputing it, ſays, That ſince many atteſt the fact from experience, and that the learned Kircher hath poſitively averred it, and ſet down the ſongs and tunes ſolemnly uſed for the cure of the diſeaſe, and ſince ſome alſo affirm that the tarantula itſelf will dance at the ſound of muſic, he ſhall not at all queſtion it.

Farther, that eminent Italian phyſician Baglivi, a native of Apulia, the country where the tarantula is produced, has written a diſſertation *De anatomia, morſu, et effectibus, Tarantulæ.* In this he deſcribes the region of Apulia where the tarantula is produced, with the anatomy and figure of the inſect and its eggs, illuſtrated by an engraving; he mentions particularly the ſymptoms that follow from the bite, and the cure of the diſeaſe by muſic, with a variety of hiſtories of cures thus wrought, many of them communicated by perſons who were eye-witneſſes of the proceſs. Ludovicus Valetta, a Celeſtine monk of Apulia, alſo publiſhed at Naples, in the year 1706, a treatiſe upon this ſpider, in which he not only anſwers the objections of thoſe who deny the whole thing, but gives, from his own knowledge, ſeveral inſtances of perſons who had ſuffered this way, ſome of whom were of great families, and ſo far from being diſſemblers, that they would at any rate, to avoid ſhame, have concealed the misfortune which had befallen them. The honourable Mr. Robert Boyle, likewiſe, in his treatiſe of "Languid and unheeded Motions," ſpeaking of the bite of the tarantula, and the cure of the diſeaſe which follows it by means of muſic, ſays, That, having himſelf had ſome doubts about the matter, he was, after ſtrict inquiry, convinced that the relations in the main were true. And laſtly, Dr. Mead, in his "Mechanical Account of Poiſons," has given an eſſay on the tarantula, containing the ſubſtance of the above relations, which he endeavours to confirm by his own reaſoning thereon.

Yet, notwithſtanding the number and weight of theſe authorities, and the general acquieſcence of learned and ingenious men in the opinion that the bite of the tarantula is poiſonous, and that the cure of the diſorder occaſioned by it is effected by muſic, we have reaſon to apprehend that the whole is a miſtake. In the Philoſophical Tranſactions for the year 1672, p. 406. is an extract of a letter from Dr. Thomas Cornelio, a Neapolitan phyſician, to John Doddington, Eſq. his majeſty's reſident at Venice, communicated by the latter, in which, ſpeaking of his intention of ſending to Mr. Doddington ſome tarantulas, he ſays, "Meanwhile I ſhall not omit to impart to you what was related to me a few days ſince by a judicious and unprejudiced perſon; which is, that, being in the country of Otranto, where thoſe inſects are in great numbers, there was a man, who, thinking himſelf ſtung by a tarantula, ſhewed in his neck a ſmall ſpeck, about which in a very ſhort time there aroſe ſome pimples full of a ſerous humour; and that, in a few hours after, the poor man was ſorely afflicted with violent ſymptoms, as ſyncopes, very great agitations, giddineſs of the head, and vomiting; but that, without any inclination at all to dance, and without a deſire of having any muſical inſtruments, he miſerably died within two days. The ſame perſon affirmed to me, that all thoſe that think themſelves bitten by tarantulas, except ſuch as for evil ends feign themſelves to be ſo, are for the moſt part young wanton girls, whom the Italians call *dolci di ſale* (half-witted); who, by ſome particular indiſpoſition falling into this melancholy madneſs, perſuade themſelves, according to the vulgar prejudice, to have been ſtung by a tarantula."

Dr. Serao, an Italian phyſician, has written an ingenious book, in which he has effectually exploded this opinion as a popular error; and in the Philoſophical Tranſactions, No. LX. for the year 1770, p. 236. is a letter from Dominico Cirillo, M. D. profeſſor of natural hiſtory in the univerſity of Naples, wherein, taking notice of Serao's book, he ſays, That having had an opportunity of examining the effects of this animal in the province of Taranto, where it is found in great abundance, he finds that the ſurpriſing cure of the bite of the tarantula by muſic has not the leaſt truth in it; and that it is only an invention of the people, who want to get a little money by dancing when they ſay the tarantiſm begins. He adds, "I make no doubt but ſometimes the heat of the climate contributes very much to warm their imaginations, and throw them into a delirium, which may be in ſome meaſure cured by muſic; but ſeveral experiments have been tried with the tarantula, and neither men nor animals after the bite have had any other complaint than a very trifling inflammation upon the part, like that produced by the bite of a ſcorpion, which goes off by itſelf without any danger at all. In Sicily, where the ſummer is ſtill warmer than in any part of the kingdom of Naples, the tarantula is never dangerous; and muſic is never employed for the cure of the pretended tarantiſm."

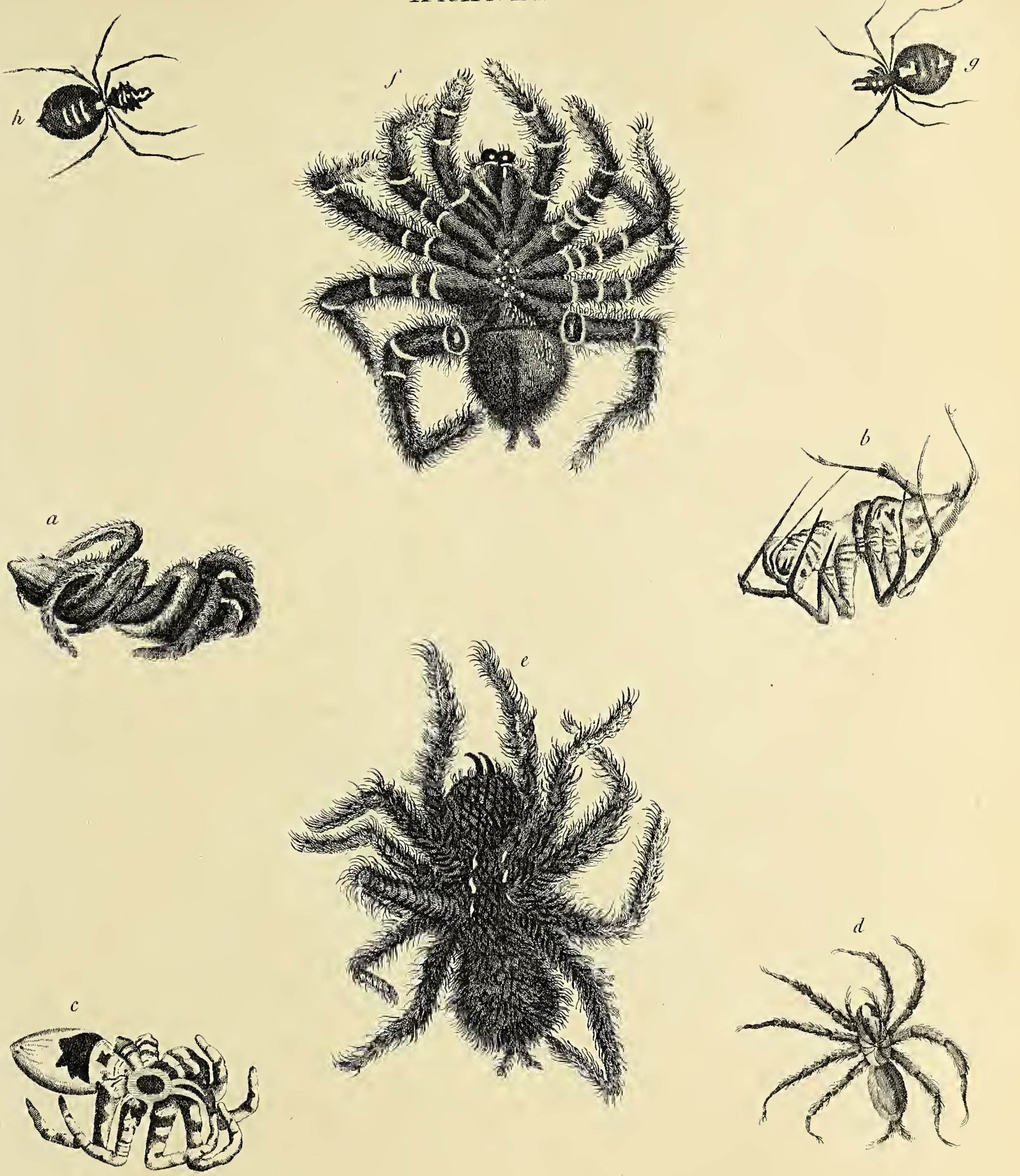
Mr. Swinburne, when in the country of the tarantula, was deſirous of inveſtigating minutely every particular relative to that inſect; but the ſeaſon was not far enough advanced, and no *tarantati* (perſons bitten, or pretending to be bitten, by the tarantula) had begun to ſtir. He prevailed, however, upon a woman who had formerly been bitten, to act the part, and dance the tarantata before him. A great many muſicians were ſummoned, and ſhe performed the dance, as all preſent aſſured him, to perfection. At firſt ſhe lolled ſtupidly on a chair, while the inſtruments were playing ſome dull muſic. They touched, at length, the chord ſuppoſed to vibrate to her heart; and up ſhe ſprung with a moſt hideous yell, ſtaggered about the room like a drunken perſon, holding a handkerchief in both hands, raiſing them alternately, and moving in very true time. As the muſic grew briſker, her motions quickened, and ſhe ſkipped about with great vigour and variety of ſteps, every now and then ſhrieking very loud. The ſcene was far from pleaſant; and, at his deſire, an end was put to it before the woman was tired. Wherever the tarantati are to dance, he informs us, a place is prepared for them, hung round with bunches of grapes and ribbons. The patients are dreſſed in white, with red, green, or yellow, ribbons, for thoſe are their favourite colours; on their ſhoulders they caſt a white ſcarf, let their hair fall looſe about their ears, and throw their heads as far back as they can bear it. They are exact copies of the ancient prieſteſſes of Bacchus. The orgies of that god, whoſe worſhip, under various ſymbols, was more widely ſpread over the globe than that of any other divinity, were no doubt performed with energy and enthuſiaſm by the lively inhabitants of this warm climate. The introduction of Chriſtianity aboliſhed all public exhibitions of theſe heatheniſh rites, and the women durſt no longer act a frantic part in the character of Bacchantes. Unwilling to give up ſo darling an amuſement, they deviſed other pretences; and poſſeſſion by evil ſpirits may have furniſhed them with one. Accident may alſo have led them to a diſcovery of the tarantula; and, upon the ſtrength of its poiſon, the Puglian dames ſtill enjoy their old dance, though time has effaced the memory of its ancient name and inſtitution; and this Mr. Swinburne takes to be the origin of ſo ſtrange a practice. If at any time theſe dancers are really and involuntarily affected, he ſuppoſes it can be nothing more than an attack upon their nerves, a ſpecies of St. Vitus's dance; and he inclines the more to the idea, as there are numberleſs churches and places throughout theſe provinces dedicated to that ſaint.

Many ſenſible people in the country, however, differ in opinion from Dr. Serao and other authors, who have ridiculed the pretended diſorder, and affirmed that the venom of this ſpecies of ſpider can produce no effects but ſuch as are common to all others. The Brindiſians ſay, that the tarantulas ſent to Naples for the experiment were not of the true ſort, but a much larger and more innocent one; and that the length of the journey, and want of food, had weakened their power ſo much, as to ſuffer the doctor or others to put their arm into the bag where they were kept with impunity. They quote many examples of perſons bitten as they ſlept out in the fields during the hot months, who grew languid, ſtupid, deprived of all courage and elaſticity, till the ſound of ſome favourite tune rouſed them to dance, and throw off the poiſon. Theſe arguments of theirs, however, Mr. Swinburne thinks of little weight; for they acknowledged that elderly perſons were more frequently infected than young ones; and that moſt of them were women, and thoſe unmarried. No perſon above the loweſt rank in life was ever ſeized with this malady, nor is there an inſtance of its cauſing death. The length of the dance, and the patient's powers of bearing ſuch exceſſive fatigue in the canicular ſeaſon, prove nothing; becauſe every day, at that time of the year, peaſants may be ſeen dancing with equal ſpirit and perſeverance, though they do not pretend to be ſeized with the tarantiſm. The illneſs may therefore be attributed to hyſterics, exceſſive heat, ſtoppage of perſpiration, and other effects of ſleeping out of doors in a hot ſummer air, which is always extremely dangerous, if not mortal, in moſt parts of Italy. Violent exerciſe may have been found to be a certain cure for this diſorder, and continued by tradition, though the date and circumſtances of this diſcovery have been long buried in oblivion; a natural paſſion for dancing, imitation, cuſtom of the country, and a deſire of raiſing contributions upon the ſpectators, are probably the real motives that inſpire the tarantati. Before Serao's experiments, the tarantula had been proved to be harmleſs, from trials made in 1693, by Clarizio, and in 1740, at Lucera, by other naturaliſts. There are ſeveral ſpecies of the tarantula, ſome hairy, and ſome ſmooth. The figures *a*, *b*, *c*, *d*, in Plate II. repreſent four of theſe ſpiders, brought from Tarenti, in Italy, where they very much abound, and from whence it is ſuppoſed the name *tarantula* is derived.

The avicularia, or great ſpider of America, is one of the largeſt ſpecies of the aranea tribe. Its back is covered with an hard, thick, brown, coat, hollowed at the ſides, and cleft tranſverſely acroſs the middle, as if it had an hole in that place. The head is ſmall, and with difficulty diſtinguiſhed from the corſelet. The mouth is furniſhed with brown, hard, and crooked, teeth. The body is large and rotund, growing out into two parts. The whole body, except the back, and all the ſix feet, are covered with long buſhy hair; an exact repreſentation of which is delineated in the annexed Plate, at letter *e*. Linnæus has given it the name of *avicularia*, becauſe it principally attacks the little birds, called *colibris*. It tears them to pieces in a cruel manner to get at the blood, and afterwards ſucks their eggs. The bite of this inſect is ſaid to be as venomous as that of a ſerpent.

The Almighty has ſo arranged the economy of nature, that one ſpecies of animals ſhall be nouriſhment for another. It is ſo in this caſe. There is in America a ſpecies of large ant, great numbers of which frequently ſally forth from their hills, and by troops traverſe through the houſes, ſo that the inhabitants can eſcape only by flight. Theſe ants devour every other inſect that comes in their way. Now theſe large ſpiders are equally expoſed to perſecution; for, although they ſometimes catch and deſtroy many of theſe ants as they are crawling on the trees, yet are

ARANEA.



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The Avicularia, Tarantula, and Aculeata Spiders.

London, Published as the Act directs, Novem.r 21.st 1795 by J. Wilkes

they, in their turn, attacked by troops of theſe ſame inſects, who ſurround them in prodigious numbers, and at length overpower them.

The figure at letter *f*, in the Plate, ſhews the under part of the ſame ſpider, which, it may be obſerved, is of a brown colour, and the rings of the feet alternately white and red. The extremities of the feet are ſmooth, and large, like the toes of a dog. It is aſſerted that theſe ſpiders from time to time throw off their ſkin, the ſame as the tarantulas.

The aculeata, is a very ſingular ſpecies of aranea, which is found in the iſland of Curaçoa, in America. In the figure at *g*, of the annexed Plate, may be ſeen the upper part of this ſpider; and at *h*, the under. It is brown, marked on both ſides with an orange ſpot, or, as the inhabitants call it, *oranje*. It is found in the fields, under the roots of plants, or even in the houſes in the country, but ſeldom or ever in towns. What is remarkable in its ſtructure is, that it has but ſix feet, and a ſmall mouth furniſhed with two teeth, like thoſe of the avicularia, deſcribed above. It is ſaid to have this fatal property, that, after having bitten a ſheep or cow, if theſe animals drink water when wounded, it inevitably kills them in the ſpace of twenty-four hours, and they expire in terrible convulſions. When a man is bitten, the cure is very difficult, and it is a chance if his life is ſaved. For they dare not give him any thing to quench his thirſt but decoction of tobacco, urine, or ſpirit extracted from ſugar, which has been hitherto found to be the beſt remedy. During the malady, the perſon is attacked with convulſions, delirium, and other ſymptoms of a burning fever. We obtain this information from D. A. L Muller, phyſician in the iſle of Curaçoa, who made a preſent of this inſect to the curious cabinet of the celebrated naturaliſt G. W. Knorr.

Medicinally conſidered, ſpiders are found to contain a great deal of volatile ſalt; in conſequence of which they are ſometimes uſeful in agues, if taken inwardly. A ſcruple of the ſpider's web, it has been ſaid, in many inſtances hath proved ſucceſsful, given an hour before the fit of an ague, and an hour after it. This produces no ſenſible effect, and may be given when the bark is not ſafe. *Motherby.*

ARA'NEOUS, *adj.* [from *aranea*, Lat.] Reſembling a cobweb.

ARANJUEZ', a town in the province of New Caſtile, where the king of Spain has a villa and gardens, called the palace of St. Ildefonſo. This place is twenty-five miles from Madrid, by a noble road, planted on each ſide with trees, lately made, at the expence of 120,000l. ſterling. It is delightfully ſituated at the conflux of the rivers Tagus and Jarama; which run through the gardens, and add new beauty to this charming ſpot, where art and nature ſeem to go hand in hand with the moſt pleaſing and rural ſimplicity. On one ſide, fine avenues of ſtately oaks and lofty elms convey the trueſt ideas of magnificence, while they afford the moſt reviving ſhade; on the other, the ſudden tranſitions to lawns and wilderneſs, the caſcades of water breaking through the thickets, the tuneful ſongs of numberleſs birds ſheltered in theſe cool receſſes, the occaſional appearance and paſſage of the monarch attended by the grandees of his kingdom; all theſe objects united, and concentrated in one point, fill the imagination with pleaſing ideas, and impreſs the mind of a traveller with a thouſand agreeable ſenſations.

The ſituation is in an extenſive plain, ſurrounded with large hills, of a moſt diſagreeable aſpect indeed, but ſeldom appearing, being hidden by the noble rows of trees that extend acroſs the flat in every direction. The main body of the palace is an old building, to which have been lately added two new wings. The firſt part of the building was erected by Philip II. who purchaſed the eſtate, planted many of the avenues, and, in order to extend his chace, or to indulge his ſplenetic diſpoſition, had all the vines that grew on the hills rooted up. By that means he drove away the inhabitants, and rendered the environs of his villa a perfect deſert. The apartments are good; but contain nothing very particular to take off from the enjoyment of ſo many fine objects abroad. In one of the new wings is a playhouſe, and in the other a chapel. Part of the cieling of the former was painted by Mengs, who was alſo ſent to Rome to paint a holy family for the principal altar in the chapel. There are ſeven fine pictures of Luca Jordano in the apartment called El Cabinete Antiguo, and ſix others in that of Los Mayordomos. The portraits of the grand duke and ducheſs of Tuſcany, by Mengs, are in a new apartment called the king's dreſſing-room. In the chapel, over the great altar, there is a fine picture of the Annunciation, by Titian, preſented to him by Charles V. and brought from the convent of Juſte, after the death of that emperor. The porcelain cabinet, where there are ſeveral large pieces of the king's own manufactory, is alſo an object of curioſity to a traveller.

As to the gardens, the whole of them may be thrown into three grand diviſions, diſtinguiſhed by the names of La Huerta Valentiana, Los Deleites, and El Cortijo. In the Huerta Valentiana, agriculture and gardening are carried on in the ſame manner as in that fruitful province, and they plough with horſes. In the Cortijo they uſe oxen, as in Andaluſia; and in other places they ſcratch up the ground with mules, as is ſtill practiſed in ſome parts of Spain. Which ever way one looks round, a conſtant variety pleaſes the eye, and enraptures the mind. At one moment the ſturdy buffalo moves before you, drawing his heavy burden; ſoon after, the ſlow camel, with his ponderous load; while the ſwift zebra, with his ſtriped garment, friſks over the plains. If you approach the farm, every object of convenience is conſulted, and in the dairy every degree of neatneſs. The Dutch cow enjoys a luxuriant paſture, the brood mares greatly enliven the landſcape, and the ſtables are filled with the moſt excellent horſes. An immenſe nurſery furniſhes all manner of trees and plants. The fine avenue, which ſerves alſo for a public walk, called Calle de Reyna, has nothing equal to it at Verſailles. It is three miles long, quite ſtraight from the palace gate, croſſing the Tagus twice before it loſes itſelf in the thickets, where ſome noble ſpreading elms and weeping poplars hang beautifully over the deep ſtill pool. Near this road is a flower-garden for the ſpring, laid out with great taſte by Mr. Wall, during his miniſtry. The gay variety of flowers at this time of the year is particularly pleaſing to the eye; but its beauty ſoon fades on the approach of ſummer. As the weather grows hot, the company that chooſes to walk retires to a garden in an iſland of the Tagus, on the north ſide of the palace. This is a heavenly place, cut into various walks and circular lawns, which in their primitive ſtate may have been very ſtiff and formal; but, in the courſe of a century, nature has obliterated the regular forms of art; the trees have ſwelled out beyond the line traced for them, and deſtroyed the enfilade by advancing into the walks or retiring from them. The ſweet flowering ſhrubs, inſtead of being clipped and kept down, have been allowed to ſhoot up into trees, and hang over the ſtatues and fountains they were originally meant to ſerve as humble fences to. The jets-d'eau daſh up among the trees, and add freſh verdure to the leaves. The terraces and balluſtrades built along the river are now overgrown with roſes, and other luxuriant buſhes, hanging down into the ſtream, which is darkened by the large trees growing on the oppoſite banks. Many of the ſtatues, groupes, and fountains, are handſome, ſome maſterly, the works of Algardi: all are placed in charming points of view, either in open circular ſpots at a diſtance from the trees, or elſe in gloomy arbours, and retired angles of the wood. The banks of this wood, called the Ila, are alſo enlivened by elegant yachts for the amuſement of the royal family.

The town or village formerly conſiſted of the palace, its offices, and a few miſerable huts, where the embaſſadors, and the attendants of the court, endeavoured to lodge themſelves as well as they could, but always very uncomfortably; many of the habitations were vaults half under ground. What determined the king to build a new town, and to embelliſh the environs, was an accident that happened at the nuncio's; a coach broke through the cieling of his dining-room, and fell in upon the table. The court then began to apply very conſiderable ſums to the purpoſe of erecting proper dwellings for the great number of perſons that flock to the place where the ſovereign reſides; near 10,000 are ſuppoſed to live here two or three months in the ſpring; the king keeps 115 ſets of mules, which require a legion of men to take care of them. Above a million ſterling has been laid out at Aranjuez ſince the year 1763; and it muſt be acknowledged, that wonders have been performed: ſeveral fine ſtreets drawn in ſtraight lines with broad pavements, a double row of trees before the houſes, and a very noble road in the middle; commodious hotels for the miniſters and ambaſſadors; great ſquares, markets, churches, a theatre, and an amphitheatre for bull-feaſts, have been raiſed from the ground; beſides the acceſſion of two new wings to the palace. Neatneſs and convenience have been more ſtudied and ſought for than ſhow in the architecture, but all together the place has ſomething magnificent in the coup d'œil.

ARAPABA'CA, *ſ.* in botany. See SPIGELIA.

A'RAR, or A'RARIS, a river of Celtic Gaul, now the *Saone*; which riſes out of mount Vogeſus on the confines of Lorraine, runs through the Franche Compte and Burgundy, and below Lyons falls into the Rhone. It is ſo incredibly ſlow, that the eye cannot diſtinguiſh which way it moves; and therefore Pliny calls it the *Sluggiſh River*. Its courſe is from north to ſouth. It is famous for a bridge of Cæſar, which was built by the ſoldiers in one day. It is navigable equally with the Rhone.

A'RARAT, the name of the mountain on which Noah's ark reſted, after the abatement of the waters of the univerſal deluge. Concerning this mountain there are various conjectures; though it is almoſt univerſally allowed to be in Armenia Major. Some are of opinion that it is one of the mountains which divide Armenia on the ſouth from Meſopotamia and that part of Aſſyria inhabited by the *Curds*; from whom theſe mountains took the name of *Curdu* or *Cardu*, by the Greeks turned into *Gordyæi*, &c. Others, that is lies towards the middle of Armenia, near the river Araxes, above 280 miles diſtant from the abovementioned mountains, making it belong to mount Taurus; but the Armenians are poſitive that Noah's Ararat is no other than a mountain to which they now give the name of *Maſis*, which lies about twelve leagues to the eaſt of Erivan, and four leagues from the Aras. It is encompaſſed by ſeveral petty hills; on the tops of them are found many ruins, thought to have been the buildings of the firſt men, who were, for ſome time, afraid to deſcend into the plains. It ſtands by itſelf, in form of a ſugar-loaf, in the midſt of a very large plain, detached, as it were, from the other mountains of Armenia, which make a long chain. It conſiſts of two hills; the ſmaller of which is the more ſharp and pointed; the higher, on which it is ſaid the ark reſted, lies to the north-weſt of it, and riſes far above the neighbouring mountains. It is ſo conſpicuous, that, when the air is clear, it may be ſeen four or five days journey off; yet travellers think the height is not extraordinary. Chardin is of opinion that he paſſed a part of mount Caucaſus which is higher; and Poullet thinks the height of mount Maſis, or Ararat, not above twice as great as that of mount Valerian near Paris. They therefore think that its being viſible at ſuch a great diſtance is owing to its lonely ſituation in a vaſt plain, and upon the moſt elevated part of the country, without any high ground before it to obſtruct the view. Nor is the ſnow with which it is always covered from the middle upwards any argument for its height; for, in this country, ice hath often been obſerved in the mornings of the middle of July. On the ſide of the mountain that looks towards Erivan, is a prodigious precipice, from whence rocks of an immenſe ſize are continually tumbling down with a hideous noiſe. This precipice ſeems quite perpendicular; and the extremities are rough and black, as if ſmutted with ſmoke. The ſoil of the mountain is looſe, and on the ſandy parts it is impoſſible to take a firm ſtep. Tournefort ſays, he encountered great difficulties in his aſcent and deſcent of this mountain; being often obliged, in order to avoid the ſand, to betake himſelf to places where great rocks were heaped on one another, under which he paſſed as through caverns, or to places full of ſtones, where he was forced to leap from one ſtone to another. But, if we may believe Struys, a Dutch traveller, all theſe difficulties may be ſurmounted. He aſſures us, he went five days journey up mount Ararat, to ſee a Romiſh hermit: that he paſſed through three regions of clouds; the firſt dark and thick, the next cold and full of ſnow, and the third colder ſtill: that he advanced five miles every day; and, when he came to the place where the hermit had his cell, he breathed a very ſerene and temperate air; that the hermit told him, he had perceived neither wind nor rain all the twenty-five years he had dwelt there; and that on the top of the mountain there ſtill reigned a greater tranquillity, whereby the ark was preſerved uncorrupted. He farther pretends, that the hermit gave him a croſs made out of the wood of the ark, together with a certificate; a formal copy of which the author has given in his narrative.

ARAS'SI, a maritime, populous, and trading, town, of Italy, in the territory of Genoa. Lat. 44. 3. N. lon. 7. 20. E.

A'RASTH, a maritime town of Fez, on the river Lucar, where it falls into the Atlantic.

A'RAT, a lake in Aſia. See ARAL.

ARATI'CU PON'HE, *ſ.* in botany. See ANNONA.

ARATE'IA, *ſ.* in antiquity, a yearly feſtival celebrated at Sicyon, on the birth-day of Aratus, wherein divers honours were paid by a prieſt conſecrated to this ſervice, who for diſtinction's ſake wore a ribband beſpangled with white and purple ſpots.

ARA'TION, *ſ.* [*aratio*, Lat.] The act or practice of ploughing.

A'RATORY, *adj.* [from *aro*, Lat. to plough.] That which contributes to tillage.

A'RATUS, general of the Achæans, conquered Niocles tyrant of Sicyon. Two years after, he ſurpriſed the caſtle called *Acrocorinthus*, and drove out the king of Macedonia: he delivered Argos from its tyrants, and was poiſoned by Philip II. king of Macedon, whom he had newly reſtored: he was about ſixty-two when he died, the ſecond year of the 141ſt Olympiad. He was interred at Sicyon, and received the greateſt honours from his countrymen.

ARATUS, celebrated for his Greek poem intitled Φαινομενα, the *Phenomena*, flouriſhed about the 127th Olympiad, or near 300 years before Chriſt, while Ptolemy Philadelphus reigned in Egypt. Being educated under Dionyſius Heracleotes, a ſtoic philoſopher, he eſpouſed the principles of that ſect, and became phyſician to Antigonus Gonatus, the ſon of Demetrius Poliorcetes, king of Macedon. The Phenomena of Aratus gives him a title to the character of an aſtronomer, as well as a poet. In this work he deſcribes the nature and motion of the ſtars, and ſhews their various diſpoſitions and relations; he deſcribes the figures of the conſtellations, their ſituations in the ſphere, the origin of the names which they bear in Greece and in Egypt, the fables which have given riſe to them, the riſing and ſetting of the ſtars, and he indicates the manner of knowing the conſtellations by their reſpective ſituations. The poem of Aratus was commented upon and tranſlated by many authors: of whom among the ancients were Cicero, Germanicus, Cæſar, and Feſtus Avienus, who made Latin tranſlations of it; a part of the former of which is ſtill extant. Aratus muſt have been much eſteemed by the ancients, ſince we find ſo great a number of ſcholiaſts and commentators upon him: among whom are Ariſtarchus of Samos, the Aryſtylli the geometricians, Apollonius, the Evæneti, Crates, Numenius the grammarian, Pyrrhus of Magneſia, Thales, Zeno, and many others, as may be ſeen in Voſſius, p. 156. Suidas aſcribes ſeveral other works to Aratus. Virgil, in his Georgics, has tranſlated or imitated many paſſages from this author: Ovid ſpeaks of him with admiration, as well as many others of the poets. And St. Paul has quoted a paſſage from him; which is in his ſpeech to the Athenians (Acts xvii. 28.) where he tells them that ſome of their own poets have ſaid, *For we are alſo his off-ſpring*, theſe words being the beginning of the fifth line of the Phenomena of Aratus. His modern editors are as follow: Henry Stephens publiſhed his poem at Paris in 1566, in his collection of the poets, in folio. Grotius publiſhed an edition of the Phenomena at Leyden in quarto, 1600, in Greek and Latin, with the fragments of Cicero's verſion, and the tranſlations of Germanicus and Avienus; all which the editor has illuſtrated with curious notes. Alſo a neat and correct edition of Aratus was publiſhed at Oxford, 1672, in 8vo, with the Scholia.

ARA'VA, a fortreſs of Upper Hungary, in a county and on a river of the ſame name. Lat. 49. 20. N. lon. 20. 0. E.

ARAU'CO, a fortreſs and a town of Chili, in South America; ſituated in a fine valley, on a river of the ſame name. The natives are ſo brave, that, after a hundred years war, they drove the Spaniards out of their country, though they had no fire-arms. Lat. 42. 30. S. lon. 51. 20. W.

ARAU'SIO, or Civitas Arausiensis, the capital of the Cavares in Gallia Narbonenſis; now *Orenge*, in the weſt of Provence, on an arm of the river Egue, which falls into the Rhone, from which it is diſtant a league to the eaſt, at the foot of a mountain. Here is an ancient amphitheatre ſtill to be ſeen. Lat. 44. 10. lon. 4. 46. E.

ARAW', a town of Swiſſerland. See Aaraw.

ARAX'ES, now the *Aras*, a river of Armenia Major, which takes its riſe in a mountain called *Albos*, where the Euphrates alſo hath its origin. The Araxes is a very rapid river, and is ſuppoſed to be the Gihon mentioned by Moſes. Beſides its extreme rapidity, it is very apt to overflow after rains; ſo that the Armenians have in vain endeavoured to build bridges over it; though ſome of them appear, from the few arches remaining, to have been built of the beſt materials, and in the ſtrongeſt manner. Such is the vehemence of its current after the thawing of the adjacent ſnows, or ſudden rains, that neither banks nor dykes can reſiſt it; ſo that nothing can be more terrible than the noiſe and violence of its waves at ſuch times; but, when its waters are low, it is fordable in ſome places on camels.

AR'BA, Ar'be, or Ar'bes, anciently an iſland and city of Illyria, now *Arbe*, in the gulf of Quarnaro. This iſland has but been ſlightly noticed by geographers. It was formerly ſubject to the kings of Hungary; afterwards it became dependent on Venetian feudatories; and at laſt was taken under the immediate dominion of that republic, by which a governor is appointed who has the title of count and captain. The number of people on the iſland does not much exceed 3000 ſouls. The climate is none of the happieſt; the winter ſeaſon is moſtly ſevere, eſpecially when agitated by the violent northerly winds, which ſometimes transform the intermediate ſeaſons into winter, and cauſe the ſummer itſelf to diſappear. Theſe furious winds do great damage to the iſland, particularly in the winter and ſpring. A few years ago, near 12,000 ſheep periſhed in one night, of cold, in the common paſtures of the mountain; where, according to the cuſtom over all Dalmatia, they are left in the open air the whole year round. The ſalt fog raiſed by the dreadful commotion of the waves, which often roars between the mountains of Arbe and the oppoſite Alps, in the narrow channel of Morlacca, conſumes all the buds of the plants and corn, if it happens to be driven upon the iſland by the wind; and it is then followed by a cruel ſcarcity of every kind of product. This calamity communicates its baneful influence even to the fleſh of the animals left on the paſtures, that becomes ill-taſted, in conſequence of the bitterneſs and bad nouriſhment of the food. Abſtracting from theſe irregularities, the air of Arbe is healthful, and conducive to longevity. The appearance of the iſland is exceedingly pleaſant. On the eaſt it has a very high mountain, of the ſame ſubſtance as the Morlacca, of which it was once a part. At the foot of this mountain, the reſt of the iſland is extended to the weſtward, and divided into beautiful and fruitful plains interſperſed with little hills fit to bear the richeſt products. At the extremity that looks to the north, a delightful promontory, called Loparo, ſtretches into the ſea; it is crowned with little hills, which almoſt encloſe a fine cultivated plain. Near this promontory are the two ſmall iſlands of S. Gregorio and Goli, very uſeful to ſhepherds and fiſhers. The coaſt of Arbe, that faces the Morlacca mountains, is quite ſteep and inacceſſible; and the channel between them is extremely dangerous, being expoſed to furious winds, and without a ſingle port on either ſide. The long and narrow iſland of Dolin, lying parallel to the iſland of Arbe, along the coaſt of Barbado, forms a channel leſs dangerous, though by no means ſo ſecure as it is beautiful to look at. There are ſeveral harbours in the neighbourhood of the city of Arbe, by which the trade of the beſt part of the iſland is facilitated. The city ſtands on a riſing ground between two harbours, which form a peninſula; it contains about 1000 inhabitants, among whom are many noble families. Among the moſt remarkable curioſities of the iſland, the Arbegiani are proud of many reliques, and particularly of the head of St. Criſtofano their protector; but the lovers of ſacred antiquity will find ſomething much more ſingular in the three heads of Shadrach, Meſhech, and Abednego, which are venerated here with great devotion. Four of the principal gentlemen are keepers of the ſanctuary, and to their care the precious records of the city are alſo committed. Among theſe records there is a tranſaction of MXVIII. by which the city of Arbe promiſes to the doge of Venice, Ottone Orſeolo, a tribute of ſome pounds *de ſeta ſerica*, "of wrought ſilk," and, in caſe of contravention, pounds *de ruro obrizo*, "of pure gold."

Springs of freſh water are by nature well diſtributed over the iſland, and maintain a proper humidity when the ſummer is not exceſſively dry; ſo that the dark verdure of the hills covered with wood, the luxuriance of the vines, and freſhneſs of the corn-ground, form a ſpectacle extremely cheerful and agreeable. The trade of this iſland conſiſts in fire-wood, of which many cargoes are annually ſent to Venice; corn, oil, excellent wine, brandy, and ſilk; it alſo exports hides, wool, ſheep, hogs, and horſes of a good breed. There is alſo abundance of good ſalt made on the iſland; and the fiſhing of tunny and mackarel makes no inconſiderable article of trade to the Arbegiani, who, like all their neighbours, find their account in ſelling this commodity to ſtrangers, rather than to the Venetians.

ARBA'CES, was governor of Media under Sardanapalus. Seeing him ſpinning among a company of his women, he ſtirred up his people to revolt, and dethroned Sardanapalus: who thereupon burnt himſelf in his palace. Arbaces, being crowned, began the monarchy of the Medes; which laſted 317 years under nine kings, till Aſtyages was expelled by Cyrus. Arbaces reigned twenty-two years, and died A. M. 3206. See Media.

AR'BALIST, *ſ.* [from *arcus*, a bow, and *baliſta*, Lat. an engine to throw ſtones.] A croſs-bow.—It is reported by William Brito, that the arcubaliſta, or *arbaliſt*, was firſt ſhewed to the French by our king Richard the Firſt, who was ſhortly after ſlain by a quarrel thereof. *Camden.* See Archery.

AR'BELA, now Irbil, a city of Aſſyria, lying in lon. 44. 5. E. lat. 35. 15. N. It is famous for the laſt and deciſive battle fought in its neighbourhood between Alexander the Great and Darius Codomannus. This battle was fought 331 years before Chriſt, and the event of it determined the fate of the Perſian empire. Arrian relates, that Darius's army conſiſted of a million of foot and 40,000 horſe; according to Diodorus, there were 200,000 horſe and 800,000 foot; Plutarch relates, that the horſe and foot together made up a million: and Juſtin gives us exactly half Diodorus's number.

Upon receiving notice of the vaſt ſtrength of the enemy, Alexander expreſſed neither ſurpriſe nor apprehenſion; but, having commanded a halt, he encamped four days, to give his men reſt and refreſhment. His camp being fortified by a good entrenchment, he left in it the ſick and infirm, together with all the baggage; and, on the evening of the fourth day, prepared to march againſt the enemy with the effective part of his army, which was ſaid to conſiſt of 40,000 infantry and 7000 horſe, unincumbered with any thing but their proviſions and armour. The march was undertaken at the ſecond watch of the night, that the Macedonians, by joining battle in the morning, might enjoy the important advantage of having an entire day before them, to reap the full fruits of their expected victory. About half way between the hoſtile camps, ſome eminences intercepted the view of either army. Having aſcended the riſing ground, Alexander firſt beheld the Perſian army drawn up in battle array, and perhaps more ſkilfully marſhalled than he had reaſon to apprehend. Their appearance, at leaſt, immediately determined him to change his firſt reſolution. He again commanded a halt, ſummoned a council of war; and, different meaſures being propoſed, acceded to the ſingle opinion of Parmenio, who adviſed that the foot ſhould remain ſtationary until a detachment of horſe had explored the field of battle, and carefully examined the diſpoſition of the enemy. Alexander, whoſe conduct was equalled by his courage, and both ſurpaſſed by his activity, performed thoſe important duties in perſon at the head of his light horſe and royal cohort. Having returned with unexampled celerity, he again aſſembled his captains, and encouraged them by a ſhort ſpeech. Their ardour correſponded with his own; and the ſoldiers, confident of victory, were commanded to take reſt and refreſhment.

Meanwhile Darius, perceiving the enemy's approach, kept his men prepared for action. Notwithſtanding the great length of the plain, he was obliged to contract his front, and form in two lines, each of which was extremely deep. According to the Perſian cuſtom, the king occupied the centre of the firſt line, ſurrounded by the princes of the blood and the great officers of his court, and defended by his horſe and foot guards, amounting to 15,000 choſen men. Theſe ſplendid troops, who ſeemed fitter for parade than battle, were flanked on either ſide by the Greek mercenaries and other warlike battalions, carefully ſelected from the whole army. The right wing conſiſted of the Medes, Parthians, Hyrcanians, and Sacæ; the left was chiefly occupied by the Bactrians, Perſians, and Carduſians. The various nations compoſing this immenſe hoſt were differently armed, with ſwords, ſpears, clubs, and hatchets; while the horſe and foot of each diviſion were promiſcuouſly blended, rather from the reſult of accident than by the direction of deſign. The armed chariots fronted the firſt line, whoſe centre was farther defended by the elephants. Choſen ſquadrons of Scythian, Bactrian, and Cappadocian, cavalry, advanced before either wing, prepared to bring on the action, or after it began to attack the enemy in flank and rear. The unexpected approach of Alexander within ſight of his tents prevented Darius from fortifying the wide extent of his camp; and, as he dreaded a nocturnal aſſault from enemies who often veiled their deſigns in darkneſs, he commanded his men to remain all night under arms. This unuſual meaſure, the gloomy ſilence, the long and anxious expectation, together with the fatigue of a reſtleſs night, diſcouraged the whole army, but inſpired double terror into thoſe who had witneſſed the miſerable diſaſters on the banks of the Granicus and the Iſſus.

At day-break Alexander diſpoſed his troops in a manner ſuggeſted by the ſuperior numbers and deep order of the enemy. His main body conſiſted in two heavy-armed phalanxes, each amounting to above 16,000 men. Of theſe the greater part formed into one line; behind which he placed the heavy-armed men, reinforced by his targeteers, with orders, that when the out-ſpreading wings of the enemy prepared to attack the flanks and rear of his firſt line, the ſecond ſhould immediately wheel to receive them. The cavalry and light infantry were ſo diſpoſed on the wings, that, while one part reſiſted the ſhock of the Perſians in front, another, by only facing to the right or left, might take them in flank. Skilful archers and darters were poſted at proper intervals, as affording the beſt defence againſt the armed chariots, which (as Alexander well knew) muſt immediately become uſeleſs whenever their conductors or horſes were wounded.

Having thus arranged the ſeveral parts, Alexander with equal judgment led the whole in an oblique direction towards the enemy's left; a manœuvre which enabled the Macedonians to avoid contending at once with ſuperior numbers. When his advanced battalions, notwithſtanding their nearneſs to the enemy, ſtill ſtretched towards the right, Darius alſo extended his left, till, fearing that by continuing this movement his men ſhould be drawn gradually off the plain, he commanded the Scythian ſquadrons to advance, and prevent the farther extenſion of the hoſtile line. Alexander immediately detached a body of horſe to oppoſe them. An equeſtrian combat enſued, in which both parties were reinforced, and the Perſians finally repelled. The armed chariots then iſſued forth with impetuous violence; but their appearance only was formidable; for the precautions taken by Alexander rendered their aſſault harmleſs. Darius next moved his main body, but with ſo little order, that the horſe, mixed with the infantry, advanced, and left a vacuity in the line, which his generals wanted time or vigilance to ſupply. Alexander ſeized the deciſive moment, and penetrated into the void with a wedge of ſquadrons. He was followed by the neareſt ſections of the phalanx, who ruſhed forward with loud ſhouts, as if they had already purſued the enemy. In this part of the field, the victory was not long doubtful: after a feeble reſiſtance the Perſians gave way; and the puſillanimous Darius was foremoſt in the flight.

The battle, however, was not yet decided. The more remote diviſions of the phalanx, upon receiving intelligence that the left wing, commanded by Parmenio, was in danger, had not immediately followed Alexander. A vacant ſpace was thus left in the Macedonian line, through which ſome ſquadrons of Perſian and Indian horſe penetrated with celerity, and advanced to the hoſtile camp. It was then that Alexander derived ſignal and well-earned advantages from his judicious order of battle. The heavy-armed troops and targeteers, which he had ſkilfully poſted behind the phalanx, ſpeedily faced about, advanced with a rapid ſtep, and attacked the enemy's cavalry, already entangled among the baggage. The enemy, thus ſurpriſed, were deſtroyed or put to flight. Meanwhile, the danger of his left wing recalled Alexander from the purſuit of Darius. In advancing againſt the enemy's right, he was met by the Parthian, Indian, and Perſian, horſe, who maintained a ſharp conflict. Sixty of the *Companions* fell; Hephæſtion, Cœnus, and Menidas, were wounded. Having at length diſſipated this cloud of cavalry, Alexander prepared to attack the foot in that wing. But the buſineſs was already effected, chiefly by the Theſſalian horſe; and nothing remained to be done, but to purſue the fugitives, and to render the victory as deciſive as poſſible.

According to the leaſt extravagant accounts, with the loſs of 500 men he deſtroyed 40,000 of the Perſian army, who never thenceforth aſſembled in ſufficient numbers to diſpute his dominion in the Eaſt. The invaluable provinces of Babylonia, Suſiana, and Perſis, with their reſpective capitals of Babylon, Suſa, and Perſepolis, formed the prize of his ſkill and valour. The gold and ſilver found in thoſe cities amounted to thirty millions ſterling; the jewels and other precious ſpoil, belonging to Darius, ſufficed, according to Plutarch, to load 20,000 mules and 5000 camels. The conſequences of this victory the reader will find narrated under the article PERSIA.

AR'BERG, or AR'BURG, a town of Swiſſerland, in the canton of Bern, with a handſome caſtle. It is ſeated on the river Ar, in a kind of iſland. Lat. 47. 0. N. lon. 7. 5. E.

AR'BITER, *ſ.* [Lat.] In the civil law, implies a judge nominated by the magiſtrate, or choſen voluntarily by two contending parties, in order to decide their differences. The civilians make a difference between *arbiter* and *arbitrator*, though both found their power on the compromiſe of the parties; the former being obliged to judge according to the cuſtoms of the law; whereas the latter is at liberty to uſe his own diſcretion, and accommodate the difference in that manner which appears moſt juſt and equitable.

ARBITRABLE, *adj.* [from *arbitror*, Lat.] Arbitrary; depending upon the will.—The ordinary revenue of a parſonage is in land, called the glebe; in tythe, a ſet part of our goods rendered to God; in other offerings beſtowed upon God by the people, either in ſuch *arbitrable* proportion as their own devotion moveth them, or as the laws or cuſtoms of particular places do require them. *Spelman.*

ARBI'TRAMENT, *ſ.* [from *arbitror*, Lat.] Will; determination; choice. It ſhould be written *arbitrement*:

Stand faſt! to ſtand or fall,
Free in thine own *arbitrament* it ſtands;
Perfect within, no outward aid require,
And all temptation to tranſgreſs repel. *Milton.*

AR'BITRARILY, *adv.* With no other rule than the will; deſpotically; abſolutely.—He governed *arbitrarily*, he was expelled, and came to the deſerved end of all tyrants. *Dryden.*

ARBITRA'RIOUS, *adj.* [from *arbitrarius*, Lat.] Arbitrary; depending on the will.—Theſe are ſtanding and irrepealable truths, ſuch as have no precarious exiſtence, or *arbitrarious* dependence upon any will or underſtanding whatſoever. *Norris.*

ARBITRA'RIOUSLY, *adv.* Arbitrarily; according to mere will and pleaſure.—Where words are impoſed *arbitrariouſly*, diſtorted from their common uſe, the mind muſt be led into miſpriſion. *Glanville.*

AR'BITRARY, *adj.* [*arbitrarius*, Lat.] Deſpotic; abſolute; bound by no law; following the will without reſtraint. It is applied both to perſons and things:

In vain the Tyrian queen reſigns her life
For the chaſte glory of a virtuous life,
If lying bards may falſe amours rehearſe,
And blaſt her name with *arbitrary* verſe. *Walſh.*

Depending on no rule; capricious.—It may be perceived, with what inſecurity we aſcribe effects depending on the natural period of time, unto *arbitrary* calculations, and ſuch as vary at pleaſure. *Brown.*

ARBITRARY PUNISHMENT, in law, denotes ſuch puniſhments as are by ſtatute left to the diſcretion of the judge. It is a general rule in arbitrary puniſhments, that the judge cannot inflict death. Hence all puniſhments that are not capital have acquired the name of arbitrary puniſhments, even although they be expreſsly pointed out by ſtatute.

To AR'BITRATE, *v. a.* [*arbitror*, Lat.] To decide; to determine; to judge of:

Yet, where an equal poiſe of hope and fear
Does *arbitrate* th' event, my nature is
That I incline to hope, rather than fear. *Milton.*

To ARBITRATE, *v. n.* To give judgment.—It did *arbitrate* upon the ſeveral reports of ſenſe, not like a drowſy judge, only hearing, but alſo directing, their verdict. *South.*

AR'BITRARINESS, *ſ.* Deſpoticalneſs; tyranny.—He that by harſhneſs of nature, and *arbitrarineſs* of commands, uſes his children like ſervants, is what they mean by a tyrant. *Temple.*

ARBITRA'TION, *ſ.* [from *arbitror*, Lat.] Arbitration is, where the parties ſubmit all matters in diſpute, concerning any perſonal chattels or perſonal wrong, to the judgment of one, two, or more, arbitrators, who are to decide the controverſy; or, if the two do not agree, it is uſual to add, that another perſon be called in as umpire, to whoſe ſole judgment it is then referred. 3 *Blackſt.* 16. Generally all matters of controverſy, either of fact, or of right, in things and actions perſonal and uncertain, may be ſubmitted to arbitration. 9 *Co.* 78. But matters of freehold, or any right and title to a freehold, cannot be ſubmitted to arbitration; yet, if the parties enter into mutual bonds to ſtand to the award relating to lands and tenements, they forfeit their bonds unleſs they obey it. 1 *Roll's Abr.* 242, 244. Alſo criminal matters, as felonies and other indictable offences, cannot be ſubmitted to arbitration; and, although the ſubmiſſion be by bond, yet the obligation is void, and the parties may be puniſhed for entering into ſuch bonds. 1 *Bac. Abr.*

Of ſubmiſſion there are divers kinds:—a ſubmiſſion by *words* is good, and the party in whoſe favour the award is made hath a remedy to enforce the performance of it. Yet it is not expedient that any ſubmiſſion ſhould be by words only, becauſe the party may revoke it any time before the award made, and that by word likewiſe, beſides that it lays a great foundation for perjury. *Compl. Arbitr.* 21. Submiſſion may alſo be by *covenant*; but this method is ſeldom uſed; for though it contains the ſame certainty with a bond, yet the method of ſuing on a covenant is different, and more difficult than ſuing upon a bond. *Id.* 7. 46. There may alſo be a ſubmiſſion by *rule of court*, which is in purſuance of the ſtatute 9 and 10 Will. c. 15. whereby the parties may agree that their ſubmiſſion be made a rule of ſuch of his majeſty's courts of record as the parties ſhall chuſe; which court will thereupon carry the award into execution in the ſame manner as for contempt of a rule of court. Or the ſubmiſſion may be by *bond*, which in ſome reſpects is preferable to a ſubmiſſion by rule of court; for an award made in purſuance of bonds of ſubmiſſion may bind the parties executors; but, if he who refuſes to perform an award made purſuant to a rule of court ſhall die, the ſtatute directing that the proſecution ſhall be carried on by attachment, the remedy being loſt, the award is loſt alſo. *Compl. Arbitr.* 34. Or the ſubmiſſion may be both by *bond* and *rule of court*, by adding the parties conſent at the bottom of the condition of the bond, and this ſeemeth to be the beſt way, for then the party may proceed which way he pleaſes; and it is ſaid, he may proceed both ways, that is, both on the bond, and alſo have an attachment for the contempt. 1 *Salk.* 73. It hath been uſual alſo, of late years, to inſert in the ſubmiſſion a caution that *no bill in equity* ſhall be filed againſt the arbitrators; for it would be a very great hardſhip upon arbitrators if they ſhould be harraſſed with ſuits, and the allowing them to be liable to ſuch ſuits would effectually diſcourage perſons of worth from accepting the office of arbitrators. 2 *Atk.* 395.

The award muſt be made according to the ſubmiſſion: upon which ground it hath been diſputed, whether awarding releaſes to the time of the award, and not to the time of the ſubmiſſion, is good; but it ſeems to be now ſettled, that ſuch award is not totally void, but good for ſo much as is within the ſubmiſſion, and void for the reſidue. *Bac. Abr.* If the ſubmiſſion be, ſo as the award be ready to be delivered to the parties, or to ſuch of them as ſhall deſire the ſame, the parties ſo bound are themſelves obliged to take notice of the award at their peril; but if the words of the ſubmiſſion be, ſo that the award be delivered to each party by ſuch a day, then muſt it be delivered to each party accordingly. *Wood, b.* 4. *c.* 3. An award muſt be *poſſible*, and *lawful*; thus, if an award be that money ſhall be paid to an infant, and that he ſhall make a releaſe, it is void; for the infant's releaſe is not good in law. So alſo the award muſt be certain and final, upon which account the arbitrators cannot regularly reſerve any thing for their future judgment, when the time allowed is expired. *Cro. Ja.* 585. Generally, the award ſhall be expounded according to the intent of the arbitrators, and ſhall not be unravelled in a court of equity, unleſs there was corruption in the arbitrators; for, the arbitrators being perſons of the parties own chooſing, the law preſumes that they would chooſe perſons whoſe underſtanding and judgment they could rely on. *Bur. Manſf.* 701.

Arbitrators cannot proceed on a reference alone, after they have once named an umpire; for then their authority ceaſeth, though the time for making the award is not yet expired. *Id.* Arbitrators, of themſelves, have no power to adminiſter oaths to the witneſſes; but it is now ſettled that they may award coſts and damages, the ſame as tho' the matter had been tried at *niſi prius*.

ARBITRA'TOR, *ſ.* An extraordinary judge between party and party, choſen by their mutual conſent. A governor; a preſident:

Though heav'n be ſhut,
And heav'n's high *arbitrator* ſit ſecure
In his own ſtrength, this place may be expos'd. *Milton.*

He that has the power of preſcribing to others without limit or controul.—Another Blenheim or Ramilies will make the confederates maſters of their own terms, and *arbitrators* of a peace. *Addiſon.*—The determiner; he that puts an end to any affair:

The end crowns all;
And that old common *arbitrator*, time,
Will one day end it. *Shakeſpeare.*

ARBI'TREMENT, *ſ.* [from *arbitror*, Lat.] Deciſion; determination.—I know the knight is incenſed againſt you, even to a mortal *arbitrement*; but nothing of the circumſtance more. *Shakeſpeare.*—Compromiſe.—Lukewarm perſons think they may accommodate points of religion by middle ways, and witty reconcilements; as if they would make an *arbitrement* between God and man. *Bacon.*

ARBOI'S, a ſmall town of France, in the department of Jura, and late province of Franche Compte, famous for its wines. It is twenty-two miles ſouth-weſt of Beſançon. Lat. 46. 55. N. lon. 5. 40. E.

ARBON', an ancient town in Swiſſerland, on the ſouth banks of the lake Conſtance, in Thurgaw. It has a caſtle built by the Romans, and is under the juriſdiction of the biſhop of Conſtance. In the time of war, the Swiſs have a right to put in a garriſon. It is twelve miles ſouth-eaſt of Conſtance. Lat. 47. 30. N. lon. 9. 30. E.

AR'BOR, *ſ.* in botany, a tree. Trees are by Linnæus claſſed in the ſeventh family of the vegetable kingdom, and are diſtinguiſhed from ſhrubs in that their ſtems come up with buds on them; but this diſtinction holds not univerſally, there being rarely any buds on the large trees in India.

ARBOR, in mechanics, the principal part of a machine which ſerves to ſuſtain the reſt; alſo the axis or ſpindle on which a machine turns, as the *arbor* of a crane, windmill, &c.

ARBOR CAMPHORI'FERA, *ſ.* in botany. See LAURUS.

ARBOR CRE'PITANS. See HURA.

ARBOR DIA'NÆ. See CHEMISTRY.

ARBOR JU'DÆ, *ſ.* in botany. See CERCIS.

ARBOR VI'TÆ. See THUYA.

AR'BORARY, *adj.* [*arborarius*, Lat.] Belonging to a tree.

AR'BORET, *ſ.* [*arbor*, Lat. a tree.] A ſmall tree or ſhrub:

No *arboret* with painted bloſſoms dreſt,
And ſmelling ſweet, but there it might be found,
To bud out fair, and her ſweet ſmells throw all around.
Fairy Queen.

ARBO'REOUS, *adj.* [*arboreus*, Lat.] Belonging to trees; conſtituting a tree.—A grain of muſtard becomes *arboreous*. *Brown.*—A term in botany, to diſtinguiſh ſuch funguſes or moſſes as grow upon trees, from thoſe that grow on the ground.—They ſpeak properly, who make it an *arboreous* excreſcence, or rather a ſuperplant bred of a viſcous and ſuperfluous lopp, which the tree itſelf cannot aſſimulate. *Brown.*

ARBORES'CENT, an epithet applied to ſuch objects as reſemble trees.

ARBORIBON'ZES, in modern hiſtory, prieſts of Japan, who live an erratic life, and ſubſiſt on alms. They dwell in caverns, and cover their heads with bonnets made of the bark of trees.

AR'BORIST, *ſ.* [*arboriſte*, Fr. from *arbor*, a tree.] A naturaliſt who makes trees his ſtudy.—The nature of the mulberry, which the *arboriſts* obſerve to be long in the begetting his buds; but, the cold ſeaſons being paſt, he ſhoots them all out in a night. *Brown.*

AR'BOROUS, *adj.* [from *arbor*, Lat.] Belonging to a tree:

From under the ſhady *arborous* roof
Soon as they forth were come to open ſight
Of day-ſpring and the ſun. *Milton.*

AR'BOUR, *ſ.* [from *arbor*, Lat. a tree.] A bower; a place covered with green branches of trees:

For noon-day's heat are cloſer *arbours* made;
And, for freſh ev'ning air, the op'ner glade. *Dryden.*

ARBOUR VINE, *ſ.* A ſpecies of BINDWEED.

ARBUR'THIE, a diſtrict in the ſhire of Kincardin, or Mearns, in Scotland.

AR'BUSCLE, *ſ.* [*arbuſcula*, Lat.] Any little ſhrub.

ARBUS'TUM, *ſ.* implies a number or multitude of trees planted for the fruit, as an orchard, &c. The word is alſo applied to a place planted with trees for faſtening vines to, which are hence called by Columella *arbuſtivæ*. Arbuſtum is likewiſe uſed to denote an orchard wherein the trees are planted at ſuch diſtances that there is room for ploughing and growing corn between.

AR'BUTHNOT (Alexander), principal of the univerſity of Aberdeen in Scotland, was born in the year 1538. He ſtudied firſt at Aberdeen; and was afterwards ſent to France, where, under the famous Cujacius, he applied himſelf to the ſtudy of the civil law. In the year 1563, he returned to Scotland, and took orders. In 1568, he was appointed miniſter of Arbuthnot and Logy-Buchan; and, in the following year, he was made principal of the king's college at Aberdeen. In the general aſſembly which met at Edinburgh in 1573 and 1577, he was choſen moderator; and to the end of his life was an active ſupporter of the reformed religion. He died in 1583, in the forty-fifth year of his age; and was buried in the college church of Aberdeen. We are told in the Biographia, that he was eminent as a poet, a philoſopher, a mathematician, a lawyer, a divine, and a phyſician. He wrote *Orationes de Origine & Dignitate Juris*, printed at Edinburgh, 1572, 4to. and he publiſhed Buchanan's Hiſtory of Scotland in the year 1582.

ARBUTHNOT (Dr. John), was born in Kincardinſhire, near Montroſe, and was educated at Aberdeen, where he received his degree in phyſic. The difficulties in which his family was involved on account of their political principles made it neceſſary that he ſhould court preferment elſewhere, therefore he went to London. The firſt character in which he acted there was a teacher of the mathematics; and, while he was employed in this manner, he had occaſion to publiſh his Examination of Dr. Woodward's Account of the Deluge. This tract, which abounded with learning and good ſenſe, ſerved to make him known. He publiſhed ſoon after his Eſſay on the Uſefulneſs of Mathematics. In the profeſſion of phyſic he advanced by ſlow but ſure degrees; and his reputation in it was at length fully eſtabliſhed, by a ſucceſsful cure which he performed on prince George of Denmark. Queen Anne, in conſequence of it, appointed him one of her phyſicians, and he was made a member of the Royal Society. His talents and worth were the ſtrongeſt recommendations of him to the men of wit and learning of his day; and he entered into particular connections with Pope and Swift, with whom he joined in publiſhing ſeveral volumes of miſcellanies. In 1727, he publiſhed Tables of ancient Coins, Weights, and Meaſures; a work of great uſe, and real erudition. In 1732, his valuable tract concerning The Nature and Choice of Aliments appeared; which, the year after, was followed by his remarks on The Effects of Air on Human Bodies. A conſtitutional aſthma had diſtreſſed him at different periods of his life, and proved fatal to him in 1734. In 1751, came out, in two vols. 8vo, printed at Glaſgow, The Miſcellaneous Works of the late Dr. Arbuthnot; which are ſaid to comprehend, with what is inſerted in Swift's Miſcellanies, all the pieces of wit and humour of this admirable author.

ARBU'TUS, *ſ.* [Latin; derivation uncertain.] In botany, a genus of the decandria monogynia claſs, in the natural order of bicornes. The generic characters are—Calyx: perianthium five-parted, obtuſe, very ſmall, permanent. Corolla: monopetalous, ovate, flattiſh at the baſe, diaphanous, with a quinquefid mouth; diviſions obtuſe, revolute, ſmall. Stamina: filaments ten, ſubulate-ſwelling, very ſlender at the baſe, affixed to the edge of the baſe of the corolla, and half the length of it; antheræ ſlightly bifid, nodding. Piſtillum: germ ſubglobular, on a receptacle marked with ten dots; ſtyle cylindric, the length of the corolla; ſtigma thickiſh, obtuſe. Pericarpium: berry roundiſh, five-celled. Seeds: ſmall, bony.—*Eſſential Character.* Calyx five-parted; corolla ovate, diaphanous at the baſe; capſule five-celled.

Species. 1. Arbutus unedo, or common ſtrawberry-tree: of this there are the following varieties; i. Arbutus alba, or common white-flowered ſtrawberry-tree: flower ſimple, corollas whitiſh. ii. Arbutus rubra, or red-flowered ſtrawberry-tree: flower ſimple, corollas reddiſh. iii. Arbutus plena, or double-flowered ſtrawberry-tree: flower full; ſtem arboreous, leaves oblong-lanceolate, panicles ſmooth, nodding. The common arbutus, or ſtrawberry-tree, riſes to the height of twenty or thirty feet, but rarely with an upright ſtem. It uſually puts out branches very near the ground. The leaves keep on all the winter, and are thruſt off in the ſpring by new ones, ſo that it is always clothed with leaves. The berries have many ſeeds in them, and are roughened with the tubercles of the ſeeds. The arbutus is now to be found in moſt of our plantations, and is one of their greateſt ornaments in the months of October and November, that being the ſeaſon when it is in flower, and the fruit of the former year is ripe, for that is a whole year in growing to perfection. When there is plenty both of fruit and flowers upon the trees, they make an elegant appearance, at a ſeaſon when moſt others are paſt their beauty. Thoſe trees which have large oval fruit, make the greateſt figure; the flowers of this being larger, and oblong. The variety with double flowers is a curioſity, but the flowers, having only two rows of petals, make no great appearance, nor do the trees produce fruit in any quantity; the other therefore is preferable. That with red flowers makes a pretty variety when intermixed with the other; for the outſide of them is of a fine red colour at their firſt appearance, and afterwards they change to purple before they fall off. The fruit of this is the ſame with the common one. Beſides theſe principal varieties, the nurſerymen have the curled-leaved or cut-leaved, and the ſmooth-leaved; they alſo diſtinguiſh the broad from the narrow-leaved. The arbutus is a native of the ſouth of Europe, Greece, Paleſtine, and many other parts of Aſia. It is alſo found in the weſt of Ireland, in the county of Kerry, near the lake of Killarney, on barren limeſtone rocks. The country people eat the fruit there, in Spain, Italy, &c. Mr. Ray mentions, that he ſaw it in the market at Padua. It is ſaid to have conſtituted part of the food of mankind in the early ages.

2. Arbutus laurifolia, or laurel-leaved ſtrawberry-tree: ſtem arboreſcent; leaves oblong, acuminate to both ends, ſharply ſerrate, ſmooth; racemes axillary, one-ranked, ſeſſile, ſolitary. This is very like the common arbutus, but differs in its ſharp cuſpidate ſerratures, and its axillary very ſimple racemes, ſhorter than the leaves, with the flowers all directed the ſame way. It is a native of North America.

3. Arbutus andrachne, or oriental ſtrawberry-tree: ſtem arboreous; leaves oval, quite entire and ſerrate; panicles pubeſcent, erect. This alſo much reſembles the common arbutus, but the bark is not rough; ſome of the leaves have no ſerratures; the panicle is upright and viſcid, which in that is ſmooth. It grows to a middle-ſized tree, with irregular branches. The leaves are ſmooth, large, ſomewhat like thoſe of the bay-tree, but not quite ſo long. Flowers like thoſe of the common arbutus, but growing thinly on the branches. Fruit oval, of the ſame colour and conſiſtence with the common ſort; but the ſeeds of this are flat, whereas in that they are pointed and angular. It grows naturally in the eaſt, particularly about Magneſia, where it is ſo plentiful, as to be the principal fuel uſed by the inhabitants. Belon ſays, it is common in Crete, and between Aleppo and Antioch. Wheeler obſerved it near Athens, and ſaw the fruit in the market at Smyrna. Tournefort enumerates three other varieties of this tree, which he obſerved in the Levant; one with ſerrate leaves, a ſecond with a large oblong fruit, and a third with large compreſſed fruit. Flowers in March and April.

4. Arbutus ferruginea, or long-flowered ſtrawberry-tree: ſtem arboreſcent, leaves oblong, obtuſe, ſmooth, quite entire; racemes terminal. Found in America, by Mutis.

5. Arbutus mucronata, or pointed-leaved ſtrawberry-tree: ſtem ſhrubby; leaves alternate, ovate, ſerrate, pointed; peduncles axillary, one-flowered. 6. Arbutus pumila, or dwarf ſtrawberry-tree: ſtems diffuſed; leaves alternate, diſtich, oblong, quite entire; flowers lateral, ſolitary. Both of theſe were found in Terra del Fuego, by Bäck.

7. Arbutus Acadienſis, or Acadian ſtrawberry-tree: ſtems procumbent; leaves ovate, ſubſerrate; flowers ſcattered; berries many-ſeeded. This is a low buſhy ſhrub, with ſlender trailing branches: it never produces fruit in England. It grows naturally in Acadia, and other northern parts of America, upon ſwampy land, which is frequently overflowed with water.

8. Arbutus Alpina, or Alpine arbutus: ſtems procumbent; leaves rugoſe, ſerrate. The branches of this ſhrub trail flat upon the ground, two or three feet round the root; the berries are globular, green at firſt, then red, but black when ripe, and of the ſize of a ſloe, having five cells, containing five ſmall bony ſeeds, their taſte reſembling that of black currants, but more maukiſh, inſomuch that Linnæus ſays the Laplanders will ſcarcely eat them. Haller, on the contrary, thinks the flavour not unpleaſant; and Mr. Miller deſcribes them as of a pleaſant taſte, ſo as frequently to be eaten by the inhabitants of thoſe countries where they grow naturally. Nothing is more common, ſays Linnæus, in all the Lapland Alps, in Dalekarlia, from their tops to their baſe, round the White Sea, eſpecially in very dry ſandy places: alſo in Denmark, Switzerland, Dauphiné, Savoy, Siberia, &c. and with us, in many of the highland mountains of Scotland, in a dry barren ſoil. It flowers in May.

9. Arbutus uva urſi, or trailing arbutus or bear-berry: ſtem procumbent, leaves quite entire. This ſhrub is very abundant in many parts of the continent, as in Sweden, Denmark, and moſt parts of the north; alſo in Switzerland, Germany, Carniola, Dauphiné, Savoy, Siberia, &c. With us it is of late diſcovery, and ſeems firſt to have been noticed by Mr. Lhwyd, in the iſland of Mull; it is however now known to be very common upon dry, heathy, mountainous, and rocky, places, throughout the highlands and weſtern iſles; alſo near Hexham, in Northumberland. The leaves have been greatly celebrated in calculous and nephritic complaints, and other diſorders of the urinary paſſages. The doſe is half a drachm of the powder of the leaves, every morning, or two or three times a day. De Haen relates, after great experience of this medicine in the hoſpital of Vienna, that ſuppurations, though obſtinate, and of long continuance, in the kidneys, ureters, bladder, urethra, ſcrotum, and perinæum, where there has been no venereal taint or evident marks of a calculus, were in general completely cured by it: that, of thoſe who had a manifeſt calculus, ſeveral found permanent relief, ſo that,

long after the medicine had been left off, they continued free from pain or inconvenience in making water, though the catheter ſhewed that the calculus ſtill remained: that others, who ſeemed to be cured, relapſed on leaving off the medicine, were again relieved on repeating its uſe, and this for ſeveral times ſucceſſively; while others obtained from it only temporary and precarious relief, the complaints being often as ſevere during the continuance of the medicine as when it was not uſed. The trials of the uva urſi made in this country have by no means anſwered expectation. Sometimes the patients found no relief, but thought their complaints rather aggravated than alleviated; whilſt, in other calculous and nephritic caſes, the ſymptoms have been almoſt entirely removed. Perhaps upon the whole, we ſhall find it no better than other vegetable aſtringents; ſome of which have long been uſed by the country people, in gravelly complaints, and with very great advantage; though hitherto unnoticed by the regular practitioners. But, whatever may be the event of its medical qualities, the whole plant is certainly very ſerviceable in dying an aſh-colour, but particularly in tanning leather. In this view it may deſerve attention, in thoſe countries where whole mountains are covered with this trailing ſhrub, and they have ſcarcely timber ſufficient for their œconomical purpoſes. The berries are a food for grous, and other game.

10. Arbutus thymifolia, or thyme-leaved arbutus: ſtems procumbent; leaves oval, acute, obſcurely ſerrate, ſtrigoſe underneath, flowers axillary, eight-ſtamened. This has the ſtructure of the cranberry, but all the parts are larger. The ſtem is imbricate, with briſtle-ſhaped ſcales. Native of North America, in ſwamps; and extremely abundant there. The berries are brought to market at Philadelphia, late in autumn; and are uſed for tarts and other kinds of paſtry. Quantities of them are ſent over, preſerved, to Europe, and to the Weſt Indies. They are much uſed by our paſtry-cooks in London, but are inferior to cranberries of our own growth. The Swedes in America call them *tranbær*, and the French in Canada *atopa*, from the Indians.

Propagation and Culture. The beſt method of propagating the common arbutus is from ſeeds. When the fruit is perfectly ripe, which is from the middle of November to the end of December, it ſhould be gathered, and mixed whole with dry ſand, to preſerve it until the time of ſowing. The ſureſt method of raiſing the plants, is to ſow the ſeeds in pots, which ſhould be plunged into an old bed of tanners bark, that has loſt its heat, covering the bed with glaſſes, &c. to keep out froſt; this ſhould be done in December. If the ſeeds are good, and, as the ſpring advances, the pots are refreſhed with water, the plants will come up the beginning of April, when they ſhould be frequently but ſparingly watered, and conſtantly kept clean from weeds. As the ſummer advances, if the plants are ſhaded in the heat of the day, it will greatly promote their growth; but in warm weather they muſt be open all night to receive the dew, and ſhould only be covered in the middle of the day; with this management, the plants will riſe to the height of five or ſix inches the firſt ſummer. The beginning of October, theſe plants may be ſhaken out of the pots, and their roots carefully ſeparated, planting them ſingly in ſmall pots filled with light earth; then plunge the roots into an old bed of tanners bark, under a common frame, obſerving to ſhade them from the ſun in the middle of the day, and to give them water as they may require: in this bed the pots ſhould remain during the winter, obſerving to expoſe the plants to the open air, at all times when the weather is favourable; but in froſty weather they muſt be covered, otherwiſe they will be in danger, if the ſeaſon proves ſevere. The ſpring following the plants may be removed to a very gentle hot-bed, which will require no other covering but mats. This will enable them to make ſtrong ſhoots early in the ſummer, whereby they will be in a better condition to bear the cold of the ſucceeding winter: in this bed the plants may continue moſt part of the ſummer; for, if the pots are taken out and ſet upon the ground, the ſmallneſs of their ſize will occaſion the earth in them to dry ſo faſt, that watering will ſcarcely preſerve the plants alive; but, if they are kept growing all the ſummer, they will be more than a foot high by the next autumn; but it will be adviſable to ſcreen them from the froſt during their continuance in pots, by plunging them into the ground in a warm place, and covering them with mats in bad weather. When the plants are grown to be two or three feet high, you may ſhake them out of the pots, and plant them in the open ground in the places where they are to remain; but this ſhould be done in April, that they may have taken good root before the winter, which would be apt to damage them if newly planted; and, as all the earth about their roots may be thus preſerved, there will be no fear of ſucceeding at this ſeaſon. Theſe plants are tolerably hardy, and are ſeldom hurt, except in extreme hard winters, which many times kill the young and tender branches, but rarely deſtroy the roots; therefore, however dead they may appear after a hard winter, yet I would adviſe the letting them remain till the ſucceeding ſummer has ſufficiently demonſtrated what are living and what are dead; for the winters of 1728-9, and 1739-40, gave us great reaſon to believe moſt of the trees of this kind were deſtroyed; and many people were ſo haſty, as to dig up or cut down many of their trees; whereas all thoſe who had patience to let them remain, found that ſcarcely one in five hundred failed to come out again the next ſummer, and many of them made handſome plants that ſeaſon. This tree delights in a moiſt ſoil, for, when it is planted in dry ground, it ſeldom produces much fruit; the flowers coming forth in autumn, if the winter proves ſevere, are generally deſtroyed, which has occaſioned their producing very little fruit in England for ſeveral years: therefore, in order to obtain fruit, the trees ſhould be placed in a warm ſituation; and, where the ground is not naturally moiſt, there ſhould be a good quantity of loam and rotten neat's dung laid about their roots; and, if the ſpring ſhould prove dry, they muſt be plentifully watered, in order to have plenty of fruit. The very beſt ſeaſon for tranſplanting the arbutus is in September, at which time the bloſſoms are beginning to appear; and, at that ſeaſon, if it ſhould prove very dry, and they are kept moiſt, they will take root very ſoon: but, towards the beginning of November, their roots ſhould be well covered with mulch, to keep out the froſt.

The following directions are added from Mr. Boutcher's excellent Treatiſe on Foreſt-trees. The ſeeds ripening at different times muſt not be gathered all at once. Thoſe fruits which are ripe, may eaſily be known by their turning of a deep browniſh tawney colour; examine therefore your trees every two or three days. They retain their growing quality a very ſhort time. Sow the ſeeds rubbed out with the ſand in pots the middle of March. If the quantity you intend to raiſe be large, prepare a moderate hot-bed of tanners bark; lay on ſix inches deep of the fineſt rich looſe mould, ſow the ſeeds, and cover them not more than one-ſixth of an inch deep: in five or ſix weeks the plants will appear. The ſecond ſpring, Mr. Boutcher recommends to remove them into penny pots, which ſhould be plunged into the hot-bed till Auguſt, hardening them gradually by expoſing them to the open air in moiſt calm weather. Then they may be placed in a warm ſpot under a hedge, till October, where they may be expoſed all the winter, mats only being thrown over them in bad weather. The following ſpring take out the ſurface mould, fill the pots again with rich earth, remove them to a ſhady border till autumn, watering them in dry weather every ſecond or third evening; and then let them ſtand during winter under a wall or hedge where they may have the ſun. Having now ſtood two ſeaſons in the pots, ſhake them out cautiouſly, and cut off the mouldy or muſty roots; plunge them in water and earth for an hour, and then place them in twopenny pots, where they may continue two or three years; keep them the firſt ſeaſon under ſhade and ſhelter; water them in dry weather, and every ſpring take away the earth from the ſurface of the pots, and replace it with ſome which is freſh and rich. Mr. Boutcher ſays, they require a generous dry ſoil, and that they ſhould be planted under the covert of trees, at a proper diſtance. This tree is not fond of being much pruned at removal; this ought therefore to be performed a year before or after that operation. It will not ſucceed in moiſt, heavy, or clay, lands, but will grow tolerably well in a thin ſandy ſoil; it moſt affects that which is deep, loamy, and generous. It will riſe thirty feet high in a favourable ſoil and ſituation that is well ſheltered.

Arbu'tus, *Trailing*, *ſ.* in botany. See Epigæa.

ARC, *ſ.* [*arcus*, Lat.] A ſegment; a part of a circle; not more than a ſemicircle.—Their ſegments, or *arcs*, for the moſt part, exceeded not the third part of a circle. *Newton.* An arch:

Load ſome vain church with old theatric ſtate,
Turn *arcs* of triumph to a garden-gate. *Pope.*

Arc (Joan d'), called the Maid of Orleans, was born in 1407, in the village of Domremi, near Vaucouleurs, on the borders of Lorraine. She rendered herſelf famous in hiſtory, by commencing the expulſion of the Engliſh out of France, after the conqueſts made in that country by Henry V. She had lived for ſome time ſervant at an inn, where ſhe had been accuſtomed to ride the horſes of her maſter's gueſts to water; her employment and converſation with the company whom ſhe attended had given her a degree of boldneſs above her ſex; and, though only twenty-one years of age, ſhe liſtened with pleaſure to the martial atchievements, the conſtant topics of converſation in a warlike age. The calamities of her country, and the diſtreſs of her ſovereign, Charles VII. were the objects of her daily thoughts and nightly dreams. She was ſoon inflamed with the deſire of avenging on the Engliſh the miſery of France; and an ignorant mind might poſſibly miſtake the impulſe of her paſſions for heavenly inſpirations. She procured admiſſion to Baudrecourt, the governor of Vaucouleurs; ſhe declared to him that ſhe had been exhorted by frequent viſions and diſtinct voices, to atchieve the deliverance of her country; and the governor, either equally credulous himſelf, or ſufficiently penetrating to foreſee the effect ſuch an enthuſiaſt might have on the minds of the vulgar, granted her an eſcort to the French court, which at that time reſided at Chinon, in Touraine.

On her arrival at Chinon, ſhe is ſaid to have diſtinguiſhed Charles from his courtiers, though diveſted of every enſign of royalty; to have revealed a ſecret to him unknown to all the world beſide himſelf; and to have demanded, and deſcribed by particular marks, a ſword ſhe had never ſeen, and which ſhe required as the inſtrument of her future victories; ſhe aſſerted, that ſhe was commiſſioned to raiſe the ſiege of Orleans, and to conduct her lawful prince to Rheims, to be there crowned and anointed king of the French. Charles and his miniſters pretended to examine her pretenſions with ſcrupulous exactneſs: they affected at length to be convinced of the ſincerity of her declarations, and of her ſupernatural powers; their opinion was ſolemnly and publicly countenanced by an aſſembly of doctors and theologians, and by the parliament of France, then reſiding at Poictiers. After repeated examinations, the miſſion of Joan of Arc was pronounced to be divine; and the ſpirits of a deſpairing people were again elevated by the hope that heaven had declared itſelf in favour of France.

The Engliſh were at that time beſieging the city of Orleans, the laſt reſource of Charles, and every thing indicated a ſpeedy ſurrender. Joan undertook to raiſe the ſiege; and, to render herſelf ſtill more remarkable, girded herſelf with the miraculous ſword, of which ſhe before had ſuch extraordinary notices. Thus equipped, ſhe ordered all the ſoldiers to confeſs themſelves before they ſet out; ſhe diſplayed in her hand a conſecrated banner, and aſſured the troops of certain ſucceſs. Such confidence on her ſide ſoon raiſed the ſpirits of the French army; and even the Engliſh, who pretended to deſpiſe her efforts, felt themſelves ſecretly influenced with the terrors of her miſſion. When ſhe arrived near Orleans, ſhe wrote to the Engliſh to quit the ſiege; but her meſſenger was detained and loaded with irons; ſhe complained of this violation of good faith, and her herald was then ſent back with a letter full of contempt. She then addreſſed a ſecond letter, which ſhe faſtened to the end of an arrow, and ſhot it into the Engliſh fort raiſed before the city. The ſuperſcription was, "To the Duke of Bedford, who calls himſelf Regent of France in the name of the King of England. Having no right to this kingdom, God commands you, by me, the Maid of Orleans, to abandon the forts you have raiſed, and to retire." A ſupply of proviſions wanting to be conveyed into the town, Joan, at the head of ſome French troops, covered the embarkation, and entered Orleans at the head of the convoy which ſhe had ſafely protected. While ſhe was leading her troops along, a dead ſilence and aſtoniſhment reigned among the Engliſh; and they regarded with religious awe that temerity, which they thought nothing but ſupernatural aſſiſtance could inſpire. But they were ſoon rouzed from their ſtate of amazement by a ſally from the town; Joan led on the beſieged, bearing the ſacred ſtandard in her hand, encouraging them with her words and actions, bringing them to the trenches, and overpowering the beſiegers in their own redoubts. In the attack of one of the forts, ſhe was wounded in the neck with an arrow; but inſtantly pulling out the weapon with her own hands, and getting the wound quickly dreſſed, ſhe haſtened back to head the troops, and to plant her victorious banner on the ramparts of the enemy. Theſe ſucceſſes continuing, the Engliſh found that it was impoſſible to reſiſt troops animated by ſuch ſuperior energy; and the earl of Suffolk, who conducted the attack, thinking it dangerous to remain any longer in the preſence of ſuch an enthuſiaſtic enemy, raiſed the ſiege, and retreated with all imaginable precaution.

The ſiege of Orleans was raiſed in 1425; and the French, animated by this firſt eſſay of the holy maid, prepared to improve their advantage. The earl of Suffolk, with part of his forces, had retired to Jergeau; he was there inveſted by the French, animated by the preſence of Joan, and in ten days the town was taken by aſſault, and Suffolk himſelf made priſoner. Joan of Arc entered the town in triumph at the head of her army. The conſtable Richemont preſſed the remnant of Engliſh, who endeavoured to retreat: they were overtaken at the village of Patay; oppreſſed by their fears, they ſcarcely awaited the charge of their enemies; two thouſand were ſlaughtered on the field, and among the numerous captives were Talbot and Scales. Thus the Maid of Orleans had early fulfilled great part of her miſſion; but a more arduous enterpriſe remained, to conduct the king to receive the crown at Rheims. The city itſelf lay far diſtant from any place poſſeſſed by Charles; it was in the hands of the Engliſh; and the whole road which led to it was occupied by their garriſons. Yet Joan inſiſted on the execution of her deſign; the king himſelf ſhook off his general indolence, and reſolved to follow the exhortations of his warlike propheteſs; the nobility of France crowded to the ſtandard of their youthful ſovereign, who began his march at the head of twelve thouſand men; he paſſed without interruption through an enemy's country; received in his progreſs the ſubmiſſion of Troyes; was inſtantly admitted into Rheims, the inhabitants of which drove out the Engliſh, and in that city he was ſolemnly inaugurated; the Maid of Orleans ſtanding by his ſide in complete armour, and diſplaying, during the ceremony, her holy banner. The claim of Charles, from his coronation at Rheims, received new luſtre; and Laon, Soiſſons, Chateau-Thierri, Provins, and many other towns in the neighbourhood, inſtantly revolted from the Engliſh.

Joan of Arc had declared, that with the inauguration of Charles VII. at Rheims her miſſion expired; and that it was her wiſh, after having fulfilled her promiſes, to return to her former condition. The count of Dunois had exhorted her to perſevere till the Engliſh were finally expelled. Overcome by his importunities, ſhe had thrown herſelf into Compeigne, which at that time was beſieged by the duke of Burgundy. In a ſally on the quarters of John of Luxembourg, ſhe was deſerted by her friends, ſurrounded by her enemies, and after a gallant reſiſtance taken priſoner. She is ſuppoſed to have been betrayed by the envy of the French, who repined at every ſucceſs being aſcribed to her influence; and the neglect of Charles, who made not the ſlighteſt effort to procure her releaſe, proves that he no longer expected to derive any benefit from the inſtrument he had adopted. The duke of Bedford purchaſed from John of Luxembourg this important captive, and commenced a proſecution againſt her, which, whether undertaken from policy or revenge, ſtains with barbarity his accompliſhed character. As a priſoner of war, Joan was entitled to the courteſy of good uſage, practiſed by civilized nations; and in her military capacity ſhe never had been impeached of acting with treachery or cruelty. But her enemies were inexorable; and to diſguiſe the ſource of their enmity, they prevailed on the biſhop of Beauvais to proſtitute the ſacred name of religion to the perſecution they meditated. The biſhop pretended that Joan had been taken in his dioceſe, and deſired to have her tried by an eccleſiaſtical court for ſorcery, impiety, idolatry, and magic; the univerſity of Paris diſgraced itſelf by joining the requeſt. But Joan for a long time defended herſelf with becoming firmneſs; ſhe acknowledged her intention to expel the Engliſh, the invaders of her country; and replied, that ſhe ſubmitted her inſpirations, which her judges urged as magical, to God, the fountain of truth. But ſhe was already prejudged; her revelations were declared to be the inventions of the devil to delude the people; and ſhe was ſentenced to be delivered over to the ſecular arm. It is with indignation the reader muſt peruſe her fate; the Maid of Orleans was found guilty of hereſy and witchcraft; and ſentenced to be burnt alive, the then puniſhment for ſuch offences. But, previous to the infliction of this dreadful ſentence, they were reſolved to make her abjure her former errors; and at length ſo far prevailed by terror and rigorous treatment, that her ſpirits were broken by the hardſhips ſhe was to ſuffer. Her former viſionary dreams began to vaniſh, and a gloomy diſtruſt took place of her late inſpirations. She publicly declared herſelf willing to recant, and promiſed never more to give way to the vain deluſions which had hitherto miſled her, and impoſed on the people. This was what her oppreſſors deſired; and, willing to ſhew ſome appearance of mercy, they changed her ſentence into perpetual impriſonment, and to be fed during life on bread and water. But the rage of her enemies was not yet ſatiated. Suſpecting that the female habit which ſhe had conſented to wear was diſagreeable to her, they purpoſely placed in her apartment a ſuit of man's apparel, and watched for the effects of their temptation upon her. Their artifices prevailed. Joan, ſtruck with the ſight of a dreſs in which ſhe had gained ſo much glory, immediately threw off her penitent's robes, and put on the forbidden garment. Her enemies caught her equipped in this manner; and her imprudence was conſidered as a relapſe into her former tranſgreſſions. No recantation would ſuffice, and no pardon would be granted. She was condemned to be burnt alive in the market-place of Rouen; and this infamous ſentence was executed with brutal ſeverity, A. D. 1432. A mauſoleum was afterwards erected to the memory of this woman, in the city of Orleans, which is deſcribed by Wraxall, in his Tour, as follows: "In the ſtreet leading from the bridge ſtands the celebrated monument where Charles VII. and Joan of Arc, the Maid of Orleans, are repreſented on their knees before the body of our Saviour, who lies extended on the lap of the Virgin. It was erected by order of that monarch in 1458, to perpetuate his victories over the Engliſh, and their expulſion from his dominions. All the figures are in iron. The king appears bareheaded, and by him lies his helmet ſurmounted with a crown. Oppoſite to him is the Maid herſelf, in the ſame attitude of grateful devotion to heaven. It is a moſt precious and invaluable hiſtorical monument.

"In the Hotel de Ville (continues Wraxall) is a portrait of the ſame immortal woman, which I ſtudied long and attentively. Though it was not done till 1581, which was near 130 years after her deceaſe, it is yet the oldeſt and beſt picture of her now exiſting. The painter ſeems undoubtedly to have drawn a flattering reſemblance of her, and to have given his heroine imaginary charms. Her face, though long, is of exceeding beauty, heightened by an expreſſion of intelligence and grandeur rarely united. Her hair falls looſely down her back, and ſhe wears on her head a ſort of bonnet enriched with pearls, and ſhaded with white plumes, tied under her chin with a ſtring. About her neck is a little collar, and lower down, upon her boſom, a necklace compoſed of ſmall links. Her dreſs, which is that of a woman, I find it difficult exactly to deſcribe. It fits cloſe to the body, and is cut or ſlaſhed at the arms and elbows. Round her waiſt is an embroidered girdle, and in her right hand ſhe holds the ſword with which ſhe expelled the enemies of her ſovereign and her country. I am not ſurpriſed at the animated and enthuſiaſtic attachment which the French ſtill cheriſh for her memory. The critical and deſperate emergency in which ſhe appeared; her ſex, youth, and even the obſcurity of her birth; the unparalleled ſucceſs which crowned her enterprize; the cruel and deteſtable ſentence by which ſhe was put to death; the air of the marvellous ſpread over the whole narration, increaſed and ſtrengthened by that veneration which time affixes to every great event; all theſe united cauſes conſpire to place her above mortality. Rome and Athens would undoubtedly have ranked her among their tutelary deities, and have erected temples to her honour; nor can I help being amazed, that, amidſt the almoſt infinite number of modern ſaints who croud and diſgrace the French churches, no altar was ever erected to the Maid of Orleans."

ARCA'DE, *ſ.* [French.] A continued arch; a walk arched over:

> Or call the winds through long *arcades* to roar,
> Proud to catch cold at a Venetian door. *Pope.*

ARCA'DI, or ARCA'DIANS, the name of a learned ſociety at Rome.

ARCA'DIA, an inland diſtrict in the heart of Peloponneſus. It is mountainous, and fitter for paſture than corn; and therefore chiefly celebrated by bucolic or paſtoral poets, who feign Pan, the god of ſhepherds, to be the guardian of it. *Virgil.* It has to the north Achaia, to the eaſt Argos and Laconia, Meſſenia to the ſouth, and Elis to the weſt. According to Pliny, the wine of this country cured barrenneſs in women, and inſpired the men with rage; and the berries of the yew gathered there were ſo ſtrong a poiſon, that whoever ſlept or took refreſhment under that tree were ſure to die. In Strabo's time there were few cities remaining in it, moſt of them being deſtroyed in the Grecian wars. Euſtathius ſays, that the country was anciently called *Pelaſgia,* from Pelaſgos, who brought the people, from roots, herbs, and leaves of trees, to feed on acorns, eſpecially beech-maſt; as Artemidorus obſerves, that the Arcadians uſually lived on acorns. It was alſo called Lycaonia, Gigantis, and Parrhaſia. *Stephanus.* The Arcadians are greatly commended for their love of, and ſkill in, muſic. Homer celebrates their martial proweſs, their paſtures, their ſheep, and their country well-watered. The gentilitious name is *Arcades,* who boaſted of their great antiquity, and that they were older than the ſun and moon. They were the firſt who had a year of three months, and therefore called *Proceleni,* becauſe their year was before adjuſted in Greece to the courſe of the moon.

ARCADIA, a ſea-port of the above province, near the gulf of the ſame name. It is nearly oppoſite to the iſle of Zante, 64 miles ſouth-weſt of Corinth, and 22 north of Navarin. Lat. 37. 24. N. lon. 21. 42. E.

ARCAN'GIS, *ſ.* in the Turkiſh armies an inferior kind of infantry, which ſerve as *enfans perdus*, and to haraſs and pillage the enemy's frontiers. The Arcangis are an order inferior to the Janiſaries; and, when any of them diſtinguiſh themſelves, they are uſually preferred into the Janiſaries order. They have no pay, but ſubſiſt on their plunder.

ARCA'NUM, *ſ.* A Latin word, ſignifying a ſecret. Its plural is *arcana*.

ARCA'NUM, anciently a villa of Q. Cicero, Tully's brother, in Latium; now Arce, in the Terra di Lavoro, in the kingdom of Naples, on the borders of the Campagnia di Roma, on the river Melpis, between Arpinum and Aquinum.

ARCA'NUM CORALLI'NUM, *ſ.* This name has been given to red precipitate, on which ſpirit of wine has been two or three times burnt, with an intention of rendering it milder.

ARCA'NUM DUPLICA'TUM, *ſ.* A name formerly given to the combination of vegetable alkali and vitriolic acid, and moſt commonly called vitriolated tartar.

AR'CAS, in fabulous hiſtory, the ſon of Jupiter and the nymph Caliſto. He reigned in Pelaſgia, which from him was called Arcadia; and, after his death, Jupiter made him a conſtellation, called the *Little Bear*, placed in heaven near his mother. See ARCTURUS.

ARC-BOUTANT, *ſ.* is a kind of arched buttreſs, formed of a flat arch, or part of an arch, abutting againſt the feet or ſides of another arch or vault, to ſupport them, and prevent them from burſting or giving way.

ARCE'SILAUS, a celebrated Greek philoſopher, about 300 years before the Chriſtian era, was born at Pitane, in Eolis. He founded the ſecond academy, which is called *the ſecond ſchool*. He was a man of great erudition, and well verſed in the writings of the ancients. He was remarkable for the ſeverity of his criticiſms; but nevertheleſs he knew how to accommodate himſelf to the age, and purſue all the allurements of pleaſure. He had a great number of diſciples. His doctrines were different in ſeveral reſpects from thoſe of the ancient ſchool; and, perhaps, he was led into this diverſity of opinions by many capital errors in the ancient ſchool, ſuch as the incredible arrogance of the dogmatiſts, who pretended to aſſign cauſes for all things; the myſterious air they had thrown upon the doctrine of ideas; the entirely diſcarding the teſtimony of the ſenſes; the objections of the Pyrrhoneſts, who now began to broach their opinions; the powerful oppoſition of the Stoics and Peripatetics, who diſcovered the feeble parts of the academic philoſophy. Theſe might have given cauſe to reform the ancient ſchool, and to found a new one. Arceſilaus was ſucceeded by his diſciple Lacydes.

ARCEIUL', a village three miles ſouth of Paris, remarkable for an aqueduct, which is thought to equal the works of the ancient Romans. It was built in 1624, by Mary de Medicis, and ſupplies different parts of Paris with water.

ARCH, *ſ.* [*arcus*, Lat.] Part of a circle, not more than the half.—The mind perceives, that an *arch* of a circle is leſs than the whole circle, as clearly as it does the idea of a circle. A building open below and cloſed above, ſtanding by the form of its own curve, uſed for bridges and other works:

Let Rome in Tiber melt, and the wide *arch*
Of the rais'd empire fall! here is my ſpace. *Shakeſpeare.*

The ſky, or vault of heaven:

Hath nature given them eyes
To ſee this vaulted *arch*, and the rich cope
Of ſea and land? *Shakeſpeare.*

ARCH, [from αρχος, Gr.] A chief: *obſolete.*

The noble duke, my maſter,
My worthy *arch* and patron comes to-night. *Shakeſpeare.*

To ARCH, *v. a.* [*arcuo*, Lat.] To build arches. See ARCHITECTURE. To cover with arches.—The proud river which makes her bed at her feet, is *arched* over with ſuch a curious pile of ſtones, that conſidering the rapid courſe of the deep ſtream that roars under it, it may well take place among the wonders of the world. *Howell.* To form into arches.—Fine devices of *arching* water without ſpilling, and making it riſe in ſeveral forms of feathers and drinking-glaſſes, be pretty things to look on, but nothing to health and ſweetneſs. *Bacon.*

ARCH, *adj.* [from αρχος, chief.] Chief; of the firſt claſs:

The tyrannous and bloody act is done;
The moſt *arch* deed of piteous maſſacre,
That ever yet this land was guilty of. *Shakeſpeare.*

Waggiſh; mirthful; triflingly miſchievous. This ſignification it ſeems to have gained, by being frequently applied to the boy moſt remarkable for his pranks; as, The *arch* rogue; unleſs it be derived from *Archy*, the name of the jeſter to Charles I.—Eugenio ſet out from the univerſity; he had the reputation of an *arch* lad at ſchool. *Swift.*

ARCH, *ſ.* [from αρχος, or αρχι, Gr.] In compoſition, ſignifies chief, or of the firſt claſs; as, *archangel*, *archbiſhop*. It is pronounced variouſly with regard to the *ch*, which before a conſonant ſound as in *cheeſe*, as *archdeacon*; before a vowel like *k*, as *archangel*.

ARCH, or ARC, in geometry, a part of any curve line; as, of a circle, or ellipſis, or the like. It is by means of circular arcs, or arches, that all angles are meaſured; the arc being deſcribed from the angular point as a centre. For this purpoſe, every circle is ſuppoſed to be divided into 360 degrees, or equal parts; and an arch, or the angle it ſubtends and meaſures, is eſtimated according to the number of degrees it contains: thus, an arc, or angle, is ſaid to be of 30, or 80, or 100, degrees. Circular arcs are alſo of great uſe in finding of fluents.

ARCH, in architecture, a concave ſtructure, raiſed or turned upon a mould, called the centering, in form of the arch of a curve, and ſerving as the inward ſupport of ſome ſuperſtructure. Sir Henry Wotton ſays, An arch is nothing but a narrow or contracted vault; and a vault is a dilated arch. See ARCHITECTURE.

ARCH of DIRECTION, in aſtrology, is a portion of the equator lying between two points in the heavens, one of which is the place of the ſignificator, and the other of the promiſſor.

ARCHAN'GEL, *ſ.* [*archange*, Fr. *archangelus*, Lat. αρχαγγελος, of αρχων, chief, and αγγελος, angel, Gr.] An angel occupying the eighth rank in the celeſtial hierarchy. See ANGEL and HIERARCHY.

ARCHANGEL, a city of Ruſſia, in the province of Dwina, ſituated on the eaſt ſide of the river Dwina, about ſix miles from the White Sea, and 400 north-eaſt of Peterſburg, in lat. 64. 34. N. lon. 39. 0. E. The city extends about three miles in length and one in breadth. It is rich and populous, and is a metropolitan ſee. It roſe from a caſtle built on the ſpot by Baſilowitz II. to protect the increaſing trade brought there by the diſcovery of the White Sea by the Engliſh, and took its name from a monaſtery built in honour of Michael the archangel. Before this period, the commercial intercourſe between Ruſſia and the northern parts of Europe had been long carried on by the Hanſeatic towns, which uſually ſailed to Revel or Narva, and from thence paſſed through Dorpt to Pleſcof and Novogorod, where their factories were eſtabliſhed. The accidental diſcovery of Archangel, in 1553, deprived the Hanſeatic towns of a great part of this lucrative commerce, and transferred it to the Engliſh. On the 11th of May, in the above-mentioned year, three ſhips ſailed from Deptford, to explore the northern ſeas, under the command of Sir Hugh Willoughby. Two of theſe veſſels penetrated as high as the 72d degree of latitude, to the coaſt of Spitzbergen; and, being afterwards forced by ſtreſs of weather into the bay of the river Arzina in Ruſſian Lapland, both their crews were frozen to death. Richard Chancellor, who commanded the other ſhip, called the Bonaventure, diſcovering the country bordering upon the White Sea, landed near the mouth of the Dwina, in a bay, which he denominated the *Bay of St. Nicholas*, from a convent of that name near the preſent port of Archangel. The czar Iwan Baſilowitz, being informed of his arrival, invited him to his court, where he was hoſpitably entertained, and the czar indulged the Engliſh with a free trade in his dominions: in conſequence of this permiſſion, a company of merchants was incorporated in London; and being encouraged by particular privileges from the czar, ſet on foot a conſiderable commerce, to the mutual advantage of both nations. This traffic the Engliſh for ſome time enjoyed without competition. The Dutch, however, and other nations, gradually inſinuated themſelves into this commerce; which they carried on to a very great diſadvantage, as not being favoured with thoſe privileges which the czar had granted to the Engliſh company. Theſe were at laſt ſuddenly annihilated by Alexis Michaelovitch; who in 1648 baniſhed the Engliſh merchants from all his dominions. The cauſe of this expulſion is generally imputed to the reſentment which the czar conceived againſt the Engliſh for the execution of Charles I. But in effect he aboliſhed the company's privileges the year before that event; and his indignation againſt the Engliſh for their rebellion, Mr. Coxe affirms, was only a political pretext; the real motive being derived from the offers made by the Dutch to pay duties of export and import, to the amount of 15 per cent. if they were indulged with the liberty of carrying on as free a trade as the Engliſh throughout his dominions. For not long afterwards, the czar ſuffered William Prideaux, Cromwell's agent, to reſide at Archangel; and permitted the Engliſh to renew their commerce in that port in common with other foreigners. And upon this footing alone our merchants ever after continued to trade. The commodities chiefly imported into Archangel were gold and ſilver ſtuffs and laces, gold wire, cochineal, indigo, and other drugs for dyeing; wine, brandy, and other diſtilled ſpirits. The cuſtoms ariſing to the czar were computed at 200,000 rubles a-year, and the number of foreign ſhips at 400 annually. But, upon the building of Peterſburgh, Peter the Great aboliſhed the immunities of Archangel, and removed the commerce of the White Sea to the havens of the Baltic. Still, however, its exports of tar were conſiderable; in 1730, to the amount of 40,000 laſts, of 11 barrels each. In 1752, the czarina Elizabeth again reſtored the ancient immunities of Archangel; and its preſent trade is not inconſiderable. It ſupplies the government of Archangel, part of thoſe of Niſhnei-Novogorod and Caſan with European commodities; and draws in exchange from thoſe parts corn, flax, hemp, coarſe linen, cordage, ſails, maſts, and tallow, which are moſtly conveyed by the Dwina: it forms alſo a principal communication with the northern and weſtern parts of Siberia, from whence the merchants procure furs, ſkins, and iron.

The houſes of Archangel are generally of wood, but well contrived; and every chamber is provided with a ſtove, as a fence againſt the cold, which is here exceſſive in the winter. The ſtreets are paved with broken pieces of timber and rubbiſh, diſpoſed ſo unſkilfully that one cannot walk over it without running the riſk of falling, except when the ſtreets are rendered ſmooth and equal by the ſnow that falls and freezes in the winter. The moſt remarkable edifice is a large town-houſe, built of ſquare ſtones in the Italian manner, and divided into three parts. One of theſe conſiſts of apartments for the accommodation of merchants, ſtrangers as well as natives: here they are permitted to reſide with their merchandiſe till the month of October, when all the foreign ſhips ſet ſail for the reſpective countries to which they belong. Then the traders are obliged to remove their quarters from the town-houſe or palace, which hath a ſpacious court that reaches down to the river.

ARCHANGEL, *ſ.* in botany, ſee LAMIUM; for Baum-leaved, MELITIS; and, for Yellow, GALEOPSIS.

ARCHANGEL-GO'ROD, one of the governments of Ruſſia, comprehending Samoides, Laplanders, &c.

ARCHANGE'LIC, *adj.* Belonging to archangels:

He ceas'd, and th' *archangelic* power prepar'd
For ſwift deſcent; with him the cohort bright
Of watchful cherubim. *Milton.*

ARCHANGE'LICA, *ſ.* in botany. See ANGELICA.

ARCHBEA'CON, *ſ.* [from *arch* and *beacon.*] The chief place of proſpect or of ſignal.—You ſhall win the top of the Corniſh *archbeacon* Hainborough, which may for proſpect compare with Rama in Paleſtina. *Carew.*

ARCHBI'SHOP, *ſ.* [*ertz biſchoff*, Teut. *archeveque*, Fr. *archiepiſcopus*, Lat. of αρχιεπισκοπος, Gr. of αρχων, chief, and επισκοπεω, biſhop, of επισκοπος, to take care of.] A biſhop of the firſt claſs, who ſuperintends the conduct of other biſhops his ſuffragans.

Archbiſhops were not known in the eaſt till about the year 320; and, though there were ſome ſoon after this who had the title, yet that was only a perſonal honour, by which the biſhops of conſiderable cities were diſtinguiſhed. It was not till of late that archbiſhops became metropolitans, and had ſuffragans under them. Athanaſius appears to be the firſt who uſed the title archbiſhop, which he gave occaſionally to his predeceſſor; Gregory Nazianzen, in like manner, gave it to Athanaſius; not that either of them were intitled to any juriſdiction, or even any precedence in virtue of it. Among the Latins, Iſidore Hiſpalenſis is the firſt that ſpeaks of archbiſhops. He diſtinguiſhes four orders or degrees in the eccleſiaſtical hierarchy, viz. patriarchs, archbiſhops, metropolitans, and biſhops.

An archbiſhop is the chief biſhop of the province, who next and immediately under the king hath ſupreme power, authority, and juriſdiction, in all cauſes and things eccleſiaſtical; and has the inſpection of all the biſhops of that province. He hath alſo his own dioceſe, where he exerciſes epiſcopal juriſdiction, as in his province he exerciſes archiepiſcopal. As archbiſhop, upon the receipt of the king's writ, he calls the biſhops and clergy of his province to meet in convocation: but without the king's writ he cannot aſſemble them. To him all appeals are made from inferior juriſdictions within his province. During the vacancy of any ſee in his province, he is guardian of the ſpiritualties thereof; as the king is of the temporalties; and he executes all eccleſiaſtical juriſdiction therein. If the archiepiſcopal ſee be vacant, the dean and chapter are the ſpiritual guardians. The archbiſhop is entitled to preſent by lapſe to all the eccleſiaſtical livings in the diſpoſal of his dioceſan biſhops, if not filled within ſix months. And he has a cuſtomary prerogative, when a biſhop is conſecrated by him, to have the next preſentation to ſuch dignity or benefice in the biſhop's diſpoſal, as the archbiſhop ſhall chuſe; which is therefore called his *option.*

If we conſider Canterbury as the ſeat of the metropolitan, it hath under it twenty-one biſhops; but, if we conſider it as the ſeat of a dioceſan, it comprehends only ſome part of Kent (the reſidue being in the dioceſe of Rocheſter), together with ſome other pariſhes diſperſedly ſituate in ſeveral dioceſes; it being an ancient privilege of this ſee, that the places where the archbiſhop hath any manors or advowſons, are thereby exempted from the ordinary, and are become peculiars of the dioceſe of Canterbury, properly belonging to the juriſdiction of the archbiſhop of Canterbury. *Godolph. Repert.* 14.

The archbiſhop of Canterbury has the privilege by cuſtom to crown the kings and queens of this kingdom. And by ſtatute of 25 Hen. VIII. c. 21. he hath power of granting diſpenſations, where the pope uſed formerly to grant them; which is the foundation of his granting ſpecial licences to marry at any place or time, to hold two livings, and the like. 1 *Blackſt.* 381. Further, the archbiſhop of Canterbury is ſtyled primate and metropolitan of *all* England, albeit there is another archiepiſcopal province within this realm; partly becauſe of his ancient legatine power, and partly by his being enabled by the aforeſaid ſtatute to grant faculties and diſpenſations in both the provinces alike. At general councils abroad, the archbiſhop of Canterbury had the precedency of all the other archbiſhops. *Godolph.* 21. At home, he is the firſt peer of the realm, and hath precedency, not only before all the other clergy, but alſo (next and immediately after the blood royal) before all the nobility of the realm, and all the great officers of ſtate.

The archbiſhop of Canterbury had anciently, viz. till the year 1152, juriſdiction over Ireland as well as England, and was ſtyled a *patriarch*, and ſometimes *alterius orbis papa*, and *orbis Britannici pontifex*. Matters were done and recorded in his name thus, *Anno pontificatus noſtri primo, &c.* The firſt archbiſhop of Canterbury was Auſtin, appointed by king Ethelbert, on his converſion to Chriſtianity, about the year 598; he was alſo *legatus natus*; he even enjoyed ſome ſpecial marks of royalty, as to make knights, coin money, &c.

The archbiſhop of York hath under him only four biſhops, namely, thoſe of Cheſter, Durham, Carliſle, and Man; all the reſt are under the archbiſhop of Canterbury. But the archbiſhop of York anciently claimed and had a metropolitan juriſdiction over all the biſhops of Scotland, whence they had their conſecration, and to which they ſwore canonical obedience, until about the year 1466, when the biſhops of Scotland withdrew themſelves from their obedience to this ſee; and, in 1740, pope Sextus IV. created the biſhop of St. Andrew's archbiſhop and metropolitan of all Scotland. *Id.* 14, 28. The archbiſhop of York has the privilege of crowning the queen-conſort, and of being her perpetual chaplain; and hath precedency of all dukes not being of the blood royal; and alſo before all the great officers of ſtate, except the lord chancellor. *Id.* 13, 14.

The archbiſhops are ſaid to be *inthroned*, when they are veſted in the archbiſhopric; whereas biſhops are ſaid to be *inſtalled. Id.* 22. They may retain and qualify eight chaplains, whereas a biſhop can qualify only ſix. *Id.* 21. In ſpeaking and writing to an archbiſhop is given the title of *grace* and *moſt reverend father in God*; whereas biſhops have the title of *lord*, and *right reverend father in God.* And an archbiſhop writes himſelf *by divine providence*, whereas biſhops only uſe *by divine permiſſion.*

Ireland has now four archbiſhops; of Armagh, Dublin, Caſſil, and Tuam; of whom the former is primate of all Ireland.

ARCHBI'SHOPRIC, *ſ.* The ſtate, or juriſdiction, of an archbiſhop.

ARCHBUT'LER, one of the great officers of the German empire, who preſents the cup to the emperor on ſolemn occaſions. This office belongs to the king of Bohemia.

ARCHCHAM'BERLAIN, an officer of the empire, much the ſame with the great chamberlain in England. The elector of Brandenburgh was appointed by the golden bull archchamberlain of the empire.

ARCHCHAN'CELLOR, an high officer who, in ancient times, preſided over the ſecretaries of the court. Under the two firſt races of the kings of France, when their territories were divided into Germany, Italy, and Arles, there were three archchancellors: and hence the three archchancellors ſtill ſubſiſting in Germany; the archbiſhop of Mentz being archchancellor of Germany, the archbiſhop of Cologne, and the archbiſhop of Treves.

ARCHCHAN'TER, the preſident of the chanters or choriſters in a church.

ARCHCON'T, a title formerly given to the earl of Flanders, on account of his great power and riches.

ARCHDEA'CON, [*archidiacone*, Fr. *archidiaconus*, Lat. of αρχιδιακονος, Gr. of αρχων, the chief, and διακονεω, to miniſter to, to ſerve.] One that ſupplies the biſhop's place and office in ſuch matters as belong to the epiſcopal function. The law ſtyles him the biſhop's vicar or vicegerent.

The archdeacon hath eccleſiaſtical dignity and juriſdiction over the clergy and laity, next after the biſhop, throughout the dioceſe, or in ſome part of it only. Generally, the archdeacon hath power, under the biſhop, of the examination of clerks to be ordained; and alſo of induction of clerks inſtituted to a benefice; likewiſe of excommunication, injunction of penance, ſuſpenſion, correction, inſpecting and reforming abuſes in eccleſiaſtical affairs: but his power is different in different dioceſes, and therefore he is to be regulated according to the uſage and cuſtom of his own church and dioceſe. There are ſixty archdeacons in England.

ARCHDEACON'S COURT, is the moſt inferior court in the whole eccleſiaſtical polity. It is held in the archdeacon's abſence, before a judge appointed by himſelf, and called his *official*; and its juriſdiction is ſometimes in concurrence with, ſometimes in excluſion of, the biſhop's court of the dioceſe. From hence, however, by the ſtatute 24 Hen. VIII. c. 12. there lies an appeal to that of the biſhop.

ARCHDEA'CONRY, *ſ.* [*archidiaconatus*, Lat.] The office or juriſdiction of an archdeacon.

ARCHDEA'CONSHIP, *ſ.* The office of an archdeacon.

ARCHDRU'ID, the chief or pontiff of the ancient druids of a nation. See DRUID.

ARCHDU'KE, [*archidux*, Lat.] A title given to ſome ſovereign princes, as of Auſtria and Tuſcany.—Philip *archduke* of Auſtria, during his voyage from the Netherlands towards Spain, was weather-driven into Weymouth. *Carew.*

ARCHDU'CHESS, [*archiducheſſe*, Fr.] A title given to the ſiſter or daughter of the archduke of Auſtria, or to the wife of an archduke of Tuſcany.

ARCH-PHILO'SOPHER, *ſ.* [from *arch* and *philoſopher.*] Chief philoſopher.—It is no improbable opinion therefore, which the *arch-philoſopher* was of, that the chiefeſt perſon in every houſehold was always as it were a king. *Hooker.*

ARCH-PRE'LATE, *ſ.* [from *arch* and *prelate.*] Chief prelate.—May we not wonder, that a man of St. Baſil's authority and quality, and *arch-prelate* in the houſe of God, ſhould have his name far and wide called in queſtion? *Id.*

ARCH-PRES'BYTER, *ſ.* [from *arch* and *preſbyter.*] Chief preſbyter.—As ſimple deacons are in ſubjection to preſbyters, according to the canon-law; ſo are alſo preſbyters and *arch-preſbyters* in ſubjection to theſe archdeacons. *Ayliffe.*

ARCH-PRIEST, *ſ.* [from *arch* and *prieſt.*] Chief prieſt. —The word decanus was extended to an eccleſiaſtical dignity, which included the *arch-prieſts. Ayliffe.*

ARCHAIO'LOGY, *ſ.* [from αρχαιος, ancient, and λογος, a diſcourſe.] A diſcourſe on antiquity.

ARCHAIOLO'GIC, *adj.* Relating to a diſcourſe on antiquity.

AR'CHAISM, *ſ.* [αρχαισμος, Gr.] An ancient phraſe, or mode of expreſſion.—I ſhall never uſe *archaiſms* like Milton. *Watts.*

AR'CHE, *ſ.* [αρχη, Gr.] The firſt attack of a diſeaſe, its firſt ſtage, that time of the diſorder in which the patient firſt takes to his bed, or in which help might be effectual.

AR'CHED, *part. adj.* Bent in the form of an arch.—I ſee how thine eye would emulate the diamond; thou haſt the right *arched* bent of the brow. *Shakeſpeare.*

ARCHELA'US, a celebrated Greek philoſopher, the diſciple of Anaxagoras, flouriſhed about 440 years before Chriſt. He read lectures at Athens, and did not depart much from the opinions of his maſter. He taught that there was a double principle in all things, namely, the *expanſion* and *condenſation* of the air, which he regarded as infinite. Heat, according to him, was in continual motion. Cold was ever at reſt. The earth, which was placed in the midſt of the univerſe, had no motion. It originally reſembled a wet marſh, but was afterwards dried up; and its figure, he ſaid, reſembled that of an egg. Animals were produced from the heat of the earth, and even men were formed in the ſame manner. All animals have a ſoul, which was born with them: but the capacities of which vary according to the ſtructure of the organs of the body in which it reſides. Socrates, the moſt illuſtrious of his diſciples, was his ſucceſſor.

ARCHELAUS, the ſon of Herod the Great, was declared king of Judea the ſecond year after the birth of Chriſt. He put to death 3000 perſons before he went to Rome to be confirmed by Auguſtus. That emperor, nevertheleſs, gave him half of what had been poſſeſſed by his father; but at length, on freſh complaints exhibited againſt him by the Jews, he baniſhed him to Vienne in Gaul, A. D. 6, where he died.

ARCHELAUS, the ſon of Apollonius, one of the greateſt ſculptors of antiquity, was a native of Ionia, and is thought to have lived in the time of the emperor Claudius. He executed, in marble, the apotheoſis of Homer. This maſterpiece in ſculpture was found in 1568, in a place named *Fratocchia*, belonging to the princes of Colonna, where, it is ſaid, the emperor Claudius had a pleaſure-houſe. Father Kircher, Cupert, Spanheim, and ſeveral other learned antiquarians, have given a deſcription and explication of this work.

ARCHE'MORUS, ſon of Lycurgus, king of Nemæa, in Thrace. Being placed upon a parſley-plant by Hypſipyle his nurſe, while ſhe went to ſhew a fountain to the princes who were going to beſiege Thebes, he was killed by a ſerpent, which the princeſs deſtroyed, and a fountain roſe out of the ground beneath Archemorus. Adraſtus and the other princes were ſo afflicted at this accident, that they inſtituted games in honour of Archemorus, called Nemæan, which were celebrated every three years: the combatants put themſelves in mourning, and the victors were crowned with parſley.

ARCHEN'DA, *ſ.* A powder prepared of the Egyptian privet, to be applied to the feet to check their fetid odour.

AR'CHER, or SAGITTARIUS, one of the conſtellations of the northern hemiſphere, and one of the twelve ſigns of the zodiac, placed between the Scorpion and Capricorn. See SAGITTARIUS.

ARCH'ERS, *ſ.* [of *arcus*, a bow; whence *arcuarius*, and even *arquis*, and *arquites*, as they are alſo denominated in the corrupt ſtate of the Latin tongue.] A kind of ſoldiery armed with bows and arrows. Archers were much employed in former times in the armies of England, France, and moſt other nations of Europe; but they are now laid aſide, except in ſome of the eaſtern countries; where there are companies of archers ſtill retained in their armies.

AR'CHERY, *ſ.* The art of ſhooting with a bow and arrow.—Among the Engliſh artillery, *archery* challengeth the pre-eminence, as peculiar to our nation. *Camden.*—The act of ſhooting with the bow. The art of an archer:

Say from what golden quivers of the ſky
Do all thy winged arrows fly?
Swiftneſs and power by birth are thine.
'Tis I believe this *archery* to ſhew,
That ſo much coſt in colours thou
And ſkill in painting doſt beſtow
Upon thy ancient arms, the gaudy heavenly bow. *Cowley.*

In moſt nations the bow was anciently the principal implement of war, and by the expertneſs of the archers alone was often decided the fate of battles and of empires.

Bows were firſt conſtructed probably from the rough and unformed boughs of trees; but gradual improvements would be added as men became more and more converſant with the knowledge of natural objects. We find, by Herodotus, that it was the cuſtom of ſome nations to make bows of reeds, or cane; the Bactri, he ſays, uſed ſome of this kind, as did the Indi; and the ſame practice prevails at this day in Perſia and India, and in ſome parts of America. But theſe materials are not well adapted to produce a very elaſtic bow, which, unleſs made ſtrong and difficult to draw, would have but little effect in projecting the arrow. Indeed, this is commonly the caſe with almoſt all the bows made uſe of by ſavages, and thoſe other nations who are little acquainted with the uſe of edged tools.

The moſt-eſteemed bows of Perſia, it is ſaid, are made by faſtening two pieces, one of horn, the other of wood, on each other, by means of catgut, which is bound tight around the two, from end to end; by which means they are kept firm together, and cannot ſlip when the bow is drawn. After this the bow is covered with the bark of a tree, which is exceedingly tough and flexible, and upon this ſmooth ſurface they paint various figures of branches, leaves, birds, and other decorations, generally intermixing gold and ſilver pigments among them. They then cover the whole with a tranſparent varniſh, which protects it from wet and damp. In Perſia and Tartary, and in other parts of the eaſtern world, the horns of the antelope are manufactured into bows, many of which are very excellent weapons. They are generally much ſhorter than thoſe uſed in this country, ſeldom exceeding four feet in length. The two pieces of which theſe inſtruments are made are joined firmly in the centre, and are uſually ornamented with painting and gilding.

The Otaheite bows are very long, and conſiſt of one piece only; in the back part of which there is a groove, containing a pretty thick cord. The cord reaches the whole length, and is faſtened very ſtrongly at each end. This contrivance is found very ſerviceable in aſſiſting the ſtrength of the bow, and acts in ſome meaſure as a ſpring. The Eſkimaux, bordering on Hudſon's Bay, make uſe of a bow acting on the ſame principle as that of Otaheite. The wood part is about four feet, or four and a half, in length, about three quarters of an inch in thickneſs, and two or three inches in breadth, having the ſame dimenſions throughout. At the diſtance of eight or nine inches from each end, there is an abrupt curve; and on the back of this inſtrument there are a number of ſtrings made of the ſinews of deer, drawn tight, and faſtened at the indented parts. Theſe ſtrings act in the ſame manner as the cord on the Otaheite bow, and encreaſe the force of the projecting power very much. It is the cuſtom of the ſavages to ſoak theſe bows in water before uſing, as it contracts the ſinews, and makes the inſtrument ſtronger. The curves are made by means of thick pieces of horn, which are faſtened to the wood on the outer ſide of the bow; the wood being firſt cracked and preſſed into an angle. And as the horn is in a figure fitting into this angle, and is bound tight, it confines the wooden part in the curves from moving, when the bow is made uſe of. This Eſkimaux weapon is a very extraordinary ſpecies of the bow, and unlike all others. In Lapland, it is ſaid by Scheffer, the bows are compoſed of two pieces fixed together with glue, one of which is of birch, and the other of fir-tree; which, he ſays, on account of the reſin it contains, is very proper for the making of bows. They have a caſe likewiſe of birch, in order to prevent injuries from rain or ſnow. The Laplanders, in joining the two parts of their bows, uſe a peculiar kind of glue, prepared from the ſkins of fiſh, which is poſſeſſed of an uncommon degree of ſtrength.

Metallic bows, of ſilver, gold, and braſs, are mentioned by different authors; but it is probable theſe were only metaphorical, or ornamental, as they could not be made to anſwer the purpoſe of ſhooting, in any tolerable degree. Bows of ſteel are indeed mentioned in Job xx. 24. *The bow of ſteel ſhall ſtrike him through*; but we are ignorant how they faſhioned them. Bows of ſteel tempered by ſkilful workmen have been tried in England, but it appears that the elaſticity of metal is far more ſlow and ſluggiſh than that of wood; and, unleſs the bow is made ſtrong, it has but little projectile effect. Metallic bows alſo are of much greater weight than others of the ſame power. The modern bows uſed in England are made of ſeveral kinds of wood. Yew has been by far the longeſt in uſe, but it is not ſo much eſteemed at preſent as ſome other kinds. The foreign woods, imported into this country for the purpoſe of dying and cabinet-making, are ſome of them very proper for bows, ſuch as fuſtic, roſe-wood, cocoa-tree, &c. The modern bows are conſtructed of two pieces, a body part, generally of elaſtic, often of brittle, wood, and a thin ſtrip of aſh, elm, or ickery, which is firmly fixed on the back of the other. This back not only prevents the body from ſplitting, but at the ſame time renders the bow infinitely more difficult to draw.

Bows of different nations preſerve a very near reſemblance to each other; and it is evident, from the principle upon which they act, that this muſt always be the caſe. The Grecian bow is that we generally ſee in the hands of the Grecian warriors, and moſtly delineated in ſculpture, and on ancient medals. The figure of it is the moſt beautiful and pictureſque of any; and perhaps it is for this reaſon we ſee it ſo often repreſented by painters and ſculptors, who call it the bow of Apollo. It is compoſed of three different parts; the two end pieces, which act as ſprings, and a third, into which the other two are fixed. This third piece, being between the other, is the part by which the bow is held, when made uſe of. The ſpringing parts are thick towards the middle, and taper from thence to the points where the ſtring is faſtened. Theſe points were called κορωνη, and were often of gold, or ſilver. The ſprings of the bow are curved, not unlike the horns of ſome of the Eaſt-Indian goats; and, as we read that the horns of animals were ſometimes uſed for theſe parts of the bow, perhaps the natural figure gave a model for the bows which were not made of horn. Another ſpecies of this weapon is made of one regular curve, having no ſeparation in the middle. We do not ſee this kind often repreſented in the tablets of antiquity, although of the moſt natural figure, and of the moſt ſimple conſtruction. The bows which are at preſent in uſe, and which formerly were uſed in England, are of this ſort. Bows on both theſe principles are uſed in ſavage nations, but the latter is the more common. The muſeums, and many private collections, contain bows of each ſort, which were brought to this country by the navigators who have viſited the Pacific Ocean, and the remoter parts of Aſia and America. The inſtruments of this kind made by the inhabitants of Aſia, very much reſemble thoſe of America, and are often of the ſame materials.

The Grecian bow is ſaid to have been firſt made in the form of the Sigma in their alphabet. The bow uſed by the Scythians will paſs under the ſame character. And, as the practice of archery was introduced from Scythia into Greece, the bows of each, perhaps, were not very different. The Scythian bow is called *crooked*, becauſe it was ſo in a greater degree than the bows of other countries. This incurvation is ſaid to be ſo remarkable as to repreſent a creſcent, or half-moon. Hence the ſhepherd in Athenæus, ſays Potter, being to deſcribe the letters in the name of Theſeus, and expreſſing each of them by ſome appoſite reſemblance, compares the third to the Scythian bow, meaning not the more modern character Σ, but the ancient C, and bears the third place in ΘΗCΕΥC. The figure of a modern Tartar bow, will, perhaps, enable us to point out what is meant by this peculiar incurvation. The figure alluded to is drawn in the Archery-Plate I. *fig.* 5, which exhibits the appearance of an *unſtrung* Tartar bow. This has a remarkable incurvation backwards, and is extremely different from any other ſpecies of bow. The ends, which in this repreſentation are inflected, are drawn on the oppoſite ſide, when ſtrung; and in that caſe the bow does not appear very different from others. This curve backwards is the circumſtance which characteriſed the ancient Scythian bow. Hence we may conclude, that, when authors ſpeak of the peculiarity belonging to this weapon, it is to be underſtood of its figure when unſtrung, and not its form as ſeen in the hand of one ſhooting.

The bows uſed by the Daci, a people formerly inhabiting Tranſylvania, and with whom the Romans had frequent conteſts, were made in a very beautiful curve, and ornamented at one end with the head of a ſwan, and at the other with that of a dragon; becauſe theſe figures were the common enſigns uſed by that people in battle. There is a view of one of theſe Dacian weapons in the hand of a warrior, pictured among a contending group in Montfaucon. The lower part of the bow is hidden by the interpoſition of another figure, but the upper end is diſtinct, and the ſwan's head clearly viſible upon it. The Saxons ſeem to have been in the practice of ornamenting one end of their bows in a ſimilar manner.

The form of the Roman bow is given by Spon and Montfaucon, in an excellent ſtatue of a maſter of archery. The figure is repreſented without clothing to the waiſt, and reſting the right hand on the upper end of the bow; the lower end of which is on the ground. The bow, however, is a figure ſeldom to be ſeen among the arms and trophies ſtruck on Roman medals. The reaſon is, perhaps, that it was eſteemed unworthy a place among the proper military weapons, becauſe not uſed by the regular troops. The *ſagittarii* and *funditores* were auxiliary men, and were not held in high eſtimation by the legions. The Roman veteran, inflamed with the zeal of ſignalizing himſelf by acts of perſonal bravery, diſdained the diſtant encounter; but, like the Britiſh ſailor, reſerved himſelf for cloſer combat, where he ſtruck with unerring aim, and where his attack was irreſiſtible. This being the ſchool wherein the Roman delighted to ſtudy, he viewed the ſcience of archery with contempt.

The Amazonian bow does not appear to have any very particular character different from the other bows of three pieces; in general it appears of ſtronger make; but perhaps this may be a compliment to thoſe ladies from the ſculptors. The modern Engliſh long-bow is well known, and is better underſtood from a figure than a deſcription. The only difference in thoſe formerly in uſe, and what are at preſent made is, that the ancient ones were ſometimes of a ſingle piece, but the modern ones have a thin piece of aſh joined, as above deſcribed. In the middle there is a binding, to enable the ſhooter to hold the inſtrument ſteady, and at the ſame time to prevent the hand being hurt; our old archers had no ſuch defence, but held their bow well beſmeared with wax, in order to fix it firm in the hand.

Bows, if we believe hiſtorians and ſculptors, were much ſtronger formerly, in ſome countries, than they are made at preſent. The figures of theſe inſtruments on ancient fragments, are always much ſhorter than we imagine they ought to be. Some are ſcarcely longer than a man's arm, and very few exceed that meaſure in any great degree. But the thickneſs of them is proportionally greater. We find, however, there were people who uſed bows as long as thoſe made in England. Arrian ſays, the Indian infantry held bows whoſe length was equal to the height of him who bore it; and this ſtandard ſeems to have been approved by other nations. The Iriſh ſtatute of Edw. IV. ſays, “That the bow ſhall not exceed the height of a man; and that the arrow ſhall be half the length of the bow.” The Carducian bow was three cubits long, the arrows two; the cubit being about a foot and a half of our meaſure. Herodotus ſays, the bow uſed by the Ethiopians was of palm-tree, not leſs than four cubits; and they ſhot with extremely-long arrows. We cannot form any exact conjecture on the degree of power theſe inſtruments poſſeſſed, as the length of a bow has no influence in increaſing the ſtrength; rather the contrary. We muſt however conclude they were of prodigious force, ſince the account of Xenophon, whoſe ſoldiers felt the arrows of the Carducians during the retreat of the ten thouſand Greeks, correſponds with this opinion. He ſays, “Here fell a brave man, Cleonymus, a Lacedemonian, who was wounded in the ſide by an arrow, that made its way both through his ſhield and his buff coat.” Again: “Here fell Baſias, an Arcadian, whoſe head was quite ſhot through by an arrow.” This ſtrong ſhooting continued among the deſcendants of the Carducians till the time of M. Craſſus, whoſe ſoldiers, Plutarch ſays, were ſlaughtered by their arrows in vaſt numbers, as no part of their armour could withſtand the force of them.

Chardin repreſents the practice of archery in Perſia, at the time he reſided there, as follows: “The young Perſians (ſays he) learn to ſhoot with the bow; the art of which conſiſts in holding it firm, drawing and letting go the ſtring ſmoothly. At firſt they practiſe with a weak bow; and afterwards, by degrees, with thoſe which are ſtronger. The perſons, who give inſtructions in this art, direct the young pupils to ſhoot with eaſe and agility, in every direction; before them, behind, on either ſide, elevated in the air, or low to the ground; in ſhort, in every different poſture, like the Scythians, who could uſe the bow in either hand with indifference. Some of their bows are exceedingly ſtrong; and the method they make uſe of to know their power, is by faſtening them to a ſupport driven into a wall, and ſuſpending weights to the ſtring at the point where the arrow is placed when going to ſhoot. The ſtrongeſt require five hundred pounds weight, to draw them up to the arrow's point!" We are told that Apollo, by obſerving the different tones given out by the ſtring of his bow, while thus trying its power by weights, diſcovered the notes of muſic, and conſtructed the monochord, which he formed in the ſame figure as the bow uſed by his ſiſter Diana. Such is ſtill the archery of the Perſians; and ſuch the prodigious ſtrength of the bows, which to us, who are unaccuſtomed to ſee ſuch efforts of human power, ſeem almoſt incredible; and perhaps by ſome may be eſteemed among thoſe ſtories of hiſtory which merit little credit. But let us reflect a moment on the effect of early habits, and training the body from infancy, to endure the toils of labour and fatigue; we ſhall then be induced to extend our conceptions of muſcular power to a much greater ſcale than at firſt ſight may appear reaſonable. It is evident that, in the military operations of the preſent day, perſonal valour and bodily ſtrength are by no means ſo neceſſary as formerly. The management of the muſket requires no great ſtrength; but when the bow, ſword, and javelin, were the inſtruments commonly in uſe, a ſtrong man had greatly the advantage over a weak one, which is not now the caſe. This was the reaſon why bodily ſtrength was eſteemed and cultivated of old, among the ſoldiery. We do not, at this day, ſee ſo many inſtances of muſcular power, becauſe men are trained in the more effeminate exerciſes of modern tactics, rather than the haraſſing fatigues of the Campus Martius.

The Cretans, who have been highly celebrated for their ſkill and ſtrength in the management of the bow, were kept with the ſtricteſt care to the perpetual practice of archery; and there is reaſon to think all thoſe nations and people who have rendered themſelves expert in this art, have adopted the ſame mode of education. Even among the aborigines of America, according to Gumilla, vol. ii. p. 283, the boys were not ſuffered to eat their victuals till they had firſt hit them with an arrow from a diſtance.

With reſpect to the different ways of managing the bow, and the ſeveral attitudes and poſtures which have been practiſed in the uſe of it, much has been written. Method, in ſome inſtances, is well known to effect what greater force cannot; and there is nothing in which this obſervation can be exemplified more ſtrongly, than in ſhooting the bow. Every perſon who underſtands the nature of archery, will ſee the truth of this aſſertion. A ſimple experiment will prove it, in a very ſatisfactory manner. Let an archer, who in ſhooting has learned to draw the arrow to the eye or ear, draw it to his breaſt, and he will find, that the bow he in the former caſe could draw with eaſe, will, in the latter, appear infinitely ſtronger. Mr. Barrington ſays, "That ſeveral years ago there was a man named Topham, who exhibited moſt ſurpriſing feats of ſtrength, and who happened to be at a public-houſe at Iſlington, to which the Finſbury archers reſorted after their exerciſe. Topham conſidered the long-bow as a plaything only fit for a child; upon which one of the archers laid him a bowl of punch, that he could not draw the arrow two-thirds of its length. Topham accepted the bet, with the greateſt confidence of winning; but bringing the arrow to his breaſt, inſtead of his ear, he was greatly mortified by paying the wager, after many fruitleſs efforts.

Notwithſtanding the evident diſadvantage of drawing to the breaſt, rather than the ear, yet it ſeems to have been the moſt general practice in early periods. We know one nation is ſaid to have derived its name from that circumſtance, viz. the Amazons, or ſociety of female warriors; who, perhaps on this account, more than any other, have been ſuppoſed a ſpurious race. But the ancient Egyptians, according to Herodotus, had nearly the ſame manners; and we need not paſs our own ſhores to ſee women engaged in all the toils and labours of agriculture, as well as thoſe of domeſtic employments, while the men remain idle at home. Indeed this circumſtance appears more unuſual than unnatural; for, in a ſtate of nature, the ſexes differ but little in bodily power. It is ſo with other animals. The appearances in poliſhed ſociety will argue nothing contrary to the ſuppoſition, as habits of inactivity, formed by the force of cuſtom, exhibit the abuſed, not the cultivated, faculties of the human frame. It is with equal propriety that it might be urged, the intellectual faculties of the one ſex are inferior to thoſe of the other; but there are few at the preſent day who do not perceive, that it is an unjuſt, though faſhionable, education, which enervates the mental abilities of women, and not the hand of nature. Strength and knowledge are in a great degree artificial, and to be acquired by application and exerciſe.

The method of drawing the bow to the breaſt was continued in uſe for many ages; and it was eſteemed a great improvement when the Roman auxiliaries were inſtructed to draw the right hand to the ear. We read in Procopius, when deſcribing the archers of the Roman army, "that they ride with eaſe, and ſhoot their arrows in every direction; to the right, the left, behind, or in the front, while in full ſpeed; and, as they draw the bow-ſtring to the right ear, they drive their arrows with ſuch rapidity, that it is certain death to him on whom they fall; nor can the ſtouteſt ſhield or helmet reſiſt the violence of the ſtroke." This, however, depended in a great meaſure on the goodneſs of the bow-ſtring, which conſtitutes a very eſſential part of the bow.

Bow-ſtrings ſeem originally to have been made from leather, or thongs cut from freſh hides taken from bulls, and other kinds of animals. The phraſe νευρα βοεια is very common in Homer. Strings were alſo compoſed from the ſinews of beaſts, and on that account are termed *nervus*, νευρη. It was cuſtomary for this purpoſe, to ſelect the ſinews of ſeveral of thoſe kinds of animals, remarkable for their ſtrength or activity; ſuch as bulls, lions, ſtags, &c. and from thoſe particular parts of each animal in which their reſpective ſtrength was conceived to lie. From bulls, the ſinews about the back and ſhoulders were collected; and, from ſtags, they took thoſe of the legs. Catgut, prepared from the inteſtines of animals, has been made for the ſame purpoſe, and continues to be uſed at preſent in the eaſtern countries. Many of the bow-ſtrings of this ſort are compoſed of a number of ſmall cords, going the whole length, being bound in two or three places with ſilk, to keep them cloſe together. Experience has taught the archer, that a number of ſmall cords thus accumulated in one, proves much ſtronger than a ſingle one of the ſame external dimenſions. Hair from the tails of horſes was formerly manufactured into bow-ſtrings, and appears to have been not an uncommon material for the purpoſe. The word ιππειος, which ſignifies that ſpecies of ſtring, frequently occurs in Homer, and from thence we may infer the antiquity of the practice. The moſt general material of which ſtrings are now made in England is hemp; of which the Italian anſwers the beſt; and this ſubſtance poſſeſſes many advantages over all other ſorts. Catgut is too much under the influence of heat and moiſture to prove at all times of a proper tenſion; but hemp and flax have not this inconvenient and diſadvantageous quality belonging to them.

An old phraſe ſays, "It is good to have two ſtrings to your bow;" and it appears to have originated from an ancient cuſtom. A paſſage in Aſcham teaches us it was practiſed in his day; and there is reaſon to think it had a much earlier exiſtence. "In warre (ſays he) if a ſtringe breake, the man is loſt, and is no man; for his weapon is gone; and, although he have two ſtringes put on at once, yet he ſhall have ſmall leiſure and leſſe room to bend his bowe; therefore, God ſend us good ſtringers both for warre and peace!" A law of Charlemagne, made in the year 813, ſeems likewiſe to expreſs the cuſtom of uſing bows with two ſtrings; this is further confirmed by the figure of an archer, repreſented on a curious antique ring, in the poſſeſſion of Sir James Pringle. This ring was found in 1791, upon the field of the famous battle of Bannockburn, fought ſeveral hundred years ago; an impreſſion of which is engraved in the Archery-Plate I. *fig.* 14. The bow repreſented in the hands of this archer has two ſtrings attached to it; one of which only is drawn up with the arrow, while the other remains unemployed; and this ſeems to have been the method of uſing the bow thus doubly ſtrung. Aſcham mentions, that they formerly made uſe of two ſtrings in England: the large thick ſtring, and a ſort much ſmaller. "The one (ſays he) is ſafe for the bow, but does not ſhoot ſtrong; while the other is infinitely preferable in long diſtances, but at the ſame time does not direct the arrow ſo true, and is ſooner broken."

We are not acquainted with the ſeveral ways which were practiſed by the ancients in ſtringing their bows; it was uſual, however, to hold the bow in the left hand by the middle, and to preſs on the upper end with the right, at the ſame time ſlipping the ſtring into its place, while the lower end of the weapon reſted againſt the knee of the left leg. There is a figure very diſtinctly drawn on a medal in Dr. Hunter's muſeum, which repreſents an archer ſtringing his bow, exactly in the poſition now deſcribed, and which is copied in the annexed Archery-Plate I. *fig.* 15. It is a Cretan coin.

The faſhion of the arrow ſeems to have undergone leſs variation than that of the bow. The Scythian, Indian, and Dacian, bows, have each their characteriſtic forms; but the head, or the feathers, of an arrow, are the only parts which can be varied materially. The ſubſtances from which arrows have been fabricated, have differed in almoſt every country. They were frequently made of reeds, as we may infer from the Latin word *arundo*, ſignifying both an arrow and a reed. Pliny informs us, that this ſubſtance was in the higheſt repute for the purpoſe we mention, and the calamus, another ſpecies of reed, ſays he, hath overcome half the nations of the world in battle. The modern arrows from India are made of cane, which being of a ſpecies very ſtiff and ſlender, and at the ſame time of little weight, they fly with uncommon velocity from the bow, and are capable of withſtanding every reſiſtance from objects which oppoſe their motion. Aſcham has enumerated fifteen ſorts of wood, of which arrows were made in England at the time he lived, viz. "Brazell, Turkiewoode, Fuſticke, Sugercheſte, Hardbeame, Byrche, Aſhe, Oake, Serviſtree, Aulder, Blackthorne, Beche, Elder, Aſpe, Salow." Of theſe aſp and aſh were preferred to the reſt; the one for target-ſhooting, the other for war.

Stones appear to have been one of the firſt materials for pointing or forming the heads of arrows; and there are many curious circumſtances relating to this practice. The claſs principally made uſe of in all nations, was the *ſiliceous*; as common flint, jaſper, agate, &c. There are the beſt reaſons for imagining that theſe arrow-heads were in uſe from the higheſt antiquity, as there is ſcarcely any country in which they have not been found buried in the earth. They are not uncommon in Scotland, England, and Ireland; and America produces them in all its parts. Theſe ſtone heads have been called *ceraunicæ*, and are reported by Pliny to have fallen from heaven in ſtorms of thunder. Others have claſſed them as cryſtallizations, and arranged them among the natural productions of the earth. But they were in fact the heads applied to arrows, in the early ages of the world, and bear the moſt evident marks of manufacture and art. They ſeem to have been formed by hammering and rubbing. Thoſe found in Ireland and Scotland are generally of a mixed brown-coloured flint. Very ſmall arrow-heads are found in Barbadoes, made of a fiſſile talky ſtone. Inſtruments and weapons, ſuch as axes, chiſels, arrow-heads, the points of darts and lances, have been found of the ſame materials. Both Dampier and Cook diſcovered people who were in the practice of uſing theſe ſtone tools and weapons; and the Spaniards, at their firſt deſcent upon America, found no other in uſe among the natives of that continent; for, although the Americans had iron ore in abundance, they were ignorant of its uſe till taught by the Spaniards. It is remarkable that theſe weapons are made with greater regularity than we might reaſonably expect, conſidering the imperfections of the inſtruments which muſt have faſhioned them. They are exceedingly ſharp, and the edges frequently indented like the teeth of a ſaw. Theſe arrow-heads likewiſe, tho' found in countries the moſt remote from each other, are ſtill nearly alike in ſhape. Thoſe found in the parts bordering on the ſtraits of Magellan are ſaid, by Dr. Woodward, to reſemble thoſe of this iſland. He adds his reaſons, "That different men having in view the ſame deſign, conducting their thoughts in a regular manner, may come, in the purſuit, to the ſame concluſion; and, as in this caſe, hit on the ſame ſhape for a weapon of ſuch deſign. But it is much more likely that they all came from the ſame origin, and that the firſt model was brought from Babel to the various countries, whither the ſeveral colonies, ſent thence, made their migrations." In the Archery-Plate II. are repreſented three of theſe ancient arrow-heads.

The horns of animals have been employed for the pointing of weapons in ancient times; and, as wild beaſts wore no armour, and ſavage nations little covering, arms of this kind would be found efficacious in the hand of the hunter, or warrior. Indeed, it is not an uncommon practice at this day among thoſe nations ignorant in metals. Inſtruments of war, before the knowledge of the operations of fire, could not have been pointed with metal; but the moment the art of ſeparating that ſubſtance from the ore was known, metallic weapons would no doubt be fabricated, and introduced in battle. Arrows which uſually had been pointed with horn, bone, or flint, would be covered with more permanent materials. Copper, and what was called braſs, ſeem to have been firſt in uſe. Arrows and javelins were commonly headed with braſs, or copper, in the time of Homer, as appears from many paſſages in the Iliad. Herodotus mentions a wonderful braſs cup, made from the heads of arrows. He ſays, a king, named Ariantas, deſiring to number the people of Scythia, commanded that each perſon in his dominions ſhould bring the head of an arrow to him, under pain of death, in caſe any one neglected. From the heads which were collected, a cup was made, capable of holding ſix hundred hogſheads; and the thickneſs of the ſides of it was equal to ſix digits.

The arrows now uſed in the eaſt are armed with a flat barbed iron point, about an inch in length, which is fixed on to the cane by a ſhort ferrule. Sometimes the heads are made in an acute pyramid, about one inch and an half long. The common ſhooting arrows in England, as they are not deſigned for war, are not very ſharply pointed. The ſides of the ſhaft converge to an obtuſe point, at the diſtance of an inch. Neatneſs, not deſtruction, is the object of them at preſent.

There is a kind of arrow which, from the conſtruction of its head, is called the *whiſtling arrow*. There are two methods in which the heads are made. The one is by having a ball of horn perforated with holes at the end, and faſtened to the arrow, by the wood paſſing through it, and fitting tight. Another ſort, which are uſually larger, and which have a deeper tone, are made with a ſcrew in the middle of the ball. It is ſuppoſed theſe arrows were formerly applied to ſome military uſe, and particularly that of giving ſignals in the night. The Chineſe have uſed them for this purpoſe time immemorial.

There are contrivances by which ſmall-ſhot and balls are diſcharged from the bow, by a ſpecies of arrow which is fixed on the bow-ſtring by means of a perforation thro' one end, into which the ſtring is paſſed. At the head of this rod is a tin ferrule, about three or four inches in length, and into which the ſhot are placed. It is uſual to have a ſtring on purpoſe for this kind of ſhooting, well wrapped in the middle with ſilk; and the arrows ſlipped on, that the whole may be removed from the bow at pleaſure. When an apparatus thus fitted up is diſcharged, the arrow, communicating the force impreſſed upon it by the ſtring to the ſhot, projects them with a velocity in proportion to the ſtrength of the bow made uſe of; but, as the weight of the charge and the arrow tend in a great degree to diminiſh the velocity of the body emitted, we muſt conceive the effect much leſs powerful than that of a common arrow ſhot from the ſame bow. In diſcharging balls the ſame apparatus is made uſe of; except that inſtead of a tin ferrule, as in the former caſe, the arrow has a weak ſpring on each ſide of the head, placed ſo as to preſs gently on the ball.

But, among the various appendages attached to the arrow, the moſt formidable ſeems to be that of poiſon. We are told that a fluid is prepared, and loaded with ſuch powerful infection, that the animal ſyſtem ſhrinks under its effects, almoſt inſtantaneouſly, if it be once introduced deeper than the ſkin. The vegetable and mineral poiſons we are acquainted with in Europe, if adminiſtered in ſmall portions, require time to operate, and ſeldom produce immediate death. But we find that in other parts of the world, nature has infuſed into the cells of ſome vegetables ſo deadly a venom, that not even the wound of the moſt virulent ſerpent can equal that of the poiſoned arrow; and the ſavages in America pretend, that by compounding the liquor into which they dip their arrows with a greater or leſs portion of the poiſoning quality, they can cauſe immediate death from a wound, or protract the effect to a few days, a week, a fortnight, or longer.

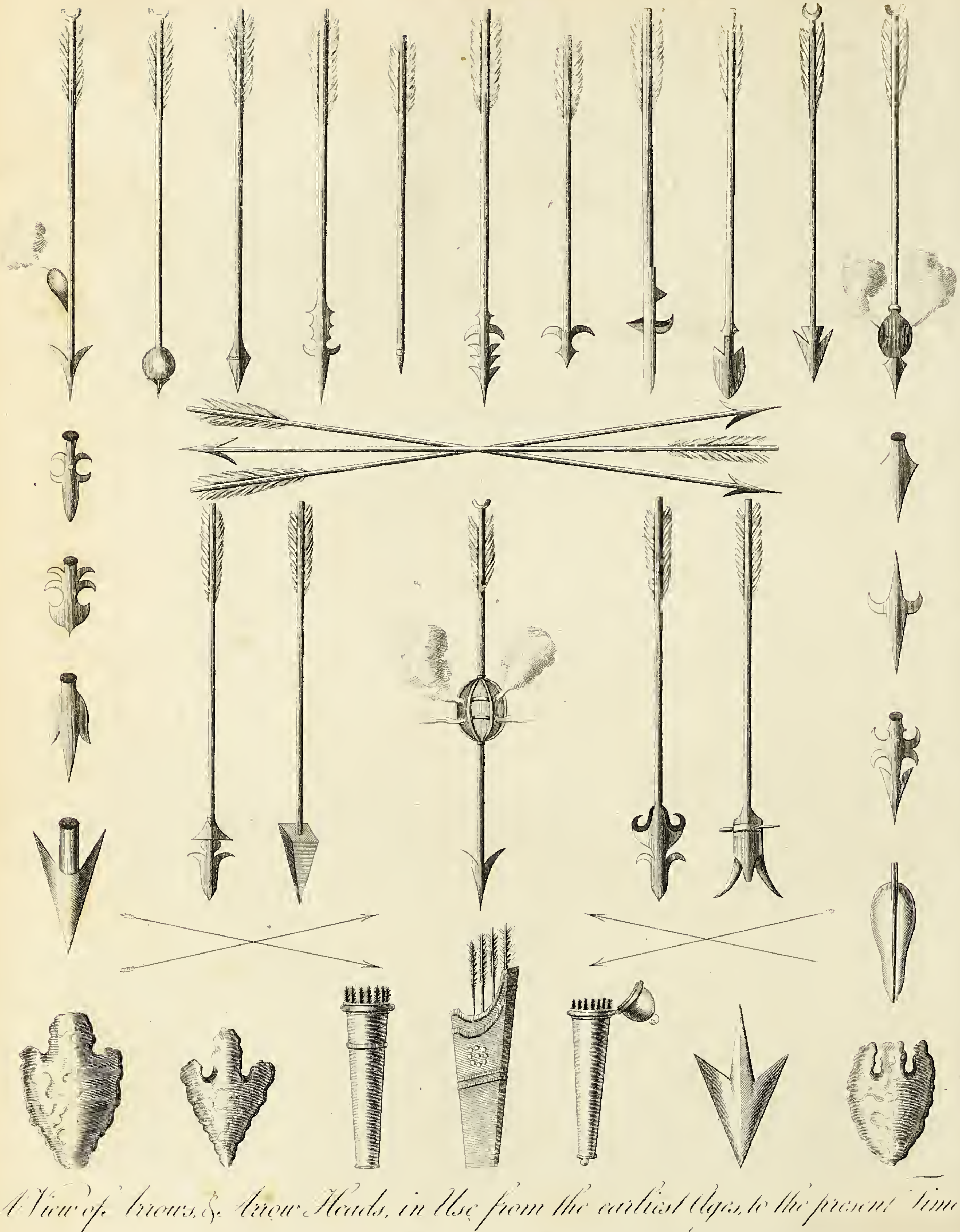
The natives of the Eaſt Indies, and of America, who practiſe the poiſoning of arrows, employ thoſe inſtruments in the hunting of wild beaſts. But the arrow they uſe is of a very different conſtruction from thoſe which are uſually ſhot from the bow. They are ſimple ſticks of hard wood, poiſoned at the end, and are ſo light as to be blown through a tube, in the manner we often ſee boys blowing peaſe, or other ſubſtances, in this country. Bancroft, in his Hiſtory of Guiana, ſays, "The poiſoned arrows are made of ſplinters of the hard and ſolid outer ſubſtance of the cokarito tree, and are uſually about twelve inches in length, not larger in bulk than a large common knitting-needle. The head of the arrow is formed into a ſharp point, and envenomed in the poiſon of *woorara*; round the other end is wound a roll of cotton, adapted to the cavity of the reed through which the arrow is to be blown. The arrow, thus decked and armed for deſtruction, is inſerted in the hollow ſtraight reed, ſeveral feet in length, which being directed towards the object, the arrow is by a ſingle blaſt of air from the lungs, protruded through the cavity of the reed, and flies, with great ſwiftneſs and unerring certainty, the diſtance of thirty or forty yards, conveying ſpeedy and inevitable death to the animal from whom it draws blood. Blowing the arrows is the principal exerciſe of the Indians from their childhood; and by long uſe and habitude, they acquire a degree of dexterity and exactneſs, which is inimitable in an European, and almoſt incredible." The ſame thing is practiſed in the Eaſt almoſt univerſally. The inhabitants of Makaſſar, particularly, are accuſtomed to poiſon their arrows. The brother of Mr. Tavernier, while in India, had a remarkable proof of the activity of this poiſon exhibited to him. An Engliſhman reſiding in Makaſſar had in a rage killed a ſubject of the king of that iſland; but his offence was pardoned. In conſequence of which, the other Engliſh, French, and Dutch, inhabitants of the iſland, fearing leſt the reſentment of the natives might be exerciſed againſt them, requeſted the king, that the perſon guilty of the charge ſhould ſuffer for what he had done; that no future revenge might be meditated by his ſubjects againſt the Europeans, as was moſt times the caſe. The king conſented; and, as he wiſhed the criminal to ſuffer as little pain as poſſible, he ſaid, he himſelf would inflict the ſtroke by a poiſoned arrow. He deſired the brother of Mr. Tavernier, and the other gentlemen, to attend the execution. When the man was brought, the king aſked him what part he ſhould wound; upon which he named the great toe of the right foot. The king then took an arrow, properly poiſoned, and adapted it to the tube, and blew it with incredible exactneſs to the point. Two European ſurgeons on the ſpot, immediately exerted their ſkill; but, though they amputated the part far above the wound, with quick diſpatch, the man died in their hands!

All the kings of the eaſtern countries collect this poiſon to tinge their arrows, and keep them ready for uſe during a long time. The king of Achen made a preſent of a dozen of theſe arrows to Mr. Coke, envoy at Bavaria, with whom Mr. Tavernier was well acquainted. One day, when theſe gentlemen were together, they had the curioſity to try whether thoſe weapons retained their virulence or not, as they had been kept ſeveral years unuſed. They ſhot ſome of them at ſquirrels and other animals, all of which dropt the moment they were wounded, a circumſtance which ſufficiently proved, not only the violence, but alſo the permanence of this terrible poiſon. There are other poiſons uſed for ſimilar purpoſes in South America, called *lamas*, and *ticunas*; for the deadly effects of which ſee POISON.

Beſides poiſoned arrows, others have been uſed, amid the ſtratagems of war, for ſetting fire to beſieged places. In order to begin a conflagration, the fire was attached to the body of arrows by ſeveral different ways. Sometimes cotton, tow, or the like ſubſtance, previouſly mixed with pitch, roſin, oil, or naptha, was wrapped on the end of an arrow, in the form of a ball; which ball, when in uſe, was fired, and the arrow directed towards wooden towers and other buildings of beſieged places; where, ſticking firmly, they communicated a flame to every part near it, and a general conflagration uſually took place.

Marcellinus deſcribes another kind of fiery arrow called the *malleolus*. It was conſtructed, he ſays, of cane, or reed; and, at the part where the head joined to the body, there was a piece of iron open-work communicating with the middle of the arrow, which was made hollow, and the cavity filled with combuſtible materials. When theſe arrows were uſed, the ſubſtance within was enflamed, and, after being ſhot, ſticking to the object, burned with great rapidity whatever came in its way. Fiery arrows were alſo uſed by the Engliſh. They are taken notice of by Matthew Paris; and were much eſteemed in naval engagements, as well as in ſieges. We are informed, an archer could ſhoot an ounce weight of combuſtible matter attached to the point of an arrow twelve-ſcore yards. In ſea fights, the ancient Engliſh alſo ſhot glaſs phials filled with quick-lime, in order to blind the eyes and diſorder the enemy. More modern warriors have found this ſtratagem to anſwer, even after cannon and artillery have been ineffectual. A remarkable inſtance of this kind happened when Charles XII. king of Sweden, with about ſixty of his ſoldiers, reſiſted the whole Turkiſh and Tartar army, near Bender. Charles, driven from his intrenchments, was under the neceſſity of ſeeking refuge in a houſe near at hand; which, however, he ſaw occupied by the enemy. He entered, with his attendants, ſword in hand, and every Turk either leaped out at the window, or was killed on the ſpot. After getting poſſeſſion of this fortreſs, the king withſtood the enemy bravely, and laid a great number lifeleſs by his muſquetry from the windows. The houſe was now attacked by cannon, but in vain; the walls were ſo firm that the ſtone bullets flew to pieces by ſtriking againſt them; and the repulſe would have been complete on the part of Charles, had not the Turks ſhot fiery arrows into the roof, the windows, and the door, of their fortreſs, which ſubdued even the iron king of Sweden! *Voltaire's Hiſt. Charles XII.*

ARCHERY.



A View of Arrows, & Arrow Heads, in Use from the earliest Ages, to the present Time.

Ihle delin.

London Published as the Act directs April 28. 1797, by J. Wilkes.

By the aſſiſtance of the arrow alſo, we find from Herodotus, that a treacherous correſpondence was carried on at the ſiege of Potidœa, between Artabazus, the Perſian general, and Timoxenus, whom he wiſhed to betray the town into his power. The hiſtorian tells us he is ignorant by what means the communication began; but, that whatever information was conveyed from one to the other, was written and affixed to an arrow, which, being ſhot to a particular place, was there examined by the oppoſite party, and an anſwer returned by the ſame mode of conveyance.

The invention of quivers, we have reaſon to believe, ſpeedily followed that of the bow and arrow. We find in Geneſis, that it was a concomitant of the bow at the time of Iſaac. "Now therefore take, I pray thee, thy weapons, thy quiver, and thy bow, and go out to the field, and take me ſome veniſon." This paſſage clearly points out the high antiquity of the inſtrument in Aſia; and there is no reaſon to ſuppoſe that in other parts of the world its invention has been much poſterior to that of the bow. The quivers of the ancient Greeks, like thoſe of many other nations, were made of ſkins, or leather. They were of various forms and ſizes: ſometimes round, ſometimes ſquare, open at the top, or cloſed with a lid; and were uſually carried on the back, the upper end of the quiver juſt riſing above the right ſhoulder. Sometimes indeed they were carried at the ſide; as may be ſeen in the Archery-Plate I. *fig.* 14.

The coryto, or corytus, was a kind of caſe uſed by many nations to carry their bows in. It appears to have been made on the ſame general principle as the quiver, and about the ſame length, as it only admitted half the length of the bow. See the annexed Archery-Plate I. *fig.* 12 and 13. It is remarkable, that in all the ancient figures of this bow-caſe, the bow is repreſented as put into it ſtrung.

The butts, or targets, at which archers were accuſtomed to exerciſe their art and ſkill, were originally ſingle poſts only; afterwards they were made of faggots, or ſheaves of ſtraw, and were uſually placed at the diſtance of a ſtadium, or about 600 feet, from the place in which the ſhooter ſtood. The butts formerly in uſe were generally of earth; but thoſe of ſtraw are at preſent more in faſhion. The latter kind poſſeſs an advantage, as they can be moved with eaſe to any diſtance fixed upon. The manufacture of them is ſimilar to that of the common ſtraw bee-hives; and they are uſually made about four feet and a half in diameter, that is, twice the length of the arrow. The front part is covered with cloth, painted in rings of different colours, in order to mark the reſpective degrees of merit each archer is entitled to.

The annexed Archery-Plate II. repreſents the different arrows and arrow-heads that have been in uſe from the earlieſt ages to the preſent time. The upper row conſiſts of arrows adapted to the common bow in different countries; the firſt and laſt are the combuſtible arrows formerly uſed by the Engliſh; and the ſecond is the bird-bolt; the others were uſed both in war, and in the chace. The centre arrow, in the middle row, is the mallcolus, or combuſtible arrow belonging to the croſs-bow; and the other four are quarrels, or arrows, adapted to the ſame weapon. The three long arrows repreſented croſſwiſe, are modern, being what are now uſed by the preſent Societies of Archers in this kingdom, and in many countries abroad. The four ſmall ones repreſented croſſwiſe, are the poiſoned arrows of the Indians. The figures on each ſide repreſent the various arrow-heads that have been from time to time in uſe; and the three at the lower corners are the moſt ancient, being made of flint. The three figures in the centre of the bottow row, are different kinds of quivers, uſed in different countries. The middle one is the moſt modern.

We are not informed at what period the arbaliſt, or croſs-bow, was firſt introduced to the world, but it is by ſome ſaid to have derived its origin from the Cretans; by others it is aſcribed to the inhabitants of Sicily. Many varieties, on the large ſcale, were uſed in the military operations of the Greeks and Romans; and that ſome of thoſe engines, called *balliſtæ*, were contrived on this principle, appears from figures on the Trajan and Antonine pillars. Theſe, however, were exceedingly ſtrong, and capable of emitting large javelins; but there were others of ſmaller dimenſions, which anſwered the purpoſe of the arbaliſt.

Among the Engliſh, the firſt mention of the croſs-bow ſeems to be in Speed; who quotes Johannes Pomarius. He ſays of the Saxons, that their arms were long ſpears, broad ſwords, and the croſs-bow. In the time of Henry II. we find ſeveral facts ſpoken of, which ſhew the croſs-bow to have been very common in that reign. In 1172, the conqueſt of Ireland was undertaken by the troops of this king; and ſeveral detachments were ſent forth, in each of which archers are particularly mentioned. The party commanded by Fitz-Stephens was firſt landed in Ireland, and conſiſted of thirty knights, ſixty ſquires, and three hundred archers. The Engliſh armies drove all before them; and Rapin explains this circumſtance by obſerving, "that it is almoſt incredible, that the Iriſh, who were exceedingly numerous, ſhould ſuffer themſelves to be over-run by an handful of Engliſhmen. The reaſon is imputed to their great dread of the Engliſh croſs-bow, the uſe of which, till then, was unknown to them." *Rapin*, vol. i. p. 235.

Little is ſaid of the inſtrument in our hiſtory from this period till about ſixty years afterwards; when Richard I. was killed by an arrow from one of them, at the ſiege of Limoges, in Guienne. This fact is mentioned by almoſt all our hiſtorians. Speed ſays, "that, when Richard was at the ſiege of the caſtle, an arbaliſter ſtanding on the wall, and ſeeing his time, charged his ſteel bow with a ſquare arrow, or quarrel, making firſt prayer to God that he would direct the ſhot, and deliver the innocency of the beſieged from oppreſſion. Whereupon diſcharging it, as the king was viewing the caſtle, within the diſtance of ſuch an engine; and the king (hearing the bow go off), ſtooping with his head, was mortally wounded in the left ſhoulder."

It appears, that in England, croſs-bow-men were very common in the reign of Henry III. Matthew Paris ſays they attended the army, and preceded the main body of it, at the diſtance of a mile. It was made uſe of at the battle of Boſworth-field, in 1485; and there is an arbaliſt in the Litchfield Muſeum, which was found on the place of battle. The ſucceeding king, Henry VII. was more partial to the long-bow than the arbaliſt; and, in the nineteenth year of his reign, forbad the uſe of it. It is from this period, we may date the decline of the croſs-bow in this country, as in the following reigns it was but little in eſteem. Henry VIII. made a law which tended very much to check the uſe of it. Stat. 33. c. 6. complains that divers murders had been perpetrated by means of croſs-bows; and that malicious and evil-minded perſons carried them ready bent and charged with quarrels, to the great annoyance of paſſengers on the highways. The act therefore reſtrains this cuſtom, and ordains that thoſe who are poſſeſſed of lands to the value of an hundred pounds per annum, ſhall alone uſe the croſs-bow; and that they ſhall not ride with them on the king's highway, nor ſhoot within a quarter of a mile of any city, or market-town, under a penalty for ſo doing.

In France, arbaliſters ſeem to have been in uſe as early as the time of Louis le Gros. There is a paſſage in Ducheſne's Hiſtory of France, which mentions both archers ſhooting by the hand, and croſs-bow-men. This inſtrument, during the beginning of the reign of Philip the Auguſt, was ſo far diſuſed, as that not one was to be found among his troops. The reaſon given for the diſcontinuance of the arbaliſt, during the reign of Philip the Auguſt, appears to be, that that weapon was prohibited by a canon of the ſecond Lateran Council, holden in 1139, as "hateful to God, and unfit to be made uſe of among Chriſtians." At the ſiege of Turin, in 1536, P. Daniel ſays, there was but one arbaliſter in the French army; but he was ſo expert, that he killed more perſons than any of thoſe uſing the harquebuſs.

Arbaliſts were made on different principles, but the more modern form was that repreſented in *fig.* 10. Plate I. annexed; and is charged with the malleolus, or combuſtible arrow. In the middle of the bow-ſtock, at A, was inſerted a ſmall round piece of iron, repreſented in *fig.* 11. It was on this nut, or lock, that the ſtring was held when they charged the bow. This was fixed in the ſtock by a ſcrew paſſing through its centre, and on which it freely turned. The notch C, aroſe above the ſurface of the ſtock on its upper ſide, and the ſtring was received into it when drawn up. B, *fig.* 10. repreſents a trigger, the end of which was inſerted into the notch D, *fig.* 11. and prevented it from moving while the nut held the ſtring; but, on being preſſed, (as it turned on a pin,) the end was diſplaced from the notch, and the nut turned round by the force of the ſtring, which it ſet at liberty, and projected the arrow.

The arrows ſhot from croſs-bows were called *quarrels*, or *bolts*. They were uſually headed with a large ſquare pyramid of iron, but had ſometimes other forms given to them. Inſtead of feathers, the quarrels were ſometimes trimmed with plates of braſs or iron. One ſpecies of quarrel, which was called in French the *vireton*, from its ſpinning round as it paſſed through the air, was made as our common arrows are at preſent, with the feathers ſet on a little curved; but it is probable that that method of placing the feathers was not in general uſed in the fifteenth century, the period in which the vireton is moſt ſpoken of, or a particular name would have been unneceſſary. An Engliſh phraſe, (as Mr. Barrington obſerves,) originated from the uſe of the bolt: "I have ſhot my bolt," is a ſaying which intimates an attempt having been made in ſome way. An example of this expreſſion occurs in Langtoft's Chronicle, where an Eſſay on Stonehenge is entitled, "A Fool's Bolt ſoon ſhot at Stonage."

It was cuſtomary among thoſe who practiſed with the croſs-bow to have a mark, which they called a *popinjay*, formed like a parrot, and which was ſuſpended in the air. Stowe, in his "Survey of London," ſays, The croſs-bow makers rented Tazel-cloſe, near Moorfields, for the purpoſe of exerciſing themſelves with that weapon at the popinjay. The practice has been very ancient in France, and appears, from P. Daniel, to have been inſtituted as early as the reign of Philip I. The croſs-bow, as it is capable of being managed with greater accuracy than the long-bow, has been at all times uſed in the chace; and, even long after the conſtruction of the muſket, was highly improved; the ſilent diſcharge of the arbaliſt, rendered it more valuable in the purſuit of timorous animals, than any other weapon. It was formerly, and perhaps is at preſent, in uſe, for the purpoſe of killing deer; and gentlemen often amuſe themſelves by ſhooting bullets at rooks and rabbits, which ſome can ſtrike with wonderful dexterity. For killing birds, there was a particular kind of arrow, having a ball of wood at the end of it, and which was named the *bird-bolt*. This arrow had often, beſides the ball, an iron point which projected before it, and with which the ſmaller animals were transfixed.

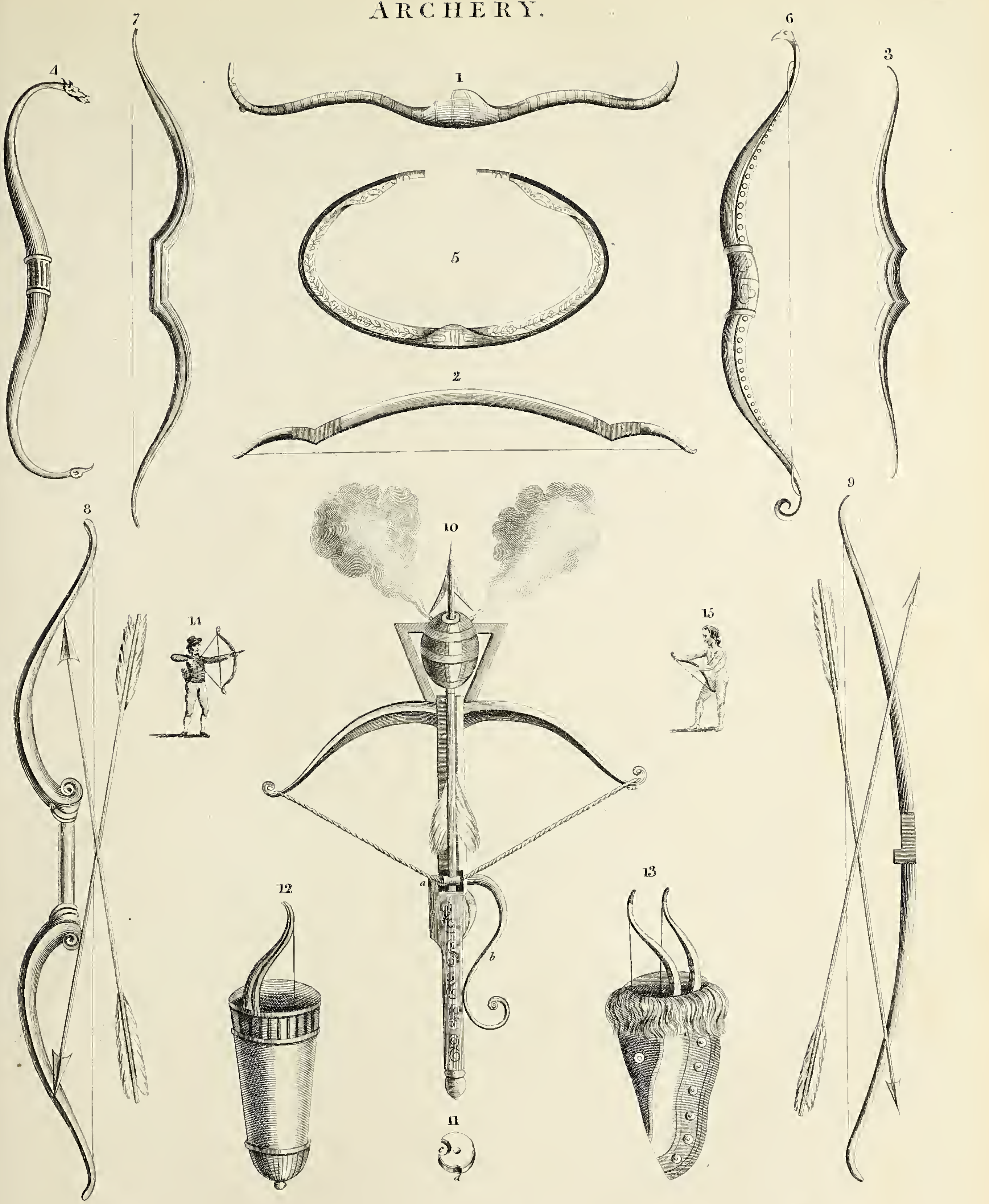
No circumſtance, perhaps, illuſtrates ſo well the accuracy with which the croſs-bow was formerly ſhot, as the following paſſage in Wood's Bowman's Glory. "On March the 21ſt, 1661, four hundred archers, with their bows and arrows, made a ſplendid and glorious ſhow in Hide-Parke, with flying colours and croſs-bows to guard them. Sir Gilbert Talbot, Bart. was their Colonel, Sir Edward Hungerford, Knight of the Bath, their Lieutenant Colonel, Mr. Donne was their Major. Great was the appearance both of the nobility, gentry, and commonalty. Several of the archers ſhot near twenty ſcore yards, within the compaſs of a hat, with their croſs-bows; and many of them, to the amazement of the ſpectators, hit the mark. There were three ſhowers of whiſtling-arrows. So great was the delight, and ſo pleaſing the exerciſe, that three regiments of foot laid down their arms to come to ſee it." *Bowman's Glory*, p. 73. Such were the early feats of the royal archers of St.-George, or preſent Artillery-Company.

The annexed Archery-Plate I. repreſents the different kinds of bows we have been deſcribing; which are as follow: *Fig.* 1. The Perſian bow, conſtructed of the horns of the antelope. 2. The curved or indented bow of Otaheite, and of the Eſkimaux bordering on Hudſon's Bay. 3. The bow of the Amazons. 4. The Dacian, or ſwan and dragon headed bow. 5. The Tartarian bow, ſhewing its inflected figure when unſtrung. 6. The Saxon bow. 7. The Roman bow. 8. The Grecian bow. 9. The Engliſh long-bow. 10. The arbaliſt, or croſs-bow, loaded with a malleolus, or combuſtible arrow. 11. The nut or lock of the croſs-bow. 12, and 13. The corytus, or caſes for carrying the bow. 14. An archer ſhooting with a double-ſtring bow. 15. A Cretan archer bending his bow.

Among thoſe who have excelled in the uſe and management of the bow, the emperors Domitian and Commodus are particularly celebrated. It is reported of Domitian, that he would often place boys in the Circus at ſome diſtance from him, and as they held out their hands, and ſeparated their fingers, he would ſhoot an arrow through either ſpace, without injury to the hand of him who acted target. The feats attributed to Commodus are numerous; and he appears to have been one of the moſt expert archers recorded in hiſtory. It is ſaid by Herodian, that his hand was unerring both with the javelin and with the bow; and that the moſt experienced Parthian archers yielded to his ſuperior ſkill. He would kill all kinds of animals in the amphitheatre by way of exerciſe, and to ſhew the ſteadineſs of his arm. But it is obſerved, that he, in theſe caſes, generally preferred to ſhew his art, rather than his courage; as he ſecured himſelf on a place elevated beyond the reach of any attack which might have happened from his opponents. Stags, lions, panthers, and all ſpecies of beaſts, fell without number by his hand; nor was a ſecond arrow neceſſary, for every wound proved mortal. He would ſtrike an animal in any particular point he wiſhed with the greateſt accuracy, in the head, or in the heart. A panther was ſometimes let looſe in the Circus where a criminal was placed; and juſt as the animal was going to ſeize the culprit, he would drive an arrow ſo opportunely, that the man ſhould eſcape unhurt. An hundred lions have been introduced at the ſame time upon the Arena, and with an hundred ſhafts he would lay them lifeleſs. He cauſed arrows to be made with heads curved in a ſemicircular figure, and with theſe he could cut off the neck of an oſtrich running in full ſpeed. This feat is, perhaps, the moſt difficult of the whole number, the oſtrich being extremely ſwift of foot, and having a neck of ſmall magnitude. Herodian obſerves alſo, that when the emperor amputated the head of one of theſe animals, the ſtroke ſevered the parts ſo inſtantaneouſly, that the body ſometimes proceeded ſeveral paces, as if ſtill living, the motion not being immediately checked.

An anecdote recorded of a perſon whoſe name was Aſter, has immortalized him as one of the moſt expert of archers. He poſſeſſed ſuch ſkill with his bow, that as he ſaw Philip of Macedon among his troops, he wrote upon an arrow which he intended to ſhoot at that king, "Aſter ſends Philip a deadly arrow;" and, having diſcharged it, ſtruck the right eye of Philip: but, although the wound was not mortal, it deprived him of ſight on that ſide. A very extraordinary, and perhaps in war one of the moſt uſeful archers, is ſpoken of by Zoſimus, in his account of the battle between Conſtantius and Magentius, at Murſa. This ſoldier, whoſe name was Menelaus, poſſeſſed the art of ſhooting three arrows from his bow at one diſcharge, and with them could ſtrike three different perſons. By this ſkilful expedient, ſays the hiſtorian, he killed a great number of thoſe who oppoſed him; and the enemy, it might almoſt be ſaid, were defeated by a ſingle archer. Unfortunately, however, this valuable man at laſt fell by the hand of Romulus, a general of the army of Magentius, whom he had firſt wounded by an arrow. It appears probable, that birds formerly were often killed by arrows, as the circumſtance is hinted by ſeveral authors. Diodorus

ARCHERY.



A View of the Arbalist, and Bows of different Nations.

London. Published as the Act directs, March 4th 1797, by J. Wilkes.
J. Pass sculpt.

rus Siculus, indeed, tells us, that ſome of the Ethiopian nations were ſo adroit, that they ſubſiſted entirely on the birds they ſhot with their bow. Some very ancient and rude pieces of ſculpture, which are copied by Stralenburg, in his Hiſtory of Siberia, repreſent archers riding on horſeback, who are aiming at birds flying in many directions, low to the ground, and perpendicularly over their heads.

From the accounts we have of the Perſians, they appear to be aſtoniſhingly expert in the art of ſhooting the bow; and, if we believe the relations of thoſe who have travelled in the eaſt, (and theſe relations are uniform,) they certainly are to be placed in the firſt rank of archers. Chardin ſays, that the Perſians, in their exerciſes, ſhoot the bow with incredible accuracy; ſo accurate, that they will drive an arrow into the ſame hole many times ſucceſſively. The butts they uſe are made of ſand, beaten hard into a wooden frame, the ſurface of which is rendered ſmooth before the archers begin to practiſe. An arrow ſhot ſtrong againſt one of theſe targets, will uſually penetrate pretty deep, perhaps half its length; and the excellence of an archer is the greater, in proportion as the number of ſhots required to drive an arrow over head in the hole, made by the firſt ſhot, diminiſhes. This feat is what they generally propoſe to themſelves; and it not unfrequently happens that they accompliſh their end.

In Perſia alſo they excel in ſhooting with the bow while on horſeback; a ſpecies of archery we in this country are entirely ignorant of. Chardin deſcribes the method of practiſing this art, as extremely curious. A mark is placed on the top of a maſt about twenty-ſix feet from the ground; the horſeman, who is prepared to ſhoot, rides on full ſpeed towards the mark, and, having paſſed it, his bow being ready drawn, turns round and diſcharges his arrow backwards. Sometimes they ſhoot to the right hand, and ſometimes to the left, according to the direction in which they guide their horſes, in reſpect to the mark they propoſe to aim at. Chardin ſpeaks of this game as common in all the villages of Perſia. The nobility and the kings are fond of it, and often practiſe it. He ſays, that Sephy, the grandfather of the king who occupied the throne at the time he made his tour, excelled in this ſport, and would uſually ſtrike the target; if not with the firſt arrow, with the ſecond he never erred.

Mr. Tavernier had an opportunity of being preſent at a review of the Perſian cavalry, during his reſidence in the eaſt, in the year 1654. His account of the exhibition is curious, and will alſo enable us to judge of the degree of excellence to which archery was brought in that nation. "The king," he ſays, "accompanied by his principal officers, ſtood on a portal to one of the royal gardens, from whence they viewed the moſt expert and beſt-looking of the troops, who were ordered to ride ſingly before the place where the king was ſtationed. The horſemen rode full ſpeed; and, as they paſſed, each man ſhot an arrow into a turf butt, prepared for the occaſion, in ſight of the king and the officers. When the review cloſed, the perſon whoſe arrow ſtood neareſt the centre, was promiſed an increaſe of pay." "I was at Caſbin," ſays Mr. Tavernier, "at the time; and remember one horſeman, who, riding in his turn, when he came before the portal ſtopped his horſe, and walked over the plain, contrary to the orders of the general. When he came oppoſite the butt, he refuſed to ſhoot his arrow, and only raiſed his arms in the attitude of drawing the bow. This horſeman was unfortunately of a very forbidding mein; and the king, enraged to ſee his diſcipline ſo groſsly diſregarded, and by one he judged incapable of any excellence, gave immediate orders for him to be diſmiſſed the ſervice. His weapons and horſe were taken from him on the ſpot; and the king's directions would have been fully executed, had not one of the generals pleaded his cauſe. It was repreſented to the king, that the cavalier, though ſo ill-looking, was one of the beſt ſoldiers in the whole army; that he had fully proved his ſkill and courage in the ſieges of Erivan and Candahar; and that his father was among thoſe who maintained the attack of Bagdad three times. Having heard this character, the king, at the requeſt of the officers, commanded the horſe and arms to be reſtored to the cavalier, and he was ordered to take his turn in the review. He accordingly rode into the preſence of the king, and turning his horſe firſt to right, then to left, in ſome agitation, cried out, "Where would the king have me ſhoot?" On which one of the generals anſwered, "At the target where the other horſemen have ſhot." The cavalier, ſhaking his head, ſaid with a ſmile, "Muſt I direct my arrows againſt a turf? I would rather point them at the enemies of my country; then would I with more pleaſure ſhoot three quivers full, than a ſingle arrow at this turf." He then, with great dignity, drew two arrows from his quiver; and, holding one of them between his teeth, fitted the other into his bow: when forcing his horſe vigorouſly acroſs the plain till he had paſſed the butt, he, in the Parthian attitude, drove an arrow into the centre of the target; turning about, he in the ſame manner ſhot his ſecond arrow preciſely into the hole from whence his firſt arrow had been drawn. The general who had before pleaded for the cavalier, now approached the king, and hoped the adroitneſs of that ſoldier had ſatisfied the expectation he had raiſed. At the ſame time ſeeing the cavalier at hand, and preſenting him to the king, his majeſty not only expreſſed admiration at his great ſkill, but ordered five times the propoſed reward to be given him."

The Turks are ſaid to have been formerly very dexterous in the management of the bow, though at preſent that inſtrument is little uſed among them. An old writer, who reſided in Conſtantinople at a time when archery was cultivated, ſpeaks highly of the feats of theſe people. Boys at the age of eight years, or even ſeven, begin to practiſe with the bow, in order to render their arms ſtrong and ſteady; and, by the time they arrived at manhood, they could ſhoot with ſo much accuracy, as to drive an arrow into the eye of a man, or could hit any part equally ſmall. They could, during their practice, ſhoot ſeveral arrows into a mark not larger than a die, from the diſtance of ten yards.

It would be an endleſs taſk to relate all the exploits of the bow which have been celebrated by the poets; we ſhall nevertheleſs mention one, which is the ſtory told of Ulyſſes, in the twenty-firſt book of the Odyſſey. The poet feigns, that Penelope, wearied by the ſolicitations of her ſuitors during the abſence of Ulyſſes at the Trojan war, at length forms a reſolution to determine which of the lovers ſhall receive her hand. She produces a bow which had been left with her by her huſband, and thus declares her propoſal:

Who firſt Ulyſſes' wond'rous bow ſhall bend,
And through twelve ringlets the fleet arrow ſend,
Him will I follow, and forſake my home,
For him forſake this lov'd, this wealthy, dome.
Graceful ſhe ſaid, and bade Eumæus ſhow
The rival peers the ringlets and the bow. *Pope.*

Juſt as they had agreed to decide by this expedient, Ulyſſes, diſguiſed in the dreſs of a ſhepherd, returns from Troy. After ſeveral of the lovers had tried unſucceſsfully, and after ſome altercation concerning the propriety of allowing a man of ſo mean an appearance to have any chance of gaining the prize, Ulyſſes takes the bow,

And, ſitting as he was, the cord he drew,
Through ev'ry ringlet levelling his view;
Then notch'd the ſhaft, releas'd, and gave it wing:
The whizzing arrow vaniſh'd from the ſtring,
Sung on direct, and thredded ev'ry ring.
The ſolid gate its fury ſcarcely bounds;
Pierc'd through and through, the ſolid gate reſounds. *Id.*

Ulyſſes, having gained the prize, diſcloſes himſelf, and immediately puts to death thoſe ſuitors to Penelope who had taken advantage of his abſence.

Whether the eulogies which have been ſo liberally beſtowed on the Engliſh archers by different writers be perfectly juſt, and whether they really were more expert in the practice of this branch of war than many of the ancient nations, may juſtly be diſputed. The laws made to inure youth to the practice of the bow, by many warlike people of antiquity, were much more ſevere than any of thoſe adopted in this country. Perhaps, indeed, our archers might derive a ſuperiority from their bows being conſtructed on better principles, being more ſkilfully made, and of better materials, than thoſe uſed in other countries. At any rate, however, it appears extraordinary, that ſome of our hiſtorians, and particularly the more modern ones, have repreſented the Engliſh at the battle of Haſtings, as entirely ignorant of the effect of archery; and ſpeak of the aſtoniſhment with which the troops were ſeized, in finding death inflicted on them whilſt the enemy was far at a diſtance. Speed obſerves, that the firſt diſcharge of arrows from the Norman army "was a kind of fight both ſtrange and terrible unto the Engliſh, who ſuppoſed their enemy had beene already even in the middeſt amongſt them." Echard expreſſes the ſame ſentiment. "The fight," he ſays, "began with great fury, order, and equal bravery on both ſides; in which the Engliſh were ſeverely gaul'd by the thick ſhowers of arrows from the Norman long-bows, before the battle joined; which was a weapon then unuſed in England, and thereby the more ſurprizing, the wounds coming from enemies ſo far diſtant, and not ſuddenly to be revenged." Hume mentions nothing of this extraordinary ſurprize among the Engliſh troops; neither does Matthew Paris, nor many others. Sir J. Hayward ſays, "The uſe of the bow was firſt brought into the land by the Normans; and that afterwards the Engliſh, being trained to the practice of it, became the beſt ſhooters in the world."

That the Engliſh could be ignorant of the bow at the conqueſt is impoſſible, ſince both the Saxons and Danes made uſe of it in battle againſt the inhabitants of this country, for many centuries previous to that time. It is true, there is no mention made of archers among the troops of Harold, but it does not follow that they were ignorant of the effect of archery, or that the bow was not then uſed in England. It is probable that the Romans firſt introduced the bow as a military weapon into Britain, as archers often formed a great part of their auxiliary troops. The battles between the Romans and our countrymen, as deſcribed by Cæſar, do not indeed appear to have been carried on by the aſſiſtance of it. But from the ſecond book of the Commentaries, we find, that Cæſar had both Numidian and Cretan archers in his army, when he encountered the Belgæ, in Gaul; and it is reaſonable to ſuppoſe, that he alſo made uſe of them among his troops, when in Britain, about two years afterwards. During the reigns which ſucceeded that of Julius Cæſar, and when the Romans had ſettled themſelves on this iſland, archers are frequently mentioned as part of their troops; and it is probable, that the reinforcements often ſent to the army in Britain, included many archers.

In North Britain the bow appears to have been known at leaſt as early as it was in the South; the works of Boethius, and other hiſtorians of that country, ſeem thus to intimate. If the poems of Oſſian may be brought as evidence of the fact, we may perceive that they uniformly repreſent the bow as an attendant on the warrior and hunter; and that the yew-tree was then employed to form theſe weapons: "Go to the cave, my love, till our battle ceaſe on the field. Son of Leith, bring the bows of our fathers! the ſounding quivers of Morni! Let our three warriors bend the yew."

During the Saxon heptarchy, we find that Offrid, the ſon of Edwin, king of Northumbria, was killed by an arrow, in a battle between the troops of that king and the united army of Mercians and Welſh, which was fought about the year 633, near Hatfield, in Yorkſhire. But, except this fact, little relating to the bow appears in our annals of the Saxon æra. The Danes arrived after the Saxons; and theſe warlike people were accuſtomed to the uſe of archery in battle, as we find often noticed by our early chronicle writers. About the year 870, they became very formidable, and committed great depredations on the inhabitants of Eaſt Anglia. In one of their battles with the Eaſt Angles, they overcame their enemy, and took priſoner Edmund, king of that part of the iſland, whom, after inſulting with many indignities, they bound to a ſtake, for the Daniſh archers and javelin-men to aim at, putting him to death by that cruel and ignominious expedient. During the reign of Alfred, it ſeems probable, that archery was much in uſe, both in the army of the Danes and in that of Alfred. Polydore Virgil confirms this ſuppoſition; for, ſpeaking of the troops of Ethelred, of which part were commanded by his brother Alfred, he ſays, a great number of archers were placed in the right wing of the army.

From this time till the era of the Norman invaſion, little occurs with reſpect to archery; at that time bows and arrows are ſpoken of by all our hiſtorians; yet many of our early writers neglect to particularize the kind of bow made uſe of by the Normans. John Roſs expreſsly ſays the long-bow was uſed. Mr. Barrington was however of opinion, that the croſs-bow was the inſtrument principally employed in the army of the invaders; and from Sir John Hayward's account of the duke of Normandy, it ſeems almoſt certain, that he himſelf uſed the croſs-bow. It is moſt probable, however, that the arbaliſt and long-bow were both uſed on that memorable occaſion. In the reign of Henry II. archery ſeems to have been firſt carried into Ireland by the troops of that king. Lord Lyttleton ſays, "it is ſtrange that the Iriſh, who had much intercourſe with the Welſh before the time of Henry II. ſhould not have learnt from that nation, who greatly excelled in archery, that arrows were better weapons to annoy the enemy with than ſtones, which, unleſs at a ſmall diſtance, could have little or no effect." The ſame author obſerves, that, "from many inſtances, in the courſe of theſe wars, it appears, that the Engliſh conqueſts in Ireland were principally owing to the uſe of the long-bow in battle, which the Iriſh infantry wanted." And therefore Giraldus Cambrenſis, in his chapter entitled *Qualiter Hibernica gens ſit expugnanda*, adviſes, that, in all engagements with that people, archers ſhould be intermingled with the heavy-armed troops.

To ſhew how worthy of imitation the Welſh were at the time of Henry II. in the uſe of the bow, we need only repeat what is mentioned by Giraldus Cambrenſis. "There is a particular tribe in Wales," ſays this ancient writer, "named the Venta; a people brave and warlike, and who far excel the other inhabitants of that country in the practice of archery. During a ſiege, it happened that two ſoldiers running in haſte towards a tower, ſituated at a little diſtance from them, were attacked with a number of arrows from the Welſh; which being ſhot with prodigious violence, ſome penetrated through the oak doors of a portal, although they were the breadth of four fingers in thickneſs. The heads of theſe arrows were afterwards driven out and preſerved, in order to continue the remembrance of ſuch extraordinary force in ſhooting with the bow. It happened alſo in a battle, at the time of William de Breuſa, as he himſelf relates, that a Welſhman having directed his arrow at an horſe-ſoldier, who was clad in armour and had his leather coat under it, the arrow, beſides piercing the man through the hip, ſtruck alſo through the ſaddle, and mortally wounded the horſe on which he ſat. Another Welſh ſoldier, having ſhot an arrow at an horſeman who was covered with ſtrong armour in the ſame manner, the ſhaft penetrated through his hip and fixed in the ſaddle: but what is moſt remarkable is, that as the horſeman drew his bridle aſide to turn round, he received another arrow in his hip on the oppoſite ſide, which paſſing through it, he was firmly faſtened to the ſaddle on both ſides. *Itinerar. Cambriæ. Gir. Camb.* p. 835—20.

The battle of Creſſy, as well as that of Poictiers, intimates the bow to have been highly cultivated by the

Engliſh at thoſe times; but it was found neceſſary by Edward to enforce the practice of archery during the peace which followed, as the ſoldiers rather attended to other amuſements than to archery. During the reign of Richard II. little is recorded with reſpect to the bow. We find, however, from Hollingſhead, that a number of archers were ſent, at the requeſt of the Genoeſe, to aſſiſt them againſt the Saracens on the coaſt of Barbary; and that they performed ſome wonderful exploits with their long-bow. From a paſſage in Stowe, we find Richard II. to have had a very numerous guard of archers; and in the reign of Henry IV. a memorable victory was gained over the Scots near Halidowne-hill, in the year 1402, by lord Percie's archers. The earl of Douglas, who commanded the Scotch army in that action, enraged to ſee his men falling thick around him by ſhowers of arrows, and truſting to the goodneſs of his armour, accompanied by about eighty lords, knights, and gentlemen, in complete armour, ruſhed forward, and attacked the Engliſh archers ſword in hand. But he had ſoon reaſon to repent his raſhneſs. The Engliſh arrows were ſo ſharp and ſtrong, and diſcharged with ſo much force, that no armour could repel them. The earl of Douglas, after receiving five wounds, was made priſoner; and all his brave companions were either killed or taken. Philip de Comines acknowledges, what our own writers aſſert, that the Engliſh archers excelled thoſe of every other nation; and Sir John Forteſcue ſays, "that the might of the realme of England ſtandyth upon archers." The ſuperior dexterity of their archers gave the Engliſh a great advantage over their enemies the French and Scots. The French depended chiefly on their men at arms, and the Scots on their pike-men; but the ranks of both were often thinned and thrown into diſorder by flights of arrows before they could reach their enemies.

The battle of Agincourt, which happened in the year 1415, under Henry V. is the next ſignal victory aſcribed to the Engliſh archers, who deſtroyed a great number of the French cavalry by their yard-long arrows. This, indeed, ſeems the laſt very important action in which archery is much ſpoken of; and, although the uſe of it was continued through ſeveral ſucceeding reigns, it ſeems to have been cultivated more for diverſion than for real military ſervice. It is ſaid, that James I. of Scotland, during his long confinement in England, in the beginning of the fifteenth century, was ſo ſtruck with the ſpirit and gallantry of the Engliſh archers, that, on returning to his own country, he eſtabliſhed the Royal Company of Edinburgh Bowmen, which ſubſiſts at the preſent day; and almoſt all the Scottiſh nobility and perſons of rank are members of it.

As an amuſement, archery was extremely faſhionable in the time of Henry VIII. and Hollingſhead reports, that that prince ſhot as well as any of his guard. Edward VI. is alſo ſaid, by Mr. Barrington, to have been very fond of the exerciſe. Charles I. appears to have amuſed himſelf in this way alſo; and is repreſented in the frontiſpiece of Markham's Art of Archery, (1634,) in the attitude and dreſs of a bowman. He likewiſe iſſued a proclamation to the lord-mayor and privy-council, to prevent the fields near London from being ſo incloſed as "to interrupt the neceſſary and profitable exerciſe of ſhooting." During the reigns of Charles II. and James II. the amuſement was continued; and the former ſometimes attended at exhibitions of ſhooting. As to the diſtance to which an arrow could be ſhot from the long-bow, that muſt neceſſarily have depended much on the ſtrength and ſleight of the archer; but in general the diſtance was reckoned from eleven to twelve ſcore yards.

The exact time in which the bow became diſuſed in war by the Engliſh, perhaps cannot be fixed. P. Daniel mentions, that arrows were ſhot by the Engliſh at the iſle of Rhé, in 1627. Mr. Groſe informs us, that, in 1643, the earl of Eſſex iſſued a precept "for ſtirring up all well-affected people by benevolence, towards the raiſing of a company of archers for the ſervice of the king (Charles I.) and the parliament." And, in a pamphlet, ſays the ſame author, which was printed anno 1664, giving an account of the ſucceſs of the marquis of Montroſe againſt the Scots, bowmen are repeatedly mentioned. Neade, in the reign of Charles I. obtained a commiſſion under the great ſeal, wherein he and his ſon were empowered to teach the combined management of the pike and the bow; which ſhews that archery was not laid aſide at this period. Indeed Mr. Groſe aſſerts, that the long-bow continued to be in eſtimation among the Engliſh for more than two centuries after gun-powder was introduced; which probably aroſe from muſkets being at firſt very cumberſome and unwieldy.

As early as the beginning of the twelfth century, a law was inſtituted with reſpect to the practice of archery, which freed from the charge of murder any one who, in practiſing with arrows or darts, ſhould kill a perſon ſtanding near. This is the firſt regulation to be found in our annals; and it appears to have been overlooked by Mr. Barrington and Mr. Groſe. Till the time of Edward III. no law ſeems to have paſſed in this kingdom with reſpect to archery. This prince, however, found it neceſſary to enjoin the practice of the bow, by two mandates during his reign; and, in the reign of Richard II. an act was made to compel all ſervants to ſhoot on Sundays and holidays. From this time many laws were enacted, of which the following is a ſummary. The 7 Henry IV. ordains, that the heads of arrows ſhall in future be well boiled and brazed, and hardened at the points with ſteel; under the pain of the forfeiture of all ſuch heads otherwiſe manufactured, and impriſonment to the makers: all arrow-heads to be marked with the maker's name. Henry V. ordered the ſheriffs of ſeveral counties to procure feathers from the wings of geeſe, picking ſix from each gooſe. Two feathers in an arrow were to be white, and one brown or grey; and this difference in colour informed the archer in an inſtant how to place the arrow. In the time of Edward IV. an act paſſed, ordaining every Engliſhman to have a bow of his own height; and butts were ordered to be put up in every townſhip, for the inhabitants to ſhoot at on feaſt days; and, if any neglected, the penalty of one halfpenny was incurred. An act of 1 Richard III. complains, that by the ſeditious confederacy of Lombards uſing divers ports of this realm, the bow-ſtaves were raiſed to an *outrageous* price; that is to ſay, to eight pounds an hundred, where they were wont to be ſold at forty ſhillings. This act therefore provides, that ten bow-ſtaves ſhall be imported with every butt of Malmſey or Tyre wines, brought by the merchants trading from Venice into this land, under a penalty of thirteen ſhillings and four-pence, for every butt of the ſaid wines, in caſe of neglect.

In the 33 Henry VIII. we have a ſtatute of complaint on account of the decay of this art. It ordains, that all men under ſixty, except ſpiritual men, juſtices, &c. ſhall uſe ſhooting with the long-bow, and ſhall have a bow and arrows ready continually in their houſe. And that every perſon, having a man-child or men-children in his houſe, ſhall provide a bow and two ſhafts for every ſuch man-child, being ſeven years old and upwards, till of the age of thirteen, in order to promote ſhooting. And if a maſter or father permit his ſervants or children, being ſeventeen years of age, to lack a bow and arrows for the ſpace of a month, the ſaid maſter or father ſhall forfeit ſix and eight-pence for every offence. Alſo every ſervant upwards of ſeventeen and under ſixty years of age, ſhall pay ſix and eight-pence if he be without a bow and four arrows for one month. The inhabitants of every city, town, and place, are ordered by this act to erect butts, and uſe ſhooting on holidays, and at every other convenient time.

In this reign, alſo, the practice of archery ſeems to have been enforced from the pulpit. In a ſermon of biſhop Latimer, preached before the king, after condemning the vices of the age, he concludes thus: "The art of ſhutynge hath ben in tymes paſt much eſtemed in this realme; it is a gyft of God, that he hath geven us to excell all other nacions withal. It hath bene Goddes inſtrumente whereby he hath gyven us manye victories agaynſte our enemyes. But nowe we have taken up horynge in townes, inſteede of ſhutynge in the fyeldes. A wonderous thynge, that ſo excelente a gyft of God ſhoulde be ſo lyttle eſteemed. I deſire you, my lordes, even as you love honoure, and glorye of God, and intende to remove his indignacion, let there be ſent furth ſome proclimacion, ſome ſharpe proclimacion, to the juſtices of peace, for they do not thyr dutye. Juſtices now be no juſtices; ther be many good actes made for thys matter already. Charge them upon their allegiance, that this ſingular benefit of God may be practiſed; and that it be not turned into bollyng, and gloſſyng, and horing, wythin the townes; for they be negligente in executying theſe lawes of ſhutynge. In my tyme, my poore father was as diligent to teach me to ſhute, as to learne any other thynge; and ſo I thinke other menne dyd thyr children. He taught me howe to drawe, howe to lay my bodye in my bowe, and not to drawe wyth ſtrength of armes, as other nacions do, but with ſtrength of bodye. I had my bowes bought me according to my age and ſtrength; as I encreaſed in them, ſo my bowes were made bigger and bigger: for men ſhall never ſhute well, excepte they be brought up in it. It is a goodly arte, a holeſome kynde of exerciſe, and much commended in phiſike. Marcilius Sicinus, in hys boke *de triplici vita* (it is a greate while ſins I red hym nowe); but I remember he commendeth thys kinde of exerciſe, and ſayth, that it wreſtleth agaynſte many kyndes of diſeaſes. In the reverence of God, let it be continued. Let a proclamacion go furth, charging the juſtices of peace, that they ſee ſuch actes and ſtatutes kept, as were made for thys purpoſe." *Latimer's Sermons, black letter*, 1549, 12mo.

Henry VIII. beſides making laws in favour of archery, inſtituted a ſociety, in 1537, for the practice of ſhooting, under a charter, in the name of the Fraternity of St. George. This fraternity is now the Artillery Company of London. It is ſaid, that the king fixed a meeting of them at Windſor, when a perſon of the name of Barlow far out-ſhot the reſt; which pleaſed the king ſo much, that he told Barlow he would make him duke of Shoreditch, he being an inhabitant of that place. This dignity was conferred, and long preſerved by the commander of the London Archers, who uſed to ſummon the officers of his ſeveral diviſions, by the titles marquiſſes of Barlow, Clerkenwell, Iſlington, Hoxton, earl of Pancraſs, &c. On another occaſion the king met them, attended by the queen and his whole court, on Shooter's-hill; which probably took its name from their aſſembling upon it to ſhoot at marks. The king granted alſo to this company a privilege, that if any of the members ſhooting at a known and accuſtomed butt, having firſt pronounced the word *faſt*, (or ſtand faſt,) ſhould happen to kill any perſon paſſing between the ſhooter and the butt, he ſhould not ſuffer, or be impriſoned. After this time, we do not find any ſtatute to regulate the uſe of the bow in England.

In France, the bow has not always been a warlike weapon. Procopius ſays, that in the expedition of the Franks under Theodebert, A. D. 538, the troops were armed with a ſword, ſhield, and hatchet, or rather battle-axe; they had neither bow nor lance. This is likewiſe obſerved by Mr. Gibbon. In the end of the ſixth century, however, archery appears to have been uſed; and a law of Charlemagne, made in the ninth century, directs, that thoſe armed with clubs, ſhould diſcontinue them, and ſhoot the bow. During the intermediate reigns to that of Lewis XI. archers were employed in the French armies; but about the year 1480, this king diſmiſſed that part of his troops, and in their place procured Swiſs infantry. Archers, however, ſeem to have been again in uſe among the French during the ſucceeding reign of Charles VIII. as Philip de Comines makes mention of them at the battle of Fornova, (or Fournue,) at which there were many Scotch archers. During the time of Francis I. the bow ſeems to have been greatly out of uſe in that country. P. Daniel ſays, that, in the year 1522, there was but one arbaliſter in the army, in the fight at Bico; but this one archer was ſo expert, that an officer, named Jean de Cardonne, having opened the vizor of his helmet to take breath, this man ſtruck him in the unguarded part with his arrow, and killed him. Fire-arms after this time became more general, and in a ſhort period altogether excluded the bow and arbaliſt as warlike inſtruments. The name of archers, however, was continued in France to thoſe in particular offices for ſome years, and even to the preſent day the miniſters of executive juſtice retain the title.

In war, archers uſually occupied the front, and retired between the ranks of the heavy-armed men, as the battle joined. It was not uncommon to place them in lines behind thoſe of the infantry, as they could act over the heads of the preceding ranks; for the ſame reaſon they ſometimes fought behind the cavalry; but, when the enemy approached, it was neceſſary for the horſemen to incline forwards, and cover themſelves with their ſhields. At the battle of Creſſy, our archers are ſaid to have been placed in triangles behind the ranks; and at Poictiers they were in the wings, drawn up in the ſame figure, "*rangez en herſe*." In ancient battles, when myriads of archers were introduced into the field, the appearance of a diſcharge of arrows from the whole army muſt have been inconceivably awful. How frequently do we meet with ſuch expreſſions as theſe: *exclucere diem telis*; *grandine ferri*, &c. There is a noble reply of Dioneces, to a perſon who informed him, at the battle of Thermopylæ, that the Perſian army was ſo numerous, as to obſcure the light of the ſun with their arrows; "we ſhall then fight in the ſhade," ſaid he, "and not be expoſed to the heat." *Herod.* p. 522. There was, however, an excellent expedient, by which the troops were often protected from the effects of arrows. One of the moſt beautiful as well as uſeful manœuvres, in the ancient diſcipline, was calculated to ward off theſe miſſive weapons. It was called *teſtudo*, in uſe among the Greeks, the Romans, the Engliſh, and others; and was often executed with wonderful addreſs. According to Potter, it was formed "when the ſoldiers, drawn up cloſe together, and the hindermoſt ranks bowing themſelves, placed their targets above their heads; as if we ſuppoſe the firſt rank to ſtand erect, the reſt to ſtoop lower and lower by degrees, till the laſt rank kneeled upon the ground; the men in front and on the ſides holding their targets before their bodies, the reſt covering the heads of thoſe that were placed before them; ſo that the whole body reſembled a pent-houſe, or roof covered with tile, down which the enemy's miſſive weapons eaſily glided, without prejudice to the ſoldiers beneath." Beſides this expedient, the old Engliſh archers had a method of protecting themſelves from the approach of the cavalry. Each bowman carried with him one, and ſometimes two, large ſtakes, ſharpened at each end. Theſe were placed in the earth before the lines, preſenting their points on a level with the breaſts of the horſes, and oppoſing their purſuit.

The principal uſes for which archers were valued in battle, have been divided under the following heads, viz. To begin the fight at a diſtance. To provoke the enemy, to haraſs and draw him out of his advantageous poſt. To wound the enemy at a diſtance. To diſorder the enemy as he makes his approach. To gall the horſes. To cope with, and hinder efforts of the light-armed troops of their antagoniſts. To ſcout and diſcover ambuſhes, as well as to lie in ambuſh themſelves. To make ſpeedy and ſudden attempts in time of battle. The effect produced on the eye by a number of arrows paſſing through the air from one army to another, is a circumſtance which, by no poet who has ſung of war, could be paſſed over unnoticed. One might fill pages from every language with beautiful alluſions to this ſubject. The appearance of an arrow on the wing, viewed on the ſide, is ſingularly intereſting. Its ſteady movement, the curve it deſcribes, its aſcending and deſcending motion, its velocity, &c. are all ſources of beauty which never fail to excite agreeable feelings in the mind, and even lead us to attribute active powers, for a moment, to the ſhaft. Weakneſs and ſtrength are well expreſſed by the arrow which arrives ſhort or which paſſes far over the target; and the different degrees of ſwiftneſs perceptible in arrows, from bows of various powers, immediately aſſociate the ideas of bodily vigour and energy, in various degrees of ſtrength. This is not fantaſtic; it is thus we feel pleaſure from the objects in nature which ſurround us. No wonder, then, that archery, ſince it has ceaſed to be dreadful in war, has of late become a favourite amuſement, and that many companies are formed for the preſervation and practice of ſo noble and elegant an art. Of theſe ſocieties, the following are the principal, viz. The Artillery Company, Royal Edinburgh, Toxophilite, Woodmen of Arden, Royal Kentiſh Bowmen, Royal Britiſh Bowmen, Robin Hood Bowmen, Loyal Archers, Yorkſhire Archers, Hainhault Foreſters, Southampton Archers, Bowmen of Chiviot Chace, Kentiſh Rangers, Woodmen of Hornſey, Surry Bowmen, Bowmen of the Border, Mercian Bowmen, Broughton Archers, Staffordſhire Bowmen, and Trent Archers.

That archery poſſeſſes many excellencies as an amuſement, requires little trouble to prove. It is an exerciſe adapted to every age and every degree of ſtrength, and the blood may be driven with any required velocity, by increaſing or diminiſhing the power of the bow. It is not neceſſarily laborious, as it may be diſcontinued at the moment it becomes fatiguing; a pleaſure not to be enjoyed by the hunter, who, having finiſhed his chace, perceives that he muſt crown his toils with an inanimate ride of forty miles to his bed. Archery alſo, as an amuſement, is attended with no cruelty. It ſheds no innocent blood, nor does it torture harmleſs animals; charges which lie heavy againſt many other favourite purſuits. It has been ſaid, a reward was formerly offered to him who could invent a new pleaſure. Had ſuch a reward been held forth by the ladies of the preſent day, he who introduced archery as a female exerciſe would deſervedly have gained the prize. It is unfortunate that there are ſo few diverſions in the open air, in which women can join with that unaſſuming dignity which ornaments their character; and, as their ſedentary life renders motion neceſſary to health, it is to be lamented that ſuitable amuſements are wanting to invite them. Archery, however, ſeems well calculated to remedy this defect; and, ſince the practice of it is become polite and faſhionable, we were tempted to be as diffuſe in treating of it, as we are anxious to promote ſo pleaſing and elegant an exerciſe.

ARC'HES-COURT, *curia de arcubus*, is ſo called, becauſe it was anciently held in the church of St. Mary-le-Bow, which church had that appellation from the ſteeple being raiſed at the top with ſtone pillars in the manner of an arch or bow. And the judge thereof, for the like reaſon, is called the *dean of the arches*; whoſe juriſdiction is properly over the thirteen pariſhes only belonging to the archbiſhop of Canterbury in London: but the office of the dean of the arches having been for a long time united with that of the archbiſhop's principal official, he now, in right of this laſt-mentioned office, receives and determines appeals from the ſentences of all inferior eccleſiaſtical courts within the province. The ſame perſon is likewiſe *judge of the peculiars*, that is, of all thoſe pariſhes, fifty-ſeven in number, which, though lying in other dioceſes, yet are no way ſubject to the biſhop or archdeacon, but to the archbiſhop. From this judge there lies an appeal to the king in chancery, that is, to a court of delegates appointed under the king's great ſeal. The courts of arches and of the peculiars, as alſo the admiralty court, the prerogative court, and the court of delegates (for the moſt part), are now held in the hall belonging to the college of civilians in London, commonly called *Doctors Commons*.

AR'CHETYPE, *ſ.* [*archetypum*, Lat. of αϱχετυπος, of αϱχε, the beginning or principal, and τυπος, an example or a pattern, Gr.] The original of which any reſemblance is made.—Our ſouls, though they might have perceived images themſelves by ſimple ſenſe, yet it ſeems inconceivable how they ſhould apprehend their *archetypes*. *Glanville*.—As a man, a tree, are the outward objects of our perception, and the outward *archetypes* or patterns of our ideas; ſo our ſenſations of hunger, cold, are alſo inward *archetypes* or patterns of our ideas. But the notions or pictures of theſe things, as they are in the mind, are the idea. *Watts*.

ARCHE'TYPAL, *adv.* [*archetypus*, Lat.] Original; being a pattern from which copies are made:

Through contemplation's optics have I ſeen
Him who is fairer than the ſons of men:
The ſource of good, the light *archetypal*. *Norris.*

ARCHE'US, *ſ.* [probably from αϱχος, Gr.] A word by which Paracelſus ſeems to have meant a power that preſides over the animal œconomy, diſtinct from the rational ſoul.

ARCHIACOLY'THUS, *ſ.* [from αϱχος, chief, and ακολουθος, miniſter, Gr.] An ancient dignity in cathedral churches; the miniſters whereof were divided into four orders or degrees, viz. prieſts, deacons, ſubdeacons, and acolythi, each of which had their chiefs. The chief of the acolythi was called *archiacolythus*.

ARCHIA'TER, *ſ.* [αϱχιατϱος, of αϱχος, chief, and ιατϱος, a phyſician.] The chief or principal phyſician; a phyſician to a prince.

AR'CHIBALD, [of *arch*, eminent, and *bald*, quick; i.e. eminently or exceedingly ſwift; or, if you will ſtretch ſo far, as to turn *bald* into *bold*, it will ſignify extremely bold.] A proper name of men.

ARCHIDA'PIFER, *ſ.* [from αϱχος, chief, and *dapifer*, ſewer, or chief ſewer.] A great officer of the empire. The elector of Bavaria is archidapifer. The palatine of the Rhine at one time pretended this office was annexed to his palatinate, but he has ſince withdrawn his claim.

ARCHIDIA'CONAL, *adj.* [from *archidiaconus*, Lat. an archdeacon.] Belonging to an archdeacon; as, This offence is liable to be cenſured in an *archidiaconal* viſitation.

ARCHIEPIS'COPAL, *adj.* [from *archiepiſcopus*, Lat. an archbiſhop.] Belonging to an archbiſhop; as, Canterbury is an *archiepiſcopal* ſee; the ſuffragans are ſubject to *archiepiſcopal* juriſdiction.

ARCHIERO'SYNES, *ſ.* in Grecian antiquity, a high-prieſt veſted with authority over the reſt of the prieſts, and appointed to execute the more ſacred and myſterious rites of religion.

ARCHIGAL'LUS, *ſ.* the high-prieſt of Cybele, or the chief of the eunuch-prieſts of that goddeſs, called *Galli*.

ARCHIGERON'TES, *ſ.* [from αρχος, and γεϱων, old.] In antiquity, the chiefs or maſters of the ſeveral companies of artificers at Alexandria. Some have miſtaken the archigerontes for the arch-prieſts appointed to take the confeſſions of thoſe who were condemned to the mines.

AR'CHIGRAPHER, *ſ.* [*archigraphus*, Lat. of αϱχιγϱαφος, of αϱχος, chief, and γϱαφω, Gr. to write.] A chief ſecretary.

ARCHIGUBER'NUS, or ARCHIGUBERNE'TA, *ſ.* in antiquity, the commander of the imperial ſhip, or that which the emperor was aboard of. Some have confounded the office of archigubernus with that of *præfectus claſſis*, or admiral, but the former was under the command of the latter. Potter takes the proper office of the archiguberneta to have been, to manage the marine affairs, to provide commodious harbours, and order all things relating to the ſailing of the fleet, except what related to war.

ARCHIHERE'TICAL, *ſ.* Falſe in the higheſt and moſt dangerous degree.

AR'CHIL, ARCHIL'LA, ROCEL'LA, or ORSEIL'LE, a whitiſh moſs growing upon rocks in the Canary and Cape Verd iſlands, which yields a rich purple tincture, fugitive indeed, but extremely beautiful. This weed is imported to us as it is gathered. Thoſe who prepare it for the uſe of the dyer, grind it betwixt ſtones, ſo as to thoroughly bruiſe, but not to reduce it into powder, and then moiſten it occaſionally with a ſtrong ſpirit of urine, or urine itſelf mixed with quick-lime: in a few days it acquires a purpliſh red, and at length a blue colour; in the firſt ſtate it is called *archil*, in the latter, *lacmus*, or *litmus*. The dyers rarely employ this drug by itſelf, on account of its dearneſs and the periſhableneſs of its beauty. The chief uſe they make of it is for giving a bloom to other colours, as pinks, &c. This is effected by paſſing the dyed cloth or ſilk through hot water lightly impregnated with the archil. The bloom, thus communicated, ſoon decays upon expoſure to the air. Mr. Hellot informs us, that, by the addition of a little ſolution of tin, this drug gives a durable dye; that its colour is at the ſame time changed towards a ſcarlet; and that it is the more permanent, in proportion as it recedes the more from its natural colour.

Prepared archil very readily gives out its colour to water, to volatile ſpirits, and to ſpirit of wine; it is the ſubſtance principally made uſe of for colouring the ſpirits of thermometers. As expoſure to the air deſtroys its colour upon cloth, the excluſion of the air produces a like effect in thoſe hermetically-ſealed tubes, the ſpirits of large thermometers becoming in the compaſs of a few years colourleſs. M. l'Abbé Nollet obſerves (in the French Memoirs for the year 1742), that the colourleſs ſpirit, upon breaking the tube, ſoon reſumes its colour, and this for a number of times ſucceſſively; that a watery tincture of archil, included in the tubes of thermometers, loſt its colour in three days; and that in an open deep veſſel, it became colourleſs at the bottom, while the upper part retained its colour. A ſolution of archil, in water, applied on cold marble, ſtains it of a beautiful violet or purpliſh blue colour, far more durable than the colour which it communicates to other bodies. M. Du Fay ſays, he has ſeen pieces of marble ſtained with it, which in two years had ſuffered no ſenſible change. It ſinks deep into the marble, ſometimes above an inch, and at the ſame time ſpreads upon the ſurface, unleſs the edges be bounded by wax, or ſome ſuch ſubſtance. It ſeems to make the marble ſomewhat more brittle.

Linnæus informs us, in the Swediſh Tranſactions for the year 1742, that the true archil moſs is to be found on the weſtern coaſts of England; and ſuſpects that there are ſeveral other more common moſſes, from which valuable colours might be extracted. A quantity of ſea-moſs having rotted in heaps upon the ſhore, he obſerved the liquor in the heaps to look like blood; the ſea-water, and the ſun, and the putrefaction, having brought out the colour. M. Kalm, in an Appendix to Linnæus's Paper in the year 1745, mentions two ſorts of moſſes actually employed in ſome parts of Sweden for dying woollen red: one is the lichenoides coralliforme apicibus coccineis of Ray's Synopſis; the other, the lichenoides tartareum, farinaceum, ſcutellarum umbone fuſco of Dillenus. This laſt is a white ſubſtance, like meal clotted together, found on the ſides and tops of hills. It is ſhaved off from the rocks after rain, purified from the ſtony matters intermixed among it, by waſhing with water; then dried in the ſun, ground in mills, and again waſhed and dried: it is then put into a veſſel with urine, and ſet by for a month. A little of this tincture added to boiling water makes the dying liquor. In the ſame Tranſactions, for the year 1754, there is an account of another moſs, which, prepared with urine, gives a beautiful and durable red or violet dye to wool and ſilk. This is the lichen foliaceus, umbilicatus ſubtus lacuneſus Linn. Flor. Suec. It grows upon rocks, and is readily diſtinguiſhed from others of that claſs, by its looking as if burnt or parched, conſiſting of leaves as thin as paper, convex all over on the upper ſide, with correſponding cavities underneath; adhering firmly to the ſtones by a little root under the leaves, and coming aſunder, when dry, as ſoon as touched. It is gathered after rain, as it then holds beſt together, and parts eaſieſt from the ſtone.

In France, a cruſtaceous moſs, growing upon rocks in Auvergne, is prepared with lime and urine, and employed by the dyers as a ſuccedaneum to the Canary archil, to which it is ſaid to be very little inferior: it is called *Orſeille d'Auvergne*, or *Perelle*. Mr. Hellot relates, that he has met with ſeveral other moſſes, which, on being prepared in the ſame manner, acquire the ſame colour. The moſt expeditious way, he ſays, of trying whether any moſs will yield an archil or not, is, to moiſten a little of it with a mixture of equal parts of ſpirit of ſal ammoniac and ſtrong lime-water, and add a ſmall proportion of crude ſal ammoniac. The glaſs is then to be tied over with a piece of bladder, and ſet by for three or four days. If the moſs is of the proper kind, the little liquor which runs from it, upon inclining the veſſel, will appear of a deep crimſon colour; and this afterwards evaporating, the plant itſelf acquires the ſame colour.

Lewis tried a good number of the common moſſes, both of the cruſtaceous and foliaceous kind, and not a few of the fungi; as alſo the herbs chamomile and milfoil, which yield a blue eſſential oil; and thyme, whoſe oil becomes blue by digeſtion with volatile ſpirits; but have not as yet met with any that yielded a colour like archil. Moſt of them gave a yellow or reddiſh brown tincture; and, if there was a ſcarcity of other drugs for theſe kinds of dyes, ſome of the moſſes might be made to afford not inelegant ones. A few gave a deep red colour to the liquor; but, when diluted, it ſhewed a yellowiſh caſt; and, when applied on cloth, it gave only a yellowiſh red.

ARCHILO'CHIAN, *ſ.* a term in poetry, applied to a ſort of verſes, of which Archilochus was the inventor, conſiſting of ſeven feet; the four firſt whereof are ordinarily dactyles, though ſometimes ſpondees; the three laſt trochees, as in Horace, *Solvitur acris hyems, grata vice veris & Favoni.*

ARCHI'LOCHUS, a famous Greek poet and muſician, was, according to Herodotus, cotemporary with Candaules and Gyges, kings of Lydia, who flouriſhed about the 14th Olympiad, 724 years before Chriſt. But he is placed much later by modern chronologiſts; viz. by Blair 686, and by Prieſtley 660, years before Chriſt. He was born at Paros, one of the Cyclades. His father Teleſicles was of ſo high a rank, that he was choſen by his countrymen to conſult the oracle at Delphos. Archilochus ſhewed an early genius and attachment to poetry and muſic; yet theſe arts did not prevent his going into the army, like other young men of his birth; but, in the firſt engagement at which he was preſent, the young poet, like Horace, and like our own Suckling, loſt his buckler, though he ſaved his life by the help of his heels. "It is much eaſier," ſaid he, "to get a new buckler than a new exiſtence." This pleaſantry, however, did not ſave his reputation; nor could his poetry or prayers prevail upon Lycambes, the father of his miſtreſs, to let him marry his daughter, though ſhe had been long promiſed to him. After theſe mortifications, his life ſeems to have been one continued tiſſue of diſgrace and reſentment.

According to Plutarch, there is no bard of antiquity by whom the two arts of poetry and muſic have been ſo much advanced as by Archilochus. To him is attributed particularly the ſudden tranſition from one rhythm to another of a different kind, and the manner of accompanying thoſe irregular meaſures upon the lyre. Heroic poetry, in hexameter verſe, ſeems to have been ſolely in uſe among the more ancient poets and muſicians; and the tranſition from one rhythm to another, which lyric poetry required, was unknown to them; ſo that, if Archilochus was the firſt author of this mixture, he might with propriety be ſtyled *the inventor of lyric poetry*, which, after his time, became a ſpecies of verſification wholly diſtinct from heroic. Archilochus was ſlain by Callondax Corax, of the iſland of Naxos; who, though he did it in fight, according to the laws of war, was driven out of the temple of Delphi, by command of the oracle, for having deprived of life a man conſecrated to the Muſes.

ARCHI'MAGUS, the high-prieſt of the Perſian Magi, or worſhippers of fire. He reſided in the higheſt fire-temple, which was had in the ſame veneration with them as the temple of Mecca among the Mahometans. Zoroaſtes firſt ſettled it at Balch; but, after the Mahometans had over-run Perſia, in the 7th century, the archimagus was forced to remove from thence into Kerman, a province of Perſia, lying on the ſouthern ocean, where it hath continued to this day. Darius Hyſtaſpes took upon himſelf the dignity of archimagus: for, Porphyry tells us, he ordered before his death, that, among the other titles, it ſhould be engraven on his monument, that he had been *maſter of the magi*; which plainly implies, that he had borne this office among them, for none but the archimagus was maſter of the whole ſect. From hence it ſeems to have proceeded, that the kings of Perſia were ever after looked on to be of the ſacerdotal tribe, and were always initiated into the ſacred order of the magi before they took on them the crown, and were inaugurated into the kingdom.

ARCHIMAN'DRITE, *ſ.* was a name given by the ancient Chriſtians to what we now call an *abbot*. Father Simon obſerves, that the word *mandrite* is Syriac, and ſignifies a ſolitary monk.

ARCHIME'DES, [Αρχιμηδης, Gr. i.e. the prince of counſel,] was born at Syracuſe, in Sicily, according to Torelli, in the ſecond year of the 123d olympiad, or the 466th year from the building of Rome, which correſponds to the 286th year before Chriſt: but Rivaltus, who has taken conſiderable pains in aſſigning the true era of his birth, dates it in the ſecond year of the 122d olympiad, or the 463d year from the building of Rome, anſwering to the 289th year before Chriſt. If we may rely on the authority of Tzetzes, Archimedes lived ſeventy-five years. Plutarch informs us, that he was nearly related, by his father, to Hiero king of Syracuſe; but his mother was of obſcure origin; which circumſtance may probably account for the degrading terms "*humilem homunculum*" which Cicero applies to him in the fifth book of his Tuſculan queſtions. Archimedes devoted himſelf to the ſtudy of geometry in his youth; and in his maturer years he travelled into Egypt, whither the Greeks generally reſorted in the purſuit of ſcience. After an abſence of ſeveral years, which he ſpent in the ſociety of Conon, and other eminent men, and during which time he gave very promiſing indications of his future fame, he returned to his own country; and there he probably availed himſelf of the leiſure which he enjoyed in compoſing thoſe books which are now extant. The ardour and intenſeneſs of his application to mathematical ſcience, rendered him both the honour of his own age, and the admiration of poſterity. He was indeed the prince of the ancient mathematicians, being to them what Newton is to the moderns, to whom in his genius and character he bears a very near reſemblance. He was frequently loſt in a kind of reverie, ſo as to appear hardly ſenſible; he would ſtudy for days and nights together, neglecting his food; and Plutarch tells us that he uſed to be carried to the baths by force. Many particulars of his life, and works, mathematical and mechanical, are recorded by ſeveral of the ancients, as Polybius, Livy, Plutarch, Pappus, &c. He was equally ſkilled in all the ſciences, aſtronomy, geometry, mechanics, hydroſtatics, optics, &c. in all of which he excelled, and made many and great inventions.

Archimedes, it is ſaid, made a ſphere of glaſs, of a moſt ſurpriſing contrivance and workmanſhip, exhibiting the motions of the heavenly bodies in a very pleaſing manner. Claudian has an epigram upon this invention, which has been thus tranſlated:

> When in a glaſs's narrow ſpace confin'd,
> Jove ſaw the fabric of th' almighty mind,
> He ſmil'd, and ſaid, Can mortals' art alone
> Our heavenly labours mimic with their own?
> The Syracuſan's brittle work contains
> Th' eternal law that through all nature reigns.
> Fram'd by his art, ſee ſtars unnumber'd burn,
> And in their courſes rolling orbs return:
> His ſun through various ſigns deſcribes the year;
> And every month his mimic moons appear.
> Our rival's laws his little planets bind,
> And rule their motions with a human mind.
> Salmoneus could our thunder imitate,
> But Archimedes can a world create.

Many wonderful ſtories are told of his diſcoveries, and of his very powerful and curious machines, &c. Hiero once admiring them, Archimedes replied, "Theſe effects are nothing. Give me," ſaid he, "but ſome other place to fix a machine upon, and I ſhall move the earth." He fell upon a curious device for diſcovering the deceit which had been practiſed by a workman, employed by king Hiero to make a golden crown. Hiero, having a mind to make an offering to the gods of a golden crown, agreed for one of great value, and weighed out the gold to the artificer. After ſome time, he brought the crown home, of the full weight; but it was ſuſpected that a part of the gold had been ſtolen, and the like weight of ſilver ſubſtituted in its ſtead. Hiero, being angry at this impoſition, deſired Archimedes to take it into conſideration, how ſuch a fraud might be certainly diſcovered. While engaged in the ſolution of this difficulty, he happened to go into the bath; where obſerving that a quantity of water overflowed, equal to the bulk of his body, it preſently occurred to him, that Hiero's queſtion might be anſwered by a like method: upon which he ran homeward, crying out Ευρηκα! ευρηκα! I have found it! I have found it! He then made two maſſes, each of the ſame weight as the crown, one of gold, and the other of ſilver: this done, he filled a veſſel to the brim with water, and put the ſilver maſs into it, upon which a quantity of water overflowed equal to the bulk of the maſs; then, taking the maſs of ſilver out, he filled up the veſſel again, meaſuring the water exactly which he put in; this ſhewed him what meaſure of water anſwered to a certain quantity of ſilver. Then he tried the gold in like manner, and found that it cauſed a leſs quantity of water to overflow, the gold being leſs in bulk than the ſilver, though of the ſame weight. He then filled the veſſel a third time, and, putting in the crown itſelf, he found that it cauſed more water to overflow than the golden maſs of the ſame weight, but leſs than the ſilver one; ſo that, finding its bulk between the two maſſes of gold and ſilver, and that in certain known proportions, he hence computed the real quantities of gold and ſilver in the crown, and thus manifeſtly diſcovered the fraud.

Archimedes alſo contrived many machines for uſeful and beneficial purpoſes: among theſe, engines for launching large ſhips; ſcrew pumps, for exhauſting the water out of ſhips, marſhes, or overflowed lands, &c. which they would do from any depth. But he became moſt famous by his curious contrivances, by which the city of Syracuſe was ſo long defended, when beſieged by the Roman conſul Marcellus; ſhowering upon the enemy ſometimes long darts, and ſtones of vaſt weight, and in great quantities; at other times lifting their ſhips up into the air, that had come near the walls, and daſhing them to pieces by letting them fall down again; nor could they find their ſafety in removing out of the reach of his cranes and levers, for there he contrived to ſet them on fire with the rays of the ſun reflected from burning-glaſſes. However, notwithſtanding all his art, Syracuſe was at length taken by ſtorm, and Archimedes was killed by a ſoldier. Plutarch ſays, Archimedes was at that time in his muſeum; and his mind, as well as his eyes, ſo fixed and intent upon ſome geometrical figures, that he neither heard the noiſe and hurry of the Romans, nor perceived the city to be taken. In this depth of ſtudy and contemplation, a ſoldier came ſuddenly upon him, and commanded him to follow him to Marcellus; which he refuſing to do, till he had finiſhed his problem, the ſoldier, in a rage, drew his ſword, and ran him through. Livy ſays, he was ſlain by a ſoldier, not knowing who he was, while he was drawing ſchemes in the duſt: that Marcellus was grieved at his death, and took care of his funeral; and made his name a protection and honour to thoſe who could claim a relationſhip to him. His death happened about the 142d or 143d olympiad, or 210 years before the birth of Chriſt.

When Cicero was queſtor for Sicily, he diſcovered the tomb of Archimedes, all overgrown with buſhes and brambles; which he cauſed to be cleared, and the place ſet in order. There was a ſphere and cylinder cut upon it, with an inſcription, but the latter part of the verſes quite worn out. Many of the works of this great man are ſtill extant, though the greateſt part of them are loſt. The pieces remaining are as follow: 1. Two books on the Sphere and Cylinder. 2. The Dimenſion of the Circle, or proportion between the diameter and the circumference. 3. Of Spiral Lines. 4. Of Conoids and Spheroids. 5. Of Equiponderants, or Centres of Gravity. 6. The Quadrature of the Parabola. 7. Of Bodies floating on Fluids. 8. Lemmata. 9. Of the Number of the Sand. Among the works of Archimedes which are loſt, may be reckoned the deſcriptions of the following inventions, which may be gathered from himſelf and other ancient authors. 1. His account of the method which he employed to diſcover the mixture of gold and ſilver in the crown, mentioned by Vitruvius. 2. His deſcription of the Cochleon, or engine to draw water out of places where it is ſtagnated, ſtill in uſe under the name of Archimedes's Screw. Athenæus, ſpeaking of the prodigious ſhip built by the order of Hiero, ſays, that Archimedes invented the cochleon, by means of which the hold, notwithſtanding its depth, could be drained by one man. And Diodorus Siculus ſays, that he contrived this machine to drain Egypt, and that by a wonderful mechaniſm it would exhauſt the water from any depth. 3. The Helix, by means of which, Athenæus informs us, he launched Hiero's great ſhip. 4. The Triſpaſton, which, according to Tzetzes and Oribaſius, could draw the moſt ſtupendous weights. 5. The machines, which, according to Polybius, Livy, and Plutarch, he uſed in the defence of Syracuſe againſt Marcellus, conſiſting of Tormenta, Baliſtæ, Catapults, Sagittarii, Scorpions, Cranes, &c. 6. His Burning-Glaſſes, with which he ſet fire to the Roman gallies. 7. His Pneumatic and Hydroſtatic Engines, concerning which ſubjects he wrote ſome books, according to Tzetzes, Pappus, and Tertullian. 8. His Sphere, which exhibited the celeſtial motions: and probably many others. He was the firſt who ſquared a curvilineal ſpace; unleſs Hippocrates muſt be excepted on account of his lunes. In his time the conic ſections were admitted into geometry, and he applied himſelf cloſely to the meaſuring of them, as well as other figures. Accordingly, he determined the relations of ſpheres, ſpheroids, and conoids, to cylinders and cones; and the relations of parabolas to rectilineal planes whoſe quadratures had long before been determined by Euclid. He has left us alſo his attempts upon the circle: he proved that a circle is equal to a right-angled triangle, whoſe baſe is equal to the circumference, and its altitude equal to the radius; and, conſequently, that it's area is equal to the rectangle of half the diameter and half the circumference; thus reducing the quadrature of the circle to the determination of the ratio between the diameter and the circumference; which determination, however, has never yet been done. Being diſappointed of the *exact* quadrature of the circle, for want of the rectification of its circumference, which all his methods would not effect, he proceeded to aſſign an uſeful approximation to it: this he effected by the numeral calculation of the perimeters of the inſcribed and circumſcribed polygons: from which calculation it appears that the perimeter of the circumſcribed regular polygon of 192 ſides, is to the diameter, in a leſs ratio than that of $3\frac{1}{7}$ or $3\frac{10}{70}$ to 1; and that the perimeter of the inſcribed polygon of 96 ſides, is to the diameter, in a greater ratio than that of $3\frac{10}{71}$ to 1; and conſequently that the ratio of the circumference to the diameter lies between theſe two ratios. Now the firſt ratio, of $3\frac{1}{7}$ to 1, reduced to whole numbers, gives that of 22 to 7, for $3\frac{1}{7} : 1 :: 22 : 7$; which therefore is nearly the ratio of the circumference to the diameter. From this ratio between the circumference and the diameter, Archimedes computed the approximate area of the circle, and he found that it is to the ſquare of the diameter, as 11 is to 14. He determined alſo the relation between the circle and ellipſe, with that of their ſimilar parts: and it is probable that he likewiſe attempted the hyperbola; but it is not to be expected that he met with any ſucceſs, ſince approximations to its area are all that can be given by the various methods that have ſince been invented. Beſides theſe figures, he determined the meaſures of the ſpiral, deſcribed by a point moving uniformly along a right line, the line at the ſame time revolving with an uniform angular motion; determining the proportion of its area to that of the circumſcribed circle, as alſo the proportion of their ſectors.

Throughout the whole works of this great man, we every where perceive the deepeſt deſign and the fineſt invention. He ſeems to have been, with Euclid, exceedingly careful of admitting into his demonſtrations nothing but principles perfectly geometrical and unexceptionable; and, although his moſt general method of demonſtrating the relations of curved figures to ſtraight ones be by inſcribing polygons in them, yet, to determine thoſe relations, he does not increaſe the number, and diminiſh the magnitude, of the ſides of the polygon *ad infinitum*; but from this plain fundamental principle, allowed in Euclid's Elements, (viz. that any quantity may be ſo often multiplied, or added to itſelf, as that the reſult ſhall exceed any propoſed finite quantity of the ſame kind,) he proves that to deny his figures to have the propoſed relations, would involve an abſurdity; and, when he demonſtrated many geometrical properties, particularly in the parabola, by means of certain progreſſions of numbers, whoſe terms are ſimilar to the inſcribed figures; this was ſtill done without conſidering ſuch ſeries as continued *ad infinitum*, and then collecting or ſumming up the terms of ſuch infinite ſeries.

There have been various editions of the exiſting writings of Archimedes. The whole of theſe works, together with the commentary of Eutocius, were found in their original Greek language, on the taking of Conſtantinople, from whence they were brought into Italy; and here they were found by that excellent mathematician John Muller, otherwiſe called Regiomontanus, who brought them into Germany; where they were, with that Commentary, publiſhed long afterwards, viz. in 1544, at Baſil, being moſt beautifully printed in folio, both in Greek and Latin, by Hervagius. A Latin tranſlation was publiſhed at Paris, 1557, by Paſcalius Hamellius. Another edition of the whole, in Greek and Latin, was publiſhed at Paris, 1615, in folio, by David Rivaltus, illuſtrated with new demonſtrations and commentaries: a life of the author is prefixed; and at the end of the volume is added ſome account, by way of reſtoration, of our author's other works, which have been loſt; viz. The Crown of Hiero; the Cochleon or Water Screw; the Helicon, a kind of endleſs ſcrew; the Triſpaſton, conſiſting of a combination of wheels and axles; the Machines employed in the defence of Syracuſe; the Burning Speculum; the Machines moved by Air and Water; and the Material Sphere. In 1675, Dr. Iſaac Barrow publiſhed a neat edition of the works, in Latin, at London, in quarto; illuſtrated, and ſuccinctly demonſtrated in a new method. But the moſt complete of any, is the magnificent edition, in folio, printed at the Clarendon preſs, Oxford, 1792. This edition was prepared for the preſs by the learned Joſeph Torelli, of Verona, and in that ſtate preſented to the univerſity of Oxford. The Latin tranſlation is a new one. Torelli alſo wrote a preface, a commentary on ſome of the pieces, and notes on the whole. An account of the life and writings of Torelli is prefixed, by Clemens Sibiliati. And at the end a large appendix is added, in two parts; the firſt being a Commentary on Archimedes's Paper upon Bodies that float on Fluids, by the Rev. Abram Robertſon, of Chriſt-church college; and the latter is a large collection of various readings in the manuſcript works of Archimedes, found in the library of the late king of France, and of another at Florence, as collated with the Baſil edition above mentioned. There are alſo extant other editions of certain parts of the works of Archimedes. Thus, Commandine publiſhed, in 4to, at Bologna 1565, the two books concerning Bodies that Float upon Fluids, with a Commentary. Commandine publiſhed alſo a tranſlation of the Arenarius. And Borelli publiſhed, in folio, at Florence, 1661, Archimedes's Liber Aſſumptorum, tranſlated into Latin from an Arabic manuſcript copy. This is accompanied with the like tranſlation, from the Arabic, of the 5th, 6th, and 7th, books of Apollonius's Conics. Mr. G. Anderſon publiſhed (in 8vo. Lond. 1784) an Engliſh tranſlation of the Arenarius of Archimedes, with learned and ingenious notes and illuſtrations. Dr. Wallis alſo publiſhed a tranſlation of the Arenarius.

ARCHIPE'LAGO, *ſ.* [of αρχος, chief, and πελαγος, the ſea.] A part of the ſea containing a number of ſmall iſlands in the Helleſpont, and conſequently ſeveral little ſeas that take name from thoſe iſlands.

ARCHIPELAGO (Grecian), a very conſiderable part of the Mediterranean Sea, having Romania on the north; Natolia on the eaſt; Macedonia, Livadia, and the Morea, on the weſt; and the iſle of Candia on the ſouth. It is partly in Europe, and partly in Aſia, containing the iſlands of Rhodes, Negropont, Lemnos, Tenedos, Sciros, Metelen, Scio, Samos, Patmos, Paros, Antiparos, Cerigo, Santorin, Andros, Tina, Naxia, Milo, Delos, Argentiera, &c. for particulars of each of which ſee under their reſpective heads.

ARCHIPELAGO (Northern), ſo called to diſtinguiſh it from the above, conſiſts of ſeveral groups of iſlands, lying between the eaſtern coaſts of Kamtſchatka, and the weſtern coaſt of the continent of America, and was firſt diſcovered by the Ruſſians under the czar Peter I. Mr. Muller divides theſe iſlands into four principal groups, the two firſt of which are ſtyled the Aleutian iſlands. The firſt group comprehends Beering's Iſland, Copper Iſland, Otma, Samyra or Shemiyah, and Anakta. The ſecond group compriſes Immak, Kiſka, Tchetchia, Ava, Kavia, Tſchangulak, Ulagama, and Amtchidga. The third general name is Negho, and comprehends the iſlands known to the Ruſſians under the name of Andreanoffſki Oſtrova; ſixteen of which are the following: Amatkinak, Ulak, Unalga, Navotſha, Uliga, Anagin, Kagulak, Illaſk or Illak, Takavanga (upon which is a volcano), Kanaga (which has alſo a volcano), Leg, Sketſhuna, Tagaloon, Goreloi, Otchu, and Amla. The fourth group is called Kavalang, and comprehends ſixteen iſlands; which are called by the Ruſſians Lyſſie Oſtrova, or the *Fox Iſlands*, and which are named, Amuchta, Tſchigama, Tſchegula, Uniſtra, Ulaga, Tauagulana, Kagamin, Kigalga, Skelmaga, Umnak, Agun-Alaſhka, Unimga, Uligan, Anturo-Leiſſume, Semidit, and Senagak.

Some of theſe iſlands are only inhabited occaſionally, and for ſome months in the year, and others are very thinly peopled; but others have a great number of inhabitants, who conſtantly reſide in them. Copper Iſland receives its name from the copper which the ſea throws upon its coaſts. The inhabitants of theſe iſlands are, in general, of a ſhort ſtature, with ſtrong and robuſt limbs, but free and ſupple. They have lank black hair, and little beard, flattiſh faces, and fair ſkins. They are for the moſt part well made, and of ſtrong conſtitutions, ſuitable to the boiſterous climate of their iſles. The inhabitants of the Aleutian iſles live upon roots which grow wild, and ſea-animals. The rivers abound with all kinds of ſalmon, and the ſea with turbot. Their clothes are made of the ſkins of birds and ſea-otters.

The Fox Iſlands are ſo called from the great number of black, grey, and red, foxes, with which they abound. The dreſs of the inhabitants conſiſts of a cap and a fur coat, which reaches down to the knee. Some of them wear common caps of a party-coloured bird-ſkin, upon which they leave part of the wings and tail. On the fore part of their hunting and fiſhing caps, they place a ſmall board like a ſkreen, adorned with the jaw-bones of ſea-bears, and ornamented with glaſs-beads, which they receive in barter from the Ruſſians. But at their feſtivals and dancing-parties they uſe a much more ſhowy ſort of caps. They feed upon the fleſh of all ſorts of ſea-animals, and generally eat it raw. But, if at any time they chooſe to dreſs their victuals, they make uſe of a hollow ſtone; having placed the fiſh or fleſh therein, they cover it with another, and cloſe the interſtices with lime or clay. They then lay it horizontally upon two ſtones, and light a fire under it. The proviſions, intended for keeping, are dried without ſalt in the open air. Their weapons conſiſt of bows, arrows, and darts, and for defence they uſe wooden ſhields. The moſt perfect equality reigns among theſe iſlanders: they have neither chiefs nor ſuperiors, neither laws nor puniſhments. They live together in families, and ſocieties of ſeveral families united, which form what they call a race, who, in caſe of attack, or defence, mutually help and ſupport each other. The inhabitants of the ſame iſland always pretend to be of the ſame race; and every perſon looks upon this iſland as a poſſeſſion, the property of which is common to all the individuals of the ſame ſociety. Feaſts are very common among them, and more particularly when the inhabitants of one iſland are viſited by thoſe of the others. The men of the village meet their gueſts beating drums, and preceded by the women, who ſing and dance. At the concluſion of the dance, the hoſts ſerve up their beſt proviſions, and invite their gueſts to partake of the feaſt. They feed their children when very young with the coarſeſt fleſh, and for the moſt part raw. If an infant cries, the mother immediately carries it to the ſea-ſide, and, whether it be ſummer or winter, holds it naked in the water until it is quiet. This cuſtom is ſo far from doing the children any harm, that it hardens them againſt the cold, and they accordingly go barefooted through the winter without the leaſt inconvenience. They ſeldom heat their dwellings; but, when they are deſirous of warming themſelves, they light a bundle of hay, and ſtand over it; or elſe they ſet fire to train-oil, which they pour into a hollow ſtone. They have a good ſhare of plain natural ſenſe, but are rather ſlow of underſtanding. They ſeem cold and indifferent in moſt of their actions; but let an injury, or even a ſuſpicion only, rouſe them from this phlegmatic ſtate, and they become inflexible and furious, taking the moſt violent revenge, without regard to conſequences. The leaſt affliction prompts them to ſuicide, the apprehenſion of even an uncertain evil often leads them to deſpair, and they put an end to their days with great apparent inſenſibility.

ARCHIPHERA'CITÆ, *ſ.* miniſters in the Jewiſh ſynagogues appointed to read and interpret the Perakim, or titles and heads of the law and the prophets.

ARCHISTRA'TEGUS, *ſ.* [αρχιϛρατηγος, of αρχος, a chief, and ϛρατεγων, of the leaders of the army.] The generaliſſimo, or captain-general, of an army.

ARCHISYNAGO'GUS, *ſ.* the chief of the ſynagogue; the title of an officer among the Jews, who preſided in their ſynagogues and aſſemblies. The number of theſe officers was not fixed, nor the ſame in all places; there being ſeventy in ſome, and in others only one. They are ſometimes called *princes* of the ſynagogue, and had a power of excommunicating ſuch as deſerved that puniſhment.

AR'CHITECT, *ſ.* [*architecte*, Fr. *architectus*, Lat. or αρχιτεκτος, Gr. of αρχος, the principal, and τεκτων, artificer.] A profeſſor of the art of building.—The *architect's* glory conſiſts in the deſignment and idea of the work; his ambition ſhould be to make the form triumph over the matter. *Wotton.*—A contriver of a building; a builder:

> The haſty multitude
> Admiring enter'd, and the work ſome praiſe,
> And ſome the *architect*: his hand was known
> In heav'n, by many a tower'd ſtructure high,
> Where ſcepter'd angels held their reſidence,
> And ſat as princes. *Milton.*

The contriver or former of any compound body.—This inconvenience the divine *architect* of the body obviated. *Ray.*—The contriver of any thing:

An irreligious Moor,
Chief *architect* and plotter of theſe woes. *Shakeſpeare.*

The moſt celebrated architects are, Vitruvius, Palladio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Viola, Inigo Jones, De Lorme, Perrault, S. le Clerc, Sir Chriſtopher Wren, the earl of Burlington, and Sir William Chambers.

ARCHITEC'TIVE, *adj.* That performs the works of architecture.—How could the bodies of many of them, particularly the laſt-mentioned, be furniſhed with *architective* materials? *Derham.*

ARCHITECTO'NIC, *adj.* [from *αρχος*, chief, and *τεκτων*, an artificer.] That which has the power or ſkill of an architect; that which can build or form any thing.—To ſay that ſome more fine part of either, or all the hypoſtatical principle, is the architect of this elaborate ſtructure, is to give occaſion to demand what proportion of the tria prima afforded this *architectonic* ſpirit, and what agent made ſo ſkilful and happy a mixture. *Boyle.*

AR'CHITECTURE, *ſ.* [*architectura*, Lat. of *αρχιτεκτονικη*, or *αρχιτεκτονεμα*, Gr.] The art or ſcience of planning and building or erecting any edifice, ſo as properly to anſwer the end propoſed, for ſolidity, conveniency, and beauty; whether houſes, temples, churches, bridges, halls, theatres, &c. &c. Architecture is divided into *civil*, *military*, and *naval* or *marine.*

Civil Architecture, is the art of deſigning and erecting edifices of every kind for the uſes of civil life in every capacity; as churches, palaces, private houſes, &c. and it has been divided into five orders or manners of building, under the names of the *Tuſcan*, *Doric*, *Ionic*, *Corinthian*, and *Compoſite.* There were many authors on architecture among the Greeks and Romans before Vitruvius; but he is the firſt whoſe work is entire and extant. He lived in the reigns of Julius Cæſar and Auguſtus, and compoſed a complete ſyſtem of architecture, in ten books, which he dedicated to this prince. The principal authors on architecture, ſince Vitruvius, are, Philander, Barbarus, Salmaſius, Baldus, Alberti, Gauricus, Demonioſus, Perrault, De l'Orme, Rivius, Wotton, Serlio, Palladio, Strada, Vignola, Scamozzi, Dienſſart, Catanei, Freard, De Cambray, Blondel, Goldman, Sturmy, Wolfius, De Roſi, Deſgodetz, Baratteri, Mayer, Gulielmus, Ware, Sir William Chambers, &c. &c.

Military Architecture, otherwiſe more uſually called *fortification*, is the art of ſtrengthening and fortifying places, to ſcreen them from the inſults or attacks of enemies, and the violence of arms; by erecting forts, caſtles, and other fortreſſes, with ramparts, baſtions, &c. The authors who have chiefly excelled in this art, are Coehorn, Pagan, Vauban, Scheiter, Blondel, and Montalembert.

Naval Architecture, or *ſhip-building*, is the art of conſtructing ſhips, galleys, and other veſſels, proper to float on the water.

The ſtudy and improvement of architecture, as a liberal ſcience, ſeems to have been the early care of every enlightened age, and of every civilized country. For, not only as it reſpects the elegancies and pleaſures communicated in common with the kindred arts, architecture attaches with it a tendency to our comforts and conveniences, and is therefore a ſtudy of conſiderable importance to men of taſte and property. Beſides the advantage attending a knowledge of its utility, an acquaintance with the ſubject is neceſſary to aſſiſt travellers in forming a judgment of the moſt remarkable edifices in foreign countries; and, on claſſic ground, the pleaſure of viewing with intelligence the remains of the moſt elegant ſtructures in the world, would be loſt without this qualification.

Architecture has been uſually divided into Ancient, Gothic, and Modern; the firſt of which traces the art from its origin to its final improvement under the Greeks and Romans; the ſecond deſcribes the ſtate and ſtyle of it in the hands of the Goths, Saxons, and Normans; and the third manifeſts the practice and utility of the ſcience in the application of it at the preſent day. As theſe diſtinctions therefore naturally divide themſelves into three parts, we ſhall ſpeak of them ſeparately under their reſpective heads: and firſt,

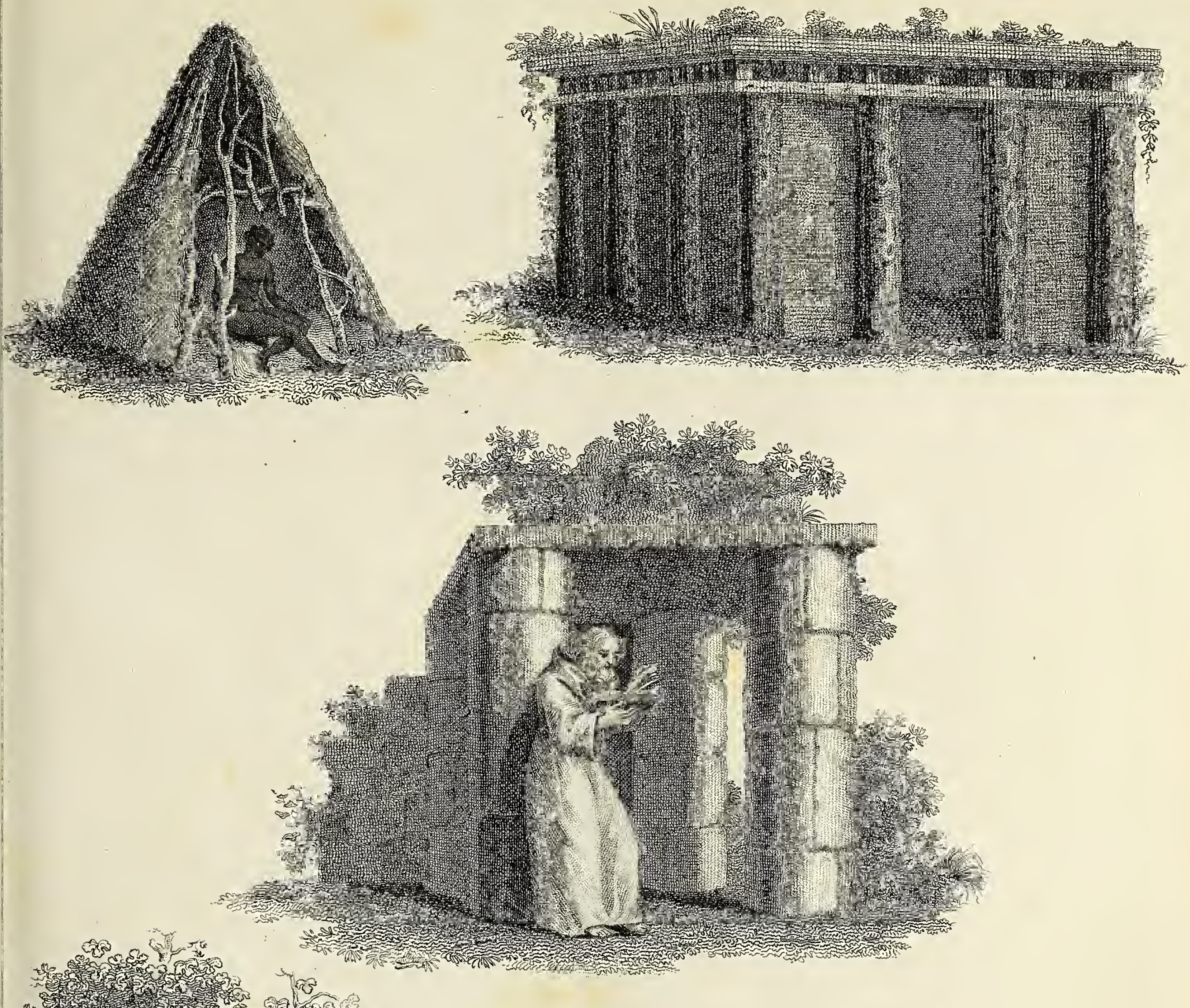
Of ANCIENT ARCHITECTURE.

We preſume that architecture, as a neceſſary art, is almoſt coeval with the human ſpecies; and therefore we diſclaim every idea that tends to reſtrict its origin to any particular country. The neceſſities of man, under the climate in which he lived, and the nature and productions of the country, together with his avocations, are circumſtances moſt likely to have influenced him in the primitive manner of conſtructing his habitation; for, when mankind began firſt to feel the inclemencies of the ſeaſons, architecture, in its firſt or rudeſt ſtate, unqueſtionably had its beginning; and of conſequence ſpread itſelf wherever the ſeverities of climate demanded ſhelter or ſhade. It is to be traced in the Indian's hut, and the Greenlander's cave; and ſhews, in thoſe barbarous parts of the globe, from what a mean original it has ariſen to its preſent magnificence. And perhaps the neighbourly aſſiſtance required in erecting the meaneſt fence againſt the violence of the winds and weather, was the firſt introduction of civil ſociety: thus a number of habitations were formed together, and men, in conſequence, had mutual converſation and intimacy. It is eaſy to conceive, that, in this early ſtate of ſociety, genius had expanded but little; the firſt efforts were ſmall, and the ſtructure ſimple; perhaps no more than a number of trees leaning together at the top in a conical ſhape, interwoven with twigs, and plaſtered with mud, to exclude air, and ſtrengthen the work. In this early period, we may ſuppoſe each deſirous to render his own habitation more convenient than his neighbour's, by improving on what had already been done; and thus in time, obſervation, aſſiſting that natural ſagacity inherent even in uncultivated minds, might lead them to conſider the inconveniences of the round ſort of habitation, and ſeek others more ſpacious and convenient of the ſquare form. This improvement would naturally introduce the neceſſity of ſupports for the croſs beams, which were to ſuſtain the roof; and the trunks of trees were ſo ready an application that we cannot ſuppoſe they heſitated long in their choice. Thus from the nature of things aroſe the idea of what we call pillars, which have from time to time undergone many changes, and at laſt have produced thoſe elegant columns which we term the orders of architecture.

To attempt producing an authority or origin for every ſpecies of ornament attending the columns, would be wandering in a maze of uncertainty, attended with much labour, and little recompenſe: the general parts may, however, with more certainty, have their origin pointed out. The *plinth*, it is reaſonable to imagine, was, at firſt, ſimply a ſquare ſtone, placed under the trunk of the primitive column, to prevent it from rotting, to which it was expoſed from the conſtant moiſture of the earth; it alſo ſerved as a more firm and ſolid foundation to the column. There are nevertheleſs many inſtances of elegant buildings of conſiderable extent which have no plinth to the columns. Such are the temple of Erictheus, at Athens; the temple of Veſta, at Tivoli; and almoſt all the old Doric temples.

The *torus*, or ſwell above the plinth, may have originated from the root or lower part of the tree being thicker than the part above, which alſo fixed it more firmly on the plinth; or, by ſome it is conjectured to have been only a rope or bandage placed round the trunk, to prevent its ſplitting; or, according to Vitruvius, it repreſents the ſhoe. The idea of the *capital* may have originally been ſuggeſted by ſome tree, whoſe arms or branches ſpreading out juſt above where it was neceſſary the upper parts ſhould be cut off to be of its proper length, the ſwell of the arms

probably



J.Chapman Sculp

Primitive Huts, or the Origin of Architecture.

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probably gave the firſt idea of the ſwell of the capital, which was further attended with this advantage, that by being broader on the top, it was better formed for receiving the works above. It would be unapt and aukward reaſoning to continue the compariſon of a column to the human figure, by ſuppoſing an alluſion of the capital to the head of a man.

The *abacus* was certainly no more than a tile or ſtone, placed with intent to throw off the water, and prevent its ſoaking into the column, which would have endanged the duration of the building. The *aſtragals* and *fillets* were certainly no more than bandages to bind the columns. The *architrave* we may conceive to be the beams or ties neceſſary to hold or unite the columns together. The *frize* was an outſide facing of wood, occupying an height equal to the depth of the timbers under the roof; and which, originally, perhaps, was nothing more than the external appearance of thoſe timbers, either plain or ornamented. The *cornice*, and its ornaments, were the ends or outer edge of the timbers, rafters, &c. neceſſary to ſupport the roof. The *denteles*, *triglyphs*, *modillions*, &c. from the above ſource alſo, were accidental hints improved, when to uſefulneſs was wiſhed to be added ornament; and which became permanent, when the rude and clumſy ſtructures of wood gave place to more elegant and durable ones of ſtone.

To furniſh a more complete idea of the ſtate of primitive architecture, and to ſhew its gradual progreſs, from the ſhady bower or turfed hut of the Indian, to the moſt ſimple and early conſtruction of a ſtone building, we have added the annexed Plate, the figures of which have been ſelected from the beſt authors on this ſubject.

When, therefore, the comforts and conveniences of ſubſtantial habitations were known to mankind, and the intereſts of ſociety became united under regular forms of government, the art of building made haſty and rapid ſtrides. Among the ancient Egyptians, Aſſyrians, and Perſians, architecture was carried to an incredible length. The pyramids of Egypt are ſuch ſtructures as would almoſt exceed the power of the moſt potent monarch to raiſe at this day. The largeſt of them, according to M. Goguet, is near 500 feet high, and contains 313,590 ſolid fathoms. It is compoſed of ſtones enormouſly large; many of them being thirty feet long, four feet high, and three in breadth; and all this huge maſs of building was coated over with marble. The ſtructure called the *labyrinth*, in the ſame country, according to Herodotus, who ſaw it, excelled every thing which he could have conceived from the imagination either of himſelf or others. Within the ſame circuit of walls they had incloſed 3000 halls, twelve of which were of a ſingular form and beauty; and of theſe half were above, and half below, ground; and the whole was terminated by a pyramid forty fathoms high. All this prodigious maſs of building was compoſed of white marble, and the walls were adorned with engravings. The obeliſks were not leſs aſtoniſhing: the largeſt of them being entire pieces of granite, no leſs than 180 feet high. Near Andera, in Upper Egypt, are the ruins of a palace of grey granite, the cielings of which are ſupported by columns of ſuch thickneſs, that four men can ſcarcely fathom them. The cielings themſelves are compoſed of ſtones of the ſame kind, ſix or ſeven feet in breadth and eighteen feet in length. The grand hall is 112 feet long, ſixty high, and fifty-eight broad. The roof of the whole edifice is a terrace, on which the Arabs formerly built a very large village, the ruins of which are ſtill viſible. Among the Babylonians and Perſians, too, ſuch immenſe piles of building have been raiſed, as appear utterly inconceivable and incredible to many modern authors, where their former grandeur is not demonſtrable by ruins viſible at this day. The ruins of Perſepolis, the ancient capital of Perſia, were ſo ſtupendous in the time of Avicenna the Arab phyſician, that his countrymen could not believe ſuch ſtructures poſſible to be erected but by evil ſpirits. Of their extraordinary magnificence, indeed, we may have ſome idea from the account of the ſtair-caſes belonging to the palace. The remains, ſome time ago, conſiſted of ninety-five ſteps of white marble, ſo broad and flat, that twelve horſes might go up abreaſt.

In theſe vaſt ſtructures, the nations of whom we ſpeak, ſeem to have had it in view to immortalize their name. Antiquarians, however, are much divided touching the deſtination of pyramids; M. Pauw ſuppoſes they were raiſed in honour to the ſun; and this ſeems partly confirmed by the word *pyramué*, which, according to Savary, ſignifies in Arabic the rays of the ſun. Be this as it may, it is enough for us to know, that they are the nobleſt monuments of the ſublime in architecture; and that, by the correſpondence of their faces with the four cardinal points, they prove to a certainty, that the poles of the earth have not changed in the courſe of 4000 years. If the kings who built the pyramids deſigned to immortalize their memories, they certainly could not have fallen upon any thing more proper for this purpoſe; yet in this they have failed, the names of thoſe who erected them not being certainly known even in the time of Herodotus. It is certain, however, that neither the ancient Aſſyrians nor Babylonians knew the method of conſtructing arches. The roofs of all their halls were flat, and covered with prodigiouſly large ſtones, ſome of them ſo big as to cover a whole room ſingly. It is remarkable, that improvements in architecture did not take place in Aſſyria till after the time that Jeruſalem was taken by Nebuchadnezzar. The grandeſt buildings erected among the Aſſyrians ſeem to have owed their exiſtence to this monarch; and it can ſcarcely be imagined that he would not endeavour to imitate the architecture of Solomon's temple, to which, by his conqueſt of Jeruſalem, he had full acceſs. It is alſo remarkable, that the dimenſions of the two pillars, Jachin and Boaz, ſet up by Solomon, very nearly correſpond with thoſe of the Doric order uſed by the Greeks, and which originally came from their colonies ſettled in Aſia Minor. The height of Solomon's pillars, without the chapiter, was eighteen cubits; that of the chapiter itſelf was five cubits; the circumference was twelve cubits; from whence, according to the Scripture language, we may reckon the diameter to have been exactly four cubits. Had they been a ſingle cubit higher, they would have been preciſely of the ſame height with the columns of the original Doric. We do not mean to aſſert, that this famous temple gave a model of architecture to the whole world; although it is ſcarcely conceivable but imitations of it, as far as it could be known, muſt have taken place among many nations.

Notwithſtanding the deficiency of arches, however, the Egyptian buildings had an air of vaſt grandeur and magnificence, if we may credit the deſcription given of one of their banqueting-rooms by Vitruvius. The uſual ſize of one of theſe rooms was from 100 to 150 feet in length, and its breadth ſomewhat more than half its length. At the upper end, and along the two ſides, they placed rows of pillars well proportioned to one another, though not of any regular order; and at the lower part they made a magnificent and ſpacious entrance. Theſe rows of columns were ſet at a diſtance from the wall, forming a noble portico along the two ſides and upper end of the building. Upon the pillars was laid an architrave; and from this was carried up a continued wall with three quarter columns, anſwering directly to thoſe below, and in proportion one-fourth ſmaller in all their parts. Between theſe three quarter columns were placed the windows for enlightening the building. From the tops of the lower pillars to the wall was laid a floor: this covered the portico over-head within, and made on the outſide a platform, which was ſurrounded by a corridor with rails and baluſters. This was terraced, and ſerved as a plain for people to walk on; and from this they could look down through the windows into the room below. To this terrace there was no covering required, as the Egyptians were in no fear of rain. The Egyptians decorated this ſort of building with ſtatues; and no kind of ornament could anſwer it ſo well, as the light cannot fall upon ſtatues to ſuch advantage in any direction, as when it comes from above, in ſuch a regular, proportioned, and uninterrupted, manner.

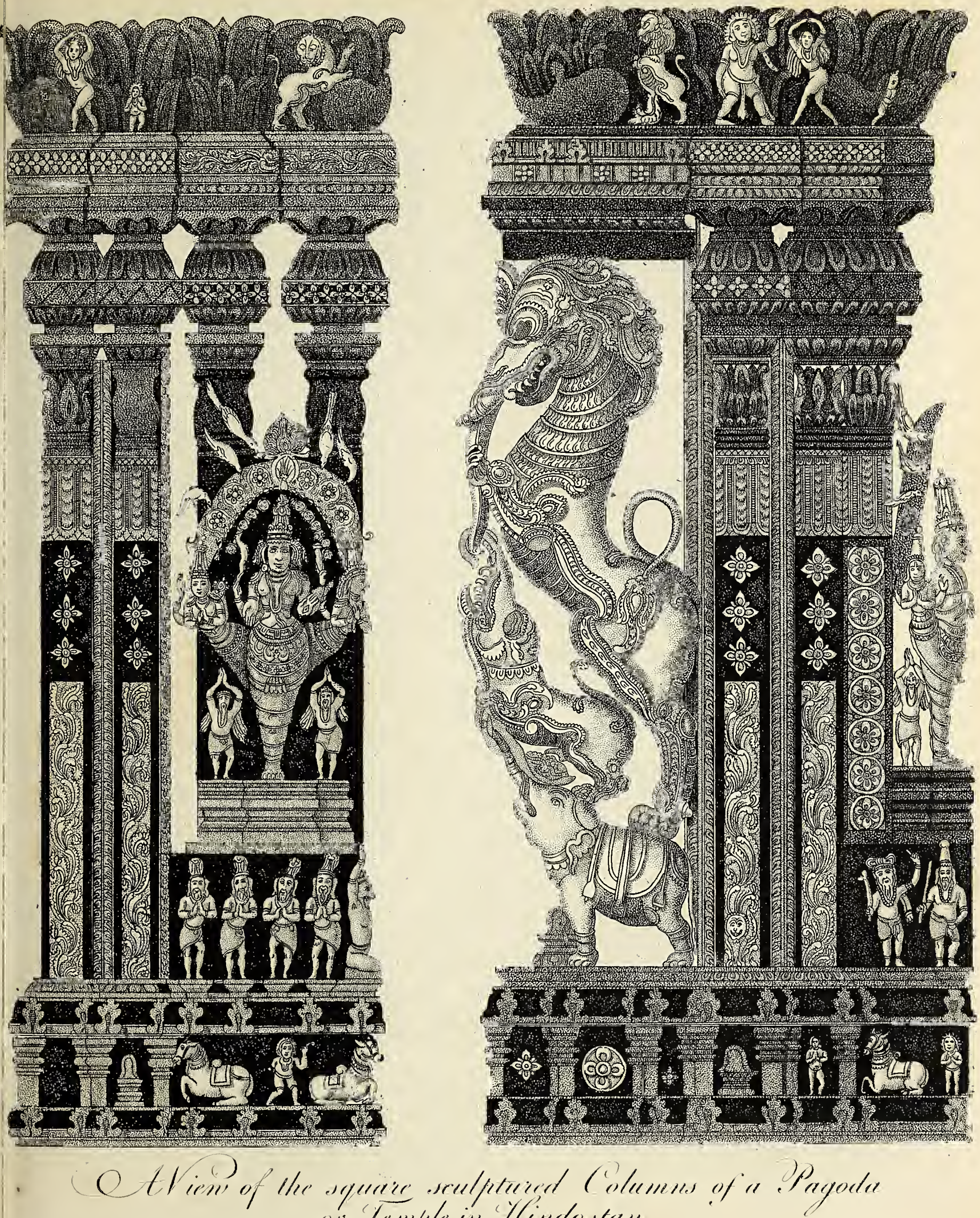
The Egyptian buildings were of marble, the Chineſe of wood. Yet the Chineſe wall is a ſtupendous monument of the ſolid and durable. Compare the wall of China, or thoſe of ancient Babylon, with the pyramid of Geeza; the greatneſs of the former is in the ſcale and extenſion; of the latter, in the firſt conception of a ſublime idea. If this diſtinction be obſerved in our deciſions on works in architecture, there will be no difference of opinion, except between thoſe who have taſte, and thoſe who have it not. There are ſome modern authors, however, who call in queſtion even the exiſtence of theſe ſtupendous works of the ancients, and aſk "how it is poſſible to conceive that the walls of Babylon could have been 318 feet high and eighty-one in thickneſs, in a compaſs of near ten leagues?" To this we may eaſily reply, that the pyramids of Egypt, and the immenſe wall which divides China from Tartary, ſhew us, that even ſuch a work as the wall of ancient Babylon is ſaid to have been is not altogether incredible. The loweſt computation of the dimenſion of the Chineſe wall is, that it extends in length 1200 miles, is eighteen feet high at a medium, and as many thick; according to which computation, it muſt contain 9,504,000 ſolid fathoms; and yet, if we may credit the Chineſe hiſtorians, this immenſe maſs of building was finiſhed in five years. If therefore we can ſuppoſe Nebuchadnezzar, or whoever fortified the city of Babylon, to have been capable of employing as many men for ten years as were employed in raiſing the Chineſe wall, we may ſuppoſe him able to have fortified the city of Babylon as ſtrongly as it is ſaid to have been; for the maſs of building is not quite double that of the Chineſe wall, tho' nearly ſo, amounting to 18,189,600 ſolid fathoms.

A great wall was built by Seſoſtris, to defend Egypt againſt the Arabs; and the raiſing of ſuch walls was common in early times to all civilized nations bounded by barbarians. There were many in different parts of Aſia erected againſt the Tartars; and we know of three built by the Romans in Britain, as a defence againſt the Scots and Picts. According to the calculation of M. Pauw, were all the walls of this kind ſtretched in a ſtraight line, they would be found equal to the diameter of the earth.

Obeliſks and pyramids, the wonders of Egypt, are works totally unknown to the Chineſe, who had no conception of building for duration, except in the inſtance of their great wall. The flat roofs of the temples and houſes of the Egyptians, derived, perhaps, from the primitive habit of abiding in caverns in the mountains of Ethiopia, make a ſtriking contraſt with the airy and fantaſtic architecture of the Chineſe. It was probably the cuſtom of dwelling and ſtudying in thoſe gloomy manſions, that gave birth to the Egyptian myſteries, and to the obſcure communications of their notions in religion and philoſophy; ſo different from the Chineſe, as to preclude every idea of connection between the two people, although the Chineſe monarchy is allowed to be one of the moſt ancient upon the earth.

It is ſuppoſed by ſome, that the trunk of the palm-tree was the model of the Egyptian column; the lateſt and moſt celebrated of which is thus deſcribed by Savary: "It is of red granite, the capital nine feet high, and nearly reſembling the Corinthian; the ſhaft and upper member of the baſe is of one piece, ninety feet long and nine in diameter; the whole column is 114 feet high: the moſt beautiful monument on the face of the earth." The columns, however, which decorate and ſupport their ancient religious buildings, are of a very different ſtructure, rudely formed, and covered with hieroglyphics, the remains of which are ſtill to be ſeen in the ruins of temples and ſubterraneous excavations throughout Egypt. From the perſpicuous pen of Mr. Orme, we derive many deſcriptions of ſimilar works in India, coeval in point of antiquity, and ſo alike in ſtyle and manner, as might induce us almoſt to fancy we were travelling through diſtant provinces of the ſame empire. By this, and other ſtriking marks of reſemblance, many writers have been led to conclude, that the Egyptians and Indians were originally one and the ſame people. Mr. Bryant, however, ſtruck with the antiquity and magnitude of the immenſe buildings found throughout Hindoſtan, attributes the introduction of them to the Cuſhites or Babylonians, who from various accounts formed one of the earlieſt diſtinct nations in the world, and in a manner extended their ſovereignty over the greateſt part of Aſia. The moſt aſtoniſhing of theſe works are the images and temple in the iſland of Elephanta; the rocking-ſtones of immenſe weight, yet ſo nicely balanced, that a man can move them with his hand; the obſervatory at Benares, uſed by the ancient Bramins for aſtronomical and myſtical purpoſes; the magnificent pagodas or temples, with their choultres; and the ſtupendous ruins of other noble ſtructures, which have only in part withſtood the ravages of war, and the mouldering hand of time. Theſe fabrics in general are of immemorial antiquity, and of ſuch immenſe labour, that they are ſuppoſed by the preſent race of Bramins, who preſide over them, to have been originally built by the divinities or gods to whom they are conſecrated.

The Indian pagoda is a temple of very conſiderable magnitude and elegance; and one of the moſt conſiderable now exiſting, in Hindoſtan, is ſuppoſed to be that of Seringham, a ſmall iſland on the coaſt of Coromandel. This temple is compoſed of ſeven ſquare incloſures, one within the other, the walls of which are twenty-five feet high and four thick. Theſe incloſures are 350 feet diſtant from one another, and each has four large gates, with a lofty tower; theſe are placed, one in the middle of each ſide of the incloſure, and oppoſite to the four cardinal points, in imitation of the pyramids of Egypt; each tower is ſuppoſed to be an hiſtorical monument of the propitious interpoſition and attributes of ſome god, ſince the four ſides of them are thickly ſculptured with repreſentations and hieroglyphical ſymbols of theſe divinities. The outward wall is near four miles in circumference, and its gateway to the ſouth is ornamented with pillars, ſeveral of which are ſingle ſtones thirty-three feet long, and nearly five in diameter; and thoſe which form the roof are ſtill larger. In the inmoſt incloſure are placed the chapels, where the rites and myſteries of the Hindoo manner of worſhip are performed. Annexed to, or at a ſmall diſtance from, theſe temples, choultries are generally erected, as an appendage to the pagoda; which ſupply the place of inns, where travellers of every deſcription are received without exception. Theſe buildings are uſually covered and incloſed on three ſides with walls, but are open in front, where, inſtead of a wall, the roof is ſupported by pillars. A tank, for the further refreſhment of travellers and their cattle, is likewiſe dug near it; and, in regions where the convenience of inns is unknown, and where the wayfaring man would be in perpetual danger of periſhing through fatigue and want of ſuſtenance, theſe charitable foundations, though in a pagan country, manifeſt no inconſiderable proof of the general benevolence of the people. And, though the Indians appear to have loſt all memory of the ages in which theſe temples and choultries were firſt inſtituted, they are nevertheleſs ſedulous to keep them in the higheſt repair, and to reſpect them with the utmoſt veneration, throughout the whole extent of Hindoſtan. To furniſh the reader with ſome idea of the ſuperſtitious eſtimation in which theſe temples are held, and of the rigour of the religious diſcipline of the Hindoos, we need only mention, that an annual feaſt is conſtantly obſerved in each, in memory of the god to whom it is conſecrated; upon which occaſion the worſhippers of him are obliged to attend in the humble character of pilgrims. There is a feſtival of this deſcription annually celebrated in the month of September, at the temple of Tripetti, about fifty miles north-eaſt of Arcot, at which the offerings made by the vaſt concourſe of pilgrims who arrive from all parts to aſſiſt at it, amount to ſo great a ſum, that the Bramins, beſide what they reſerve to themſelves, pay the government an annual revenue of 60,000 pagodas, or 24,000l. ſterling! The revenue



A View of the square sculptured Columns of a Pagoda or Temple in Hindostan.

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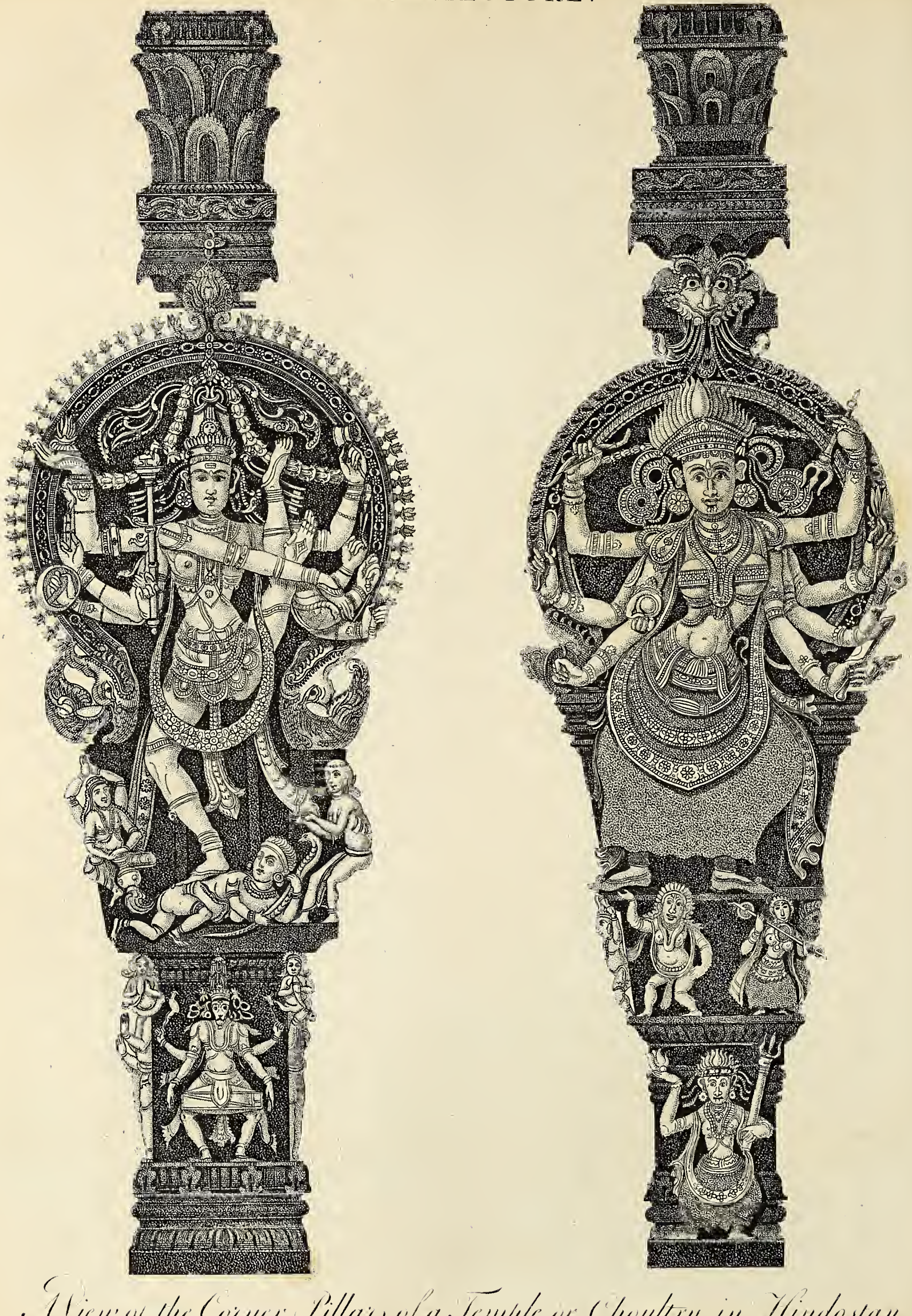
J. Chapman sculp.



A View of the Corner Pillars of a Temple or Choultry in Hindostan.

[illegible]

J. Chapman

of this temple was aſſigned over to the Engliſh by the nabob of Arcot, as a reimburſement of their expences in defending his dominions againſt the attacks of his enemies, among whom was Mahomed Comaul, who fought a hard battle with the Engliſh juſt before the feſtival began, in 1753, hoping to obtain poſſeſſion of the temple in time to receive theſe immenſe offerings from the Bramins: but he was defeated.

In the city of Madura, which is alſo under the dominion of the nabob of Arcot, is ſtill to be ſeen uninjured, except by the ſilent hand of time, a ſuperb temple of the ſame kind, with a royal palace remarkable for the elegance of its interior conſtruction; and a choultry at a little diſtance, which is truly magnificent. It bears the name of *Trimul-naig*, one of the kings of Madura; but of the date of whoſe reign we have no authentic account. It is conſtructed in a ſtyle of peculiar richneſs and grandeur, ſupported with columns all varying from each other, which exhibit ſpecimens of architecture ſo ſingular and intereſting, that we are induced to give a repreſentation of them in the annexed Plates. A very curious model of a ſection of this choultry, formed in braſs, and worked on the ſpot, was lately exhibited in London, and offered for ſale at Chriſtie's auction-room in Pall-mall. Nothing can be more minutely accurate; nor, to thoſe who have had an opportunity of examining it, can any deſcription or drawing convey ſo perfect an idea of this intereſting piece of Hindoo architecture. Of the deſign and execution of the ſculpture, however, an attentive examination of the engravings will convey a tolerably correct notion; though from the complicated profuſion of the hieroglyphics, it is not practicable to deſcribe the whole. The firſt of theſe Plates preſents two ſides of one and the ſame pillar, which is ſelected as the moſt curious. The firſt ſide exhibits a ſingular repreſentation of the idol Trimoortee, or triple-god; the belief in which is a leading tenet and very ſtriking feature of the Hindoo religion. The idol Trimoortee is commonly expreſſed by *three* faces on *one* body; but *here* the unity of this *triad* is ſtill more diſtinctly marked by three ſeparate bodies on one leg. The ſecond ſide of the column is decorated with an elephant ſurmounted by two fanciful monſters, the higheſt and largeſt of which reſembles a horſe, with the trunk of an elephant. It is called by Hindoo poets the *aulee*, and is ſuppoſed to exceed the laſt-mentioned animal as much in ſize as it is here repreſented. If the reader carries in his mind the recollection that the ſhaft and baſe of this column is ſculptured from one ſtone, he will be convinced that the workmanſhip and carving of the animals in queſtion is truly ingenious.

The other Plate repreſents two columns, whereon are carved the idol *Shivven*, dancing in his anger; under which is *Agôram*, and the infernal goddeſs *Caullee*, evil-genii of the Hindoſtan mythology. Theſe figures form each a ſeparate ſide of the two corner pillars of the front row in the choultry, and are to be ſeen in the brazen model of it above-mentioned. The original drawings from which theſe pillars are engraved, were taken on the ſpot by a Hindoo, and publiſhed in 1794, by N. E. Kinderley, Eſq. in his admirable "Specimens of Hindoo Literature."

Though there is no poſſibility of tracing theſe hieroglyphics to their ſource, yet many reſpectable writers have informed us, that the notion of a *triad*, or trinity, is in like manner to be traced among the Egyptians, as well as the Jews. This, however, is but one point of ſimilarity between the Hindoo and Egyptian mythologies, out of many which might be adduced, and which prove beyond a doubt that one of the ſyſtems is derived from the other; and no better evidence can poſſibly be deſired by thoſe, who contend that the Egyptians and Indians were originally one and the ſame people. At any rate it muſt be allowed, that the Egyptians, from the earlieſt antiquity, have been conſidered among the firſt inventors of arts; and in the time of their proſperity all nations ſought and ſtudied their philoſophy and their ſciences; ſo that being learned in the arts of the Egyptians became proverbial. Among other arts thus early cultivated by them, was undoubtedly that ſpecies of original architecture, where the ſtrength and extent of the fabric was more regarded than its correctneſs of ſymmetry. Of this kind are the ruins of a magnificent temple at Luxor, (the ancient Thebes;) of which there remain more than 130 columns of conſiderable magnitude, covered with neat and curious hieroglyphics, ſimilar to thoſe in India. There are alſo others at Komonbu, and in many parts of Egypt, as ſhewn by Norden. Hence it is fair to conclude, that from Egypt the Greeks derived their principal ideas of building; and that this was the track by which architecture made its way into Greece, and roſe to perfection; for certainly the ſtructures of Egypt are much more ancient than thoſe of Greece; and, as it may be conſidered the beſt character of buildings, that they provide for the comforts and conveniences of man, ſo it muſt be allowed that the Greeks firſt rendered them productive of elegance, ſymmetry, and beauty. We muſt therefore admit, that to the fine eye, ſkilful hand, and ſublime genius, of that people, architecture is indebted for its rules of decorum, elegance of deſign, and taſte of ornament, which began to arrive at perfection under the foſtering care of Pericles; which period, including the reign of Alexander the Great, muſt be conſidered as its climax of grace, magnificence, and beauty, in that empire.

It is a maxim, that the mind of man is influenced by modes of government; and, certain it is, the Greeks with their independency, loſt alſo their ſuperior vigour of genius; and what remained was, with the ſpoils of their cities, carried to Rome: wherefore, from this period, the Romans muſt be conſidered as the patrons and promoters of architecture. From this period alſo, its progreſs was great and rapid, though little was done of new invention; but the rules of the Greeks were applied to ſtructures ſo numerous, and of ſuch wonderful extent, that we are at a loſs which moſt to admire, the original inventors of theſe ſublime rules, or thoſe who applied them to ſuch ſtupendous buildings.

There are ſome authors well read in ancient hiſtory who wiſh to prove that from the Etruſcans, and not from the Egyptians, the Greeks derived their firſt ideas of architecture. The Etruſcans (or Tuſcans) certainly were well ſkilled in building, and from theſe the Romans in their early ſtate ſought help in all their large works: the remains of the temple of Jupiter Capitolinus, the Cloaca Maxima, &c. the work of Tuſcan artiſts, ſhew them to have well underſtood the ſcience and the practice of uſeful and ſtately architecture. Neither, when we inſpect the antique vaſes of undoubted Etruſcan workmanſhip, can we deny them to have poſſeſſed taſte and elegance. It is however generally agreed, that the Greeks completed the art of building, by uniting the uſeful with the elegant and agreeable; and that to them, and the Romans, we are indebted for the five eſtabliſhed Orders of architecture, which are the *Tuſcan*, the *Doric*, the *Ionic*, the *Corinthian*, and the *Compoſite*. Theſe are diſtinguiſhed from each other by the column with its baſe and capital, and by the entablature.

The Plates, choſen to exhibit the different orders, are ſelected from ſuch antiques as have ſtood the teſt of ages for their ſymmetry and effect; and the modern proportions in the deſcriptive account are taken from Sir William Chambers's uſeful Treatiſe on Civil Architecture. To the examples ſhewn in the plates, the meaſurements are figured to each particular member; ſo that, by comparing them, the variations of the moderns from the ancients may be eaſily known. The meaſurements are in minutes, that is, one-half of the lower diameter divided into thirty parts or minutes, which method, having fewer calculations than any other, is preferable: the projections are meaſured from the perpendicular of the ſuperior and inferior parts of the column.

TUSCAN ORDER.

Of the Tuſcan Order little hiſtoric can be ſaid; its plainneſs of ornament gives it the firſt place in moſt treatiſes:

tiſes: there is no regular example of this among the remnants of antiquity. Piraniſi has given a drawing of a Tuſcan baſe found at Rome, but of what date is uncertain. Vitruvius, in an indiſtinct manner, has mentioned the general proportions, but through his whole book does not refer to one ſtructure of this order. The Trajan and Antonine columns at Rome are reckoned of the Tuſcan order, though they have eight diameters for their height; the torus and capitals are certainly more ornamented than is conſiſtent with Tuſcan plainneſs. The fluting to the necks alſo are after the moſt ancient Doric examples. It is ſomewhat ſingular there ſhould be no remains of this order; and, were it not for what little Vitruvius has written of it, it certainly might have been loſt to the moderns. The plainneſs of its appearance, no doubt, cauſed it to be neglected at Rome; but in no other place has been diſcovered any truly ancient example. Of the Doric there are unqueſtionably many remains of a very ancient date; which leads to a probable ſuppoſition that the Tuſcan is no other than the Doric more ſimplified, or deprived of its ornaments to ſuit certain purpoſes, where ſtrength and cheapneſs were wanted; nevertheleſs it is applied with propriety and effect, to the entrance of cities, large gateways, and in military architecture, where dignity and maſſive ſtrength are required. The profile of this order is ſelected from Palladio, he having ſeen ſome remains in Italy, which might lead him to more juſt ideas of the ſtyle the ancients practiſed. It certainly derived its name, though not its origin, from the people of Tuſcany, who were fond of introducing it into every large and ſtately edifice.

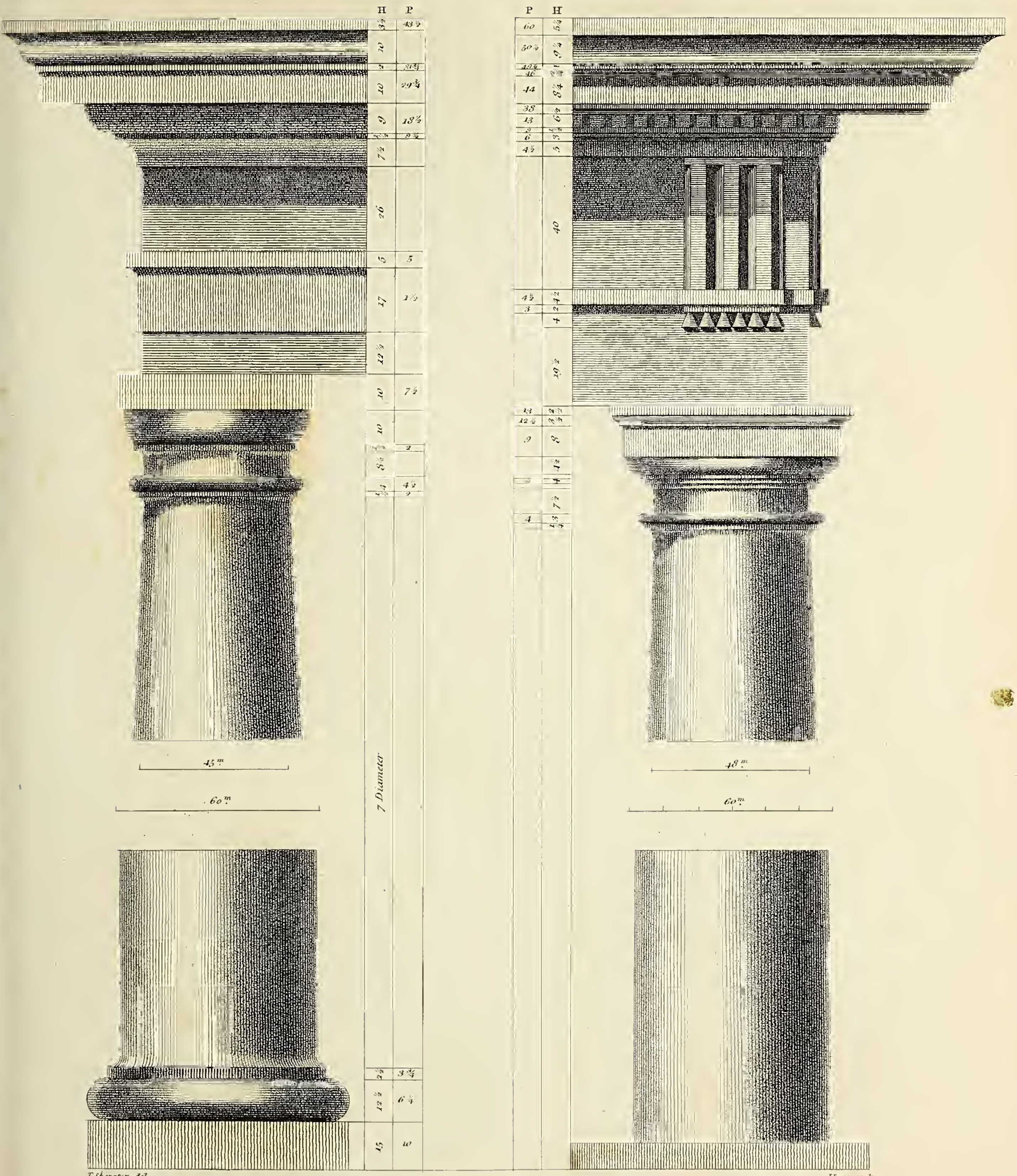
Sir William Chambers gives the Tuſcan order the following proportions: "The height of the column is fourteen modules, or ſeven diameters; that of the whole entablature three modules and a half, which being divided into ten equal parts, three are for the height of the architrave, three for the frize, and the remaining four for the cornice: the capital is in height one module; the baſe, including the lower cincture (which is peculiar to the meaſurement of this order) of the ſhaft, is alſo one module; and the ſhaft, with its upper cincture and aſtragal, is twelve modules; in interior decorations, the height of the column may be fourteen modules and a half, or even fifteen modules; which increaſe may be in the column only." It is cuſtomary in executing this order to diminiſh it one quarter, perhaps without ſufficient reaſon; as its character of extraordinary ſtrength would be better preſerved by the uſual diminution of one-eighth or one-ſixth.

DORIC ORDER.

Of this there are many examples ſtill remaining; ſome of very high antiquity, and of proportions ſo diſſimilar to the practice of later times, that one cannot help concluding they were produced before experience had matured the rules of art. In ſeveral buildings exhibited in the ruins of Pæſtum, Ionia, and Athens, the height of the columns does not exceed four diameters, or at moſt four and a half: the low appearance of theſe in large buildings, muſt ſurely convince us uſefulneſs was regarded more than elegance of deſign. Indeed the hiſtory of the Doric order may be divided into three epocha. Firſt, when the columns did not exceed four diameters in height, as to the temple called *Thoricion*, ten leagues from Athens; here the columns have four diameters, and are not fluted, except four and a half inches under the capital, with regular Doric fluting; the reſt is ſmooth. Alſo to a temple at Corinth, where the columns are only three and a half diameters, and are fluted. To which may be added thoſe remaining at Pæſtum, in Italy; where to one temple the columns are four diameters high, to another about one-third leſs, and to the other about one-third more. The ſecond era may be preſumed, when the columns had not ſix diameters in height; as to the Propylea, or grand entrance into the citadel of Athens, to the temples of Minerva and Theſeus at the ſame place, which were built in the flouriſhing time of Pericles, whoſe columns are only five and a quarter diameters high. Alſo the more ancient temple of Apollo, at Delos, where the columns have five diameters, and are ſmooth or plain; having twenty channels or flutings three inches long in the neck, or top of the column, and as many at the foot, two inches long. The third point of time is when ſix or more diameters were allowed, as to the temple of Auguſtus at Athens; or as Stuart, on good evidence, calls it, the *entrance to a market*, where ſix diameters are uſed. Theſe are all without baſes: in this diviſion muſt be included the temple of Hercules, at Cora, where the columns have eight and three quarters diameter, and are on baſes. Vitruvius allows this to be the moſt ancient order, and gives the following account of its origin: "Dorus, the ſon of Helenis and the nymph Optyce, built a temple in the ancient city of Argos, to the goddeſs Juno, which happened to be of this order, but which then had no regular proportions; it derived its name from the patron of the building. This example, or order, was followed by all the cities of Achaia. Ion, the ſon of Xuthus, afterwards built a temple in Aſia, to Apollo Panionius, of this order; and, to render it more agreeable to the eye, he gave ſix diameters to the column, being guided therein by the example of nature, which has given to the height of man ſix times the length of his foot."

Modern practice allows eight diameters, and a baſe, which was never given to the Doric order by the ancients: this is another mark of its antiquity; for certainly the baſe is no leſs proper than elegant. Concerning the flutings, whether they were at firſt practiſed or not, is impoſſible to determine: the remains of this order of the oldeſt date have flutings. It appears probable, that, when any thing like ornament was wiſhed to be added, the fluting of columns early preſented itſelf. The original columns having been trees, it was the natural effect of a hot climate on their bark to make it crack or divide, which might readily give the hint of flutings. There are examples among the antiques of the column being ſquared off, or wrought with pans, as they are called, inſtead of hollows. Of this kind is the temple of Minerva at Syracuſe, of very ancient Doric: the pillars are cut in pans or angles, and are without baſes. The temple of Diana at the ſame place is alſo in the ſame ſtyle of Doric. To the temple of Hercules at Cora, the columns have the lower third part with pans, and the upper part of the ſhaft with the regular Doric fluting, which is a ſingular inſtance of mixture of ſtyle in antique columns. Theſe columns have eight and three-quarters diameters for their height, and ſtand upon baſes of a very ungraceful form.

The *triglyph*, a characteriſtic mark of this order, has more the appearance of art; the ends of projecting rafters will produce this effect, or near enough, to be improved into what we at preſent ſee them; the places aſſigned them alſo corroborate this idea. Vitruvius ſays, that in building, they laid the joiſts from the interior wall to the exterior parts, and as much of the joiſt as appeared unhandſome was ſawed off, which, not having a pleaſing effect, they made tablets like the triglyphs now in uſe, fixed them againſt the ſawed ends, and painted them in wax, &c. Thus the triglyphs, interjoiſts, and metope, in Doric work, had their origin from the diſpoſition of the timbers in the roof; afterwards, in other works, ſome made the rafters that were perpendicularly over the triglyphs to project out, and carved their projecture; hence, as the triglyphs aroſe from the diſpoſitions of the joiſts, ſo the mutules under the corona were derived from the projecture of the rafters; wherefore, in ſtone or marble ſtructures, the mutules were repreſented declining, in imitation of the rafters; and alſo, on account of the droppings from the eaves, it is proper they ſhould have ſuch declination. This alſo explains the ornament and ſituation of the guttæ, or drops. The ornaments on the metope, or the ſpace between the triglyphs, may have been originally trophies of the Deity, or implements of ſacrifice placed there; the bull's ſkull is peculiar to the Doric order. M. Winkelman has taken ſome pains to prove, from a paſſage in Euripides, that the



T. Sheraton del.

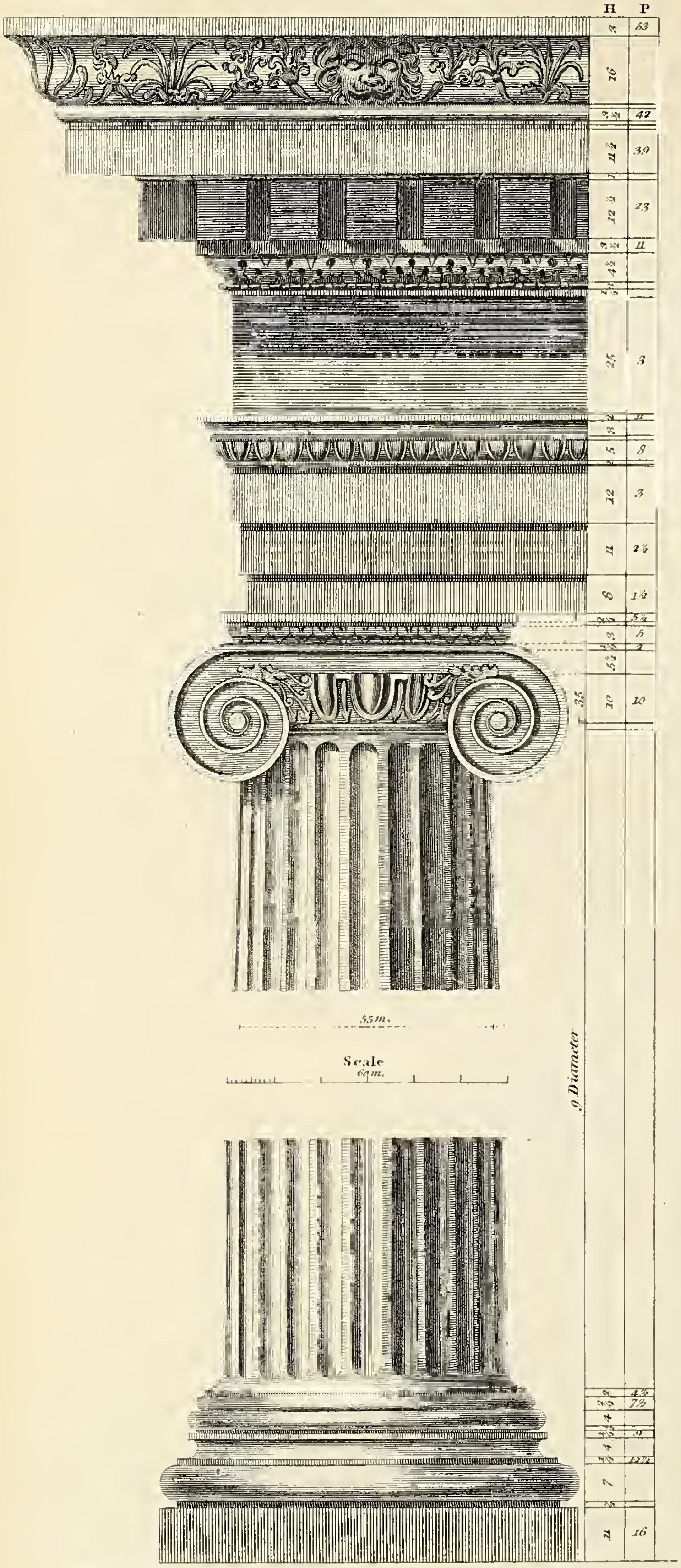
J. Pass sculp.

Tuscan.

Doric.

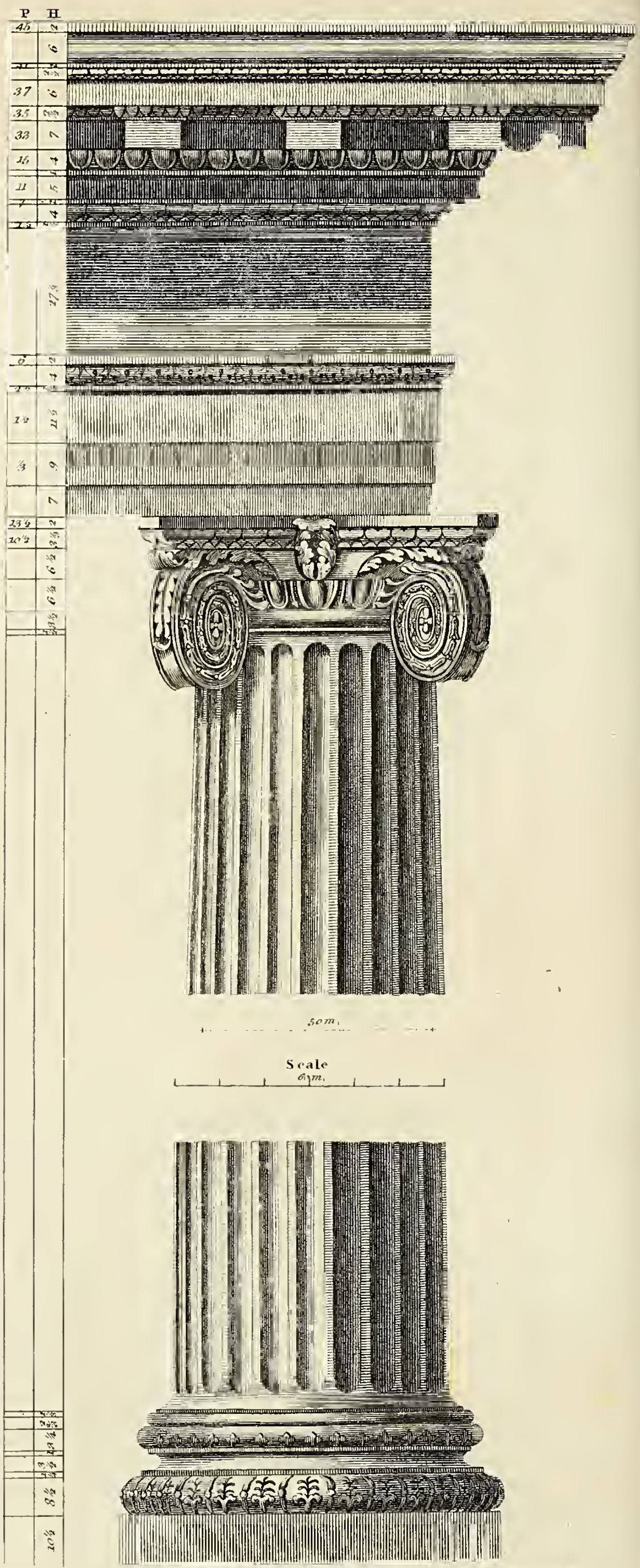
London Published as the Act directs, Jan.y 23. 1798, by J. Wilkes.

ARCHITECTURE



T. Sheraton del.

Ancient Ionic.



J. Pass sculp.

Modern Ionic.

London Published as the Act directs Dec.r 22.1797 by J. Wilkes.

metopes or ſpaces between the triglyphs were open in the moſt ancient temples. How this may have been, cannot now be determined; thoſe ſtructures which remain have the ſpace filled with maſonry.

The profile we have given is taken from the theatre of Marcellus, which has ever been conſidered as a juſt proportion for this maſculine order: the meaſurements are according to M. Deſgodetz. The denteles in the cornice belong not ſo properly to this order as to the Ionic: we have taken the liberty to alter the ſlope of the corona, which in the original is declining, and is thought in modern times to have a heavy effect: it was executed there, perhaps, on the rules before ſtated; or more probably for ſome optical reaſon, as it had a conſiderable elevation. The column has eight diameters, which is now the general practice, is without a baſe; but the attic baſe, or its peculiar one, may be uſed.

The modern proportions, from the before-cited author, are as follow: The height of the column, including its capital and baſe, is ſixteen modules; the height of the entablature, four modules; which being divided into eight parts, two are for the architrave, three for the frize, and three for the cornice: the baſe is one module in height; the capital thirty-two minutes, or a little more.

IONIC ORDER.

The origin of this order is accounted for by Vitruvius, in the following manner:—“ Ion, (the ſame as before-mentioned,) building a temple to Diana, and ſeeking ſome new manner to render it more elegant, had recourſe, as before in the Doric order, to the human figure; and gave to this new order a feminine delicacy: thus he was the firſt who gave eight diameters to a column, that the aſpect might be more pleaſing; and, that its appearance might be more lofty, he added a baſe, in imitation of a ſhoe: the volutes, like locks or plaits of hair, hanging on each ſide, he gave to the capital, ornamented with fruits, or flowers in feſtoons, and furrows, or flutings down the column were wrought, reſembling the folds or plaits of a matron's garment. Thus he invented two kinds of columns, in the Doric imitating a manly robuſt appearance, without ornament; in the Ionic, regarding a female delicacy, accompanied with ornaments pleaſing and elegant. Succeeding architects, much approving the taſte and ingenuity of this deſign, allowed eight diameters and a half to this order.” Vitruvius records an anecdote much in praiſe of the Ionic order, in the following words: “ The difficulty attending the proper adjuſtment of the mutules, metopes, and triglyphs, in Doric ſtructures, was ſuch, as frequently to be a cauſe of much inconvenience and trouble to architects in large buildings, and alſo rendered their aſpect confuſed and embarraſſing; on which account, and the maſſy appearance of the Doric column, it was thought improper for ſacred buildings: of this opinion were Tarchenius and Pytheus, with many ancient architects; alſo the celebrated Hermogenes, who, when he was building the temple of Bacchus at Teos, rejected the Doric, though all the marbles were ready cut, and in its ſtead, erected a temple of the Ionic order.” From the remains of this very celebrated building, the plate of this order is here given, as reſtored in that elegant work the *Ionian Antiquities*. Denteles properly belong to the Ionic cornice; they repreſent the *aſſers*, or ſmaller rafters, which ſupport the tiles.

The Modern Ionic has the volute of the capital executed on an angular plan, the ſame as in the Compoſite order; ſo that, viewed every way, it has the ſame appearance: this differs from the general mode of the antiques, which was to have the volutes parallel. And to Michael Angelo this was attributed as a new invention; but examples are found in the capitals of the angle columns in the temple of Erictheus at Athens, and in the temple of Fortuna Virilis at Rome. Piraniſi has endeavoured to prove the firſt idea of the Ionic volute to have been derived from ſhells; and certainly many pleaſing forms of convolution may be obtained from the ſection of ſhells. The modern Ionic repreſented on the plate is according to Scamozzi, which is of good ſymmetry and form, erring only in being too much enriched.

The ſtandard of the modern proportions is as follows: The height of the column is eighteen modules, and that of the entablature four modules and a half, or one quarter the height of the column, as in the other orders, which is a trifle leſs than in the regular antique Ionics: the capital is twenty-one minutes, and the baſe thirty minutes in height; the ſhaft of the column may be plain, or fluted, with twenty or twenty-four flutings, whoſe plan may be a trifle more than a ſemicircle, becauſe they then appear more diſtinct; and the fillet or interval between them muſt not be broader than one-third of the breadth of the fluting, nor narrower than one quarter thereof; the ornaments of the capital are to correſpond with the flutings of the ſhaft; and there muſt be an ove above the middle of each fluting. The entablature being divided into ten equal parts, three are for the architrave, three for the frize, and four for the cornice. In interior decorations, where much delicacy is required, the height of the entablature may be reduced to one-fifth of the height of the column.

CORINTHIAN ORDER.

This differs from the Ionic only in its capital; the Ionic capital having no more than one-third of the diameter of the column for its height; but the Corinthian capital is allowed one entire diameter, which gives to the column a noble but delicate grandeur. The other members placed on the Corinthian pillar, are common to the Doric and Ionic orders; for it has no particular ſpecies of ornament peculiar to its cornice: ſometimes it has the Doric mutules and triglyphs in the architrave; ſometimes an Ionic frize, with denteles in the cornice; in a manner, it is no more than a third order, riſen out of the former two, which has nothing peculiar to itſelf but the capital. Its origin Vitruvius records as follows: “ A marriageable young lady of Corinth fell ill, and died; after the interment, her nurſe collected together ſundry ornaments with which ſhe uſed to be pleaſed, and, putting them into a baſket, placed it near her tomb; and, leſt they ſhould be injured by the weather, ſhe covered the baſket with a tile. It happened the baſket was placed on a root of acanthus, which in ſpring ſhot forth its leaves; theſe, running up the ſide of the baſket, naturally formed a kind of volute, in the turn given by the tile to the leaves. Happily Callimachus, a moſt ingenious ſculptor, paſſing that way, was ſtruck with the beauty, elegance, and novelty, of the baſket ſurrounded by the acanthus leaves; and, according to this idea or example, he afterwards made columns for the Corinthians, ordaining the proportions ſuch as conſtitute the Corinthian order.” Vitruvius, in the foregoing account, forgot the peculiarities of the Corinthian cornice, or the entablature to that order was not then practiſed in the manner we find remaining among ancient buildings; for to this cornice the modillion is ever an attendant. But exactly, according to this deſcription of Vitruvius, is the cornice of the portico at Athens, called *Poikilie*, as repreſented by the indefatigable Stuart, in his valuable Antiquities of that ancient city.

The beauty and elegance of this order have rendered it famous, and the many examples exiſting among the fragments of antiquity ſufficiently evince the great eſteem with which it was regarded. The ravages of cruel and deſolating war, however, have not left us one remain of this order from among the many celebrated examples which the city of Corinth poſſeſſed, where arts of every kind, and particularly architecture, eminently flouriſhed and were carried to perfection. In later times, the conduct of Lucius Mummius, in the deſtruction of that poliſhed people and city, would have juſtly been conſidered as the groſſeſt barbariſm: the temples, the ſacred buildings, were deſtroyed, and levelled with the ground; ſo that at one ſtroke the works of ages were deſolated, the labours and ingenuity of thouſands were deſtroyed, and poſterity deprived of every trace of this order, in the place of its nativity and nurture. Although Rome would not ſuffer Corinth to exiſt as a rival city, there is no doubt but ſhe deigned to follow the rules and laws of art eſtabliſhed by her vanquiſhed enemy, eſpecially in architecture. The elegance and purity of ſtyle in many of her buildings clearly evince Grecian ingenuity and refinement.

The profile we have given, is according to Palladio's meaſurements of the Corinthian pillars to the portico of the Rotunda at Rome: the univerſal celebrity of this ſtructure pointed it out as a proper example. The moderns have adapted the following proportions: the column is twenty modules in height; the entablature five modules; the baſe one module, and may be either Attic or Corinthian: the capital has ſeventy minutes in height; the proportion of the members of the entablature is the ſame as in the Tuſcan and Ionic orders. If the entablature is enriched, the ſhaft of the column may be fluted, and the flutings may be filled to one-third part of their height with cabling, which will ſtrengthen the lower part of the column, and make it leſs liable to injury. In very rich interior decorations, the cabling may be compoſed of reeds, ribbands, huſks, flowers, &c. The capital is enriched with olive-leaves, as almoſt all the antiques at Rome of this order are; the acanthus is ſeldom employed but in the Compoſite order: the entablature may be reduced to two-ninths, or one-fifth of the height of the column; in which caſe it is beſt to uſe the Ionic entablature, or reduce the denteles of the cornice.

COMPOSITE ORDER.

The Compoſite, or Roman order, ſeems to owe its origin to that conſtant ſolicitude after novelty, which ever renders the mind of man reſtleſs in enlightened and highly cultivated ages. The deſire of variety and novelty, either of new invention, or combination, probably engaged the Roman architects to unite with the proportions and enrichments of the Corinthian order, the angular volute of the Ionic, and by this union to compoſe a new order. The introduction of the angular Ionic volute, and the omiſſion of the upper row of leaves in the capital, certainly give it a more bold and noble aſpect than that of the Corinthian capital, yet different from any of the other orders, poſſeſſing an elegance and projection very pleaſing, and may be uſed with very agreeable and happy effects. There are many examples remaining at Rome, which ſhew the general eſtimation of this order, in the height of its ſplendour and proſperity. In their triumphal arches, it was uſed with good effect, where it produced an agreeable boldneſs, uniting elegance and ornament.

The example given in the annexed plate, is that executed in the triumphal arch erected to the honour of Veſpaſian and Titus at Rome; the juſtneſs of the proportions, with the elegance of the ornaments, mark it as a proper ſtandard for the Compoſite order. The proportions adapted to it by the moderns are as follow: the height of the column is twenty modules, and that of the entablature five modules; the capital has ſeventy minutes in height; the baſe meaſures the ſame as in the Doric and Ionic orders; and, as the module is leſs, all its parts will of courſe be more delicate; the ſhaft may be enriched with flutings, to the number of twenty or twenty-four, as in the Ionic order; there is no reaſon why they ſhould be augmented. The principal members of the entablature may have the ſame proportions as the two former orders, viz. being divided into ten equal parts, three are for the height of the architrave, three for the frize, and four for the cornice.

We may add here, more to complete the hiſtory than to recommend their uſe, that there are ancient examples of oval columns; where the circle of the column is elongated by a broad plain ſpace on the two oppoſite ſides of the ſhaft. Of this kind were ſome fragments found in the iſland of Delos, by M. le Roy. There are two others at La Trinité du Mont, at Rome: alſo in the tomb near Mylaſſa, in Greece, according to M. de Choiſeul; this elegant ſtructure is very perfect; is of a ſquare form, on a baſement; the pillars are inſulated, and ſupport a vaulted cieling highly enriched; each front has two oval fluted columns with the narrow face outwards; at the angles are pilaſters having the ſame enrichments as the columns; the capitals are Compoſite, and the volutes are omitted. This elegant little *morſeau* is of white marble, and about nineteen feet ſquare.

It has often been contended, that, ſtrictly ſpeaking, there are are only *three* orders in architecture, namely, the Doric, Ionic, and Corinthian; the other two, viz. the Tuſcan and Compoſite, being only varieties. And perhaps it would ſimplify and facilitate the ſtudy of architecture, were this reſtriction univerſally to take place. The only circumſtances that can ſerve to diſtinguiſh one order from another, are the form of the column, and its deſtination. To make the firſt a diſtinguiſhing mark, without regard to the other, would be to multiply orders without end. Deſtination is more limited, and it leads us to diſtinguiſh three kinds of orders; one plain and ſtrong, for the purpoſe of ſupporting plain and maſſy buildings; one delicate and graceful, for ſuſtaining buildings of that character; and between theſe a third, for ſupporting buildings of a mixed nature. So that, if deſtination alone were to be regarded, the Tuſcan is of the ſame order with the Doric, and the Compoſite with the Corinthian.

An order may be divided into two parts, the column, including the plinth of its baſe, with the abacus of the capital; and the entablature, which includes all above the capital, and may be divided, in the large, into the architrave, the frize, and the cornice.

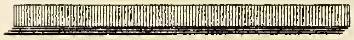
By examining the antiques, it will be found, that, in all their profiles, the cyma and the cavetto are conſtantly uſed as finiſhings, and never applied where ſtrength is required; that the ovolo and talon are always employed as ſupporters to the eſſential members of the compoſition, ſuch as the modillions, denteles, and corona; that the chief uſe of the torus and aſtragal, is to fortify the tops and bottoms of columns, and ſometimes pedeſtals, where they are frequently cut in the form of ropes; and that the ſcotia is employed only to ſeparate the members of baſes, for which purpoſe the fillet is alſo uſed, not only in baſes, but in all kinds of profiles. An aſſemblage of eſſential parts and mouldings, is termed a profile; on the choice, diſpoſition, and proportion, of theſe, depends the beauty or deformity of the profile. The moſt perfect are, ſuch as are compoſed of few mouldings, varied both in form and ſize, fitly applied with regard to their uſes, and ſo diſpoſed, that the ſtraight and curved ones ſucceed each other alternately. In every profile there ſhould be a predominant member, to which all the others ought to be ſubſervient, and ſeem made either to ſupport, to fortify, or to ſhelter it from the injury of the weather, as in a cornice where the corona is principal, the cyma or cavetto cover it, and the modillions, denteles, ovolo, and talon, ſupport it.

When ornaments are employed to adorn the mouldings, ſome of them ſhould be left plain, in order to form a proper repoſe; for, when all are enriched, the figure of the profile is loſt. In a cornice the corona ſhould not be ornamented, nor the modillion band; neither ſhould the different facias of architraves, the plinths of columns, fillets, nor ſcarcely any ſquare member, be carved; for they are, generally ſpeaking, either principal in the compoſition, or uſed as boundaries to other parts; in either of which caſes, their figures ſhould be diſtinct and unembarraſſed. The dentele band ſhould remain uncut, where the ovolo and talon immediately above and below it are enriched; for, when the denteles are marked, particularly if they be ſmall, the three members are confounded together, and, being covered with ornament, are much too rich for the reſt of the compoſition; a fault carefully to be avoided, as the juſt and equal diſtribution of enrichments is on all occaſions to be attended to. For, in effect, the ornaments of ſculpture in architecture, are like diamonds in a lady's dreſs, with which it would be abſurd to cover her face,

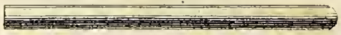
ARCHITECTURE.

Mouldings.

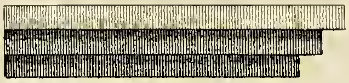
List or Square.



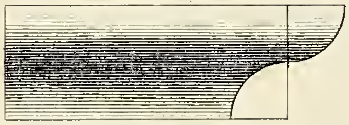
Astragal or Bead.



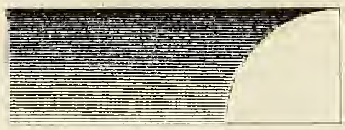
Annulets of the Doric.



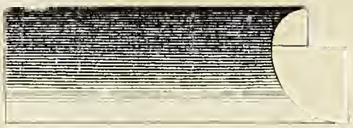
Cima reversa or Oge.



Cavetto or hollow.



Scotia.



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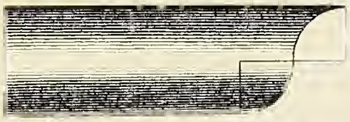
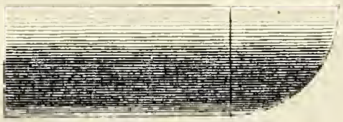


Ovolo or quarter round.



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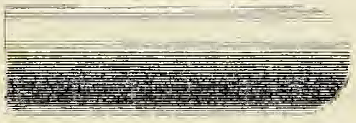
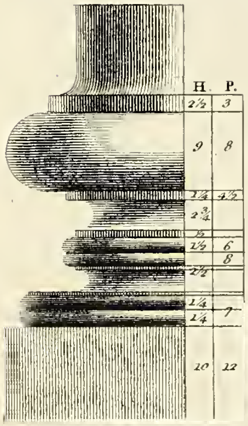
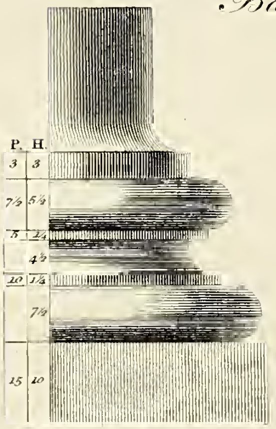


Bases.

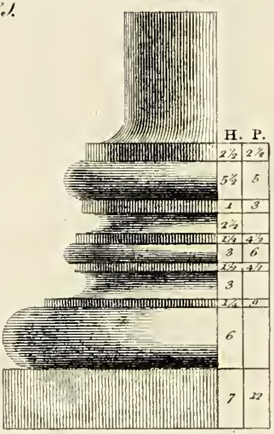
Ionic.



Attic.



Corinthian.



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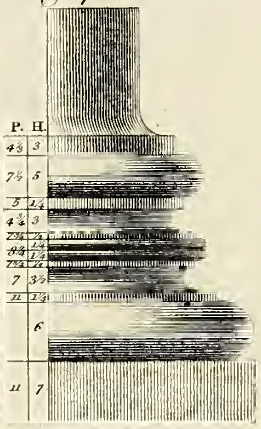
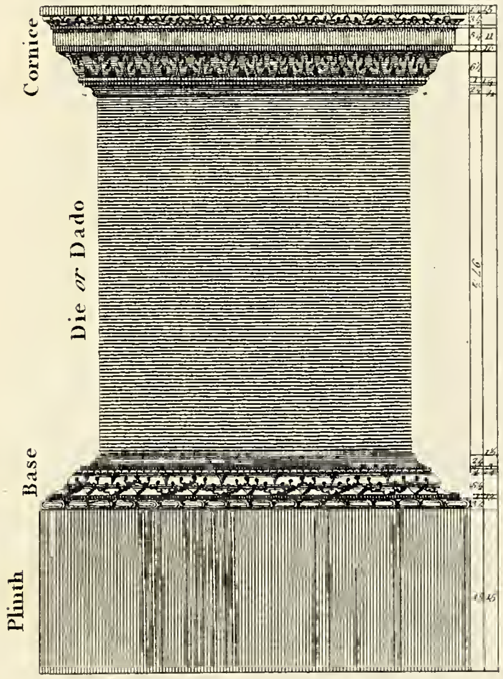
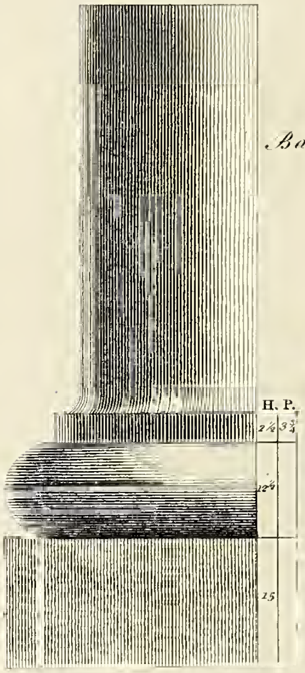


Corinthian Pedestal.

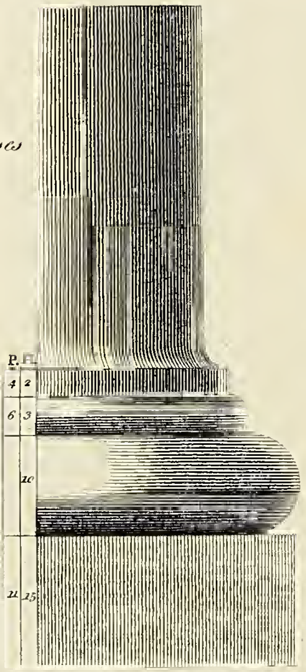


Tuscan.



Bases

Doric.



T. Sheraton del.

I. Pass sculp.

Pedestals, Bases & regular Mouldings.

London Published as the Act directs March 17.1797 by J. Wilkes.

and other parts that are in themſelves beautiful. When mouldings of the ſame form and ſize are employed in one profile, they ſhould be enriched with the ſame kind of ornaments. It muſt be obſerved, that all the ornaments of mouldings are to be regularly diſpoſed, and anſwering perpendicularly above each other; the middles of the modillions, denteles, oves, and other ornaments, all in a line; for nothing is more confuſed and unſeemly, than to diſtribute them without any kind of order. The larger parts are to regulate the ſmaller; all the ornaments in the entablature are to be governed by the modillions or mutules; and theſe are to be dependent upon the intervals of the columns, and ſo diſpoſed, that one of them may correſpond with the axis of each column. It is farther to be obſerved, that the ornaments muſt partake of the character of the order which they enrich; and thoſe uſed in the Doric and Ionic orders muſt be of a ſimpler kind, and groſſer make, than thoſe employed in the Compoſite and Corinthian. In the exterior, whatever does not contribute to the general effect of the whole building, is in a great meaſure uſeleſs, and an expence that might more judiciouſly be employed in places where it could be more attended to. The parts that are in themſelves large, and ſo formed and diſpoſed as to receive broad maſſes and ſtrong impreſſions of light and ſhade, will of courſe excite great ideas; but, if they are broken into a number of ſmall diviſions, and their ſurface ſo varied as to catch a thouſand impreſſions of light, demi-tint, and darkneſs, the whole will be confuſed, trifling, and incapable of cauſing any great emotions.

The appearance of columns is often varied by adding ruſticated cinctures at equal (or other) diſtances to a column: this is a modern invention, which gives a very unnatural appearance, and diſguiſes the noble figure of the column. Ruſtic work is with greater propriety, and better effect, introduced into large entrances, parks, and gardens; alſo into grottos, baths, or fountains, where an irregular and rough appearance better ſuits the place and purpoſe. Le Clerc ſays, theſe kind of ruſtic ornaments are never to be imitated, excepting in the gates of citadels or priſons, in order to render their entrances more rugged and frightful.

The flutings of columns are ſometimes wrought round, or ſpirally on the column; there is an ancient example of this, in a ſmall temple below Trevi in Italy, the plan and elevation of which are given by Palladio, where, of four columns in front, two have their flutings ſpirally, and the two centre ones are wrought with leaves on the ſhaft.

The rule for the diminution of columns has ever varied: the ancients frequently diminiſhed the column from the very foot, or from one-quarter or one-third of its height: the latter method is now generally practiſed; the diminution ſhould be ſeldom leſs than one-eighth part of the lower diameter of the ſhaft, nor more than one-ſixth: this latter is the more graceful: ſome, by way of giving a better contour or appearance, allow a ſmall ſwell, or bellying, in the lower part of the middle diviſion of the pillar.

It will here be proper to give the general rules to be obſerved in *pedeſtals,* where it is neceſſary to introduce them. They conſiſt of three principal parts; the baſe, the dye, and the cornice. A determinate rule, however, cannot be given, as they muſt be made to vary in height according to the circumſtances which render them uſeful; they have ever been conſidered as mere auxiliaries, to give height, and elevate the column above ſurrounding objects which impede its view. When they are uſed by choice, it is common to give them one-third, or one-quarter, part of the height of the column and entablature, which is thus divided: of nine equal parts, two are for the baſe, one for the cornice, the remaining ſix for the dye, of the pedeſtal, which is equal in ſize to the plinth of the column; the enrichments ſhould be regulated by thoſe of the entablature, &c. whereby they are made ſubſervient to each diſtinct order. When columns are in couples, if pedeſtals are uſed, they ſhould have but one; alſo in a colonade or periſtyle there ſhould be but one pedeſtal continued, having breaks or projections in the cornice, &c. ſo that each column may ſeem to have its particular pedeſtal.

Each column has its particular *baſe.* The Tuſcan baſe is the moſt ſimple, having only a torus and plinth. The Doric baſe has an aſtragal more than the Tuſcan. To the Ionic baſe the torus is larger on a double ſcotia, with two aſtragals between. The Corinthian baſe has two toruſes, two ſcotias, and two aſtragals. The Compoſite baſe has one aſtragal leſs than the Corinthian. The Attic baſe conſiſts of two toruſes and a ſcotia, and is applicable to every order except the Tuſcan, which has its particular baſe. Theſe, with the pedeſtal and mouldings of the ancients, are all exemplified in the annexed Plate.

Pilaſters differ from columns only in their plan; which is a ſquare, as that of columns is round. Their baſes, capitals, and entablatures, have the ſame parts, with the ſame heights and projections, as thoſe of columns: they are alſo diſtinguiſhed in the ſame manner, by the names of Tuſcan, Doric, Ionic, Corinthian, and Compoſite. The column is undoubtedly more perfect than the pilaſter; however, they may be employed with great propriety on many occaſions. Some authors declaim againſt pilaſters, becauſe, according to them, they do not admit of diminution. But this is a miſtake; there are many inſtances, in the remains of antiquity, of their being diminiſhed. Scamozzi always gave his pilaſters the ſame diminution as his columns: Palladio and Inigo Jones have likewiſe diminiſhed them in many of their buildings. Pilaſters are employed in churches, galleries, halls, and other interior decorations, to ſave room; for, as they ſeldom project beyond the ſolid wall above one-quarter of their diameter, they do not occupy near ſo much ſpace as columns. They are likewiſe uſed in exterior decorations; ſometimes alone, inſtead of columns, on account of their being leſs expenſive; and ſometimes they accompany columns, being placed behind them to ſupport the architraves, where they enter the building, as in the Pantheon at Rome; or, in the ſame line with them, to fortify the angles, as in the portico of Septimius. When pilaſters are uſed alone, they ſhould project one-quarter of their diameter beyond the walls. When placed behind columns, eſpecially if they be very near them, they need not project above one-eighth of their diameter. But, when placed on a line with columns, their projection muſt be regulated by that of the columns; and conſequently, it can never be leſs than a ſemidiameter, even when the columns are engaged as much as poſſible. The ſhafts of pilaſters are frequently adorned with flutings, in the ſame manner as thoſe of columns; the plan of which may be a trifle more than a ſemicircle: their number muſt be ſeven on each face, which makes them nearly of the ſame ſize with thoſe of columns. The intervals, or fillets, muſt either be one-third or one-fourth of the fluting in breadth. The capitals of pilaſters are profiled nearly in the ſame manner as thoſe of columns.

Attics had their origin in Athens, where it was for many ages a rule in building to conceal the roof. For this purpoſe, nothing ſerved ſo well as a kind of low or little order ranged in a continued line, ſingly, or with the interruption of baluſters; which, riſing above the reſt of the work and before the roof, hid it perfectly, and placed ſomething agreeable in view. The place of Attics, therefore, is at the uppermoſt extremity of a building, to which they ſerve as a crown, or very properly make a finiſhing for the other orders when they have been uſed in the ſtructure. They muſt never ſtand under any thing except ſuch ornaments as are placed at the very top. Theſe Attics ſhould never exceed in height one-third of the height of the order on which they are placed, nor be leſs than one-quarter of it. The baſe, dye, and cornice, of which they are compoſed, may bear the ſame proportions to each other as thoſe of pedeſtals do; and the baſe and cornice may be compoſed of the ſame mouldings as thoſe pedeſtals. Sometimes the Attic is continued throughout; at others, it projects, and forms a pilaſter over each column of the order. The breadth of this pilaſter is ſeldom made narrower than the upper diameter of the column below it, and never broader. Its projection may be equal to one-quarter of its breadth.

Beſides columns and pilaſters, it is ſometimes cuſtomary to employ repreſentations of the human figure, to ſupport entablatures in buildings. The male figures are called *Perſians*; and, the female, *Carians*, or *Caryatides*. The Perſians are ſo called from a victory gained over the Perſians by Pauſanias, who having brought home ſpoils and trophies to the Athenians, they fixed upon Perſian figures for thoſe which ſhould ſupport entablatures, and thus kept in mind that there were once Perſian ſlaves in Athens. To repreſent theſe conquered people in the loweſt ſtate poſſible, they loaded them with the heavieſt entablature, viz. that of the Doric order. In proceſs of time, however, other figures beſides thoſe of Perſians were introduced, and other entablatures put over them; but the name was ſtill retained. The proper Caryatides are women dreſſed in long robes, after the Aſiatic manner; and the origin of the device was as follows: The Carians had been long at war with the Athenians, but, being at length totally vanquiſhed, their wives were led away captives; and, to perpetuate the memory of this event, trophies were erected, in which figures of women dreſſed in the Caryatic manner, were uſed to ſupport entablatures like the Perſians; and, though other female figures were afterwards uſed in the ſame manner, the name of *Caryatides* was always retained.

The ancients made frequent uſe of Perſians and Caryatides, and delighted in diverſifying them a thouſand ways. The modern artiſts have followed their example; and there is a great variety of compoſitions of this kind to be met with in different parts of Europe. The Caryatides, or female figures, ſhould never much exceed the human ſize. But the Perſians, or male figures, may be of any ſize; and the larger the better, as they will ſtrike the beholder with the greater awe and aſtoniſhment. Perſians may be uſed with propriety in arſenals, galleries of armour, &c. under the figures of captives, heroic virtues, &c. Their entablature ought to be Doric, and bear the ſame proportion to them as to columns of the ſame height. The entablature for Caryatides ought to be either Ionic or Corinthian, according as the character of the figures is more or leſs delicate.

Termini are ſometimes employed, inſtead of Perſians or Caryatides, to ſupport the entablatures of monuments, chimney-pieces, and ſuch-like compoſitions. Theſe figures owe their origin to the ſtones uſed by the ancients to mark the limits of particular poſſeſſions. Numa Pompilius, to render theſe inviolable, conſecrated the terminus into a deity, and inſtituted feſtivals and ſacrifices to his honour. In a ſhort time, what was formerly only large upright ſtones, were repreſented in human ſhape; and afterwards introduced as ornaments to temples and other buildings. The termini are now principally uſed as ornaments for gardens and fields.

Of the SACRED BUILDINGS of the ANCIENTS.

Of all the buildings erected by the ancients, thoſe ſacred to their deities remain moſt perfect, and in the greateſt number. Indeed, conſidering the polytheiſm of their religion, (the Greeks are reported to have had 30,000 gods, nor were the Roman deities leſs numerous,) and how much men and nations vied in endeavouring to ſhew the greateſt liberality in erecting buildings to the honour of their tutelar deities, or when they had vowed worſhip and homage to any particular one; and further, when we conſider what variety of opportunities offered to ſhew honour, to exhibit ſplendour, and to diſplay liberality, we need not be ſurpriſed at the great number of ſacred edifices ſtill remaining: indeed they are ſo many, and of ſuch magnificence, as chiefly to abſorb the traveller's attention; the remains of other public ſtructures being but few. We ſhall therefore firſt ſpeak of the temples, or ſacred buildings, of the ancients, and then of their manſion-houſes and villas.

Sacred buildings, or temples, differ in their various figures and aſpects. Of the firſt order is the *Antis*; 2dly, the *Proſtyle*; 3dly, the *Amphiproſtyle*; 4thly, the *Peripteral*; 5thly, the *Pſeudodipteral*; 6thly, the *Dipteral*; and, 7thly, the *Hypæthral*; which are diſtinguiſhed thus: The edifice or temple is called *anticæ*, when it has in the front antæ, or pilaſters, at the corners of the wall which forms the cell; and between the pilaſters, in the middle two columns, which ſupport the pediment or porch; of which examples are in the three temples of Fortune, the one neareſt the Colline-gate. The *proſtyle* is the ſame as the antis, only columns are added oppoſite the pilaſters or antæ of each corner, which ſupport a chapiter or architrave, the ſame as in the antis: an example of this manner is the temples of Jupiter and Faunus, in the iſle of Tyber. The *amphiproſtyle* is the ſame as the preceding, only a poſtern or back front *(poſticum)* is added, with columns and pediment, the ſame as to the proſtyle. The *peripteral* has in the front and hinder porch *(poſticum)* ſix columns, and eleven, counting the corner ones, on each ſide. And theſe columns are ſo placed, that the ſpace of an intercolumniation ſhall be left between the wall and the outer range of columns, leaving an ambulatory round the cell of the edifice: as in the gate of Metellus, the temple of Jupiter Stator deſigned by Hermodius; and that founded by Mariana to Honour and Virtue, built by Mutius, and wants the hinder porch. To the *pſeudodipteral*, the columns are ſo placed, that in the front and behind there are eight columns, and on each ſide, counting the corner ones, fifteen; and the walls of the cell muſt correſpond, or run parallel with the four centre columns, both before and behind: there muſt be the ſpace of two intercolumniations, and the thickneſs of one column between the walls and the outer columns. Of this order Rome affords no example; but at Magneſia, the temple of Diana, by Hermogines Alabandin; and that of Apollo, built by Amneſta, are examples. The *dipteral* is octoſtyle or eight-columned, both before and behind; but it has a double row of columns round the cell, as in the temple of Jupiter Quirinus of the Doric order, and the Ionic temple of Diana at Epheſus, built by Cteſiphon. The *hypæthral* is decaſtyle or ten-columned, both before and behind: the other parts are the ſame as the dipteral, but within it has a double row of columns, one above the other all round, reſembling a porch, which is called a periſtyle: the middle has no roof; it has folding doors both before and behind. We have no example of this at Rome; but Athens has one, the temple of Jupiter Olympus, which is octoſtyle or eight-columned.

There are alſo round temples, of which ſome are *monopteral*, without cells, and built on columns: the other is called *peripteral*. Thoſe *without cells* have a tribunal or throne, and are aſcended by ſteps of one third of the diameter of the temple; the columns, placed on pedeſtals, are as high as the diameter of the temple, taken at the outer ſide of the pedeſtals; their thickneſs is one-tenth part of the height of the ſhaft and capital; the height of the architrave is half the diameter of the column; the frize, and other ornaments above, may be according to the general rule. The *peripteral* is built with an aſcent of two ſteps, on which the pedeſtals of the columns are placed; the wall of the cell is diſtant one-fifth part of the diameter of the temple from the pedeſtals of the columns; in the middle is left a ſpace for folding doors; the diameter of the inner part of the cell muſt be equal to the height of a column without the pedeſtal; the columns round the cell are placed with ſuitable proportion and ſymmetry. The encloſure in the middle is thus proportioned: one diameter of the whole building for its height; half is for the cupola, excluſive of a flower on the top of the pyramid: the ſize of the flower ſhall be the ſame as a capital of the columns; the other parts may be according to the proportions already written.

By the ſame general proportions other kind of temples are built, but have different diſpoſitions of their parts; as the temple of Caſtor in the Circus of Flaminius, and the temple of Vejovius between the two groves; alſo the temple of Diana of the groves; where the columns are added on both ſides the walls of the porch. This kind of building was firſt uſed in the temple of Minerva within the acropolis or citadel at Athens, and in the temple of Pallas, at Sunium, in Attica. They have the ſame proportions as the others; for the cell is in length double its breadth, and the ſame rule is followed for the ſides as for the fronts. Some there are who uſe the Tuſcan diſpoſition of the columns, although they are of the Corinthian or Ionic orders.

To temples, whoſe walls with the antæ project to form a porch, two columns are placed oppoſite the walls which form the cell; thus blending the Tuſcan and Greek manners. Again, others by removing the walls of the cell, and placing them between the intercolumniation, leave a very large ſpace within the cell; the other parts preſerve the ſame portion and ſymmetry. Thus has ariſen a new order, which is called *pſeudodipteral*; and this kind is particularly uſeful for ſacrifices. The ſame kind of temple cannot be made to every god, becauſe of the diverſity of the ceremonies to be performed.

The elegance and magnificence of a ſtructure depending very much on the proper placing of the columns, we ſhall add the rules laid down by Vitruvius, as obſerved by the ancients, and allowed by the moderns, in the diſpoſition of columns, called by that writer the *five ſpecies* of building; which are as follow: 1ſt, the *Pycnoſtyle*, that is, thick of columns; 2d, the *Syſtyle*, that are a little wider; 3d, the *Diaſtyle*, ſtill wider; 4th, the *Aræoſtyle*, more diſtant than is proper; and 5th, the *Euſtyle*, which is the proper diſtance.

To the *pycnoſtyle*, the diſtance of the intercolumniation is one diameter and a half of the column; as in the temple of the divine Julius; the temple of Venus in Cæſar's Forum, and many others after the ſame manner. The *ſyſtyle* has two diameters of the column between the intercolumniation, and the plinths of the baſe are equal to the ſpace which is between two plinths; as in the temple of Fortuna Equeſtris, near the Stone Theatre; and others made after the ſame proportions. Both theſe ſorts are inconvenient; for the ladies, when entering the temple to worſhip, cannot paſs the columns arm in arm, unleſs they go ſideways: alſo, by the frequency of the columns, the view of the door, and the ſigns or trophies of the deity, are hid, and the narrowneſs of the porch is inconvenient for walking. The *diaſtyle* has this diſtribution, viz. three diameters of the columns between the intercolumniations, as in the temple of Apollo and Diana. This has its inconveniences; becauſe the architrave, on account of the diſtance between the columns, is liable to break. In the *aræoſtyle* they uſe neither ſtone nor marble, but make the beams of durable timber. This kind of building is ſtraggling and heavy, low and broad. The pinnacles are generally ornamented with fictile or earthen-ware, or braſs gilt after the Tuſcan manner, as in the Circus Maximus at the temple of Ceres, and in Pompey's temple of Hercules, and alſo in the Capitol. The *euſtyle* manner, for its uſefulneſs, beauty, and durability, merits every commendation. It is formed by allowing to the diſtance of the intercolumniations two diameters and a quarter, and to the middle intercolumniation only, both before and behind, three diameters. Thus the figure has a beautiful aſpect, is acceſſible without impediment, and round the cell is a ſtately ambulatory. The rule is this: the front of the building of it is tetraſtyle (four columns), is divided into eleven parts and a half, without reckoning the projection of the baſe of the column. If it is hexaſtyle (ſix columns), it is divided into eighteen parts. If it is octaſtyle (eight columns), it is divided into twenty-four parts and a half. Of theſe parts, one, whether the building be tetraſtyle, hexaſtyle, or octaſtyle, ſhall be a module, which is to be the thickneſs of a column. Each intercolumniation, except the middle one, muſt be two modules and a quarter; the middle one ſhall have three modules both before and behind; the height of the columns ſhall be eight modules and a half; by this diviſion of the intercolumniation, the columns have a juſt proportion. Rome affords no example of this kind; but at Teos in Aſia is one, the temple of Bacchus, which is octaſtyle.

Hermogenes was the firſt inventor of theſe proportions; he alſo firſt uſed the octaſtyle pſeudodipteral; he firſt contrived to take away, without injuring the beauty, the interior range of columns in the dipteral (which are thirty-four), thereby very much decreaſing both the labour and expence: this alſo gave a very large ambulatory round the cell, and, without miſſing the ſuperfluity, preſerved the majeſty of the whole; for the walls and the columns were thus firſt diſpoſed, that the view, on account of the aſperity (*aſperitas*) of the intercolumniation, ſhould have more majeſty; beſides, it has this convenience, of ſheltering a great many perſons from rain, as well round as within the cell, which includes a great ſpace. This diſpoſition of pſeudodipteral buildings was firſt diſcovered by the labour of the great and diſcerning ſpirit of Hermogenes; which, like a fountain, will ſerve poſterity from whence to draw rules for the ſcience of architecture.

The columns to the aræoſtyle ſhould have for their thickneſs one-eighth part of their height. For the diaſtyle, the height of the column is to be divided into eight parts and a half; one part for the thickneſs of the column. For the ſyſtyle, the height ſhall be divided into nine parts and a half; one part for the thickneſs of the column. Alſo for the pycnoſtyle, the height ſhall be divided into ten parts; one part for the thickneſs of the column. The euſtyle alſo is divided into eight parts and a half, the ſame as the diaſtyle: one part is given for the thickneſs of the column; and for the ſolidity of its parts it ſhall have its proper intercolumniation. As the ſpace between the columns increaſes, ſo ought alſo the thickneſs of the columns. If it is aræoſtyle, and they ſhould only have a ninth or tenth part for their thickneſs, they will then appear tall and ſlender, on account of the length of the intervals; for the aiſle will in appearance diminiſh the thickneſs of the columns. On the contrary, if it is pycnoſtyle, and the columns have an eighth part for their thickneſs, they have a clumſy and ungraceful appearance, on account of the frequency of the columns, and the narrowneſs of the intervals: for this reaſon, the ſymmetry and proportion of each order ſhould be attended to. Alſo the thickneſs of the corner columns muſt be increaſed one-fiftieth part; for, by the great ſurrounding ſpace, they will appear ſmaller to the view, and it is neceſſary art ſhould rectify this defect of viſion.

For the diminution of the ſhaft of a column, the following rule may be obſerved: if the ſhaft of a column is fifteen feet high, the diameter of the lower part is divided into ſix parts; five of which are for the top diameter. If columns are from fifteen to twenty feet high, the lower diameter is divided into ſix parts and a half; five and a half of which are for the top diameter. If columns are from twenty to thirty feet high, the lower diameter is divided into ſeven parts; ſix of which are for the top diameter. If columns are from thirty to forty feet high, the lower diameter is divided into ſeven parts and a half; ſix and a half of which are for the top diameter. If columns are from forty to fifty feet high, the lower diameter is divided into eight parts; ſeven of which are for the top diameter. If any are higher than thoſe mentioned, they ſhall have the ſame proportions for their diminution. An additional thickneſs is properly given, on account of the increaſed height; for, as the eye is attracted by beauty, it is neceſſary it ſhould be flattered by the pleaſure it receives from proportionate and juſt diſtribution of parts, as it is when deceived by judicious additions; elſe the whole will have a bulky and inelegant effect.

At what period, or by what nation of heathens, temples were firſt erected, does not appear. The Perſians did not judge the gods to be of human ſhape, (as did the Greeks,) therefore had no temples, thinking it abſurd to confine the gods within walls, whoſe houſe and temple conſiſted of the whole world. Mount Ida was remarkable for the quantity and largeneſs of its timber, and it is perhaps univerſally allowed that the places beſt calculated to inſpire religious ideas are groves, or thick woody places, where gloomy dulneſs and ſhade naturally impreſs the mind with awe, and lead it to contemplation. This is farther confirmed by the ſacred groves, which were always adjoining the oldeſt and moſt eminent temples. Pliny alſo aſſures us, that trees in old times ſerved for the temples of the gods. Tacitus reports the ſame to have been the cuſtom of the ancient Germans. Q. Curtius ſays the ſame of the Indians. The Druids alſo had their ſacred oaks and conſecrated groves. The Romans too practiſed the ſame mode of worſhip, and had *luci*, or groves, dedicated to ſome particular deity, in moſt parts of the city of Rome.

Such, we may therefore ſuppoſe, were the places firſt ſet apart for religious worſhip; but when the weather, or inclination, rendered a cloſe place deſirable, they laboured, in this early ſtate of arts, to produce a building merely ſuited to theſe purpoſes. But when ſociety was more enlarged and refined, and the profits of commerce and dominion accumulated to wealth, then the mind of man, which naturally tends towards excellence, was not content with the plain and ſimple ſtructures already built. A modern writer has well obſerved, that "thoſe, who have already all they can deſire, muſt enlarge their deſires. He that has built for uſe, till uſe is ſupplied, muſt build for vanity, and extend his plan to the utmoſt power of human invention, that he may not ſoon be reduced to form another wiſh;" and, it is likely, no ſmall ſpur was uſed by the influence of thoſe concerned in the worſhip and ſacrifices of the times; for additional wealth naturally excited an increaſe of ſplendour and more coſtly ceremonies: theſe required more room, and a correſponding increaſe of ſtate and magnificence, that the ſeveral rites and ceremonies might be ſuitably performed: thus, an edifice of ſtill more elegance, a building of greater extent and richer embelliſhments, was required, which would ſhew ſuperior honour and reſpect to the deity worſhipped. Thus, from the ſimpleſt ſtructure, aroſe the antis, proſtyle, &c. till invention and ingenuity, aided by unbounded liberality, crowned the whole with the hypæthral edifice. Excited by ambition and unbounded riches, whoſe ſources were far-extended territory and numerous fertile provinces, emperors, and even private perſons, were enabled to erect the moſt coſtly temples, the extent and magnificence of which are truly aſtoniſhing!

It is a remark worthy of notice, that the ancient architects did not follow in a ſervile manner the rules delivered by Vitruvius; yet certainly what he wrote were the rules by which they planned their great outline, or deſign, however they might vary the ſmaller or inferior parts of an edifice. To enumerate a few inſtances of variation: the temple of Minerva Pollias has ſix columns in front, yet is proſtyle; although Vitruvius allows but four to this order. The temple of Jupiter Olympus at Athens has no more than eight columns in front, yet is hypæthral, to which Vitruvius gives ten columns in front. This is a variation recorded by himſelf, and without any particular notice of the violation of the rule; from which it ſhould appear as not conſidered of much conſequence.

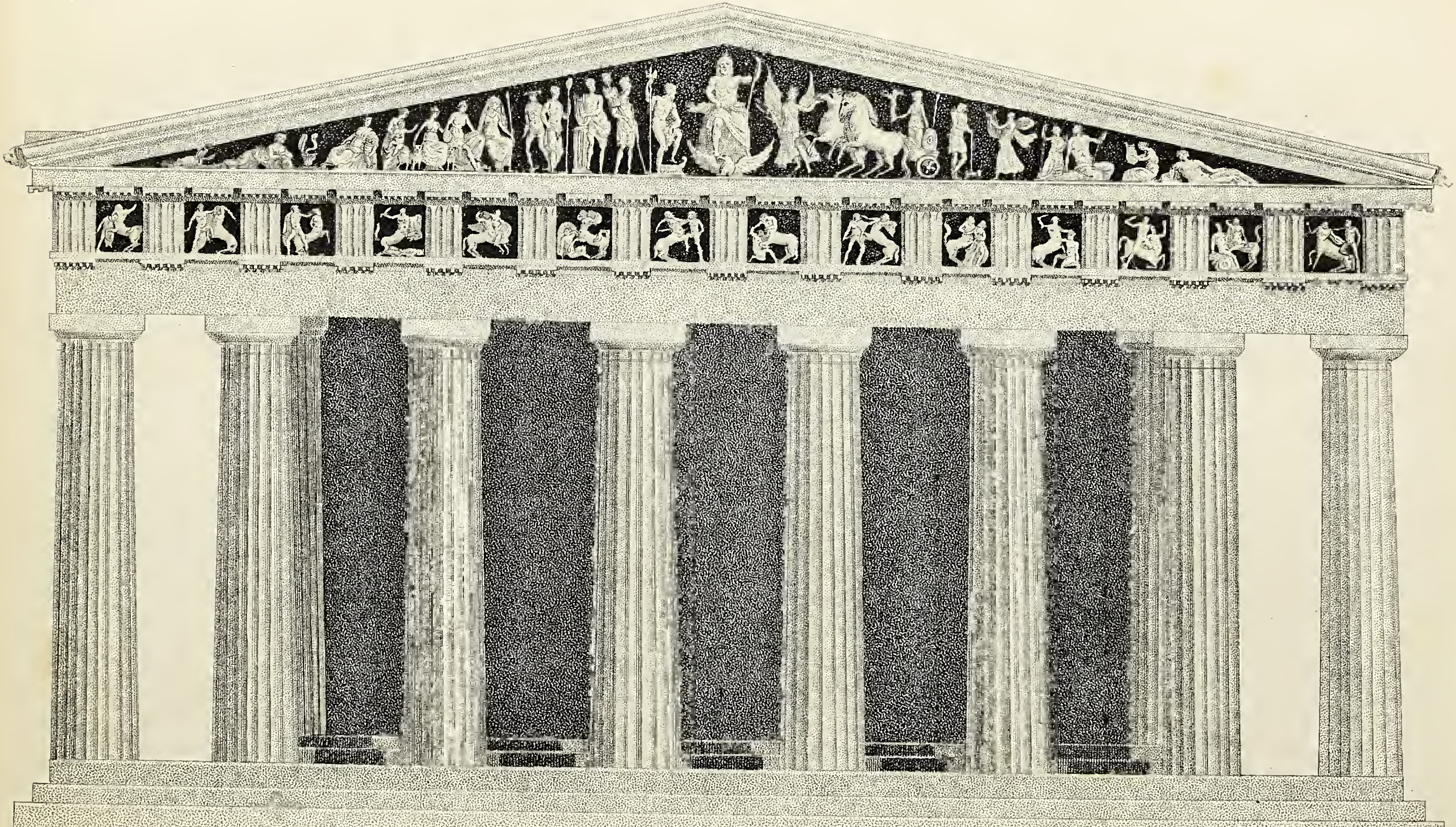
This difference is alſo to be obſerved between the temples built by the Greeks, and thoſe by the Romans. The rule of the former was, to give to the flanks one column more than double the number of thoſe in front; thus an octaſtyle would have ſeventeen columns in the flanks, as to the temple of Minerva at Athens. The Romans, on the contrary, gave only double the number of intercolumniations; thus, to an hexaſtyle, they would make only eleven columns in the flanks, that is, ten intercolumniations, making two columns leſs in the flanks than the Greeks made; as is to the temple of Fortuna Virilis at Rome, and to the temple at Niſmes in France. The walls of the cell were always placed oppoſite the columns of the pronäos, and poſticum, according to the rule; at leaſt we know of but one example to the contrary, which is in the temple of Theſeus at Athens. We thought it neceſſary to notice theſe inſtances of the variation of the ancient architects, that the reſearches and genius of modern times might not be led into error, or fettered by obſerving as law, that which was not adhered to by thoſe we wiſh to imitate.

We ſhall farther illuſtrate this ſubject, and endeavour to bring into the reader's view a more complete idea of the rich and ſuperb ſtyle of the Grecian temples, by annexing Plates, and giving a particular deſcription, of that dedicated to Minerva, called *Parthenon* and *Hecatompedon*, within the acropolis at Athens. This temple was built during the adminiſtration of Pericles, who employed Callicrates and Ictinus as architects, under Phidias, to whom he committed the direction of all works of magnificence and ſplendour. The materials are of the fineſt white marble; the order Doric, with fluted columns, but without baſes. There are two fronts, the principal one to the weſt, the other to the eaſt; each of them adorned with eight pillars, ſupporting pediments highly enriched with admirable ſculpture. The ſtory of the birth of Minerva was carved in the front pediment; and, in the back, her conteſt with Neptune. The weſtern portico, which extends almoſt one hundred feet, is the moſt perfect; and ſuch parts as have been injured or defaced, Meſſrs. Stuart and Revett, authors of the Antiquities of Athens, have endeavoured to ſupply from broken fragments, and other materials, with a view of preſerving to poſterity the magnificent effect of ſo ample a pediment, filled with ſuch a quantity of excellent ſculpture. The annexed Plate, taken from the above invaluable work, repreſents an elevation of the Weſtern Front, in its perfect ſtate. When Sir George Wheler and Dr. Spon viſited Athens, in 1676, this temple was entire; and Sir George Wheler then publiſhed the following deſcription of it:

"The Parthenon, or great temple of Minerva, is ſituated about the middle of the citadel; and conſiſts altogether of admirable white marble. The plane of it is above twice as long as it is broad, being 217 feet nine inches long, and ninety-eight feet ſix inches broad. It hath an aſcent every way of five degrees or ſteps, which ſeem to be ſo contrived, to ſerve as a baſis to the portico; which is ſupported by channelled pillars of the Doric order, erected round upon them, without any other baſes. Theſe pillars are forty-ſix in number, being eight to the front, and as many behind, and ſeventeen on each ſide, counting the four corner ones twice over to be deducted. They are forty-two feet high, and ſeventeen feet and a half about. The diſtance from pillar to pillar is ſeven feet four inches. This portico beareth up a front, and frieze round about the temple, charged with hiſtorical figures of admirable beauty and work. The figures of the front, which the ancients called the eagle, appear, though from that height, of the natural bigneſs; being in entire relievo, and wonderfully well carved. Pauſanias ſaith no more of them, than that they concern the birth of the goddeſs Minerva.

"There is a figure that ſtands in the centre of it, havits right arm broken, which probably held the thunder. Its legs ſtraddle at ſome diſtance from each other, where without doubt was placed the eagle: for the beard, and the majeſty which the ſculptor hath expreſſed in his countenance, do ſufficiently ſhew it to have been made for Jupiter. At his right hand is another figure, covered half-way the legs, in a poſture as coming towards Jupiter; which, perhaps, was a Victory, leading the horſes of the triumphant chariot of Minerva, which follows it. The horſes are made with ſuch great art, that the ſculptor ſeems to have outdone himſelf, by giving them a more than ſeeming life, ſuch a vigour is expreſſed in each poſture of their prancing and ſtamping, natural to generous horſes. Minerva is next repreſented in the chariot, rather as the goddeſs of learning than of war, without helmet, buckler, or a Meduſa's head on her breaſt. Next behind her is another figure of a woman with her head broken off, who it was is not certain. But my companion made me obſerve the two next figures, ſitting in the corner, to be of the

emperor



J. Chapman sculp.

Elevation of the western Portico of the Parthenon, or Temple of Minerva, in its perfect State.

London publish'd as the Act directs Sep.r 2 1797 by J. Wilkes

emperor Adrian, and his empreſs Sabina. At the left-hand of Jupiter are five or ſix other figures; my companion taketh them to be an aſſembly of the gods, where Jupiter introduceth Minerva, and owneth her for his daughter. The poſtic, or hind-front, was adorned with figures, expreſſing Minerva's conteſt with Neptune, about naming the city of Athens, but now all of them are fallen down, only part of a ſea-horſe excepted. The architrave is alſo charged with a baſſo-relievo at ſeveral diſtances, divided into ſquares of about two or three feet broad, and three or four feet high. Within the portico on high, and on the outſide of the cella of the temple itſelf, is another border of baſſo-relievo round about it, or at leaſt on the north and ſouth ſides, which, without doubt, is as ancient as the temple, and of admirable work; but not ſo high a relievo as the other. Thereon are repreſented ſacrifices, proceſſions, and other ceremonies, of the heathen worſhip. The cella of the temple without is 158 feet long, and broad ſixty-ſeven feet. Before you enter into the body of the temple from the front, is the pronäos, whoſe roof is ſuſtained by ſix channelled pillars, of the ſame order and bigneſs with thoſe of the portico, and contains near the third part of the cella; to wit, forty-four feet of the length. We obſerved, in place of one of the pillars, a great pile of ſtone and lime, of moſt rude work; which they told us the kiſlar-aga had ordered to be ſo done, to help to ſupport the roof; becauſe he could never find a ſtone big enough to ſupply the place of the old pillar broken down, altho' he had ſpent 2000 crowns to do it. From the pronäos we entered into the temple by a long door in the middle of the front. But my companion and I were not ſo much ſurpriſed with the obſcurity of it, as M. Guiliter; becauſe the obſervations we had made on other heathen temples did make it no new thing to us. When the Chriſtians conſecrated it to ſerve God in, they let in the light at the eaſt-end, which is all it yet hath; and not only that, but made a ſemi-circle for the holy place, according to their rites; which the Turks have not yet much altered. This was ſeparated from the reſt by jaſper pillars; two of which on each ſide yet remain. Within this chancel is a canopy, ſuſtained by four porphyry pillars, with beautiful white marble chapters of the Corinthian order; but the holy table under it is removed. Beyond the canopy are two or three degrees or ſteps one above another in a ſemi-circle, where the biſhop and preſbyters uſed to ſit in time of communion upon certain ſolemn days. The biſhop ſat in a marble chair above the reſt; which yet remaineth above the degrees, againſt the window. On both ſides, and towards the door, is a kind of gallery, made with two ranks of pillars, twenty-two below, and twenty-three above; the odd pillar is over the arch of the entrance which was left for the paſſage. They ſhewed us the place where two orange-trees of marble formerly ſtood, which being taken thence to be carried to Conſtantinople, the veſſel miſcarried with them. The roof over the altar and choir, added to the temple by the Greeks, hath the picture of the holy virgin on it, of moſaic work, left yet by the Turks."

Thus far Sir George Wheler; and Dr. Spon tells us the meaſures were taken in French feet; therefore, reckoning the diameters of the columns $5\frac{57}{100}$ ſuch feet, the extent of the front between the outer ſurfaces of the angular columns, reduced to Engliſh meaſure, will be found nearly 102 feet two inches, that of the ſide 225 feet ten inches and a half. But meaſures obtained by girting the circumferences of columns being little to be depended upon, and the name of this temple, *Hecatompedon*, implying that it extended a hundred feet, induced Mr. Stuart to examine into the meaſure of the Attic foot. For this purpoſe he compared the length of the lower ſtep in front with its length on the ſide, and found them incommenſurable; neither were the front and ſide lengths of the ſtep above it commenſurable with each other. But the third ſtep, on which the columns of the portico ſtand, meaſured 101 feet $1\frac{7}{10}$ inch Engliſh in front, and 227 feet $7\frac{1}{20}$ inch on each ſide, which are ſo nearly in the proportion of 100 to 225, that, had the greater meaſure been one-fourth of an inch leſs, it would have been deficient of it.

The frieze which ornamented and ſurrounded the external part of the cell, as mentioned by Sir George Wheler, repreſented the panathenaïc pomp or proceſſion; part of which was copied by a young Flemiſh painter, employed by the marquis de Nointel, in 1674, by which means the reſemblance of theſe beautiful figures, and their magnificent effect, are in ſome meaſure preſerved to the moderns. With reſpect to the heads of Adrian and Sabina, in the weſtern pediment, Mr. Stuart was of opinion that their faces were put upon two of the ancient figures, in compliment to that emperor when he repaired Athens; and which was no uncommon practice with the Romans in many of their conquered cities. Mr. Stuart was alſo of opinion that the ſtyle of this temple was an hypœthros, with eight columns in front.

In the interior of this temple ſtood the ſtatue of Minerva, made of ivory, twenty-ſix cubits or thirty-nine feet high. It was decked with pure gold to the amount of forty talents, ſo diſpoſed by Phidias, as to be taken off and weighed if required. According to the value of gold at that time, forty talents muſt have been worth upwards of 120,000l. ſterling! The goddeſs was repreſented ſtanding, with her veſtment reaching to her feet. Her helmet had a ſphinx for the creſt, and on the ſides were griffins. The head of Meduſa was on her breaſt-plate. In one hand ſhe held her ſpear, and in the other ſupported an image of Victory about four cubits high. The battle of the Centaurs and Lapithæ was carved on her ſandals; and, on her ſhield, which lay at her feet, the war of the gods and giants, and the battle of the Athenians and Amazons. By her ſpear was a ſerpent, in alluſion to the theory of Erichthonius; and, on the pedeſtal, the birth of Pandora. The ſphinx, the Victory, and ſerpent, were accounted eminently wonderful. This image was placed in the temple in the firſt year of the 87th Olympiad, in which the Peloponneſian war began. The gold was ſtripped off by the tyrant Lychares, when Demetrius Poliorcetes compelled him to fly. The ſame plunderer plucked down the golden ſhields in the acropolis, and carried away the golden Victories, with the precious veſſels and ornaments provided for the Panathenæan feſtival.

This temple remained entire for many ages after it was deprived of the goddeſs. The Chriſtians converted it into a church, and the Mahometans into a moſque. The Venetians under Koningſmark, when they beſieged the acropolis in 1687, threw a bomb, which demoliſhed the roof, and, ſetting fire to ſome powder, did great damage to the fabric. The floor, which is indented, ſtill witneſſes the place of its fall. This was the ſad forerunner of farther deſtruction; the Turks breaking the ſtones applied them to the building of a new moſque, which ſtands within the ruin; with theſe they repair their houſes, and the walls of the fortreſs. The vaſt pile of ponderous materials, which lay ready, is diminiſhed; and the whole ſtructure will gradually be conſumed and diſappear.

The temple of Minerva in 1676 was, as Wheler and Spon aſſert, the fineſt moſque in the world, without compariſon. The Greeks had adapted the fabric to their ceremonial, by conſtructing a window at the eaſt end; for before it was enlightened only by the door; obſcurity being preferred under the heathen ritual, except on feſtivals, when it yielded to ſplendid illuminations: which is the reaſon why temples are commonly found ſimple and unadorned on the inſides. In the wall beneath the window were inſerted two pieces of the ſtone called *phengites*, a ſpecies of marble diſcovered in Cappadocia in the time of Nero; and ſo tranſparent that he erected with it a temple to Fortune, which was luminous within when the door was ſhut. Theſe pieces were perforated, and the light which entered was tinged with a reddiſh or yellowiſh hue. The picture of the Panagia, or Virgin Mary, in Moſaic, remained; and the Turks had white-waſhed the walls, to obliterate the portraits of ſaints, and the other paintings with which the Greeks decorate their places of worſhip; and had erected a pulpit on the right hand for their iman or reader. In the portico were ſuſpended a few lamps, to be uſed in the moſque at the ſeaſons when the muſſulmans aſſemble before day-break, or to be lighted up round the minaret, as is the cuſtom during their Ramazan or Lent. Even in its preſent ſtate, it is not eaſy to conceive a more ſtriking object than this temple; every ſpectator, on approaching it, will find himſelf not a little affected by ſo ſolemn an appearance of ruined grandeur. The columns of the periſtyle have all been removed: but on the floor may be ſeen the circles which directed the workmen in placing them; and at the farther end is a groove acroſs it, as for one of the partitions of the cell. The receſs erected by the Chriſtians is demoliſhed; and from the rubbiſh of the cieling the Turkiſh boys collect bits of the Moſaic, of different colours, which compoſed the picture of the Virgin. We are told at Smyrna that this ſubſtance had taken a poliſh, and been ſet in buckles. This cell is about half demoliſhed; and in the columns which ſurrounded it is a large gap near the middle. The annexed Plate, taken from the work of Meſſrs. Stuart and Revett, furniſhes an exact repreſentation of the preſent ſtate of the ruin of this temple, which was reckoned one of the fineſt in the world. In the ſpace between the columns is ſeen the preſent moſque of the Turks, who have long been in poſſeſſion of the country; and in the front are ſome of the private dwellings of that people, formed out of the ruins. It is further to be lamented, that the Turkiſh government have lately ordered all the ancient remains of the once magnificent city of Athens to be taken down, and converted into materials for building and repairing their public works and fortifications.

Of the HOUSES of the ANCIENTS.

Reſpecting the manſions or dwellings of the ancients, we can only conjecture the ſituation of their various apartments, from combining the deſcriptions of ſeveral claſſic authors; little of ſuch buildings remaining to guide our reſearches. Thoſe of which traces are found, ſuch as the baths of Titus, Caracalla, Diocleſian, the villas of Adrian, Mecænas, &c. are of little uſe to this enquiry, their extent and magnificence exceeding that of common ſtructures. To ſpeculate on the accounts left by Pliny, and others, may not be unentertaining; perhaps not without its uſes: for, from the numerous, ſtudied, and multiplied, conveniences of their villas, ſome new ideas of plan and diſtribution may ariſe; the comforts and conveniences of life are ſo valuable, that they ſhould be ſought from every ſource. The Greeks and Romans were particularly ſolicitous to keep the body in health, by conſtant and ſtrong exerciſe; to this purpoſe, it was neceſſary they ſhould have ſpacious covered places, that in bad weather they might not be obſtructed in their diverſions or games, which tended as well to the health and ſtrength of the body, as to that of the mind. Under this impreſſion, it is not to be wondered their gardens or pleaſure-grounds were extenſive, and poſſeſſed all thoſe conveniences which conduced ſo much to health and delight, as freely enjoying the freſh air in the Geſtatio, or the Xyſtus.

Of the private buildings or houſes of the Greeks, the following account is given by Vitruvius. "The Greeks uſe no atrium, but from the gate of entrance they make a paſſage of no great breadth; on one ſide of which is the ſtable, on the other the porters' rooms, and theſe are directly terminated by the inner gate: paſſing on, is the periſtylium, having porticoes on three ſides; on the ſouth ſide are two antæ, which ſupport and form a paſſage, within which, (i. e. to the right and left,) are the great œci, in which the miſtreſs of the family and the work-women reſide. To the right and left are cubiculi, or chambers, of which one is called *Thalamus* the other *Amphithalamus*; and under the porticoes of the periſtyle are the common dining-rooms, chambers, and family-rooms. This part of the edifice is called *Gynæconitis*.

Through the paſſage with the antæ, is a larger houſe, having a more ſpacious periſtyle, in which are four porticoes of equal height, or ſometime the one which looks towards the ſouth has higher columns; and this periſtyle, which has one portico higher than the reſt, is called *Rhodian*, from a nobleman of Rhodes, who firſt introduced that ſtyle of building. In theſe houſes they have elegant veſtibules, magnificent gates, and the porticoes of the periſtyle are ornamented with ſtucco, plaſter, and lacunariæ, compartments. In the portico which looks to the north, is the cyzican triclinium and the pinacœtheca; to the eaſt, are the libraries; to the weſt, the exhedræ; and in thoſe looking to the ſouth, are the ſquare œci, ſo large that they may eaſily contain four ſets of dining-couches, with the attendants, and a ſpacious place for the uſe of the games; in theſe halls the men hold their convivial entertainments, for it is not cuſtomary in Greece for the mothers of families to lie down to dine. This periſtylium and part of the houſe is called *Andronitides*, becauſe here the men only are invited, without being accompanied by the women.

On the right and left, alſo, ſmall houſes are erected, having proper gates, dining-rooms, and convenient chambers, that when ſtrangers arrive, they may not enter the periſtylium, but be received in this hoſpitalium; for when the Greeks were more refined and opulent, they prepared triclinia, cubicula, and proviſions for ſtrangers; the firſt day inviting them to dinner, afterwards ſending them poultry, eggs, herbs, fruits, and other productions of the country. Maſters of families, therefore, when they abode in the hoſpitium, ſeemed not to be from home, enjoying the full liberty of retirement in theſe apartments. *Vitruv. lib. 6. c.* 10.

Reſpecting the houſes of the Romans, we have no better guide than Vitruvius, who, after deſcribing ſuch as are proper for merchants, bankers, &c. obſerves, "Thoſe of the nobles, who bear the honours of magiſtracy, and decide the affairs of the citizens, ſhould have a princely veſtibule, lofty atrium, (hall,) and ample periſtylium, with groves and extenſive ambulatories, erected in a majeſtic ſtyle; beſides libraries, pinacothecas, (picture-rooms,) and baſilicas, decorated in a manner ſimilar to the magnificence of public buildings; for in theſe places both public affairs and private cauſes are oftentimes determined."

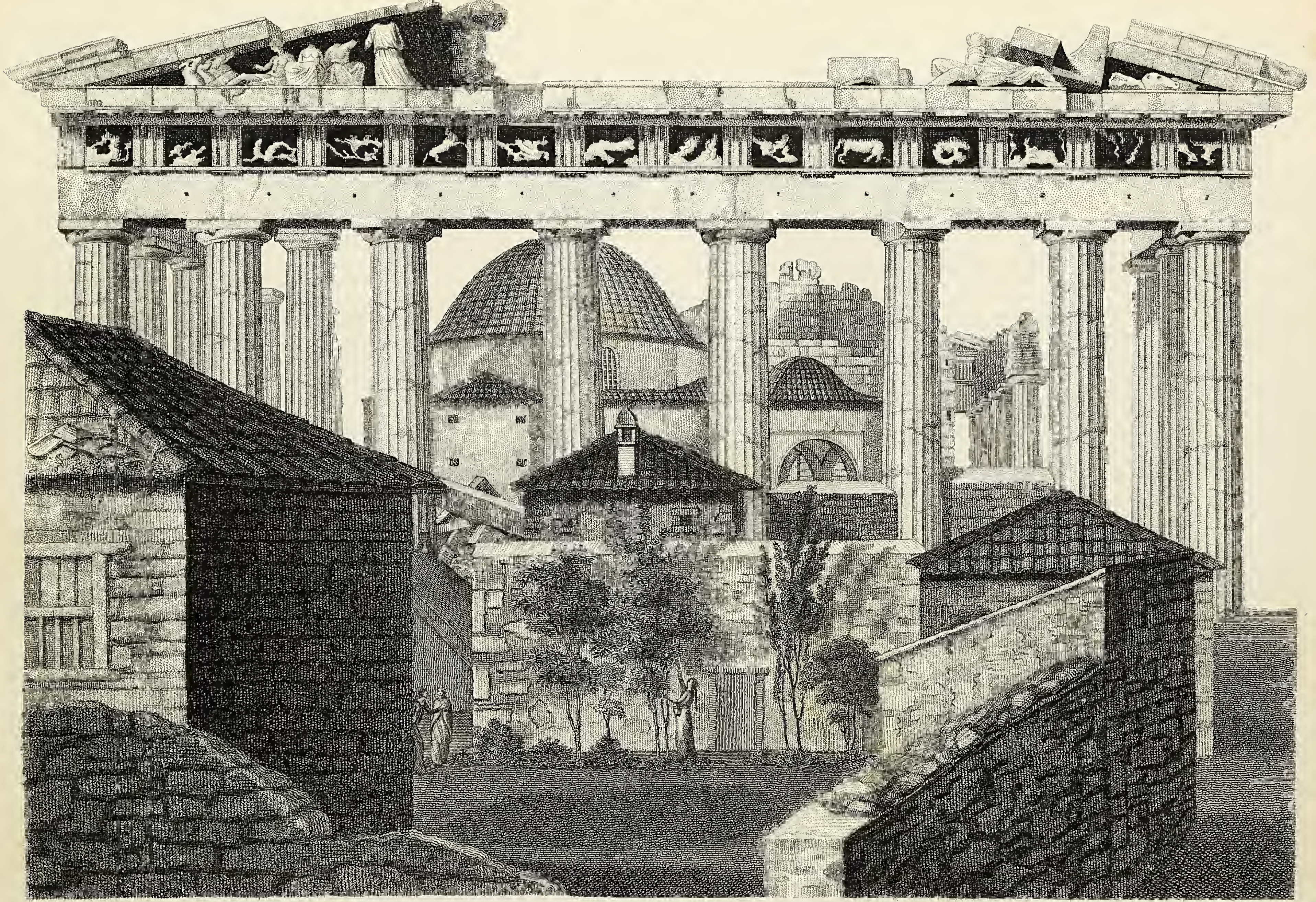
From Vitruvius, and other writers, the following may be conſidered as nearly the uſual mode of diſtribution: The part which firſt preſented itſelf was the veſtibulum, or what we call the portico; paſſing this, you entered the atrium, or hall; at the extremity of which was the tablinum, or repoſitory for books, records, &c. From the ſides of the atrium you paſſed by alæ, or ailes, to the cavædium, which was an open court, ſurrounded by a portico, or piazza, at the extremity of which was the baſilica, or place to adminiſter juſtice, &c. The triclinia, or dining-rooms, with their procœton, or room for attendants; the cubicula or chambers, with the baths, were diſpoſed on the ſides of the cavædium; alſo on the ſides of the baſilica were the pinacotheca, or rooms for pictures and library; paſſing all theſe apartments, you entered the periſtylium, which was as ſpacious as poſſible, and ſurrounded with a portico, or piazza; this was always of an oblong form; at the extremity of the periſtylium were œci, or halls, of which Vitruvius mentions the Corinthian, the Tetraſtyle, the Egyptian, and the Greek, or Cyzican.

The Corinthian œci have columns placed either on the podium (dado), or on the floor; and above have an architrave and cornice. The Egyptian had the columns detached from the wall, in the manner of a periſtyle; the ſpace between the columns and the wall was covered with a pavement, and formed a walk round. This range of columns ſupported an entablature, on which was placed another range of columns, one-fourth part ſmaller than the former, between which were the windows. The Greek or Cyzican œci were ſituated towards the north, generally had a view of the garden, with folding-doors in the middle; they had alſo folding-windows to the right and left,

that

Plate IX.

ARCHITECTURE



J.Chapman sculp.

An East View of the Ruin of the Parthenon, or Temple of Minerva;
with the interior Part converted into a Mosque, by the Turks.

London publish'd as the Act directs Sep.r 2.1797 by J.Wilkes.

that the garden might be ſeen. The Tetraſtyle œci, from the name, appears to have had only four columns, and conſequently was of the leſs enriched ſort.

The Roman villas conſiſted of three parts, one called the *urbana*, a part where the maſter and his family dwelt, the other the *ruſtica*, deſtined for the uſes of huſbandry; and the third the *fructuaria*, or receptacle for the fruits of the earth. In the choice of ſituation and aſpect, the Romans were very particular; the latter requiring peculiar attention, as only by the aſpect of the buildings and rooms could they be rendered conveniently habitable in bad weather; glaſs for windows being then unknown, and its ſubſtitutes coſtly. The ſubſtance uſed inſtead of glaſs, was a ſtone called *lapis ſpecularis*, a ſpecies of talc, according to Pliny's natural hiſtory; which, naturally ſplitting into thin tranſparent plates or lamina, was fit for the purpoſe: it has a ſimilar application now, for objects to be viewed by the microſcope.

Vitruvius has given us the following rules: the winter triclinium (dining-room) and bath ſhould look to the winter's declining ſun, becauſe the afternoon light is there uſeful; beſides the weſtern ſun ſhining thereon produces heat, and makes that aſpect warm and pleaſant in the evening; bed-chambers and libraries ſhould look to the eaſt, for in theſe the morning light is required; it is alſo proper that the books in libraries may not decay, for in thoſe that look to the ſouth and weſt, they will be damaged by damps and worms, which the humid winds generate and nouriſh. The ſpring and autumn triclinium ſhould look to the eaſt, for the windows being then turned from the ſun, proceeding weſtward, render thoſe places temperate at the time they are generally uſed. The ſummer triclinium ſhould look to the north, becauſe this aſpect is not like the others rendered hot at the ſummer ſolſtice; for, being turned from the courſe of the ſun, it remains always cool, and, when uſed, is ſalubrious and pleaſant. To the ſame aſpect alſo ſhould be diſpoſed pinacotheca (picture-rooms), as well as embroidering and painting rooms, that the colours uſed in the works, on account of the equality of the light, may remain unchanged.

The better to convey an adequate idea of the extent, accommodation, and grandeur, of the villas of the Romans, we ſhall add the conſul Pliny's deſcription of his villa at Laurentinum. It may be proper to obſerve, that this villa was conſidered as on a *ſmall* ſcale. After deſcribing the route, the views on the road, &c. he adds, "My villa is large enough to afford a convenient, though not ſumptuous, reception for my friends. The part which firſt preſents itſelf is the atrium, (court-yard,) plain, but not mean; then the portico, in form of the letter O, which ſurrounds a ſmall but pleaſant area; this is an excellent retreat in bad weather, being ſheltered by glazed windows (of *lapis ſpecularis)*, but more by the projection of the roof. Beyond the portico is a pleaſant cavædium, (open court;) paſſing which, is a handſome triclinium, which advances upon the ſhore, ſo that it is gently waſhed by the waves, when the ſouth-weſt wind blows. On every ſide are folding-doors, or windows as large, ſo that from the ſides and the front you enjoy a proſpect as it were of three ſeas, and backwards are ſeen the cavædium, the portico, and the area; again the portico and atrium terminated by woods and diſtant mountains. On the left of the triclinium, but not ſo forward, is a large cubiculum, (chamber or apartment,) and then a ſmaller one, where one window admits the riſing and another the ſetting ſun. From hence you view the ſea rather more diſtant, but more ſecurely. This cubiculum and triclinium, by their projecture, form an angle, which not only retains but augments the heat of the ſun's rays.

"Here then is my hybernaculum, (winter room or apartment,) and the gymnaſium (place of exerciſe) for my family, which is never incommoded by any winds but ſuch as bring cloudy weather, and deſtroy the otherwiſe ſerene ſituation of the place. Adjoining to this angle is a cubiculum of a curved or round form, the windows of which admit the ſun of conſequence through its whole courſe. In the walls are inſerted library preſſes, furniſhed with books, more for amuſement than ſtudy; cloſe to this is the dormitorium, (ſleeping-room,) ſeparated by a ſpace, having a covering of wood-work, which collects and diſtributes the vapour to the room, in ſalubrious temperament. The remainder of this wing is allotted to my ſervants and ſlaves, yet is generally ſufficiently neat for viſitors. On the right ſide of the triclinium is a moſt elegant cubiculum, with another large cubiculum, or moderate cænatio, (common eating or ſupper room,) which receives light both from the ſun and the ſea; after this is a cubiculum, with a procæton, (ſervants room,) for height a ſummer but for ſhelter a winter apartment, being ſkreened from all winds; a wall only ſeparates another cubiculum, with a procæton. There you enter the ſpacious and extenſive cella frigidaria of the bath; againſt the walls of which are two projecting baptiſteria, ſufficiently large to ſwim in; joining to this is the unctuarium, the hypocauſtum, and propnigeon, of the bath; and two other cells, more elegant than ſumptuous. Skilfully contrived, adjoins the callida piſcini, (warm bath,) where thoſe who ſwim enjoy a view of the ſea; not far diſtant is the ſphæriſterium, (tennis-court,) of a circular form, which enjoys the warmeſt rays of the declining ſun. Here ariſes a turris, (pavilion or ſummer-houſe,) under which are two diætæ, (ſuite or ſet of apartments,) and two alſo above, beſides a cænatio, from which is a beautiful proſpect of the ſea, the diſtant coaſt, and ſeveral pleaſant villas; there is alſo another turris, containing a cubiculum, expoſed to the riſing and the ſetting ſun; behind this is an apotheca and horreum, (cabinets or ſtore-rooms,) and underneath a triclinium, where the noiſe of the ſea is not heard but only in ſtorms, and then but faintly. This looks on the geſtatio, (a place to exerciſe on horſeback or in a carriage,) and the garden which it ſurrounds.

"The geſtatio is encompaſſed with box, or roſemary where the box is wanting; for box, when well ſheltered, flouriſhes much, but withers if expoſed to the wind or weather, or to the ſpray of the ſea. To the inner circle of the geſtatio is joined a ſhady row of young vines, with a walk, ſoft and pleaſant even to the naked feet. The garden abounds with fig and mulberry trees, to which the ſoil is ſuitable, but not to other trees. The proſpect here, not leſs pleaſant than that of the ſea, is enjoyed from a cænatio rather diſtant from the ſea; on the back it is encompaſſed with two diætæ, whoſe windows look to the veſtibule of the villa, and to a fruitful kitchen garden. Hence a crypto-porticus, (a long incloſed room or portico,) extends, for ſize comparable to a public building, with windows on both ſides: thoſe next the ſea the moſt numerous; on the garden ſide they are ſingle, with fewer in the upper row. Theſe, when the day is ſerene and calm, are all opened; but, when the wind is troubleſome, thoſe on the oppoſite ſide are opened without any inconvenience. Before the crypto-porticus is a xyſtus, (a ſpacious place for exerciſe, or a terrace,) fragrant with violets, in which the heat of the ſun is increaſed by the reflection of the crypto-porticus, which at the ſame time keeps off the north-eaſt wind; wherefore it is hot in the front and cool in the rear; it alſo ſkreens from the ſouth-weſt and ſeveral other winds. Theſe are its delights in winter, but much greater does it afford in ſummer; for before mid-day the xyſtus, and after the geſtatio, and neighbouring parts of the garden, are made temperate by its ſhadow, which is longer or ſhorter, as the day proceeds. The building is alſo the cooleſt when the ſun ſhines moſt intenſely on the roof; by opening the windows the weſtern breezes are enjoyed, and it is therefore never clouded by thick or ſtagnant air. At the top of the xyſtus, projecting from the crypto-porticus, is the diætæ of the garden, and theſe are my delight; for here, in truth, have I placed my affection. In this is an heliocaminus, (an apartment made warm by the ſun,) one ſide of which looks to the xyſtus, the other to the ſea, and both to the ſun. From the folding-doors is ſeen the cubiculum, from the windows the crypto-porticus; on the ſide next the ſea, and oppoſite the wall, a very elegant zotheca (a cloſet or ſmall room) recedes, to which a cubiculum is either added, or ſeparated by means of glazed windows and curtains. Here are contained two chairs and a bed, from the foot of which you have a proſpect of the ſea; from the back, of the neighbouring villas; and from the head, of the woods: each window giving a particular proſpect, which may be ſeen either together or ſeparately. Adjoining is a cubiculum for night and ſleep; for here neither the noiſe of ſervants, the murmurs of the ſea, the roaring of tempeſts, the glare of lightning, nor even the light of day, is perceived till the windows are opened, but all is profound ſilence, which is cauſed and preſerved by an andron, (an open court or ſpace,) which is between the wall of the cubiculum and that of the garden, ſo that all noiſe is drowned by the void ſpace between. Cloſe to the cubiculum is a ſmall hypocauſtum, (ſtove,) the heat from which, by a ſmall window, may be regulated at pleaſure. Thence a procæton and cubiculum extend into the ſun, where it is enjoyed, though obliquely, from its riſe till after mid-day.

"When retired to theſe apartments I ſeem abſent from my villa; I receive great delight here, particularly in the time of the Saturnalia, when the other parts of the villa, by the accuſtomed freedom allowed at thoſe times, reſound with feſtive clamours; for here I neither obſtruct the diverſions of my ſervants, nor they my ſtudy. Theſe conveniences, theſe pleaſures, are deficient in falling water, yet near the ſurface are wells, or rather ſprings, &c." *Plinii, Epiſt. lib.* 2, *epiſt.* 17.

This copious deſcription conveys a pretty accurate idea of the extent of a Roman villa, their numerous apartments, and various and multiplied conveniences. In the deſcription of Tuſcum, by the ſame Pliny, which merits to be called in modern language a manſion more than a villa, being ſurrounded by an extenſive domain, and diſtant from Rome one hundred and fifty miles; here apartments more numerous and of greater elegance are deſcribed; and the garden or pleaſure grounds were more abundantly accommodated with extenſive buildings and conveniences; nor were theſe two villas all which were poſſeſſed by the conſul; for he writes to a friend, "I prefer my villa of Tuſcum to thoſe of Tuſculum, Tybur, and Præneſte." Theſe three, as well as Laurentinum, were in the vicinity of Rome. On the borders of Lake Larium, his native place, now called Lake Como, on the confines of Switzerland, he mentions (in Epiſt. 7, lib. 9.) having ſeveral ſeats, two of which afforded him particular delight; and, from their ſolemn and gay ſituations, he called one tragedy, the other comedy; from one, out of the bed-chamber, almoſt from the bed, you might angle in the lake below.

Of neither of theſe villas are there any remains. What has been traced of the Tyburtine villa of Adrian, according to the plans publiſhed by Piraniſi, ſhew it to have been of an amazing extent: here was, each upon a grand ſcale, an hippodrome, a naumachia, a theatre, a palæſtra, a nymphæum, a caſtle for a guard, with a temple to Mars, a piſcina, a bibliotheca, a ſtadium, a veſtibulum of various apartments, being the entrance to the baths, ſtadium, &c. &c. baths, a pretorium, a pinacotheca, an hoſpitalium for viſitors, a canopum, an academia, an odeum and theatre, a lyceum, a palace for the emperor, with many other buildings; each of which were accommodated with various apartments, fitted up in a ſtyle of elegance and grandeur ſcarcely credible: this truly princely palace occupied a ſpace of ground about twelve hundred yards in length. The villa of Mecænas, in the neighbourhood of Tivoli, was alſo on a grand ſcale, and not leſs elegant.

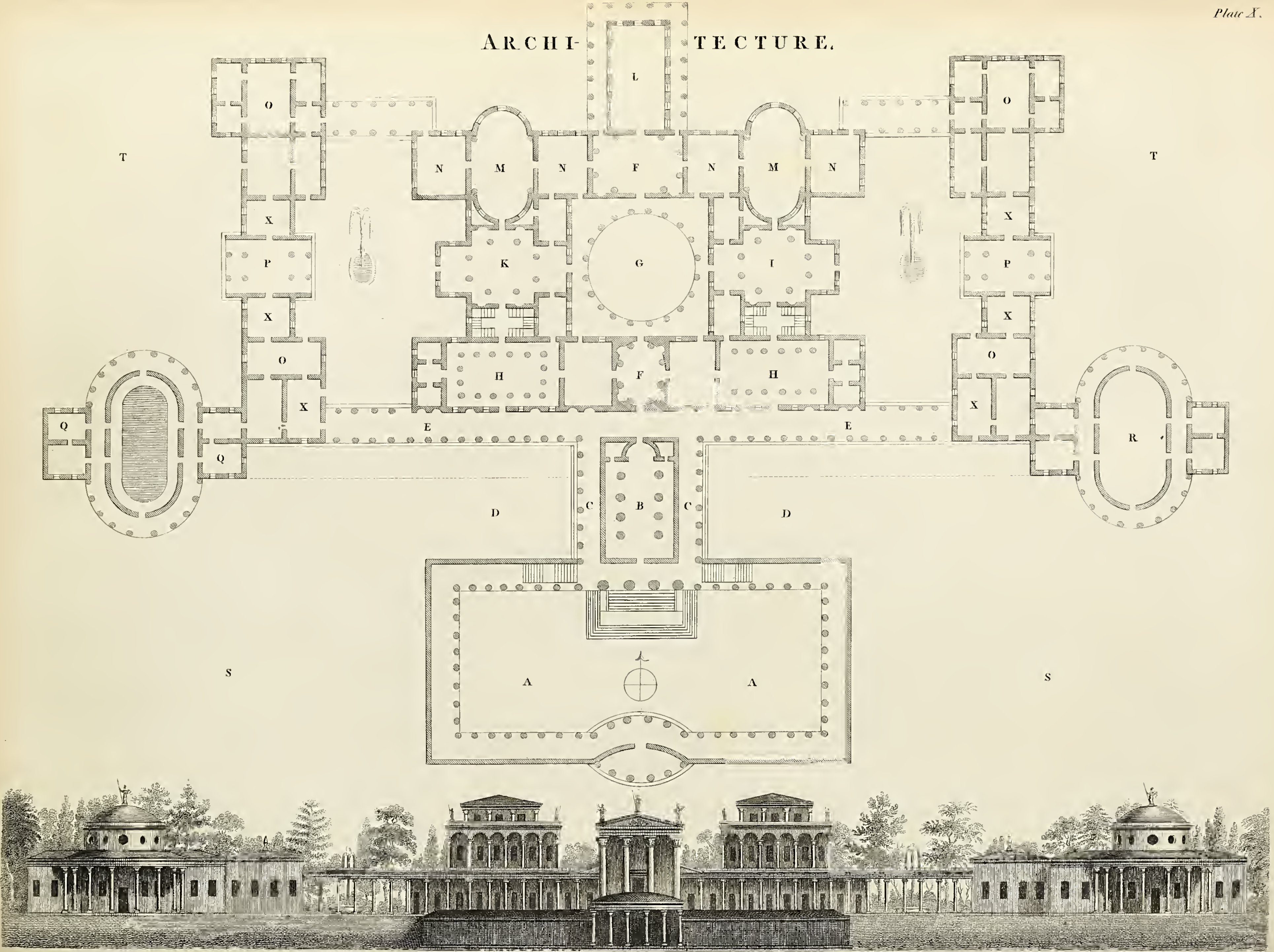
We do not find, in any of the ancient authors, that the deſcriptions of theſe villas, either Greek or Roman, are given ſo definite as to authorize any one particular diſpoſition, and no other. Vitruvius only mentions the general aſpects and connections of the different apartments; but every different villa may have varied in its particular diſtribution, according as the ſituation, nature of the ground, or other circumſtances, might render proper or neceſſary. The mode of diſtribution, conformable to the general deſcriptions of Vitruvius, Pliny, &c. is delineated in the annexed Plate of the plan and elevation of a Roman villa, of which the following is an explanation:

A, Periſtylium. B, Atrium. C, Porticus. D, Ambulatory and xyſtus. E, Crypto-porticus. F, Veſtibulum. G, Cavædium. H, Oeci. I, Library. K, Pinacotheca. L, Cyzicene œcus. M, Triclinium. N, Cubiculi. O, Dietæ, or different ſets of apartments. P, Porticus. Q, Bathing apartments. R, Gymnaſium, and rooms appertaining to the ſame. S, Pratum or lawn. T, Gardens.

Of GOTHIC ARCHITECTURE.

Though the remains of the noble edifices of ancient Greece and Rome have been meaſured and delineated with the greateſt accuracy, by architects of the higheſt eminence in their profeſſion, yet we find very few who have directed their enquiry towards the principles of that ſtyle of building called *Gothic.* This neglect may, in ſome meaſure, be attributed to a prejudice ariſing from a miſtaken notion of its having originated with a tribe of barbarians, from whom nothing good or excellent could be expected. Thus, general expreſſions, ill defined, often impoſe on the underſtanding, and lead to concluſions which have no foundation in truth. The ſenſe commonly attached to the word *barbarian,* implies almoſt every thing that degrades the human character; and therefore when we read that the mighty empire of Rome was deſolated and laid waſte by the Goths, and other barbarous nations, we conceive them to have been a wild and ſavage people, without order, diſcipline, or government, ignorant of the arts of civil life, and unexerciſed in every thing but cruelty and rapine. It ſhould, however, be recollected, that the Greeks and Romans called all nations barbarians who were not under their own government; and that the primitive ſenſe of the word implied no more than an *alien* or *foreigner.* Agreeably to this ſenſe, we are told by Mr. Gibbon, that Alaric, king of the Goths, though a barbarian, beſieging Rome, "was a Chriſtian, and a ſoldier, the leader of a diſciplined army, who underſtood the laws of war, and who reſpected the ſanctity of treaties." When he was upon the point of breaking into the city, he harangued his ſoldiers, and told them, that all the wealth in Rome was theirs, and therefore he gave them full liberty to ſeize it; but he ſtrictly enjoined them to ſhed the blood of none but ſuch as they ſhould find in arms; and, above all, to ſpare thoſe who ſhould take refuge in the holy places, eſpecially in the churches of St. Peter and St. Paul, which he named becauſe they were moſt ſpacious, and capable of affording an aſylum to great numbers of people. Accordingly, not the leaſt injury was offered to thoſe who fled to the churches, and the Goths themſelves conveyed thither, as to places of ſafety, ſuch as they were deſirous ſhould be ſpared. The idol temples, and many ſtatues of the gods that had been preſerved by ſome of the Chriſtian emperors, as excellent pieces of art, were on this occaſion deſtroyed, either by the Goths, who, though moſtly Arians, were neverthleſs zealous Chriſtians; or by a dreadful ſtorm of thunder and lightning, which fell at the ſame time on the city, as if it had been ſent on purpoſe to complete with them the deſtruction of idolatry, and aboliſh the ſmall remains of pagan ſuperſtition.

The Goths were a northern nation, the original inhabitants of Scandinavia, famed in the military art for being regardleſs of death, and inured to all the extremities of cold, hunger, and fatigue. Though rigidly abſtemious themſelves, they were celebrated for their hoſpitality and kindneſs to ſtrangers, even before they embraced the Chriſtian religion. It is even ſaid, that from their being eminently good, they were called *Goths,* by the neighbouring nations; that name, according to Grotius, and other learned writers, being derived from the German word *goten,* which ſignifies *good.* They encouraged, ſays Dio, the ſtudy



J. Pass Sculp.

Plan and Elevation of a Roman Villa

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ſtudy of philoſophy above all other barbarous or foreign nations, and often choſe kings from among their philoſophers. It is not therefore to be ſuppoſed, that the Goths were ignorant of the advantages of civil ſociety, or ſtrangers to the art of building; and though they could, in an enemy's country, raze and deſtroy the fineſt ſtructures in the world without emotion, it was becauſe they held the pride and luxury of Rome in contempt, and preferred the plain and durable ſtyle of their own edifices to the claſſical elegances of Grecian architecture. For, like the ancient Egyptians, the Goths ſeem to have been more ſtudious to amaze ſpectators with the greatneſs of their buildings, than to pleaſe the eye with the regularity of deſign, or propriety of ornament; which, in their native country, Mr. Gibbon ſays, was conſpicuous even in their long ramparts, gigantic moles, and other fabrics of original Gothic conſtruction.

The rigid temperance and auſtere manners of the northern nations, increaſed their population in ſo prodigious a degree, that immenſe numbers were compelled to migrate in queſt of new ſettlements. The Goths, particularly, had an incredible number of children, of whom they kept but one at home in each family; and hence thoſe ſwarms of them which over-ran ſo many countries. Their king Woden, who is ſaid to have firſt brought the Runic character out of Aſia, after his victories there, extended the Gothic arms all over Europe; but, inſtead of driving out the people, he only required to ſhare with them in the fruits of the earth. Hence then we ſee, that after the overthrow of the Roman empire, the Grecian architecture began to decline, and, with the ſiſter arts, was for a time in a manner loſt; the heavy Gothic ſtyle being every where introduced, though rude and inelegant as the rugged manners of its northern inventors. And thus the Goths, having incorporated themſelves with the German nations, became united with the Saxons, whom they are ſaid to have inſtructed, and taught to build. By the Saxons they were introduced into England, about the year 449; and Rapin ſaith, "that in the year 530, great numbers of Goths, with their families and attendants, came over and ſettled in Britain;" and through this channel unqueſtionably their ſtyle of architecture obtained a footing here. If we enquire what the kinds of buildings were which at that period were ſtanding in this country, what had been erected by the Roman government, and what followed in ſucceeding ages, it will ſhew us the hiſtory and progreſs of architecture in England.

When the Britons were invaded by the Romans, they had nothing among them anſwering to our ideas of a city or town. Their dwellings were ſcattered about the country, and generally ſituated on the brink of ſome rivulet for the ſake of water, and on the ſkirt of ſome wood or foreſt for the conveniency of hunting. As theſe inviting circumſtances were more conſpicuous in ſome parts of the country than others, the princes and chiefs made choice of theſe places for their reſidence; and their friends and followers, for various reaſons, built their houſes as near to them as they poſſibly could. This conſtituted an ancient Britiſh town, which is deſcribed by Cæſar and Strabo as "a tract of wood country, ſurrounded by a mound and ditch, for the ſecurity of themſelves and their cattle againſt the incurſions of their enemies." Again, it is ſaid, "The foreſts of the Britons are their cities; for, when they have incloſed a very large circuit with felled trees, they build within it houſes for themſelves and hovels for their cattle. Theſe buildings are very ſlight, and not deſigned for long duration." The palaces of the Britiſh princes were probably built of the ſame materials, and on the ſame plan, with the houſes of their ſubjects, and differed from them only in ſolidity and magnitude.

As ſoon, however, as the Romans began to form ſettlements and plant colonies in this iſland, they not only built a prodigious number of ſolid, convenient, and magnificent, ſtructures for their own accommodation, but they exhorted, encouraged, and inſtructed, the Britons to imitate their example. This was one of the arts which Agricola, the moſt excellent of the Roman governors, employed to civilize the Britons, and reconcile them to the Roman government. "The following winter (ſays Tacitus) was ſpent by Agricola in very ſalutary meaſures. That the Britons, who led a roaming and unſettled life, and were eaſily inſtigated to war, might contract a love for peace and tranquillity, by being accuſtomed to a more pleaſant way of living, he exhorted and aſſiſted them to build houſes, temples, courts, and market-places. By praiſing the diligent, and reproaching the indolent, he excited ſo great an emulation among the Britons, that after they had erected all thoſe neceſſary edifices in their towns, they proceeded to build others merely for ornament and pleaſure, as porticoes, galleries, baths, banqueting-houſes, &c." From this time, which was A. D. 80, to the middle of the 4th century, architecture, and the arts connected with it, flouriſhed in this iſland; and a ſimilar taſte for erecting ſolid, convenient, and graceful, buildings, which had long prevailed in Italy, was introduced into Britain. On the decline of the Roman power, however, and the conſequent invaſions of foreign enemies, the ſpirit of building quickly ſubſided in Britain, and ſhortly after not a veſtige remained of the Roman fabric. For, from the devaſtations made at firſt by the Saxons, for the ſpace of 234 years, to wit, from the year 455 to 689, when Cadwalladar, the laſt king of the Britons, loſt the whole kingdom; and then immediately afterward, for the further ſpace of 129 years, whilſt the Saxon kings of the heptarchy were ſtriving among themſelves for the ſovereignty, which ended in the year 818, making 363 years of deſtructive warfare in the whole; when Egbert, king of the Weſt Saxons, reduced all the others to his ſubjection, and became the firſt ſole Saxon king of England. By this time moſt of the public and private buildings, which had been erected by the Britons and Romans, were laid in one promiſcuous ruin; nothing being to be ſeen, ſaith Gildas, but churches burnt down and deſtroyed to the very foundations, and the inhabitants extirpated by the ſword, and buried under the ruins of their own houſes, the common reſult of cruel and relentleſs war!

Maſonry, and a taſte for building, is ſaid to have been greatly encouraged in England, towards the end of the ſeventh century, by the famous Wilfrid biſhop of York, and afterwards of Hexham, and Benedict Biſcop, founder of the abbey of Weremouth. Wilfrid, who was one of the moſt ingenious, active, and magnificent, prelates of the ſeventh century, was a great builder, and erected ſeveral ſtructures at York, Rippon, and Hexham, which were the admiration of the age in which he flouriſhed. Benedict Biſcop was the cotemporary and companion of Wilfrid, and had the ſame taſte for the arts. Having obtained a grant of a conſiderable eſtate from Egfrid king of Northumberland, near the mouth of the river Were, he there founded a monaſtery, A. D. 672. When the building was far advanced, he ſent agents into France to procure if poſſible ſome glaſs-makers, at that time unknown in England, and to bring them over to glaze the windows of his church and monaſtery. Theſe agents were ſucceſsful, and brought ſeveral glaſs-makers with them; who not only performed the work required by Benedict, but inſtructed the Engliſh in the art of making glaſs for windows, lamps, drinking-veſſels, and other uſes.

But though the art of building edifices of ſtone, with windows of glaſs and other ornaments, was thus encouraged by theſe two prelates, it appears from many incidental hints in our ancient hiſtorians, that ſtone buildings were very rare, and that, when ſuch buildings were erected, they were objects of great admiration. In the other parts of this iſland architecture was, as might naturally be imagined, in a ſtill leſs flouriſhing ſtate. It appears indeed to have been almoſt entirely loſt among the poſterity of the ancient Britons after they had retired to the mountains of Wales. The chief palace of the kings of Wales, where the nobility and wiſe men aſſembled for making laws, was called the *white palace*, becauſe the walls of it were woven with white wands which had the bark peeled off. By the laws of Wales, whoever burnt or deſtroyed the king's hall or palace was obliged to pay one pound and eighty pence, beſides paying one hundred and twenty pence for each of the adjacent buildings, which were eight in number, viz. the dormitory, the kitchen, the chapel, the granary, the bake-houſe, the ſtore-houſe, the ſtable, and the dog-houſe. From hence it appears, that a royal reſidence in Wales, with all its offices, when theſe laws were made, was valued at five pounds and eighty pence of the money of that age, equal in quantity of ſilver to ſixteen pounds of our money, and in efficacy to one hundred and ſixty. This is certainly a ſufficient proof of the meanneſs of thoſe buildings which were only of wood. Even the caſtles in Wales, in this period, that were built for the ſecurity of the country, appear to have been conſtructed of the ſame materials, namely, of wands with the bark peeled off, and wrought into wicker in the manner of our baſkets. Such were the materials which formed the ſide walls of edifices deſigned for defence againſt the attacks of an enemy, and whence it was that the laws required the king's vaſſals to come to the building of theſe caſtles with no other tool than an axe.

By the Scots and Picts of this age, the art of building ſeems not to have had much improvement. In the beginning of the eighth century, however, they began to make ſome advances, as appears from ſome ſingular edifices yet remaining in Scotland. Theſe buildings are all circular, and ſo extremely various in ſtyle, that they rather ſeem to be the works of different ages and nations, than of one age and country. The largeſt of theſe ſtructures are of an extraordinary ſtyle of architecture, and are deſcribed in nearly the following manner by Mr. Gordon, a modern antiquary, who viewed them with great attention. "Having arrived at the barrack of Glenbeg, I was conducted to the remains of theſe ſtupendous fabrics, ſeated about two miles from thence in a valley called Glenbeg, in which four of them anciently ſtood. The firſt I met with is called Malcolm's Caſtle; the ſecond, Caſtle Chonel. About a quarter of a mile further, upon the bank of a rivulet, which paſſes through the middle of the glen, ſtands that which is called Caſtle Tellve. I found it compoſed of ſtones without cement; not laid in regular courſes after the manner of elegant buildings, but rudely and without order. Thoſe toward the baſe were pretty large; but thoſe on the top ſcarcely exceeded the thickneſs of a common brick. I was ſurpriſed to find no windows on the outſide, nor any manner of entrance into the fabric, except a hole towards the weſt at the baſe." "But (continues he), to give a more complete idea of theſe buildings, I ſhall deſcribe the fourth ſtructure, called Caſtle Troddan, which is by far the moſt entire of any of that country, and from whence I had a very clear notion how theſe fabrics were originally contrived. The area of this building makes a complete circle; and there are four doors in the inner wall, which face the four cardinal points of the compaſs. Theſe doors are each eight feet and a half high and five feet wide, and lead from the area into the cavity between the two walls which run round the whole building. The perpendicular height of this fabric is exactly thirty-three feet; the thickneſs of both walls, including the cavity between, no more than twelve feet; and the cavity itſelf is hardly wide enough for two men to walk abreaſt; the external circumference is 178 feet. The whole height of the fabric is divided into four parts or ſtories, ſeparated from each other by thin floorings of flat ſtones, which knit the two walls together, and run quite round the building; and there have been winding-ſtairs of the ſame flat ſtones aſcending betwixt wall and wall up to the top. Over each door are nine ſquare windows, in a direct line above each other, for the admiſſion of light; and between every row of windows are three others in the uppermoſt ſtory riſing above a cornice, which projects out from the inner wall and runs round the fabric." From the foregoing deſcription of theſe ſingular edifices it plainly appears, that they were deſigned, both for the purpoſe of defence and lodging; and, conſidering the times in which they were erected, they ſeem to have been pretty well calculated for both theſe purpoſes.

The ſtone edifices of the other kind, which were probably erected in this period, and of which ſome few are ſtill to be ſeen in Scotland, are not ſo large as the former, but more artificial. They are ſlender and lofty, with circular towers of cut ſtone, laid in regular rows, between forty and fifty feet in external circumference, and from ſeventy to one hundred feet high, with one door ſome feet diſtant from the ground. They are exactly ſimilar to the round tower of Ardmore, and ſeveral others, in Ireland. It is therefore probable that they were both built at the ſame time, which was in the 10th century, and for the ſame purpoſe, which ſome believe was for the confinement of penitents, while they were performing penance. Others are of opinion, that, as theſe towers were never found but in the neighbourhood of ſome place of divine worſhip, the original intention was, that from them the people might be called to public worſhip, by the ſound of a horn or trumpet, anſwering the end of a church bell, which had not then been invented.

During the laſt four hundred years of the Saxon monarchy, that people erected great numbers of cathedrals, churches, chapels, abbeys, monaſteries, &c. which afterwards became ſacrifices to the fury of the Danes, who committed ſuch ravages and devaſtations, particularly from the year 979 to 1017, when king Edmund was murdered by Edric, and Canute ſeized upon the kingdom, and made himſelf the firſt Daniſh king of England, that all the venerable buildings which the Saxons had raiſed, St. Paul's cathedral only excepted, were either lying in ruins, or ſo irreparably defaced, that very little judgment could be formed of what they had formerly been. By this unhappy devaſtation, poſterity was deprived, not only of the original Saxon manner of building, but alſo of the geometrical rules by which theſe ſtructures were deſigned and ſet out; for it cannot be doubted but that the rules for erecting theſe early buildings contained the rudiments of the original Gothic architecture. From this time, however, to the end of the 15th century, theſe buildings were amply reinſtated, and an improved Gothic architecture univerſally prevailed. The great and general improvements that were thus made in the fabrics of abbeys and churches, in the 11th and 12th centuries, which might be called the *age of architecture in England*, are thus deſcribed by a cotemporary writer. "The new cathedrals and innumerable churches that were built in all parts, together with the many magnificent cloiſters and monaſteries, and other apartments of monks, that were then erected, afford a ſufficient proof of the great felicity of England in the reign of Henry I. The religious of every order, enjoying peace and proſperity, diſplayed the moſt aſtoniſhing ardour in every thing that might increaſe the ſplendour of divine worſhip. The fervent zeal of the faithful prompted them to pull down abbeys and churches every where, and to rebuild them in a better manner. But, as the prodigious expence of raiſing ſuch a number of large and ſuperb ſtructures as the cathedrals, abbeys, monaſteries, and other buildings, which were now erected in England, was ſo enormous, that even to keep them in repair exceeded the ability of after-times; it may not be improper to give one example of the arts employed by the clergy and monks of this period to inflame the pious ardour of kings, nobles, and others, to contribute towards the expences attendant on building and adorning churches. When Joffred, abbot of Croyland, in Lincolnſhire, reſolved to re-build the church of his monaſtery in a moſt magnificent manner, A. D. 1106, he obtained from the archbiſhops of Canterbury and York a bull, diſpenſing with the third part of all penances for ſin to thoſe who contributed any thing towards the building of that church. This bull was directed not only to the king and people of England, but to the kings of France and Scotland, and to all other kings, earls, barons, archbiſhops, biſhops, abbots, priors, rectors, preſbyters, and clerks, and to all true believers in Chriſt, rich and poor, in all Chriſtian kingdoms. To make the utmoſt uſe of this bull, he ſent two of his moſt eloquent monks to proclaim it over France and Flanders, two other monks into Scotland, two into Denmark and Norway, two into Wales, Cornwall, and Ireland, and others into different parts of England. "By this means (ſays the hiſtorian) the wonderful benefits granted to all the contributors to the building of this church were publiſhed to the very ends of the earth; and great heaps of treaſure and maſſes of yellow metal flowed in from all countries upon the venerable abbot Joffred, and encouraged him to lay the foundation of his church." Having ſpent about four years in collecting mountains of different kinds of marble from quarries both at home and abroad, together with great quantities of lime, iron, braſs, and other materials for building, he fixed a day for the great ceremony of laying the foundation, which he contrived to make a very effectual mean of raiſing the ſuperſtructure. For, on the long-expected day, the feaſt of the holy virgins Felicitas and Perpetua, an immenſe multitude of earls, barons, and knights, with their ladies and families, of abbots, priors, monks, nuns, clerks, and perſons of all ranks, arrived at Croyland, to aſſiſt at this ceremony. The pious abbot began by ſaying certain prayers, and ſhedding a flood of tears on the foundation. Then each of the earls, barons, knights, with their ladies, ſons, and daughters, the abbots, clerks, and others, laid a ſtone, and upon it depoſited a ſum of money, a grant of lands, tithes, or patronages, or a promiſe of ſtone, lime, wood, labour, or carriages, for building the church. After this the abbot entertained the whole company, amounting to 5000 perſons, at dinner. To this entertainment they were all entitled; for the money, and grants of different kinds, which they had depoſited on the foundation ſtones, were alone ſufficient to have raiſed a very noble fabric. There are yet remaining at Croyland, magnificent ruins of this venerable ſtructure, ſufficient to form an idea of its former grandeur. The timbers were of Iriſh oak, finely carved and gilt; and pieces of it are to be found in almoſt every houſe at Croyland. It was converted into a garriſon for troops during the civil war; and its roof fell in about eighty years ago. By ſuch arts as the above, the clergy inſpired kings, nobles, and people of all ranks, with ſo ardent a ſpirit for theſe pious works, that almoſt all the ſacred edifices in England were re-built, and many hundreds of new ones raiſed from the foundation.

We ſhall now enumerate the principal buildings that were erected in this kingdom, from the beginning of the Daniſh monarchy, to wit, the year 1017, unto the reign of James I. when Inigo Jones lived, who was the firſt builder that introduced the Grecian architecture into England.

In the time of the Daniſh government, which continued but twenty-ſix years, Canute erected the church of Aſhdon in Eſſex, the abbey of St. Bennet in Norfolk, and a ſtately church and monaſtery at St. Edmundſbury; but Hardicanute, the third and laſt Daniſh king, inſtead of erecting buildings to his memory, burnt the city of Worceſter. King Edward, called the Confeſſor, came to the crown in the year 1041, and died in 1065; about which time the preſent cathedral of Glouceſter was begun. This king re-built the church of St. Peter at Weſtminſter, and a convent adjoining, which Segbert had before erected, and was afterwards deſtroyed by the Danes; he alſo new-built St. Margaret's church at Weſtminſter where it now ſtands; before which time it ſtood adjoining to the ſouth cloiſter of the old abbey, part of which is now ſtanding; and, as it is reaſonable to believe, that that building was likewiſe erected by Segbert, at the time when he built the church of St. Peter, or very ſoon afterward, the remains which now are ſtanding muſt be upwards of 1100 years old.

In the reign of William the Conqueror, who began in the year 1066, and died in 1087, the abbeys at Battel in Suſſex, at Selby in Yorkſhire, at St. Saviour's in Southwark; the priory of St. Nicholas at Exeter; and the town of Newcaſtle-upon-Tyne; were founded: the foundation of old St. Paul's cathedral was re-laid, after having been burnt by lightning; the White Tower of the Tower of London in 1078, the minſter at York, after having been burnt by the Danes; the caſtles at Durham, Oxford, Exeter, Cardiff, Nottingham, York, Lincoln, Huntingdon, Cambridge, and the cathedral and caſtle of Hereford, were all built; the caſtle of Warwick repaired; and, in 1193, the preſent cathedral at Durham was begun.

In the reign of William II. ſurnamed Rufus, who ſucceeded his father, and died in 1100, the abbeys at Shrewſbury, Merton in Surry, Lewes in Suſſex, the hoſpital of St. Leonard at York, the monaſtery at Norwich, the cathedral of Old Sarum, and Univerſity-college in Oxford, were founded. The cathedral churches of Lincoln and Wincheſter were begun; the abbey at Wenlock, a fort at Newcaſtle, a new wall about the tower of London, and a great hall or palace at Weſtminſter (270 feet in length and ſeventy feet in breadth), were all built. The city of Carliſle, with its caſtle, which had been deſtroyed by the Danes, and laid 200 years in ruins, was re-built. London-bridge was alſo re-built with timber, and the abbey of St. Alban's, and the church at Rocheſter, were repaired; and a great many caſtles were built.

In the reign of Henry I. who began in the year 1100, and died in 1135, the cathedral church of Exeter, the church of St. Mary Overy in Southwark, the new church and cathedral at Tewkſbury; the priories of Dunſtable, of the Holy Trinity (now called Chriſt's Church) London, of St. Bartholomew and its hoſpital in Smithfield, of Kenelworth, of Norton in Cheſhire, of Merton, and of Oſney near Oxford; the abbeys of Cirenceſter, Reading, Sherborne, Cumbermere, Hyde-abbey without Wincheſter, and of Merival in Warwickſhire; the monaſtery of St. John at Colcheſter, of St. Andrew at Northampton, and of Plympton in Devonſhire; the houſe of St. John of Jeruſalem near Smithfield, the college of St. Mary in the town of Warwick, and the hoſpitals of Kepar, and of St. Croſs near Wincheſter; were all founded. The priory of St. James in Briſtol; the caſtles of Briſtol, Banbury, Malmeſbury, Sherborne, Windſor, and Baynard in London; the Devizes in Wilts; and the ſtone bridges at Bow and Stratford in Eſſex (which were the firſt ſtone bridges in England); were all built. The abbey at Keynſham, the cathedral at Ely, the cathedral at Llandaff, and the caſtle at Norham on the banks of the Tweed, were begun.

In the reign of king Stephen, who began in the year 1135, and died in 1154, Briſtol cathedral was built; the abbeys of Leiceſter, of Cogſhall in Eſſex, of Furneys in Lancaſhire, of Harquilers and Feverſham in Kent, of Stratford-Langthorn near London, of Boxley in Kent, of Nuneaton in Warwickſhire, of Filtey, of Rieval, of Newbury, of Beeland, and of Kirkſtead in Yorkſhire, with many others, were founded; ſo that more abbeys (ſaith Baker) were erected in this king's reign than had been in the ſpace of one hundred years before. At Higham in Kent, a houſe for black nuns, and at Carew, a houſe for white nuns, were alſo founded; and the hoſpital of St. Katherine by the Tower was new built; as was likewiſe the cathedral church of Litchfield.

In the reign of Henry II. who began in the year 1154, and died in 1189, the abbey of Bordeſly, and Wigmore abbey, the priories of Dover, of Stoney, and of Baſinwork, and the caſtle at Rudland, and the ſtone bridge at London, were all founded. The monaſtery of St. Auguſtine in Briſtol, of Gorendon, of Leiceſter, (called St. Mary de Pratis,) of Eaton, and at Glouceſter; the caſtle of Anger in Eſſex, and a new timber bridge at London, were all built: in the year 1174, the preſent cathedral at Canterbury was begun; and in 1181, the Temple church in London was finiſhed; and in 1183 the biſhop of Canterbury's palace at Lambeth was begun.

In the reign of Richard I. who began in the year 1189, and died in 1199, the Tower wall was new built, and the ditch

ditch made about it; the preſent cathedral at Chicheſter was built; a monaſtery at Weſt Dereham in Norfolk was founded; another was begun at Wolverhampton in Staffordſhire, and the collegiate church at Lambeth was finiſhed.

In the reign of king John, who began in the year 1199, and died in 1216, the abbeys of Beaulieu in the New Foreſt in Hampſhire, and of the black monks in Wincheſter, the monaſtery of Farringdon, and of Hales-Owen in Shropſhire, were founded; Godſtale and Wraxall re-edified; the chapel at Knareſborough enlarged, and the ſtone bridge at London finiſhed.

In the reign of Henry III. who began in the year 1216, and died in 1272, the ſublime and ſtately cathedral of New Sarum, with a great number of abbeys, and St. Peter's college in Cambridge, and Baliol college in Oxford, were founded. In the year 1220, this king began the new work of our Lady's chapel at Weſtminſter, where the chapel of Henry VII. now ſtands, and laid the firſt ſtone himſelf. In the year 1245, he cauſed the walls and ſteeple of the old church of St. Peter at Weſtminſter, built by Edward the Confeſſor, to be taken down; and, enlarging the church, cauſed it to be new built with greater magnificence; which to effect, was the work of the next fifty years; at which time its weſt end came no further than the firſt columns weſt from the choir; all the part from thence, together with the two old towers, having been built ſince, at the expence of the abbots of Weſtminſter. In the year 1222, the tower and ſpire of St. Paul's, which had been burnt down in 1087, was new built; the ſtone tower was 260 feet from the ground to the top of the battlements, the height of the ſpire above the battlements was 260 feet more, making 520 feet altitude, excluſive of the ball and croſs, which was near twenty feet more. A matchleſs ſtructure, greatly exceeding the height of all buildings that have been ſince raiſed in this kingdom. The Savoy was alſo built about the year 1245; and Saliſbury cathedral finiſhed in 1258. In 1260, the curious inlaid floor or pavement, yet remaining, of jaſper, porphyry, Lydian, touchſtone, alabaſter, and ſerpentine, ſtones, was made before the high altar in Weſtminſter abbey, at the expence of Richard de Ware, an abbot of Weſtminſter.

In the reign of Edward I. who began in the year 1272, and died in 1307, Carnarvon caſtle and Barnard caſtle were built; the abbey of Vale Royal in Cheſhire, of the Ciſteaux order, and Merton college in Oxford, were founded. Baliol college in Oxford, and the church of St. Peter at Weſtminſter were finiſhed. In the reign of Edward II. who ſucceeded, and died in 1327, Oriel college, St. Mary hall in Oxford, and a church of friers in his manor of Langley, were founded.

In the reign of Edward III. who began in the year 1327, and died in 1377, Lancaſter caſtle was built; the Eaſtminſter, (an abbey of the Ciſteaux order,) near the tower of London; Clare hall, Trinity hall, and Pembroke hall, with the colleges of St. Bennet or Corpus Chriſti, and Gonville or Caius, in Cambridge; Queen's college, Exeter college, New college, Hart hall, and Canterbury college, in Oxford; the college of Cobham in Kent, and the Charter-houſe near Smithfield; were all founded. The chapel of St. Stephen at Weſtminſter, (which is now the Houſe of Commons,) and St. Michael's church, near Crooked-lane, London, were built; the chapel at Windſor augmented, and the caſtle re-edified; and the beautiful church of St. Michael, in Coventry, was begun. In this reign, abbot Nicholas Litlington built the hall, Jeruſalem chamber, and the ſouth and weſt ſide of the great cloiſter, adjoining to Weſtminſter abbey; with the granary and an adjoining tower, which was afterwards made the dormitory for the king's ſcholars.

In the reign of Richard II. who began in the year 1377, and died in 1399, Trinity hall in Cambridge, and Weſtminſter hall, with its ſtately porch, were rebuilt; and the weſtern part of Wincheſter cathedral was alſo rebuilt by William of Wykeham. In the reign of Henry IV. who ſucceeded, and died in 1413, a college at Battlefield in Shropſhire, a college at Pomfret, and St. Mary's college in Wincheſter, were all founded. The guildhall in London was begun in the year 1411; the ſtone bridge at Rocheſter, and Newgate in London, were built; the laſt by Richard Whittington, the lord-mayor; and in the reign of Henry V. who began in the year 1413, and died in 1422, Bernard's and All-Souls colleges in Oxford were founded.

In the reign of Henry VI. who began in the year 1422, and died in 1460, King's college, Queen's college, and Catherine hall, at Cambridge; Eton college near Windſor; Lincoln college, and St. Mary Magdalen college, in Oxford; were all founded. The preſent cathedral at Cheſter was begun; and the divinity-ſchool in Oxford, the college of Tatſhall in Lincolnſhire, and Leadenhall in London, were built. In the reign of Edward IV. who began in the year 1460, and died in 1483, the great church of St. Mary in Cambridge was founded; and he alſo laid the foundation of the new chapel at Windſor. London-wall was built from Cripplegate to Biſhopſgate, and Biſhopſgate was rebuilt alſo. In the reign of Edward V. and of Richard III. which began in the year 1483, and ended in 1485, no buildings of note were erected.

In the reign of Henry VII. who began in the year 1485, and died in 1509, John Iſlip, an abbot of Weſtminſter, in the year 1500, built the deanery of Weſtminſter, and ſet up the ſtatues of all the kings and queens who had been benefactors to that church. The chapel of our Lady, built at Weſtminſter by Henry III. was taken down in 1502, and a new chapel of much more conſiderable dimenſions was begun to be built in its place with ſtone, which it is ſaid was brought from Huddleſtone-quarry in Yorkſhire. This building, which is commonly called Henry VIIth's chapel, is of a very different kind of architecture from that of the abbey; indeed their difference is much greater than between any two of the Grecian orders. It is a pity the architect of this chapel did not communicate to poſterity the rules by which it was erected and adorned; it is a venerable edifice, which Leland calls "*the miracle of the world*." In this king's reign the abbey-church of Bath was built; Chriſt's college, Jeſus college, and St. John's college, at Cambridge; and the ſchool of St. Paul's, London, were all founded.

In the reign of Henry VIII. who began in the year 1509, and died in 1547, Magdalen and Trinity colleges at Cambridge; and Chriſt-church college, Brazen-noſe college, and Corpus Chriſti college, at Oxford; were founded: Hampton-court, and Whitehall, (then called York-place,) and Coventry-croſs, were all built. In the reign of Edward VI. who began in the year 1547, and died in 1553, Somerſet-houſe was built by the duke of Somerſet, in 1549. In the reign of Mary, who began in the year 1553, and died in 1558, St. John's college, and Trinity college, in Oxford, were built; and the beautiful Gothic tower of St. Mary's church at Derby was erected.

In the reign of queen Elizabeth, who began in the year 1558, and died in 1603, Sidney-Suſſex college, and Emanuel college, in Cambridge, were founded; and Jeſus college, and the public library at Oxford, were built, and furniſhed. In the reign of James I. who began in the year 1603, and died in 1625, Wadham college, and Pembroke college, Oxford; Hicks's hall near Smithfield-bars, and the banqueting-houſe at Whitehall; were built: the laſt by Inigo Jones, who now brought the Greek and Roman architecture into general uſe in England.

As to the ſtate of civil architecture during the ſame period, the houſes of the common people in the country, and of the lower burgeſſes in towns and cities, were very little improved in their ſtructure, that moſt numerous and uſeful order of men being much depreſſed in the times we are now delineating. Even in the capital city of London, all the houſes of mechanics and common burgeſſes were built of wood, and covered with ſtraw or reeds, towards the end of the twelfth century. But the palaces, or rather caſtles, of the Anglo-Norman kings, barons, and prelates, were very different from the reſidences of perſons of the ſame rank in the Anglo-Saxon times. For this we have the teſtimony of a perſon of undoubted credit, who was well acquainted with them both. "The Anglo-Saxon nobles (ſays William of Malmſbury) ſquandered away their ample revenues in low and mean houſes; but the French and Norman barons are very different from them, living at leſs expence, but in great and magnificent palaces." The truth is, that the rage of building fortified caſtles was no leſs violent among the Norman princes, prelates, and barons, than that of building churches. To this they were prompted not only by the cuſtom of their native country, but alſo by their dangerous ſituation in this iſland. Surrounded by multitudes, whom they had depreſſed and plundered, and by whom they were abhorred, they could not think themſelves ſafe without the protection of deep ditches and ſtrong walls. The conqueror himſelf was ſenſible, that the want of fortified places in England had greatly facilitated his conqueſt, and might facilitate his expulſion; and therefore he made all poſſible haſte to remedy this defect, by building very magnificent and ſtrong caſtles in all the towns within the royal demeſnes. "William (ſays Matthew Paris) excelled all his predeceſſors in building caſtles, and greatly haraſſed his ſubjects and vaſſals with theſe works." All his earls, barons, and even prelates, imitated his example; and it was the firſt care of every one who received the grant of an eſtate from the crown, to build a caſtle upon it for his defence and reſidence. The diſputes about the ſucceſſion in the following reigns, kept up this ſpirit for building great and ſtrong caſtles. William Rufus was ſtill a greater builder than his father. "This William (ſays Henry Knyghton) was much addicted to building royal caſtles and palaces, as the caſtles of Dover, Norwich, Exeter, &c. the palaces of Weſtminſter, and many others, teſtify; nor was there any king of England before him that erected ſo many and ſuch noble edifices. But this rage for building caſtles never prevailed ſo much in any period of the Engliſh hiſtory as in the turbulent reign of king Stephen, from A.D. 1135 to A.D. 1154. "In this reign (as we are told by the author of the Saxon Chronicle) every one who was able built a caſtle; ſo that the poor people were worn out with the toil of theſe buildings, and the whole kingdom was covered with caſtles." This laſt expreſſion will hardly appear too ſtrong, when we are informed, that beſides all the caſtles before that time in England, no fewer than 1115 were raiſed from the foundation in the ſhort ſpace of nineteen years!

The caſtles, monaſteries, and greater churches, of this period, were generally covered with lead, the windows glazed; and, when the walls were not of aſhlar, they were neatly plaſtered, and white-waſhed on both ſides. The doors, floors, and roof, were commonly made of oak planks and beams, exactly ſmoothed and jointed, and frequently carved. It is hardly neceſſary to obſerve, that the building of theſe great and magnificent caſtles, monaſteries, or churches, muſt have been a work of prodigious labour; and that the architects and artificers, by whom that work was planned and executed, muſt have attained conſiderable dexterity in the arts. Several of theſe architects have deſervedly retained a name in hiſtory, and are highly celebrated for their ſuperior ſkill. William of Sens, architect to archbiſhop Lanfranc in building his cathedral, is ſaid, by Gervaſe of Canterbury, to have been a moſt exquiſite artiſt both in ſtone and wood. He made not only a model of the whole cathedral, but of every particular piece of ſculpture and carving, for the direction of the workmen, and invented many curious machines for loading and unloading ſhips, and conveying heavy weights by land, becauſe all the ſtones were brought from Normandy. Matthew Paris ſpeaks even in a higher ſtrain of Walter of Coventry; who flouriſhed towards the end of this period, when he ſays, that "ſo excellent an architect had never yet appeared, and probably never would appear, in the world." This encomium was undoubtedly too high; but it is impoſſible to view the remains of ſo many magnificent fabrics, both ſacred and civil, that were erected in this period, without admiring the genius of the architects by whom they were planned, and the dexterity of the workmen by whom they were executed.

Although the Roman or Grecian architecture did not begin to prevail in England till the time of Inigo Jones, yet our communication with the Italians, and our imitation of their manners, produced ſome few ſpecimens of that ſtyle much earlier. Perhaps the earlieſt was Somerſet-houſe, above-mentioned. The monument of biſhop Gardiner, in Wincheſter cathedral, made in the reign of Mary, about 1555, is decorated with Ionic pillars. But theſe ornaments were often abſurdly introduced into the old Gothic ſtyle; as in the magnificent portico of the ſchools at Oxford, erected about the year 1613; where the builder, in a Gothic edifice, has affectedly diſplayed his univerſal *ſkill* in architecture, by giving us all the five orders together. However, moſt of the great buildings of queen Elizabeth's reign have a ſtyle peculiar to themſelves, both in form and finiſhing; where, though much of the old Gothic is retained, and great part of the new taſte is adopted, yet neither predominates; while both, thus diſtinctly blended, compoſe a fantaſtic ſpecies, hardly reducible to any claſs or name. One of its characteriſtics is the affectation of large and lofty windows: where, ſays Bacon, "you ſhall have ſometimes fair houſes ſo full of glaſs, that one cannot tell where to come to be out of the ſun."

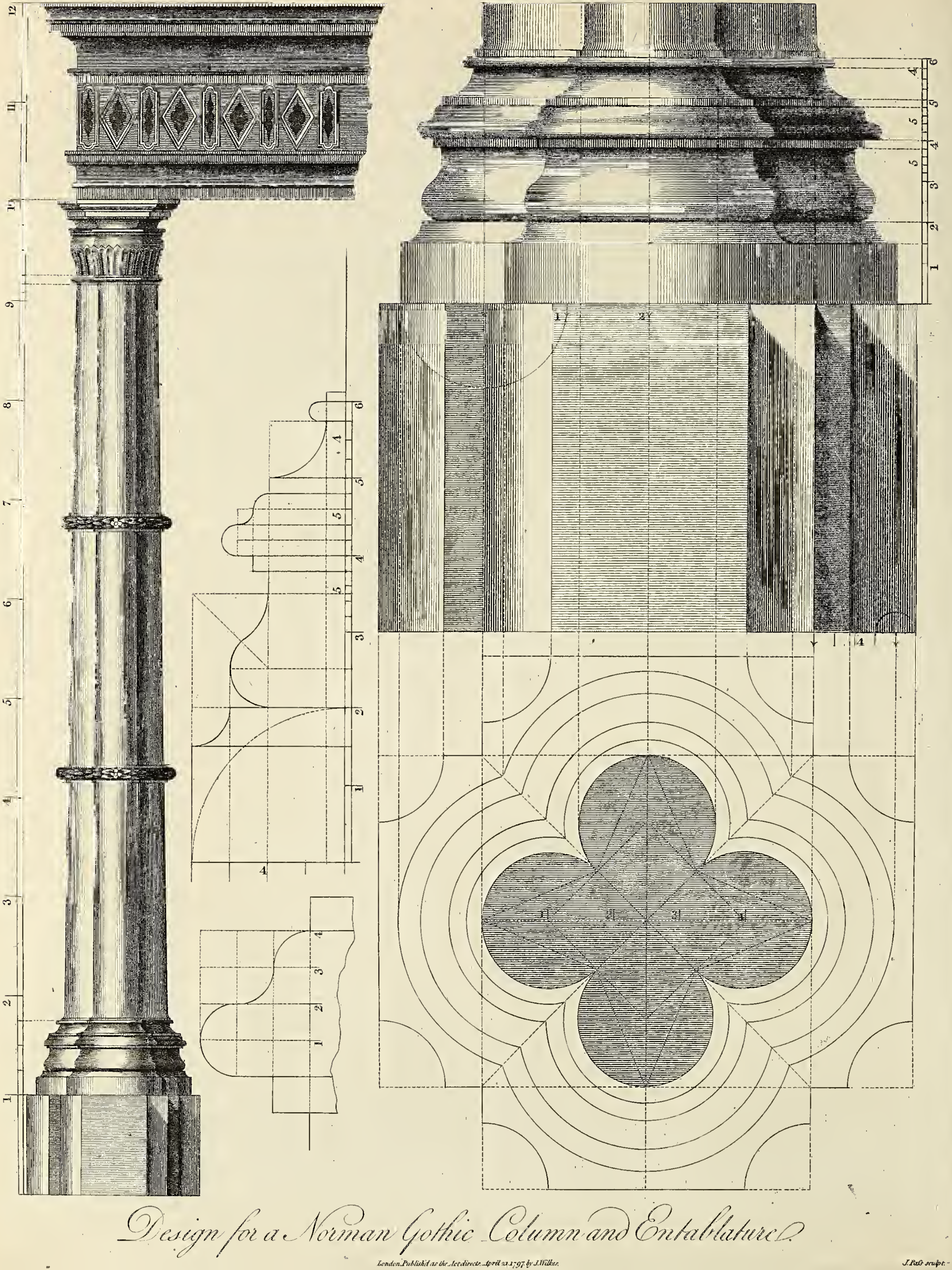
From this view of the riſe and progreſs of architecture in England, it is eaſy to perceive, that after the Romans had abandoned this country, the Gothic ſtyle was introduced here by the Saxons; and that it prevailed, at leaſt in Britain, to the end of the fifteenth century. Of this architecture there are two ſpecies; the one plain and robuſt, ſomewhat ſimilar to the Tuſcan; the other light, airy, and ornamental, in ſome meaſure reſembling the Corinthian or Compoſite. The firſt ſeems clearly diſtinguiſhable by its ſhort, round, maſſive, column; ſo thick, venerable, and bulky, as to reſemble the trunk of the moſt ſturdy oak; whence we may conceive its primary object was ſtrength and durability; while, on the other hand, it evinces great originality, and ſhews it to have been but little advanced from its priſtine ſtate. Another diſtinguiſhing feature is its ſemicircular, round, or horſe-ſhoe, arch, and plain thick walls, without buttreſſes; which ſtyle ſeems to have prevailed during the whole time of the Saxon government. The ſecond ſpecies is known by its thin or ſlender column, or cluſter of columns combined in one, reſembling a number of ſlender trunks of trees united or tied together; decorated with a pointed arch, a profuſion of ornaments, buttreſſes, and pinnacles. This improved ſtyle was introduced under the Norman government, when ſcience and the arts began to revive. It is however curious to remark the contradictory obſervations and arguments of different authors, as to the origin of theſe two kinds of building. Some abſolutely deny them to be Gothic, becauſe, they ſay, the Goths never aſſumed any dominion in England. Others impute the invention of the firſt kind to the Saxons, and the ſecond to the Saracens or Moors; while others again contend, that the firſt kind was a rude and humble imitation of the Roman architecture, and that the latter ſtyle was brought from Paleſtine, and adopted by the Normans. It nevertheleſs appears obvious, that both theſe kinds of buildings, from the great affinity of their parts, ſprung from one and the ſame ſource, and originated with the Goths; who having introduced it in its plain and ſimple ſtate, it in time acquired, from the taſte and manners of different nations, its light and airy form, receiving its finiſh, perhaps, from the more ingenious hand of the Normans. And ſince the whole maſſive ſtile was unqueſtionably the mode univerſally practiſed by the Saxons; and the light and airy by the Normans, we may, with great propriety, denominate the *firſt* the *Saxon Gothic*, and the *latter* the *Norman Gothic*, *Architecture*.

There are, however, many different opinions on this ſubject; and ſome writers who even ſtigmatize all the Gothic ſtructures as deſtitute of taſte, order, or uniformity; and ſo far below the claſſical notice of Greece and Rome, as to be deemed unworthy of notice in the ſcience of architecture. To this, biſhop Warburton, in his notes on Pope's Epiſtles, makes the following ingenious reply:—"Our Gothic anceſtors, (ſays he,) had juſter and manlier notions of magnificence, on Greek and Roman ideas, than theſe mimics of taſte, who profeſs to ſtudy only claſſic elegance; and becauſe the thing does honour to the genius of theſe barbarians, I ſhall endeavour to explain it. All our ancient churches are called without diſtinction Gothic. They are of two ſorts; the one built in the Saxon times, the other in the Norman. When the Goths had conquered Rome, and the genial warmth of religion had ripened their wits, and inflamed their piety, they ſtruck out a new ſpecies of architecture, unknown to Greece and Rome, upon original principles, and ideas much nobler than what had given birth even to claſſical magnificence. For this northern people having been accuſtomed, during the gloom of paganiſm, to worſhip the deity in groves (a practice common to all nations); when their new religion required covered edifices, they ingeniouſly projected to make them reſemble groves, as nearly as the diſtance of architecture would permit; at once indulging their old prejudices, and providing for their preſent conveniences, by a cool receptacle in a ſultry climate: and with what ſkill and ſucceſs they executed the project, appears from hence, that no attentive obſerver ever viewed a regular avenue of well-grown trees intermixing their branches overhead, but it preſently put him in mind of the long viſto through the Gothic cathedral; or even entered one of the larger and more elegant edifices of this kind, but it preſented to his imagination an avenue of trees; and this is what may be truly called the Gothic ſtyle of building. Under this idea of ſo extraordinary a ſpecies of architecture, all the irregular tranſgreſſions againſt art, all the monſtrous offences againſt nature, diſappear; every thing has its reaſon, every thing is in order, and an harmonious whole ariſes from the ſtudious application of means proper and proportionate to the end. For could the arches be otherwiſe than pointed, when the workmen were to imitate that curve which branches of two oppoſite trees make by their inſertion with one another? or could the columns be otherwiſe than ſplit into diſtinct ſhafts, when they were to repreſent the ſtems of a clump of trees growing cloſe together? On the ſame principles they formed the ſpreading ramification of the ſtone-work in the windows, and the ſtained glaſs in the interſtices; the one to repreſent the branches, and the other the leaves, of an opening grove, and both concurred to preſerve that gloomy light which inſpires religious reverence and awe. Laſtly, we ſee the reaſon of their ſtudied averſion to apparent ſolidity in theſe ſtupendous maſſes, deemed ſo abſurd by men accuſtomed to the apparent as well as real ſtrength of Grecian architecture. Had it been only a wanton exerciſe of the artiſt's ſkill, to ſhew he could give real ſtrength without the appearance of any, we might indeed admire his ſuperior ſcience, but we muſt needs condemn his ill judgment. But when one conſiders, that this ſurpriſing lightneſs was neceſſary to complete the execution of his idea of a ſylvan place of worſhip, one cannot ſufficiently admire the ingenuity of the contrivance. This too will account for the contrary qualities in what we call the Saxon architecture. The firſt places of Chriſtian worſhip were ſepulchres and ſubterraneous caverns, low and heavy from neceſſity. When Chriſtianity became the religion of the ſtate, and ſumptuous temples began to be erected, they yet, in regard to the firſt pious ages, preſerved the maſſive ſtyle, made ſtill more venerable by the church of the Holy Sepulchre, where this ſtyle was followed."

Many other ingenious men, who have carefully examined the beſt churches executed in this ſtyle, allow they are highly deſerving of attention, whether we conſider them as veſtiges of art, or monuments of the induſtry and manners of former ages. Sir William Chambers, who was certainly very competent to judge of their merit, remarks that, "to thoſe uſually called Gothic architects, we are indebted for the firſt conſiderable improvements in conſtruction; there is a lightneſs in their works, an art and boldneſs of execution, to which the ancients never arrived, and which the moderns comprehend and imitate with difficulty." Theſe circumſtances might be conſidered a ſufficient inducement to inveſtigate the principles on which thoſe edifices are built; but they have other claims to our notice. No other mode of building ſeems ſo well calculated to excite ſublime ſenſations; and if we admire the heathen temples of ancient Greece and Rome, becauſe they awaken theſe emotions in us, we muſt ſurely eſteem theſe Chriſtian temples; for they certainly produce that effect in a ſuperior degree, though, in the conſtruction of moſt of them, nothing is uſed but the ſimple produce of the quarry. And when we conſider the difficulty the architects of theſe edifices had to contend with, from the ignorance of the times, and the debaſed ſtate of ſcience and literature, we muſt confeſs they had much more merit than is generally allowed them; for, notwithſtanding theſe powerful barriers, their works diſcover traces of mathematical knowledge, of philoſophical penetration, and religious ſentiment, which future generations may perhaps ſeek for in vain, in the productions of the architects of this enlightened age.

Of the original Saxon Gothic architecture, many curious remains are yet to be traced, in ſome of our old cathedrals and monaſtic buildings. A very complete ſpecimen of this ſtyle, is the northern tranſept of the cathedral church of Wincheſter; erected about the year 1093. The weſt end of the ſame cathedral, rebuilt by William of Wykeham in the thirteenth century, affords a very ſingular inſtance of a *mixture* of both the Saxon and Norman ſtyles, which nevertheleſs produces a very ſolemn and noble effect. "This aiſle," ſays biſhop Lowth, "was originally of the Saxon architecture, with round pillars, much ſtronger than the Doric or Tuſcan, with round-headed arches and windows, and plain walls without buttreſſes. Wykeham's deſign was to rebuild the whole of it in the Norman ſtyle; but perceiving the foundation to be precarious, on low, moiſt, and looſe, ground, he determined to leave the old Saxon pillars ſtanding, and caſed them round with new work, imitating in ſome degree the cluſtered pillar and pointed arch of the Normans. Theſe circumſtances, in which ſtability and ſecurity were very wiſely in the firſt place conſulted, have been attended, however, with ſome inconvenience, as it ſeems owing to them that this building has been cenſured for want of that lightneſs and freedom, and that elegance of proportion, which might have been expected from Wykeham's known taſte in architecture, and from the ſtyle and manner of his other works in this kind; of which we have evident examples in the chapels of both his colleges, eſpecially in the weſtern part of that of New college in Oxford, which is remarkably beautiful. However, with all its defects, there is no fabric of its kind in England, after thoſe of York and Lincoln, which excels *this* part of the cathedral church of Wincheſter in greatneſs, ſtatelineſs, and majeſty." To which the laureat Warton adds, "the ſolemn proſpect through this middle aiſle to the eaſt window beyond the choir, muſt forcibly ſtrike every mind ſuſceptible of thoſe awful feelings that ariſe from the contemplation of that greatneſs and extent, which are peculiar to the proportions of Gothic architecture." Other genuine remains of the old Saxon ſtyle may be ſeen in the cathedral church of Ely, in Chepſtow priory, in the conventual church of Rumſey, in Canterbury and Glouceſter cathedrals, and in moſt of our ancient churches throughout the kingdom.

The Norman, or improved Gothic, ſays Rious, "is diſtinguiſhed by the lightneſs of its work; by the peculiar boldneſs of its elevations and ſections; and by the delicacy, profuſion, and extravagant fancy, of its ornaments; ſo peculiarly fanciful and abſurd, that its real origin can only be attributed to the Moors; whence its true appellation is Arabic, Saracenic, or Moreſque." Mr. Groſe, however,



Design for a Norman Gothic Column and Entablature.

London. Publish'd as the Act directs April 21 1797 by J. Wilkes.

J. Pass sculpt.

however, contends, that this opinion is not ſufficiently favoured by the obſervations of ſeveral learned travellers, who have accurately ſurveyed the ancient mode of building in thoſe parts of the world. Thus Cornelius Le Brun, an indefatigable and inquiſitive traveller, has publiſhed many views of eaſtern buildings, particularly about the Holy Land: in all theſe, only one Gothic ruin, the church near Acre, and a few pointed arches, occur; and thoſe built by the Chriſtians, when in poſſeſſion of the country. Near Iſpahan, in Perſia, he gives ſeveral buildings with pointed arches: but theſe are bridges and caravanſeras, whoſe age cannot be aſcertained; conſequently are as likely to have been built after as before the introduction of this ſtyle into Europe. At Iſpahan, the grand market-place is ſurrounded by divers magnificent Gothic buildings; particularly the royal moſque, and the Talael Ali-kapie, or theatre. The magnificent bridge of Alla-werdie-chan, over the river Zenderoet, 540 paces long and ſeventeen broad, having thirty-three pointed arches, is alſo a Gothic ſtructure; but no mention is made when or by whom theſe are built. The Chiaer Baeg, a royal garden, is decorated with Gothic buildings; but theſe were, it is ſaid, built only in the reign of Scha Abbas, who died anno 1629. One building indeed, Mr. Groſe ſays, ſeems at firſt as if it would corroborate this aſſertion, and that the time when it was erected might be in ſome degree fixed; it is the tomb of Abdaliah, one of the ſucceſſors of Mahomet, probably him ſurnamed Abu Becr. "If this tomb (ſays he) is ſuppoſed to have been built ſoon after his death, eſtimating that even to have happened according to the common courſe of nature, it will place its erection about the middle of the ſeventh century: but this is by far too conjectural to be depended on. It alſo ſeems as if this was not the common ſtyle of building at that time, from the temple of Mecca; the arches of which are ſemi-circular. The tomb here mentioned has but one evidence to prove its antiquity; that of being damaged by the injuries of time and weather."

With regard to the ſuppoſition, that this kind of architecture was brought into Spain by the Moors, and thence introduced by way of France into Britain; "it may, on firſt ſight," ſays Mr. Groſe, "appear plauſible; though the only inſtance adduced to corroborate the fact, on the evidence of correct drawings, is the moſque at Cordua in Spain; where, if we may judge from the views publiſhed by Mr. Swinburne, moſt of the arches are circular or horſe-ſhoe faſhioned, though a few pointed arches, formed by the interſection of two ſegments of a circle, undoubtedly appear. And, if theſe arches were part of the original ſtructure, it might be ſomewhat in favour of the ſuppoſition; but, as that edifice has been ſeveral times altered and enlarged by the Mahometans, it will be neceſſary to aſcertain the date of the preſent building, before any deciſive concluſions can be drawn." There are ſeveral pointed arches in the Mooriſh palace at Grenada, called the Alhambra; but, as that was not built till the year 1273, long after the introduction of pointed arches into Europe, they are as likely to be borrowed by the Moors from the Chriſtians as by the Chriſtians from the Moors. The greateſt peculiarity in the Mooriſh architecture is the horſe-ſhoe arch, which, containing more than a ſemicircle, contracts towards its baſe, by which it is rendered unfit to bear any conſiderable weight, and is therefore only calculated for ornament. Among the drawings of the Mooriſh buildings given in *Les Delices de l'Eſpagne*, ſaid to be faithful repreſentations, there are no traces of the Gothic architecture; there, as well as in the Mooriſh caſtle at Gibraltar, the arches are all repreſented circular. All this, however, ſeems to throw but little light on the ſubject; for it is moſt likely that the Moors, as well as other nations, at different periods, adopted different modes of building; ſo that, upon the whole, there does not appear any authentic documents to ſubvert the generally-received opinion, that this ſtyle of architecture originated in any other way than that we have already mentioned; which has lately received additional force from the obſervations of Mr. Murphy, in his excellent deſcription of the church of Batalha, in the province of Eſtremadura, in Portugal, to whom ourſelves, and the public, are under infinite obligations, for his zeal to co-operate in reſcuing from oblivion this magnificent ſtyle of architecture.

The marks which principally conſtitute the character of this ſtyle, which we now proceed to deſcribe, are its numerous and prominent buttreſſes, its lofty domes, ſpires, and pinnacles, its large and ramified windows, its ornamental niches or canopies, its ſculptured ſaints, the delicate lacework of its fretted roofs, and the profuſion of ornaments laviſhed over the whole building: but its peculiar diſtinguiſhing characteriſtics are, the ſmall cluſtered pillars, and pointed arches; which, though laſt brought into uſe, are evidently of more ſimple and obvious conſtruction than the round or ſemicircular ones; two flat ſtones, with their tops inclined to each other and touching, form its rudiments; whereas a ſemicircular arch appears the reſult of deeper contrivance, as conſiſting of more parts; and it ſeems leſs probable that chance, from whence all theſe inventions were firſt derived, ſhould throw ſeveral wedge-like ſtones between the tops of two others ſet perpendicular, ſo as exactly to fit, and fill up the interval.

Of the NORMAN GOTHIC PILLAR.

The pillars of this kind of architecture are as ſlender as thoſe of the ancient Gothic are heavy and maſſive; and yet, though they appear ſlighter and weaker than any of the Greek or Roman orders, yet it is remarkable that they are ſtronger than either; poſſeſſing, from their peculiar appearance, a deception in this reſpect that the niceſt eye cannot detect. In proof of this we need only mention, that, although the Gothic columns in the weſtern part of Weſtminſter abbey appear to be much ſlenderer, weaker, and of *leſs* diameter, than the Corinthian columns in the portico of St. Paul's, which are four feet in diameter, yet they are actually full fourteen inches *more* in their diameters, and conſequently more than half as ſtrong again; becauſe 16, the ſquare of the diameter of one of the Corinthian columns in the portico of St. Paul's, is leſs than two-thirds of 26 eight-twelfths, the ſquare of the diameter of theſe columns in Weſtminſter abbey: a light, airy, and deceptive, effect, in the Norman Gothic pillar, not to be equalled in any of the columns erected by Greek or Roman architects in any part of the world.

The grand effect ſo univerſally admired in Gothic cathedrals, ſeems to ariſe from the artful diſtribution of the pillars, with their concomitant ſcenery. Their magnitude, and relative ſituations, require to be proportionate to the laws of ſtatics and optics. The cluſter of little ſhafts, and the intervening mouldings on the ſuperficies of each pillar, give them the appearance of inſtability, and ſeem ſuperfluous at firſt ſight; but, on tracing their continuity upwards, we find them branching out in various directions, in the ribs of the nave and aile vaults, and converted into archivolts in the ſides of the nave. The manner in which theſe pillars are uſually placed, is rather ſingular, but well calculated for effect and reſiſtance; the ſides of each forms an angle of forty-five degrees with the collateral wall, by which their repulſion is greater than if placed parallel, in the ſame ratio the diagonal of a ſquare bears to its ſide. The capitals are commonly adorned with carvings of leaves and flowers, and even of animals; ſometimes with cherubims, angels, &c. either engraved or in relievo. The cornices are generally ornamented with carvings of different devices in ovals, rounds, diamonds, or ſquares; and the modillions are moſtly arched. The ſhafts of the columns are often ornamented on the ſurfaces with lozenge net-work, wreaths of leaves and flowers, ſpirals, &c. and, when the ſhaft conſiſts of a cluſter of ſmall pillars, it is common to ſee them bound round as it were with fillets, or entwined with a band or ribbon in a ſerpentine direction. Elevations of the pillars generally uſed in the ailes of churches, may be ſeen in the following View of the Section of the church of Batalha, given by Mr. Murphy. In the mean time the annexed plates of a Norman Gothic column, and enriched capital and entablature, which are adjuſted to geometrical proportions, may ſerve to illuſtrate an idea for practice, ſhould an architect be diſpoſed to raiſe ſtructures in the Gothic ſtyle, or adapt it to the purpoſe of frontiſpieces to churches, chapels, dwelling-houſes, &c.

Of ARCHES.

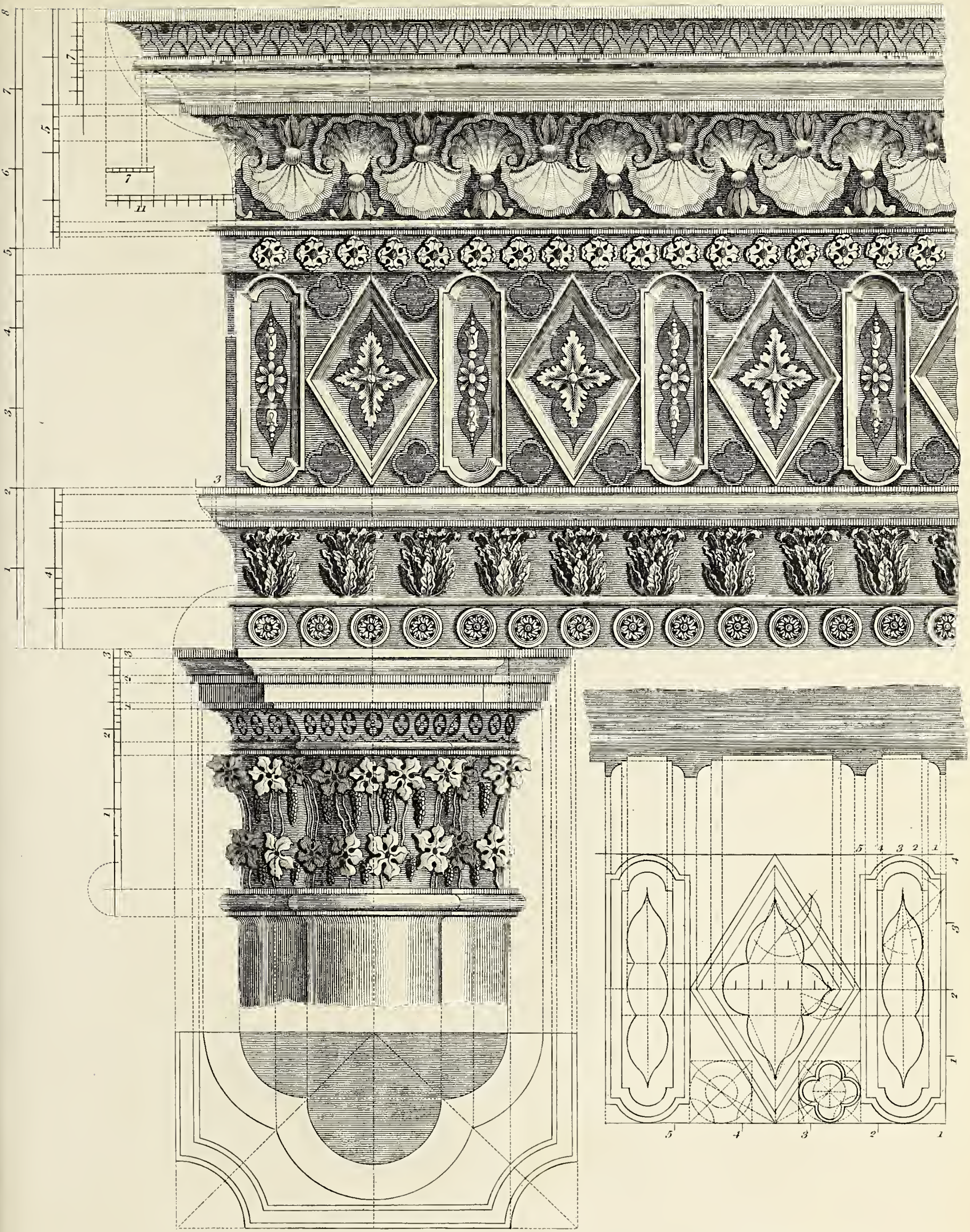
The writers who have hitherto treated on this ſubject, have principally directed their attention to the pointed arch, which they ſeem to conſider as the leading characteriſtic of this ſpecies of architecture. Many learned diſquiſitions have been written concerning its origin, but it ſtill remains unexplained. Mr. Murphy, in his ingenious publication above-mentioned, profeſſes to have beſtowed much thought on this part; and flatters himſelf, that, though his conjectures have the peculiarity of being entirely new, they may be allowed to approach as near to certainty as the nature of the ſubject will admit. "If (ſays he) the pointed arch be conſidered detached from the building, its origin may long be ſought for in vain, and this, perhaps, is the reaſon it has eluded the reſearches of ſo many ingenious men; but, on the contrary, if we examine it in a relative view, as a part in the compoſition of the whole, it will become more eaſy to account for its form, or for that of any other component part. If we take a comprehenſive view of any of theſe ſtructures externally, we ſhall perceive that not only the arch, but every vertical part of the whole ſuperſtructure, terminates in a point. And the general form, if viewed from any of the principal entrances, (the ſtation from whence the character of an edifice ſhould be taken,) will be found to have a pyramidal tendency. The porticoes of the firſt ſtory, whether they be three or five in number, are reduced to one at the top, and this is ſometimes crowned with a lofty pediment, which might more properly be called a pyramid, as we ſee in the tranſept front of Weſtminiſter Abbey, and of York Minſter. If we look further on, in a direct line with its apex, we frequently ſee a lofty ſpire, or pyramid, riſing over the interſection of the nave and tranſept. Each of the buttreſſes and turrets is crowned with a ſmall pyramid. If niches are introduced, they are crowned with a ſort of pyramidal canopy. The arches of the doors and windows terminate in a point; and every little acceſſory ornament, which enriches the whole, has a pointed or angular tendency. Spires, pinnacles, and pointed arches, are always found to accompany each other, and very clearly imply a ſyſtem founded on the principles of the pyramid.

"It appears evident, from theſe inſtances, that the pyramidal form actually exiſts throughout the ſeveral component parts, and the general diſpoſition of the edifice approaches as near to it, at leaſt, as the ordonnance of an hiſtorical painting which is ſaid to be pyramidally grouped. Hence we may comprehend the reaſon why the arch was made pointed, as no other form could have been introduced with equal propriety, in a pyramidal figure, to anſwer the different purpoſes of uniformity, fitneſs, and ſtrength. It is in vain, therefore, that we ſeek its origin in the branches of trees; or in the interſection of Saxon or Grecian circles; or in the perſpective of arches; or in any other accidental concurrence of fortuitous circumſtances. The idea of the pointed arch ſeems clearly to have been ſuggeſted by the pyramid, and its origin muſt conſequently be attributed not to accident, but to ordination. But, granting for a moment that any of the above-mentioned conjectures were true, we ſhould be as far as ever from aſcertaining the principles of theſe edifices. There never was a ſpecies of architecture the properties of which could be determined from the arch alone. Even in the Gothic, where it forms ſo conſpicuous a part, it does not govern in the compoſition, but follows the general order of things, as it is not a cauſe, but a concomitant part, and its pointed termination is a conſequence ariſing from a general actuating principle.

"Whether the Gothic architects were the inventors of this arch, or borrowed the idea of it from others, is not eaſy to determine; but it is very reaſonable to ſuppoſe that it originated with themſelves, as they were the only ſcientific builders known to have uſed the pyramidal figure in the compoſition of their edifices, except the Egyptians; and it is generally ſuppoſed that the latter were ignorant of the art of conſtructing arches, though, in other reſpects, an ingenious people. But the Gothic architects, in uſing this arch, did no more, in my opinion, than the Greeks or Romans would have done in ſimilar circumſtances. For, if we ſuppoſe for a moment, that an Athenian artiſt of the age of Pericles, or a Roman architect of the Auguſtan age, had been called in to finiſh a Gothic ſtructure that had neither doors nor windows, he could not, I think, have introduced any other but a pointed arch, in an edifice where every part grew up to a point, without being guilty of a direct violation of the laws of art, and of the precepts ſo ſtrongly inculcated in the architecture of his own country. The rule obſerved by the Gothic architects, of adapting the form of the arch to the general figure of the edifice, is, I believe, conſonant with the cuſtom of the ancients, though I cannot find that any writer, ancient or modern, has taken notice of this circumſtance. The Grecian temples, which were chiefly of an oblong form, have their doors and windows terminated horizontally, in all the deſigns that I have ſeen of the ruins of that country; ſome exceptions may perhaps be found, but they never occur, except where propriety was made ſubſervient to convenience.

"The Romans, who indulged in a greater variety of forms, furniſh us with many examples wherein this principle of uniformity is obſerved; the doors and windows of their quadrangular edifices being, generally ſpeaking, cloſed horizontally in the manner of the Grecians, and the apertures of their rotund edifices terminated with ſemicircular arches, as we ſee in the amphitheatre at Verona, and in the Coliſeum, the theatre of Marcellus, the temple of Bacchus and Faunus at Rome, &c. to which uniformity theſe buildings are indebted for a great part of their beauty. Of this the author of the ingenious Inquiry into the Origin of our Ideas of the Sublime and Beautiful, appears to have been perfectly ſenſible: 'It is in a kind of artificial infinity we ought to look, for the cauſe why a rotund has ſuch a noble effect. For in a rotund, whether it be a building or a plantation, you can no where fix a boundary; turn which way you will, the ſame object ſtill ſeems to continue, and the imagination has no reſt. But the parts muſt be uniform, as well as circularly diſpoſed, to give this figure its full force; becauſe any difference, whether it be in the diſpoſition, or in the figure, or even in the colour of the parts, is highly prejudicial to the idea of infinity, which every change muſt check and interrupt, at every alteration commencing a new ſeries.' Indeed, there is no ſpecies of architecture that has the leaſt claim to excellence, wherein this uniform conſent of parts has not been conſidered as indiſpenſably neceſſary to the general effect and harmony of the compoſition. We even find it obſerved in thoſe ſimple ſtructures of the Egyptians, that reſemble a fruſtrum of a pyramid; which ſtructures probably firſt ſuggeſted the idea of doors with oblique ſides, narrower at the top than at the bottom, as deſcribed in the ſixth chapter of the fourth book of Vitruvius. Doors of this ſort, having fitneſs to recommend them, in a building of that kind, as well as convenience, on account of their ſhutting themſelves, a property they derive from the nature of their figure, were wiſely adapted in thoſe artleſs times, and would be equally proper now, if ſimilar reaſons ſhould juſtify their reſtoration.

"Upon the whole, if the form of the arches, employed in cloſing the apertures of a regular edifice, contributes in any degree to the effect and harmony of the compoſition; it is probable, that the order here aſſigned to each



Design for a Norman Gothic Entablature enriched.

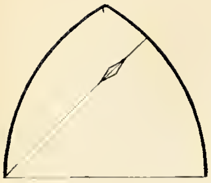
London Publish'd as the Act directs Aug.t 12.th 1797 by J.Wilkes.

J.Pass

Plate XIII

ARCHITECTURE.

1



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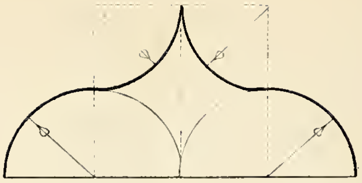

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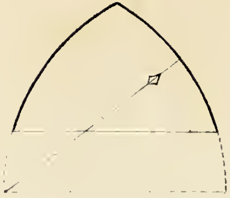

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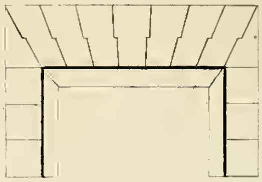

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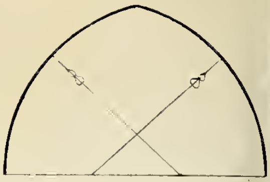

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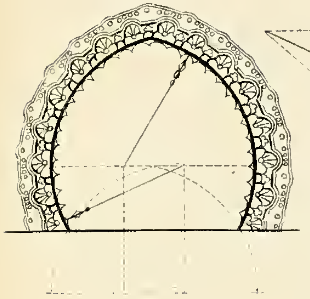

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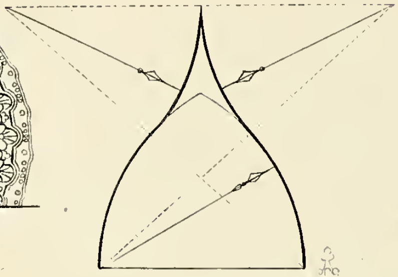

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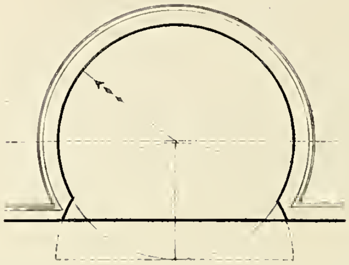

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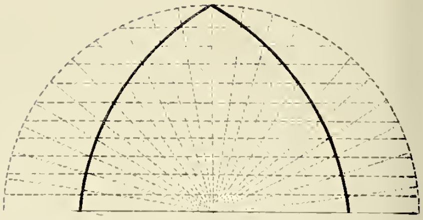

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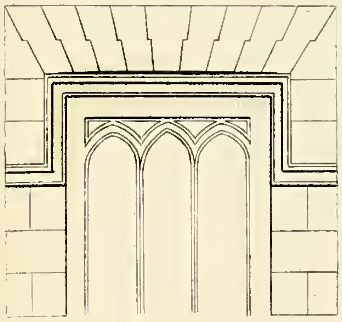

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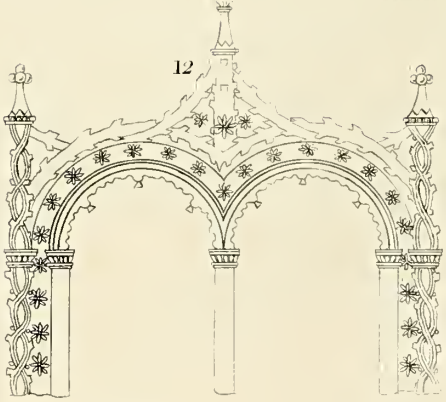

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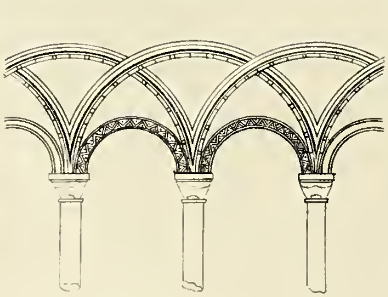

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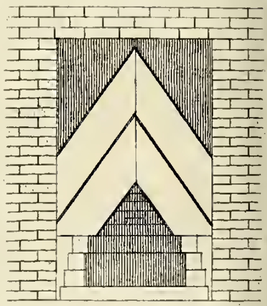

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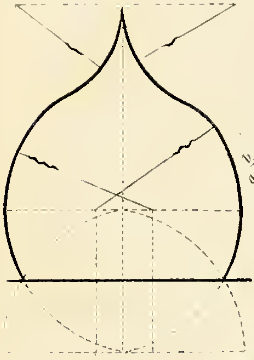

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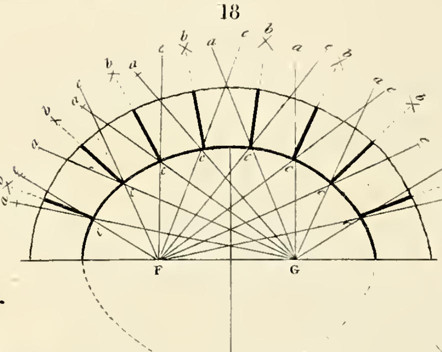

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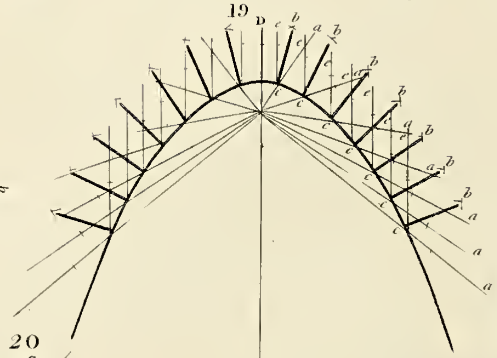

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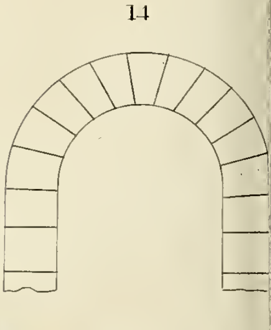

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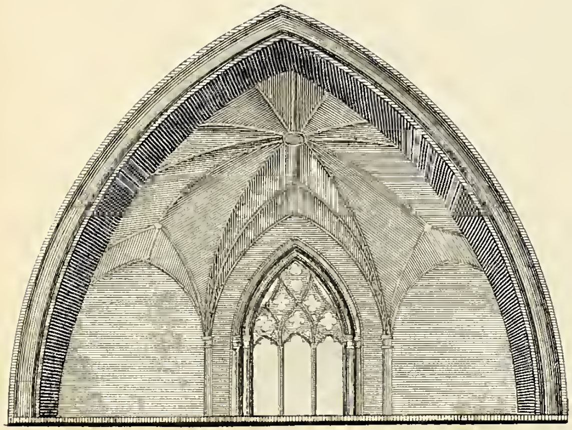

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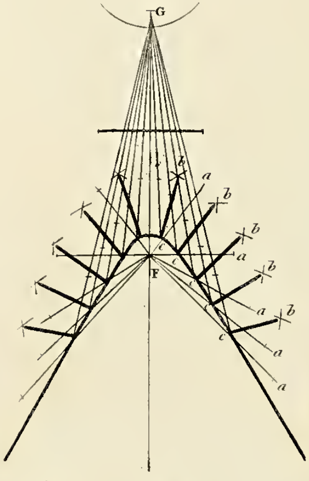

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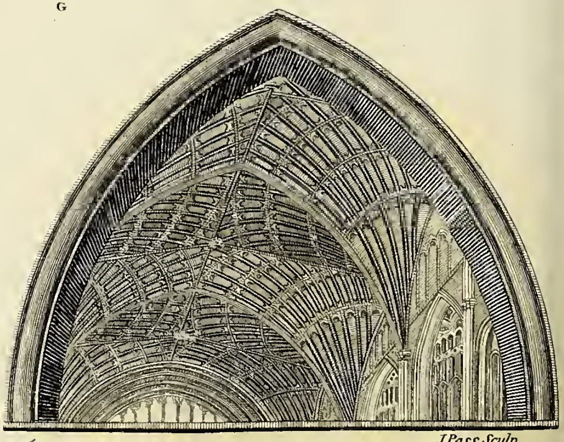


J.Pass Sculp.

Plans of the different Arches

London Published as the Act directs June 16 1797 by J.Wilkes

appears the moſt natural, and the moſt conſiſtent with the rules of fitneſs and uniformity; that is to ſay, A pointed arch, in a pyramidal ſtructure. An horizontal arch, (if the term be allowed,) in a ſquare or oblong building; and a ſemi-circular arch in a rotund. Whatever merit theſe different arches may poſſeſs, abſtracted from their properties of ſtrength, they ſhew it to moſt advantage by this arrangement; but, on the contrary, if this arrangement were tranſpoſed, the incongruity reſulting from ſuch a diſcordant compoſition would deſtroy the effect of the whole edifice. The Gothic architects appear to have been no ſtrangers to the propriety of the preceding ordinance, as is manifeſt from the various kinds of arches they employed, to coincide with the contingent forms of their buildings; and whoever ſhould undertake to determine their ſtyle of architecture, from the pointed tendency of the arch alone, would not always be correct in his deciſion. Their beſt artiſts made it a rule, to adopt the arch that was moſt congenial in its form to the figure of the edifice. The ſemicircle was excluded, becauſe their ſtructures were never round: but, where the aſpect of the edifice was horizontal, the apertures alſo were cloſed horizontally. The refectory at Batalha, which is not an inelegant ſpecimen of Gothic art, furniſhes us with a ſtriking example of this nature, that enables us to reaſon on facts. The general figure of the plan, and of the elevation, of this refectory, is nearly like that of a low Grecian pavilion; and all its apertures, without exception, are cloſed in the Grecian manner; but if each of its buttreſſes, inſtead of terminating under the cornice had been carried above the railing and crowned with a pinnacle, and the ends, if finiſhed, with ſharp pointed gables, its apertures, in that caſe, I conceive, would not have been cloſed horizontally, but with a pointed arch, ſomewhat ſimilar to thoſe of King's College Chapel, at Cambridge. Hence it appears, that it was propriety, and not caprice, that influenced the Gothic architects in cloſing the apertures of their edifices; and that a building may be in the true ſtyle of the modern Norman Gothic, without poſſeſſing a ſingle pointed arch; though that of a church cannot."

Upon the above reaſoning of Mr. Murphy, the Monthly Reviewers, with great diſcrimination, have made the following remarks: "Mr. M. maintains that the forms of buildings, in the whole or maſs, were adjuſted *à priori*, and that the forms of inferior parts were conſequent, or followed from them: the contrary of which may every where be remarked to be the caſe; for all architectural forms aroſe from primitive modes of conſtruction; and this of the Gothic arch is derived from the ſmallneſs of materials then applied in buildings. The maſſive architecture of the Grecian building was firſt rejected by the later Romans, and arches, from column to column, were ſubſtituted in its place. This was the model of the old or Saxon Gothic, being with ſemicircular arches. The more elegant modern or Norman Gothic was the ſecond change, and aroſe from the great facility with which pointed arches were conſtructed, wanting but little centering and ſtill leſs ponderous ſtones. We have a convincing proof that facility of conſtruction was the circumſtance then moſtly conſidered, in many of the greateſt works of this country; for the ſoft Norman ſtone was brought here for the purpoſe of erecting them. Maſſive and ſtrong ſtone being then totally diſuſed in building, no other mode of covering a void was left, than by the application of arches; and, in the improved Gothic, we ſee that arch judiciouſly adopted which was moſt eaſily executed, and which had the leaſt lateral preſſure. To reſiſt what little preſſure it had, appropriate buttreſſes were requiſite; ſometimes converted into towers at the angles. Thus, by a gradual progreſs, the riſe and perfection of Gothic forms, affecting the maſs of a building, are naturally explained; and no other than a pyramidal form could well reſult from a combination of ſuch parts, being, in fact a great pyramid formed of ſo many leſs pyramids. The architect being furniſhed with a knowledge of the parts, it becomes his province to combine them in the beſt manner to form one beautiful maſs: ſuggeſting only ſuch variations in thoſe parts as the nature of them will admit, without prejudice to their fitneſs in reſpect to utility or conſtruction. If, then, it be admitted, that an architect muſt have a knowledge of the parts, previouſly to forming a whole, (and ſurely there can be no other rational mode of procedure,) Mr. M's argument in that reſpect muſt be erroneous. The ſame obſervations will apply to his reaſoning on the Grecian forms of buildings conſiſting of horizontal lines, both in the parts and in the maſſes. Can we imagine that architecture aroſe from the deſire of making a picture? certainly not: it was originally provided for convenience; and fitneſs of conſtruction muſt have had its ſhare in deciding the form, as we univerſally find to have been the caſe in all original architecture. Beauty, therefore, was not conſulted *à priori* to give the general forms of the parts, but was, and always is, the laſt ſtate of refinement in architecture, and conſiſts of combining and converting the general forms of the component parts in the moſt pleaſing manner. But, although we do not agree with Mr. M. in tracing the riſe of certain forms, yet his concluſions with reſpect to their application are very juſt; and we cannot conclude our remarks on his work, without acknowledging the gratification it has afforded us by its general excellence."—See *Monthly Review, July* 1796.

The annexed Plate exhibits a correct view of different arches; of which the following is a deſcription: *Fig.* 1. The common pointed arch. 2. An arch of the third point: this arch is uſed in many parts of the church of Batalha; in the ſide elevations of churches it has an agreeable appearance, as being an equation between the high pointed and low arch. 3. A ſection of the common pointed arch, *fig.* 1. 4 and 5. Pointed arches, of contrary flexion. The manner of forming theſe, and the foregoing pointed arches, is ſhewn by the lines and indexes of the reſpective figures. 6. The quadratrix of Dinoſtratus. 7 and 8. Horizontal arches: the former is taken from the convent of the church of the bleſſed Conception at Baja; the latter is copied from a Gothic ruin at Evora, both in the province of Alem-tejo, in Portugal. The ſubtenſe of half this arch, appears to be equal to the interval between the pillars, and is the weakeſt manner of forming a Gothic arch. The ratio of its ſtrength, being to the ſtrength of a ſemicircular arch of equal ſpan, as 10 is to 13. The architect appears to have been ſenſible of this weakneſs, by the manner in which he has guarded againſt the incumbent weight. All the above arches properly belong to that ſpecies of architecture called modern Norman Gothic. 9. The creſcent, horſe-ſhoe, or Mooriſque, arch. 10. A Mooriſque pointed arch. 11. A Mooriſque pointed arch of contrary flexion. Theſe three arches may be ſeen at the Puerta de los ſicte Suelos, and at the Torre de las dos Hermanos.—Alhambra. The method of forming them is ſhewn by the lines and indexes to each. 12. A window in the Arabian ſtyle of architecture, ſketched from the royal palace at Cintra, near Liſbon. 13. Saxon arches. 14. The ſemicircular arch often uſed by the Romans, particularly in their rotund buildings. 15. The *Dos d'Ane*, uſed by the Egyptians, in the vaulting of the galleries, and ſepulchral chambers of their pyramids.—See Norden's Travels, plate 49 and 50. 16, and 17, Shews the Norman Gothic method of vaulting the roofs.

To find the Joints of any Arch formed of Segments of the Ellipſis, Parabola, or Hyperbola. See fig. 18, 19, and 20, of the annexed Plate of Arches.

PROBLEM I. *Of the Ellipſis.* From the focus point F, of the ellipſis, draw as many right lines F e, as there are joints required in the arch, and from G, the other focus point, draw the lines G a, G a, &c. which ſhall cut the former lines at the points c. c. Biſect the ſeveral angles a c e, and you have c b, the joints required; as in fig. 18.

PROBLEM II. *Of the Parabola.* From the point F, the focus of the parabola, draw lines F a, F a, through as many points (c. c) in the arch as there are joints required, and from the points c. c, where theſe lines interſect the arch, draw c e, c e, &c. parallel to the axis of the ſection G D. The lines b c, b c, which biſect the ſeveral angles e c a, will then be the true joints of the parabolic arch; as in fig. 19.

PROBLEM III. *Of the Hyperbola.* Let F and G be the focus points of two oppoſite hyperbolas given in poſition, from the focus G, draw lines through the ſeveral joints (c. c) of the arch, and through each of the points where they interſect the arch, as at c. c, &c. draw F a, F a; proceed, as in the two former problems, to biſect the angles a c G, and you will determine the joints required; as in fig. 20.

Of DOMES.

The above problems, eſpecially the two latter, will be found of great uſe, wherever arches of the parabolic or hyperbolic kind are required; their properties are well known to every mathematician, and their utility in conſtruction univerſally admitted, particularly in magnificent domes, and in ſituations where great weight is to be ſuſtained without much lateral reſiſtance; they have alſo the advantage of requiring no centring, or at leaſt not ſo much as the arches in common uſe. The concave of St. Paul's was turned upon a centre, which was judged neceſſary to keep the work even and true, though a cupola might be built without a centre: but this is obſervable, that the centre was laid without any ſtandards from below to ſupport it; and, as it was both centring and ſcaffolding, it remained for the uſe of the painters. The claim of Sir Chriſtopher Wren to the firſt rank in his profeſſion, depends more, perhaps, upon his knowledge of the properties of theſe curves, than upon all his other attainments in architecture. Hence he was enabled to deſign and execute the ſuperb cupola of St. Paul's, one of the nobleſt ſpecimens of conſtruction exiſting, and the chef-d'œuvre of this artiſt. This edifice, continues Mr. Murphy, if deprived of that noble feature, would have very little remaining, beſides the weſtern portico, that any ingenious architect of this age would be ambitious to own; and the church of St. Dunſtan in the Eaſt would have few admirers, were it not for the geometrical ingenuity of its ſpire. In that branch of architecture which relates to conſtruction, Sir Chriſtopher Wren may be conſidered as equal, if not ſuperior, to any artiſt that has appeared in Europe theſe two hundred years; and what contributed not a little to give him this ſuperiority, was his living in an age enlightened by the genius of a Newton, a Leibnitz, a Huyghens, &c. His mind was enlarged by the ſublime diſcoveries of thoſe great philoſophers; he was one of the firſt geometricians of the age; and if to his knowledge in mathematical ſcience, he had united, in an equal degree, the true principles of the art of deſign, the world, for the firſt time, would have ſeen a complete architect.

Since the death of that great man, the art of conſtruction has been much neglected in England; and perhaps there are but very few recent ſpecimens of it in Europe, of bold execution, beſides the cupola of St. Genevieve at Paris. Yet, it is remarkable, that four of the greateſt architects that have appeared ſince the reſtoration of the arts, are chiefly indebted, for their fame in this art, to their knowledge of conſtruction. Theſe were Filippo Brunelleſchi, Michael Angelo, Jacques Germain Soufflot, and Sir Chriſtopher Wren. To the firſt we owe that ſtupendous machine, the cupola of the church of S. Maria del Fiore, one of the moſt aſtoniſhing and difficult performances in Europe, being in magnitude not inferior to any thing of the kind, perhaps, the ancient world ever ſaw. The knowledge of conſtruction gradually declined in Italy, by the death of the old Gothic architects, and finally expired with Arnolfo Lappi, who began this church according to the Gothic rules; this prevented the completion of its cupola for upwards of a century, during which time, there was not to be found in Florence, nor throughout all Italy, any architect who would undertake to finiſh it. This arduous taſk was reſerved for the genius of Brunelleſchi, who has rendered his name memorable in the hiſtory of the arts, by the execution of that cupola; which Lappi, who began the work, would have conſidered as a ſimple operation, and would, as M. Felibien juſtly obſerves, have finiſhed it, had he lived, with more eaſe than Brunelleſchi, though he had been poſſeſſed of all the rules of the ancient Greek and Roman architects.

But Filippo Brunelleſchi, however great his merit may have been, has no title to the invention of the modern manner of building cupolas; for this we are indebted to Anthemius and Iſidorus, the two celebrated architects who, by order of the emperor Juſtinian, built the preſent Santa Sophia, at Conſtantinople; and to prevent its deſtruction by fire, as had already happened four ſeveral times, they employed no combuſtible materials in its fabrication. From this epoch we may date the origin of cupolas reſting upon the four pillars of a ſquare, which ſquare is gradually formed into a circle by pendentives, or thoſe parts in the angles between the arches of the nave which ſpring from a point, and gradually advance in a concave direction to receive the circular entablature of the cupola; an idea ſuggeſted by the figure of the croſs repreſented in the plans of all Chriſtian churches. The veneration in which this church has long been held, and the advantages which appeared to reſult from its new mode of conſtruction, are ſo great, that it has ſince been imitated by all the nations of Europe. The Venetians were the firſt who ſet the example to the Italians, by erecting the church of St. Mark, at Venice, upon a ſimilar plan, about the year 973. St. Mark's, together with the cathedral of Piſa, built after the ſame model at the commencement of the eleventh century, probably ſupplied Brunelleſchi with much information in the conſtruction of the cupola of Santa Maria del Fiore, which laſt Michael Angelo ſeems to have copied, in the dome of that immenſe fabric Saint Peter's at Rome.

Hence we are enabled to trace through Gothic veſtiges, the origin of thoſe ſtately domes which crown the principal ſacred edifices of Europe; a mode of conſtruction, of which there is not a ſingle inſtance to be found among the remains of the buildings of ancient Rome, or of Greece; nor in thoſe of the Egyptians; nor in the writings of Vitruvius. The abbé Winckelmann does not appear to have inveſtigated this ſubject with his uſual care, or he would not have attributed the above invention to the ancient Greeks, without being able to refer to a poſitive inſtance to eſtabliſh the fact; his concluſion to this effect reſts upon the authority of a piece of ſculpture which is upon an antique ſarcophagus found in the villa Moirani. But, granting that this ſarcophagus bears the model of a temple crowned with a ſort of cupola, the original may, notwithſtanding, have reſted upon a circular baſe; for how is it poſſible to determine to the contrary, by any external repreſentation in painting or ſculpture? The fact appears to be, that we are not warranted to conclude, from any exiſting model, that the ancients uſed any ſuch termination to their edifices as a cupola reſting on a ſquare baſement: their round temples, it is true, were often covered with a ſemicircular vault, to which they gave the name of *Tholus*, ſuch as that we now ſee in the Pantheon at Rome; but this form is very different from that which we have adopted from Santa Sophia, as may be ſeen by comparing the vault of the Pantheon at Rome with the dome of the Auguſtins' church in the ſame city.

We may conceive ſome idea of the difficulty the moderns find in executing any bold deſign of this nature, by what we collect from the Life of M. Soufflot. This artiſt, tho' one of the beſt that ever appeared in France, experienced more difficulty in conſtructing the cupola of the church of St. Genevieve, than in all the edifices that ever roſe beneath his direction. Notwithſtanding its weight, impulſe, and reſiſtance, were aſcertained, and the whole demonſtrated to be perfectly ſecure by two able mathematicians, M. Ganthey, and the abbé Boſſut; yet this was not ſufficient to ſcreen him from the malign criticiſm of cotemporary artiſts, who maintained that the piers, upon which the cupola reſted, were inadequate to ſuſtain the incumbent weight. Time and experience, however, proved the reverſe; and, when he was on the point of completing his project, the detraction of his enemies affected him ſo ſenſibly, that it is generally ſuppoſed he died of a broken heart. M. Soufflot appears to have been very intelligent in the Gothic as well as in the Grecian ſtyle of architecture: to obtain a knowledge of the former, he viſited many of the beſt Gothic buildings in France, of which he made drawings, ſtudied their conſtruction, general proportions, vaults, &c. Hence he acquired much uſeful information, that materially aſſiſted him in the deſign and execution of the church of St. Genevieve. Sir William Chambers informs me, ſays Mr. Murphy, that when he was laſt in France, M. Soufflot ſhewed him a large collection of drawings he had made from thoſe edifices; at the ſame time he expreſſed his admiration at the excellence of the general proportions he diſcovered in them, and the ſuperior intelligence their architects poſſeſſed in the laws of conſtruction. In fine, the nobleſt monuments of Florence, Rome, Paris, and London, bear ample teſtimony of the great abilities of the above artiſts, and in no part of theſe monuments are their talents more conſpicuous than in the conſtruction of the domes. It is much to be regretted then, that this ſuperior branch of our art ſhould become neglected or unknown, and that more attention is not beſtowed on the ſound rules, and demonſtrative principles, upon which the art of conſtruction is founded. The ſtudy of our Gothic edifices will be found, perhaps, to contribute very much to its reſtoration; but nothing can compenſate for the want of a thorough knowledge of ſtatics, and of conic ſections. "It ſeems very unaccountable," ſays the author of the Parentalia, "that the generality of our late architects dwell ſo much on the ornamental, and ſo ſlightly paſs over the geometrical, which is the moſt eſſential part of architecture. For inſtance, can an arch ſtand without butment ſufficient? If the butment be more than enough, 'tis an idle expence of materials; if too little, it will fall; and ſo for any vaulting: and yet, no author hath given a true and univerſal rule for this; nor hath conſidered all the various forms for arches."

Of SPIRES.

The ſpire of old St. Paul's, ſays Mr. Bentham, is one of the earlieſt we have any account of; it was finiſhed in the year of our Lord 1222, and was in height 520 feet, according to Stowe's account. The ſpire of Saliſbury church is 400 feet high; and that of Straſburgh, built by the famous Irwin de Steinbach, is 450 feet. No ſettled proportion ſeems to have been obſerved in the dimenſions of ſpires in general; ſometimes the height did not exceed four times the diameter of the baſe, whilſt, at other times, the ratio of the height, to the breadth taken at the baſe, was as eight to one. We have an example of the laſt-mentioned proportion, in the ſpires built by Hugh Lebergin upon the towers of St. Nicaſe, the two largeſt of which were fifty feet high, upon a baſe of ſix feet. Notwithſtanding the amazing height to which many ſpires were carried, they were conſtructed ſo exceedingly ſlight, that we ſhould be apt to conclude, on reaſoning from theory, that they would be inadequate to ſuſtain their own weight. The ſpire of Saliſbury, for inſtance, is but ſeven inches thick; and that of Batalha is about the ſame thickneſs, independent of the emboſſed work, though almoſt a fourth part of its ſuperficies is perforated. Great care muſt conſequently have been taken, in ſelecting the materials employed in conſtructing ſuch light ſpires, eſpecially as they appear in general to be connected without the aid of iron cramps; for this metal, when expoſed to air or moiſture, is ſubject to contract ruſt, which in time will ſhiver in pieces as much of the block as it comes in contact with. I am informed, ſays Mr. Murphy, that the ſtones of the ſpire of Batalha are keyed together by means of dove-tail wedges of pine-wood: however that may be, it is pretty certain, that the ancients, upon ſimilar occaſions, have adopted this expedient. Alberti mentions his having found wedges or cramps of wood in the ancient Roman buildings; and M. le Roy has obſerved them in the ruins of an ancient temple in the diſtrict of Athens. In the ancient temple of Girgenti in Sicily, there were found wedges of wood, in good preſervation, after a ſpace of more than two thouſand years. Cramps of copper were alſo uſed by the ancients in their buildings, which, according to the account of father Montfaucon, were tempered to an extraordinary hardneſs.

With reſpect to the origin of ſpires, it appears very unaccountable, that neither hiſtory nor tradition have preſerved the leaſt remembrance of it. There muſt, nevertheleſs, have been ſome ſpecious motive for building them; for we can hardly conceive, that appendages ſo expenſive, and difficult of execution, were merely the reſult of caprice. If we examine the uſes to which the ſacred edifices wherein they are employed were appropriated in the twelfth century, we ſhall diſcover a rational cauſe for crowning them with ſpires: namely, the cuſtom of burying in churches, which about this time appears to have become general all over Europe. Now, in conſequence of this cuſtom, there were united, in the ſame fabric, a cemetery and a church; it was highly proper, therefore, to build every ſtructure intended for this double purpoſe, in a ſtyle of architecture characteriſtic of its two-fold deſtination. Impreſſed with theſe ſentiments, the architects of thoſe times would naturally look back for precedents of a ſimilar nature among the nations of antiquity; the hiſtorians of theſe nations, as well as the remains of their edifices, would have ſhewn them, that it was invariably the practice of all civilized people, who believed in the immortality of the ſoul, and did not hold a republican form of government, to raiſe lofty pyramids over their cemeteries or places of ſepulture. The Gothic architects, in like manner, have adopted that figure to characteriſe their cemeteries, and, at the ſame time, preſerved the figure of the croſs in their ground plan, the better to denote a Chriſtian temple.

Hence the origin of ſpires, and the conſequent introduction of pinnacles, pyramidal or pointed arches, angular ornaments, &c. in ſhort, every vertical part of the whole ſuperſtructure was henceforth terminated in a point. Indeed it could not be otherwiſe, conſiſtent with the true principles of deſign, which invariably preſcribe an harmony between the ſeveral parts; and alſo between theſe parts and the general configuration; from the whole of which reſults an unity of appearance, the moſt certain criterion of its excellence. The reaſon aſſigned for the origin of ſpires will alſo apply to the pyramids, or round towers, to be found at this day near many of the old churches in Ireland; for it is obſervable, that, at the time theſe towers were built, the architects of that country were unacquainted with the art of raiſing a ſpire over the pillars, at the interſection of the nave and tranſept. They had recourſe, therefore, to an eaſier but leſs ſcientific expedient, by conſtructing, upon ſolid baſes, thoſe round pyramids which always terminated like the Egyptian obeliſks. And, notwithſtanding all the learned conjectures that have been made reſpecting the uſe of theſe pyramids, we may reaſonably conclude, that they were intended to denote cemeteries. We may conceive how far the Chriſtians of the 13th century were impreſſed with the propriety of building pyramids over their cemeteries, from the immenſe elevation they gave to ſome of them. That of old St. Paul's, for inſtance, was loftier than any of the pyramids of Egypt. And it is worthy of remark, that they were introduced about the time ſcience began to revive, and recover its long-loſt energy; hence they may not be improperly conſidered as ſo many auſpicious monuments of the riſing greatneſs and returning wiſdom of Europe.

When we conſider, ſays Mr. Murphy, the ſtupendous monuments of Egyptian power which ſtill exiſt, we cannot avoid reflecting on the vanity of their founders, and pitying the miſtaken ſyſtem of theology that gave riſe to them. Yet if we examine our own country, we ſhall find more pyramids, even in one province, than exiſt at this day in all Memphis and Sacara. From this circumſtance, one might be induced to ſuppoſe, that the origin of ſpires amongſt us, proceeded in ſome degree from Egyptian ideas grafted upon Chriſtian principles. Amongſt the Egyptians, the pyramid was held to be ſacred; by it they expreſſed the origin of all things. They placed it over their cemeteries, as the Chriſtians do, to teſtify the lively and exalted ſentiments they entertained of the immortality of the ſoul. Its form, which is like that of a flame of fire, (whence it is ſuppoſed to derive its origin,) is typical of the divine ſpirit of the deceaſed, aſcending, after its ſeparation from the body, to the divine manſions of repoſe. Such, we are given to underſtand, were partly the motives that induced the Egyptians to adopt the pyramid in their ſepultures; that figure, however, poſſeſſes many intereſting properties, which, independent of theſe motives, might have recommended it to their notice. Experience has evinced, that in point of durability the pyramid is ſuperior to all other figures; it is alſo a form the moſt conſonant with the principles of optics; as, on account of ſome natural imperfections in the viſual organ, it is continually obtruding itſelf on our ſenſes. For inſtance, a long range of buildings, viewed from either extremity, will appear to incline to a point. A long avenue, a road, or a canal running between two parallel banks, have the ſame effect. To which we may add, that the pyramid has the property of conveying an idea of elevation beyond the actual limits of the object. Whether theſe properties were taken into conſideration by the Egyptian and Gothic architects or not, it muſt be confeſſed, they have choſen a form that plays very ſtrongly upon the ſenſes, and from it their works derive no inconſiderable part of that effect which fills the mind with ideas of grandeur.

The moderns, as we have already obſerved, ſtill continue to uſe pyramids in their churches and ſepultures; although no other reaſon is aſſigned for this practice, but that it was the cuſtom of our forefathers. We ſhould recollect, however, that ſpires were graceful, and well adapted to the general formation of *their* edifices; whereas in *ours* they are quite the reverſe. By attempting to imitate the antique ſtyle of architecture in our churches, we have fallen into a compound one, which is neither Grecian nor Gothic, but rather a piece of patch-work, made up of the remnants of three different nations. Italy has furniſhed the ground plan, Greece the portico, and Normandy the ſpire. The coalition of theſe heterogeneous parts, cannot with propriety be called Grecian architecture; yet that is the appellation generally given to it. We muſt allow, however, that there are ſome churches amongſt us, executed in this mixed ſtyle, that are not undeſerving of praiſe.

Of DOORS.

The principal entrances of Gothic churches are generally ornamented in a very magnificent manner; the door is uſually placed within a large porch, which porch diminiſhes, as it recedes, in a rectilinear direction; the ſides of it are often adorned with an aſſemblage of ſlender columns, and mouldings of various ſorts. Here are alſo ſeen ſtatues of kings, popes, ſaints, and martyrs, with their reſpective emblems, canopies, pedeſtals, &c. Frequently we find as many entrances in the weſt front, as there are porticoes in the church; but the centre door, which is generally the largeſt, is ſeldom opened but on days of proceſſion, or for the reception of ſome dignitary of the church.

How different the practice of the Gothic architects, in this reſpect, from that of the ancients! The latter made the entrances of their temples large, and approached them by a flight of elevated ſteps. The former, on the contrary, made the doors of their churches comparatively ſmall, and on a level with the ſurrounding plain. Sometimes, indeed, we even find ſteps for deſcending into theſe churches, which ſome imagine to have been appended in conſequence of an accumulation of the adjacent earth; but it is evident that in general theſe ſteps made a part of the original deſign. Some inſtances indeed of elevated entrances to Gothic churches are to be met with; but they are generally ſuch as neceſſarily ariſe from the obliquity of their ſituation.

Of WINDOWS.

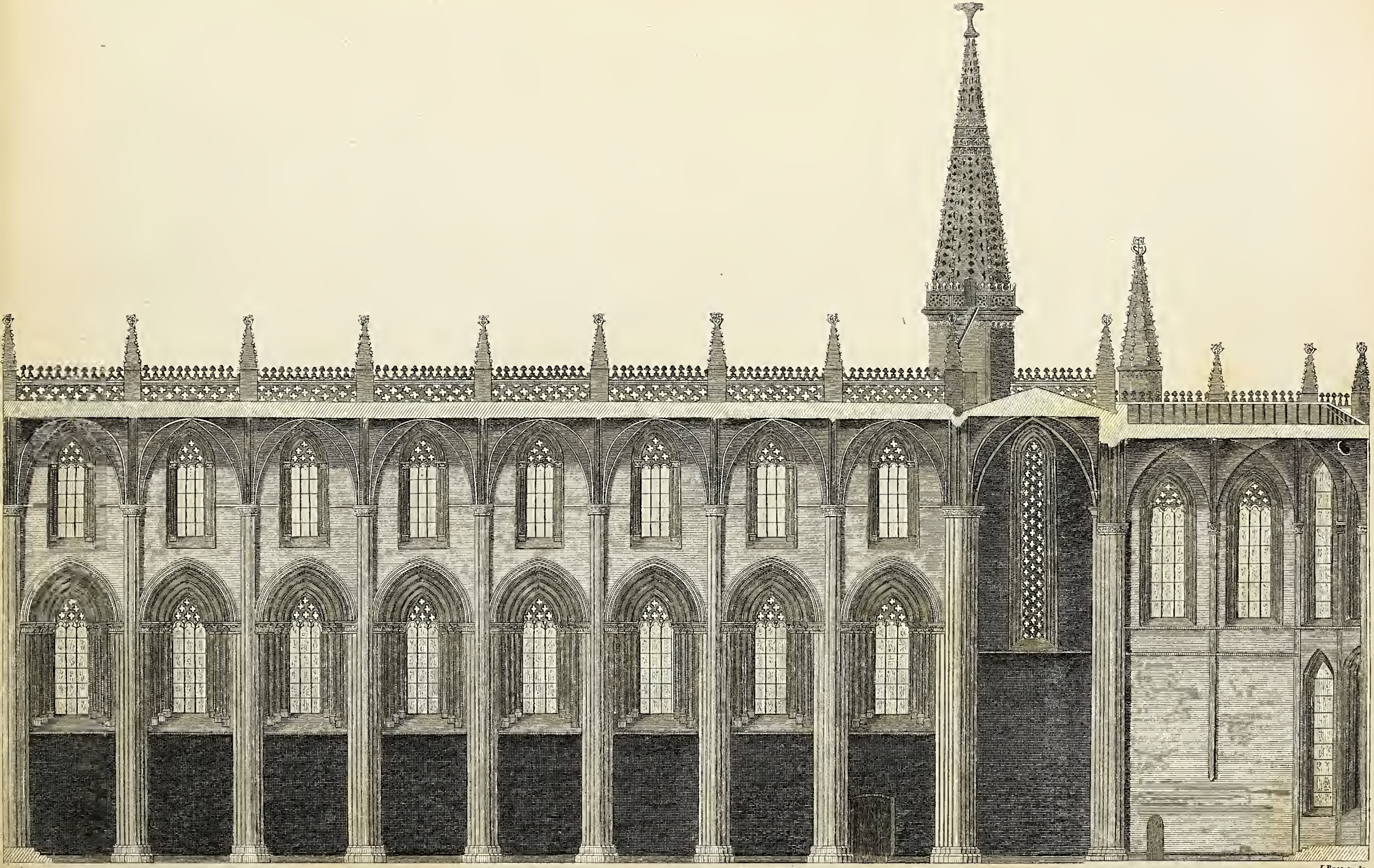
There is no part of Gothic architecture which admits of more variety, or is ſuſceptible of a greater diſplay of taſte and beauty, than the windows; the manner in which they are uſually formed is as follows: The breadth of the aperture is divided into three, five, or ſeven, equal parts, with a mullion between each. When the window is of any conſiderable height, a tranſom or croſs mullion is placed in the middle of it, for the ſecurity of the work. The ſpace between the ſpring of the arch and the ſummit of the aperture is filled with tracery work, compoſed chiefly of trefoils and quatrefoils, and theſe are ſometimes ſubdivided into other different figures. In all manner of tracery work, whether ſimple or complicated, we find that the interſticial vacuities tend to the figure of a plain or curvilinear triangle, and that their circumſcribing lines are generated by geometrical rules. The moſt beautiful ſort of tracery appears to be that in which the ſeveral perforations approach to an equal magnitude. See *fig.* 16, in the annexed Plate of Arches.

The ſplay of every window is in proportion to the thickneſs of the wall: a large ſplay appears to have been much eſteemed; and, when the wall is not of dimenſions ſufficient to admit of it, then a few mouldings are appended to the ſides of the archivolt, reſting upon a ſtring or belt, or elſe upon a ſort of corbel, formed into a groteſque head. The *apron*, or ſill, has nearly the ſame degree of obliquity as the ſides of the window; at the bottom it projects a few inches, where there is a little channel to prevent the rain from recoiling on the wall. See the annexed Plate of the Section of the Church of Batalha, which ſerves to illuſtrate this deſcription of the windows, and to ſhew the rich effect of the interior building.

The piers, between the windows in churches, are very narrow, in conſequence of the breadth of the apertures; and the great ſplay of their architraves, together with the half-pillars of the ailes, occupy nearly the whole of the wall; ſo that no plain ſpace remains for the reception of pictures. The ancients, on the contrary, made the piers of their edifices large, and the apertures comparatively ſmall, which is ſtill conſidered as the grand ſtyle in Grecian architecture; as the magnitude of the piers gave them an opportunity of embelliſhing the inſide with pictures and ſtatues. The Gothic architects, however, have amply compenſated for this deficiency, by making the windows, inſtead of the walls, the depoſitory of their pictures; and thus, by commuting the canvaſs for the glaſs, they obtained one important advantage, that is, a natural black light, a light which has the peculiar property of giving every production of the pencil the greateſt poſſible degree of force and brilliancy. The various colours of theſe windows form a happy contraſt with the ſimple white or grey caſt of the ſtructure; and, as they obſcure the church in ſome degree, they diffuſe an appearance of ſolemnity, well adapted to the majeſty of the place.

The windows of Gothic buildings in the reign of Henry II. were long, narrow, ſharp-pointed, and uſually decorated on the inſide and outſide with ſmall marble ſhafts: the order and diſpoſition of the windows varied in ſome meaſure according to the ſtories of which the building conſiſted; in one of three ſtories, the uppermoſt had commonly three windows within the compaſs of every arch, the centre one being higher than thoſe on each ſide; the middle tier or ſtory had two within the ſame ſpace; and the loweſt only one window, uſually divided by a pillar or mullion, and often ornamented on the top with a trefoil, ſingle roſe, or ſome ſuch ſimple decoration, which probably gave the hint for branching out the whole head into a

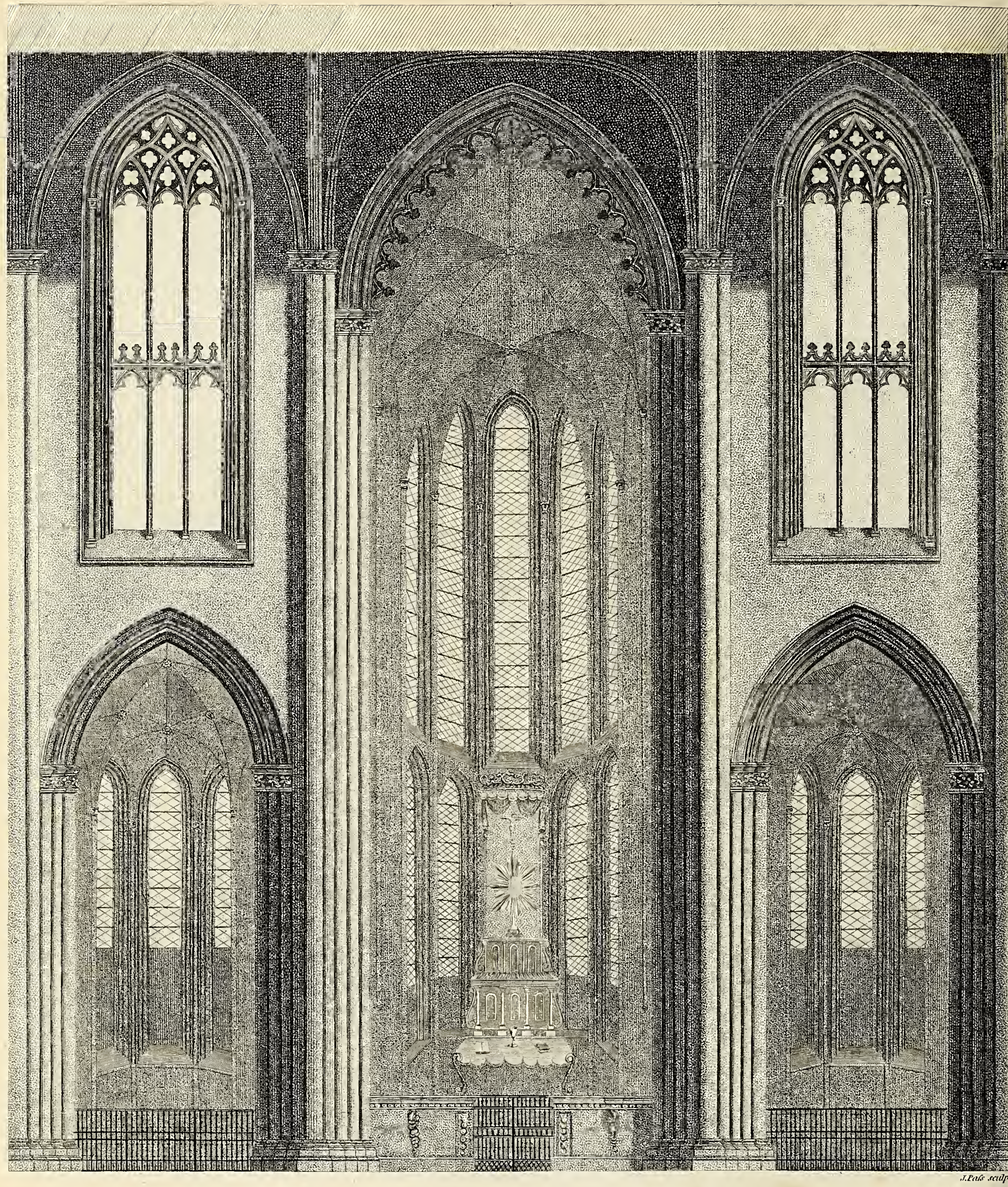
ARCHITECTURE.



J. Pass sculp.

A Section of the Church of Batalha in Portugal, shewing the internal arrangement of the Windows, Pillars, Arches, &c.

London Published as the Act directs, Nov. 12th 1797 by J. Wilkes.



J. Pass sculp.

Elevation of the Chancel of the Church of Batalha, in Portugal

London, Publish'd as the Act directs, Sept. 8. 1797, by J. Wilkes.

variety of tracery and foliage, when the windows came afterwards to be enlarged. The uſe of painting and ſtained glaſs, in our churches, is thought to have begun about this time. In the reign of Edward I. the windows were greatly enlarged, and divided into ſeveral lights by ſtone mullions, running into various ramifications above, and dividing the head into numerous compartments of different forms, as leaves, open flowers, and other fanciful ſhapes, and more particularly the great eaſtern and weſtern windows (which became faſhionable about this time), took up nearly the whole breadth of the nave, and were carried up almoſt as high as the vaulting; and, being ſet off with painted and ſtained glaſs of moſt lively colours, with portraits of kings, ſaints, martyrs, and confeſſors, and other hiſtorical repreſentations, made a moſt ſplendid and glorious appearance.

At Batalha, about five o'clock in the evening, ſays Mr. Murphy, when the ſun is oppoſite the great weſtern window, the effect of its painted glaſs is moſt enchanting. At this hour the fathers uſually aſſemble in the choir to chant the evening ſervice, whilſt the myriads of variegated rays, which emanate from this beautiful window, reſemble ſo many beams of glory playing around them. It is in vain, therefore, that we attempt to reſtore Gothic architecture, without the admiſſion of ſtained glaſs; eſpecially in churches, where a degree of obſcurity is perfectly conſonant with the tombs, inſcriptions, and other relics of mortality, we behold on every ſide. If to theſe we add the ſolemnity of the divine ſervice, the awful ſilence, and penſive deportment of the congregation, we muſt admit the propriety of accompanying ſcenes of this nature with a ſolemn ſhade, ſince it is allowed by all to be more productive of ſublime ideas than light. "Our great poet (to ſpeak in the words of a competent judge of theſe matters) was convinced of this; and indeed ſo full was he of this idea, ſo entirely poſſeſſed with the power of a well-managed darkneſs, contraſted with light, that in deſcribing the appearance of the Deity, amidſt that profuſion of magnificent images, which the grandeur of his ſubject provokes him to pour out upon every ſide, he is far from forgetting the obſcurity which ſurrounds the moſt incomprehenſible of all beings, but

"—— with the majeſty of *darkneſs* round
"Circles his throne."

NICHES were uſed but ſparingly by the Gothic architects. In ſome of the earlieſt ſtructures we trace but few inſtances of them, and theſe few are chiefly confined to the exterior of the edifice. In the church of Alcobaça, one of the moſt ancient in the Gothic ſtyle, I do not recollect, ſays Mr. Murphy, to have ſeen a niche, or a ſtatue, that was coeval with the original fabrication; and I may add the ſame of the interior of the church of Batalha: a ſtrong evidence that ſtatues in thoſe days conſtituted but a ſmall part of the ornaments of churches. The plan of theſe niches is generally a ſemi-hexagon; the head terminating with a projecting canopy.

Of the BODY of the CHURCH.

The church was entirely ſeparated from all profane buildings, at a diſtance from noiſe, and ſurrounded on every ſide with courts, gardens, or buildings dependent on the church, all ſhut up within an encloſure of walls. Firſt there was a gate or entry which led into a periſtyle, that is to ſay, a ſquare court, environed with covered galleries, ſupported by columns like the cloyſters of monaſteries. The poor remained under theſe galleries, and were allowed to beg at the church-door. In the middle of the court was one or more fountains, to waſh the hands and face before prayer: the holy-water vaſes were now introduced. At the farther end was a double porch leading into the ſaloon or baſilick, which was the body of the church. This porch was double, becauſe part of it was without the church, and the other within, which the Greeks called *narthex*. Near the baſilick, on the outſide, were at leaſt two buildings, the baptiſtery at the entrance, and the ſacriſtry or treaſury, called *ſecretarium*, or *diaconicum*, at the farther end; the latter was ſometimes double. Along the ſides of the church were often chambers or cells, for the convenience of ſuch as wiſhed to pray or meditate in private; we ſhould call them chapels.

The baſilick was divided into three parts, proportionable to its breadth, by two files of pillars, which ſupported galleries on each ſide: in the middle was the nave, as we ſtill ſee in all the old churches. At the eaſtern end was the altar, behind which was the preſbytery or ſanctuary, afterwards called the tranſept of the church. Its plan was ſemicircular, and finiſhed at top like a niche; therefore called in Latin *concha*, a ſhell; the receſs was called in Greek the *abſis*. The Chriſtians, perhaps, at firſt wanted to imitate the ſitting of the ſanhedrim of the Jews, where the judges were ſeated in a ſemicircle, and the preſident in the middle. The biſhop held the ſame place in the preſbytery, having the prieſts on each ſide of him. His ſeat was called *thronos* in Greek, and was more elevated than the others. All the ſeats together were called in Greek *ſynthronos*, in Latin *conſeſſus*. Sometimes this place was called tribunal, in Greek *bema*, becauſe it reſembled the tribunals of the ſecular judges in the baſilicks, the biſhop being as it were the magiſtrate, and the prieſts his counſellors. This tribunal was raiſed, and the biſhop came down from it to approach the altar. The front of the altar was encloſed by an open baluſtrade, beyond which was another ſeparate place in the nave for the chanters or ſingers, which on this account was called the choir, in Greek *choros*, or chancel, from the Latin word *cancelli*. The chanters were only ſimple clerks appointed to that function. At the entrance of the choir was the *ambo*, that is, a raiſed tribune, with ſteps up to it on both ſides, ſerving to read the public leſſons: ſince it is called the pulpit, deſk, or lobby. If there was but one ambo, it was in the middle; but ſometimes there were two, that the altar might not be hid. On the right-hand of the biſhop, and conſequently on the left-hand of the people, was the pulpit for the goſpel; and on the oppoſite ſide that for the epiſtle; ſometimes there was a third for the prophecies.

The altar was a table of marble or porphyry: ſometimes it was of maſſy ſilver, or even of gold, enriched with precious ſtones, for nothing was too coſtly to bear the holy of holies. The ceremonies ſtill uſed in the conſecration of altars ſufficiently expreſs this reſpect. It was ſometimes, however, only of wood, ſupported on four feet or columns, rich in proportion, and placed over the tomb of ſome martyr; for it was cuſtomary to aſſemble, or build churches, by their tombs; or, at leaſt, their bodies were tranſlated to the places where the churches were erected. Hence, at length it became a rule to conſecrate no altar without placing ſome relics under it. Theſe ſepulchres of the martyrs, were called their *memories* or *confeſſions*: they were under ground, and the way down to them was before the altar. This remained uncovered except during the time of the ſacrifice, only covered with a carpet, and nothing was placed immediately on it. Afterwards it was ſurrounded with four pillars, ſupporting a kind of tabernacle which covered the whole altar, and was called *ciborium*, on account of its ſhape, which was that of a cup reverſed. Although it was very early the cuſtom to incloſe the altar, and all the chancel, by balluſters, yet it was not till the time of Conſtantine, that the choir was ſeparated from the nave; an improvement of no ſmall conſequence to the internal beauty and elegance of the ſtructure. The chancel, in all churches, as it receives the altar, and gives a privilege to every founder to a ſeat and ſepulchre within the rail, ſo it ſeems to be an eſtabliſhed rule, in the Gothic architecture, to beſtow upon it the richeſt ornaments, and the higheſt finiſhing. The annexed Plate of a Central View of the Chancel to the Church of Batalha, will ſerve to illuſtrate this peculiar part of the interior building.

It has been ſaid, that all churches dedicated to the Holy Trinity, were, on that account, conſtructed with three ailes; and that this was the origin of that mode of building.

ing. Mr. Murphy, however, with great apparent reaſon, ſeems to attribute this, as well as the ſpires and pinnacles, to Egyptian invention. He ſays, that "among the various ſtructures of the ancients, there is none that approaches nearer to the form of a Gothic church, than the Egyptian-hall, deſcribed by Vitruvius, b. vi. c. 6. The ſimilitude is obvious at the firſt view; but, were the hall executed entirely in ſtone, the reſemblance would be ſtill more apparent. The arches over the ailes would require lateral reſiſtance proportionate to their impulſe; buttreſſes would neceſſarily follow; the vault of the nave would alſo require an adequate reſiſtance; the nature of the deſign would immediately ſuggeſt the idea of reclined fulcra, extending from the walls of the ailes to thoſe of the nave. And, ſince materials of this ſort could not be eaſily obtained to form each fulcrum of one entire piece, the conjunction of different ſtones, in the form of an arch, is the only ſupport that could with propriety be applied; we ſhould call it a flying buttreſs. It is true, that a ſolid wall of a triangular form would anſwer that end, as is ſeen in the Temple of Peace at Rome; but the ſuperiority of the Gothic manner is evidently preferable in every reſpect. In fine, were an Egyptian hall entirely conſtructed of the ſimple produce of the quarry, the arches and buttreſſes conſequently introduced, together with the pillars, windows, ailes, and the uncovered paſſages over the ailes, would bear a ſtriking reſemblance to the body of a Gothic church.

It is generally admitted, that the cathedral church of Saliſbury, taken in the aggregate, is the moſt complete of any in England, ariſing from its having been wholly erected at one time, and upon one uniform plan. We have therefore choſen a correct view of this ſuperb ſtructure, to illuſtrate the *external* effect of the Norman Gothic architecture. The deſcription is taken from Sir Chriſtopher Wren, who ſurveyed it in 1668. "The whole pile (ſays Sir Chriſtopher) is large and magnificent, and may be juſtly accounted one of the beſt patterns of architecture of the age wherein it was built. The figure of it is a croſs, upon the interſection of which ſtands a tower, and a ſteeple of ſtone, as high from the foundation as the whole length of the nave, and is founded upon four pillars and arches of the interſection. Between the ſteeple and the eaſt end is another croſſing of the nave, which on the weſt ſide only has no ailes: the main body is ſupported on pillars with ailes annexed, and buttreſſes without the ailes, from whence ariſe bowes or flying buttreſſes to the walls of the nave; which are concealed within the timber roof of the ailes.

"The roof is almoſt as ſharp as an equilateral triangle, made of ſmall timber after the ancient manner, without principal rafters. The whole church is vaulted with chalk between the arches and croſs ſpringers only, after the ancient manner, without orbs and tracery, excepting under the tower, where the ſpringers divide, and repreſent a ſort of tracery; and this appears to me to have been a later work, and to have been done by ſome later hand than that of the firſt architect, whoſe judgment I muſt juſtly commend for many things beyond what I find in divers Gothic fabrics of later date, which though more elaborated with nice and ſmall works, yet want the natural beauty that ariſes from proportion of the firſt dimenſions; for here the breadth to the height of the naves, and both to the ſhape of the ailes, bear a good proportion: the pillars and the intercolumniations (or ſpaces betwixt pillar and pillar) are well ſuited to the height of the arches. The mouldings are decently mixed with large planes, without an affectation of filling every corner with ornaments, which, unleſs they are admirably good, glut the eye, as much as in muſic too much diviſion cloys the ear. The windows are not made too great, nor yet the light obſtructed with many mullions and tranſoms of tracery work, which was the ill faſhion of the next following age; our artiſt knew better, that nothing could add beauty to light; he truſted in a ſtately and rich plainneſs, which his marble ſhafts gave to his work."

The different ſtyle of architecture which diſtinguiſhes the ſpire and the higher part of the tower from the reſt of the ſtructure, has often induced critical judges of Gothic architecture to ſuſpect that the ſpire was added to the tower in a period much poſterior to the original building; but no probable conjecture has yet been offered to determine its proper age; the reader will therefore perhaps be gratified by the following information: "There is a patent of the firſt year of king Henry VI. 1423, which recites, 'That the ſtone tower ſtanding in the middle of Saliſbury cathedral is become ruinous, and empowers the dean and chapter to appropriate 50l. annually for its repairs.' This was a very conſiderable ſum; and I think an inference may fairly be drawn, that the repair was made, and the tower rebuilt, with the addition of a ſpire. The higher and greater part of the preſent tower is evidently ingrafted on work of an older and ſimpler conſtruction. I ſuppoſe this new tower and ſpire to have been finiſhed not later than the year 1429, for in that year Sir Walter Hungerford had licenſe from the king to appropriate the great tythes of Cricklade and the reverſion of the manor of Cricklade, called Abingdon's Court, to the dean and chapter of Saliſbury cathedral, to maintain the tall ſpire ſteeple of that fabric in repair." *Dugdale's Baronage*, ii. 205.

It is ſaid that a conſultation was once held, whether it would not be adviſable to take down the ſpire, (this was ſoon after the fall of Winborne ſpire in 1610,) it being in ſo ruinous a ſtate; but, after ſome deliberation it was reſolved in the negative. Sir Chriſtopher Wren being afterwards employed, he ſo ſtrengthened it as to make that and the tower more ſecure than ever. The architecture of the preſent tower and its ſpire is quite in that ſtyle of building which began to be in faſhion about the beginning of the 15th century. The walls of the ſpire at its baſe are about two feet in thickneſs, which, as it aſcends, leſſens, till at the top it finiſhes at only 7 inches thickneſs. A neat parapet wall encompaſſes the whole building; and the quantity of timber in the ſeveral roofs, according to a moderate computation laid before the lords of the treaſury in the year 1737, amounts to 2641 tons of oak. The dimenſions of the principal parts of the cathedral are as follow:

Lengths.	*Feet.*
Extreme outſide from weſt to eaſt	480
Ditto inſide	452
From the extreme weſt to the centre of the tower	235
Ditto inſide	217
From the centre of the tower to that of the eaſt croſs	96
Widths.	
Extreme outſide of the grand croſs, ſouth to north	232
Ditto inſide	205
Extreme of the weſt front	115
Extreme of the body, or three ailes	102
Nave between pillar and pillar	34
Extreme of the tower from weſt to eaſt	51
Heights.	
From the pavement to the extreme top of the ſpire	400
Ditto to the top of the capſtone or ball	387
Ditto to the top of the parapet wall of the tower	207
Ditto to the extreme top of the weſt front	130
Ditto to the top of the vaulted cieling of the nave	84
Ditto to the cieling of the ailes	38
Height of St. Peter's at Rome	437½
Height of St. Paul's preſent cathedral, London	340

The choir has lately received a moſt complete repair, under the direction of Mr. Wyatt, with the addition of ſtained glaſs. The entrance is awfully ſtriking: the windows at the eaſt-end repreſent the Elevation of the Brazen Serpent, and the Reſurrection. The former was the gift of the earl of Radnor in 1781, deſigned by the late ingenious Mr. Mortimer, and executed by Mr. Pearſon; it is compriſed in three compartments, and conſiſts of twenty-one figures, all of which are admirably executed: its dimenſions are twenty-one feet in height, by ſeventeen feet ſix inches in width. In this window the diviſions of the glaſs are concealed by being in the dark ſhades of the draperies and figures, and a frame of iron, to which it is faſtened by bandages of lead, is ſo conſtructed as to be hid from the view by correſponding to the different ſhades. The other, the ſubject of which is the Reſurrection, was deſigned by Sir Joſhua Reynolds, and executed by Mr. Egington, near Birmingham, whoſe great abilities are univerſally admired: the window is twenty-three feet high, and is compriſed in three compartments; it principally conſiſts of one figure, which is a full-length of our Saviour juſt ariſen from the tomb, from which a glory proceeds, and diffuſes itſelf throughout the whole, diſperſing the darkneſs of the night: in the left compartment is a diſtant view of mount Calvary and the croſſes. The windows on each ſide are painted in moſaic, and thoſe on the north and ſouth ſides of what was the Lady's chapel are ornamented with the ſame elegant work: theſe, together with the range of columns within, and the vaulting above, form, perhaps, one of the grandeſt ſcenes in architecture. The pavement is black and white marble, and the amazing lightneſs of the columns that ſupport the roof is ſcarcely to be conceived; the four principal ones, not meaſuring more than ten inches diameter, are near thirty feet high; the cluſtered ones are ſtill more delicately light, and are now entirely detached from any incumbrances. By this means the beautiful perſpective of the whole building is judiciouſly preſerved, and cannot fail of ſtriking the moſt critical eye with admiration and delight.

If, then, the architects of theſe cathedrals were ſo illiterate as they have been repreſented, it is aſtoniſhing how they could have acquired the laws of conſtruction ſo accurately, or have aſcertained the maximum of their pillars, arches, buttreſſes, &c. whilſt the moderns, with all their ſuppoſed improvements in this art, and the aſſiſtance they evidently derive from algebra, have not yet produced any examples in conſtruction equal to what the former have left us. It is not to be ſuppoſed, indeed, that all the architects of thoſe times were competent to ſuch an arduous taſk; therefore the illiterate ones, whoſe talents were limited to the practice of their art, availed themſelves of the excellencies of ſome approved model, and thus obviated all calculation reſpecting the ratio of force and reſiſtance. This in ſome meaſure accounts for the ſimilarity we find in the breadth of many of theſe edifices, both in this country and on the continent. We could adduce many inſtances in teſtimony of this fact, if we admit the relation of their hiſtorians; but, for brevity's ſake, we ſhall only quote the ſtructures meaſured by Mr. Murphy, which differ but very little in breadth, as appears by the following comparative eſtimate:

	Feet.	*Inches.*
Batalha - - - -	72	4
Alcobaça - - -	72	0
Ely Cathedral - - -	72	9
Weſtminſter Abbey - - -	72	8

In the conſtruction of many of our beſt Gothic edifices, we find but few large ſtones, whence ſome writers have imagined that their architects were unacquainted with mechaniſm; but it ſeems to proceed partly from the nature of the quarry, and partly from their mode of building. The ſplendour of their works conſiſted in arches; in the fabrication of which, materials of a moderate ſize are to be preferred, becauſe large ſtones preſs too heavy on the centres, and require much time and labour in forming their intrados to the curvature of the vault. Where theſe objections did not apply, they often uſed blocks which no human force could raiſe, independent of mechanical aid. Indeed we may venture to aſſert, that there is not in Europe a Gothic church, or cathedral of note, wherein three or four of the mechanical powers have not been uſed. It is obvious that their arches, particularly thoſe of the naves and ailes, are ſupported on the principles of the ſtatiſtical balance; each ſtone of which they are compoſed is a fruſtrum of a wedge. Pullies were uſed in raiſing their cornices, pinnacles, &c. and the lever was neceſſarily employed in moving and fixing them. Here we find the application of the balance, the wedge, the pulley, and the lever, which four powers would have been ſufficient to raiſe either of the ſeven celebrated ſtructures of antiquity. How far they were converſant with the theory of theſe powers, is a point not eaſy to decide. The experience of paſt ages has evinced what great things might be effected in mechanics, independent of ſcientific calculations. The obeliſks, columns, and enormous granite blocks, of the Egyptians, were tranſported, as we are aſſured, without any precognition of the complicated movements of wheels and pullies. Joſe Zabaglio, of Rome, never received any inſtructions, he could not even write or read, yet, by the force of his genius alone, he invented machines which, though ſimple in appearance, produced moſt ſurpriſing effects. In our own days, we have many ſtriking inſtances of ſimilar inventive faculties in men unaſſiſted by erudition. An obſcure workman, of the name of Caſhman, deſigned and executed for the Dublin Society, a few years ago, a flight of winding ſtairs, aſcending in the midſt of a quadrangular hall, without any apparent ſupport whatever, contrary to all preceding examples. The equeſtrian ſtatue of Joſeph I. king of Portugal, one of the moſt magnificent works of the kind in Europe, was entirely caſt by a perſon of the name of Bartholomew da Coſta, who, as we are credibly informed, was not in the leaſt indebted to the theory of any art or ſcience. This ingenious man, after caſting the above ſtatue, tranſported it from the foundery to the great ſquare of Liſbon by machines of his own contrivance, and afterwards raiſed it on its lofty pedeſtal, to the admiration of all the mathematicians of that country.

Of CASTLES.

The venerable remains of theſe immenſe fabrics, which are more or leſs diſperſed throughout the kingdom, are ſo many monuments of the Saxon and Norman Gothic architecture. The materials of which caſtles were built varied according to the places of their erection: but the manner of their conſtruction ſeems to have been pretty uniform. The outſides of the walls were generally built with the ſtones neareſt at hand, laid as regularly as their ſhapes would admit; the inſides were filled up with the like materials, mixed with a great quantity of fluid mortar, which was called by the workmen grout-work. The general ſhape or plan of theſe caſtles depended entirely on the caprice of the architects, or the form of the ground intended to be occupied: neither do they ſeem to have confined themſelves to any particular figure in their towers; ſquare, round, and polygonal, oftentimes occurring in the original parts of the ſame building.

The ſituation of the caſtles of the Anglo-Norman kings and barons, was moſt commonly on an eminence, and near a river; a ſituation on ſeveral accounts eligible. The whole ſite of the caſtle (which was frequently of great extent and irregular figure) was ſurrounded by a deep and broad ditch, ſometimes filled with water, and ſometimes dry, called the *foſſe*. Before the great gate was an outwork, called a *barbacan*, or *antemural*, which was a ſtrong and high wall, with turrets upon it, deſigned for the defence of the gate and draw-bridge. On the inſide of the ditch ſtood the wall of the caſtle, about eight or ten feet thick, and between twenty and thirty feet high, with a parapet, and a kind of embraſures, called *crennels*, on the top. On this wall at proper diſtances ſquare towers of two or three ſtories high were built, which ſerved for lodging ſome of the principal officers of the proprietor of the caſtle, and for other purpoſes; and on the inſide were erected lodgings for the common ſervants or retainers, granaries, ſtorehouſes, and other neceſſary offices. On the top of this wall, and on the flat roofs of theſe buildings, ſtood the defenders of the caſtle, when it was beſieged, and from thence diſcharged arrows, darts, and ſtones, on the beſiegers. The great gate of the caſtle ſtood in the courſe of this wall, and was ſtrongly fortified with a tower on each ſide, and rooms over the paſſage, which was cloſed with thick folding doors of oak, often plated with iron, and with an iron portcullis or grate let down from above. Within this outward wall was a large open ſpace or court, called, in the largeſt and moſt perfect caſtles, the *outer bayle*, or *ballium*, in which ſtood commonly a church or chapel. On the inſide of this outer bayle was another ditch, wall, gate, and towers, incloſing the inner bayle or court, within which the chief tower or *keep* was built. This was a very large ſquare fabric, four or five ſtories high, having ſmall windows in prodigious thick walls, which rendered the apartments within it dark and gloomy. This great tower was the palace of the prince, prelate, or baron, to whom the caſtle belonged, and the reſidence of the conſtable or governor. Under ground were diſmal dark vaults, for the confinement of priſoners, which made it ſometimes be called the *dungeon*. In this building alſo was the great hall, in which the owner diſplayed his hoſpitality, by entertaining his numerous friends and followers. At one end of the great halls of caſtles, palaces, and monaſteries, there was a place raiſed a little above the reſt of the floor, called the *deis*, where the chief table ſtood, at which perſons of the higheſt rank dined. Though there were unqueſtionably great variations in the ſtructure of caſtles, yet the moſt perfect and magnificent of them ſeem to have been conſtructed nearly on the above plan. Such, to give one example, was the famous caſtle of Bedford, as appears from the following account of the manner in which it was taken by Henry III. in 1224. The caſtle was taken by four aſſaults. "In the firſt was taken the barbican; in the ſecond the outer ballia; at the third attack, the wall by the old tower was thrown down by the miners, where, with great danger, they poſſeſſed themſelves of the inner ballia, through a chink; at the fourth aſſault the miners ſet fire to the tower, ſo that the ſmoke burſt out, and the tower itſelf was cloven to that degree, as to ſhew viſibly ſome broad chinks: whereupon the enemy ſurrendered."

To moſt of theſe caſtles were annexed large ſubterraneous paſſages or caverns under ground, dug from the loweſt vault in the interior of the caſtle, quite under the foundation, and continued perhaps to the diſtance of half a mile in a direct line, ſerving not only for a place of ſecurity in times of danger, but alſo for a means of eſcape, whenever a caſtle ſhould be ſtormed and taken by an enemy. The principal ſtructure of this kind now remaining in England, from which might be collected an adequate idea of the magnitude and ſplendour of theſe princely fabrics, is the caſtle of Windſor, an attentive inſpection of which will amply repay the time and labour of every critical enquirer into the rudiments of the Norman Gothic architecture.

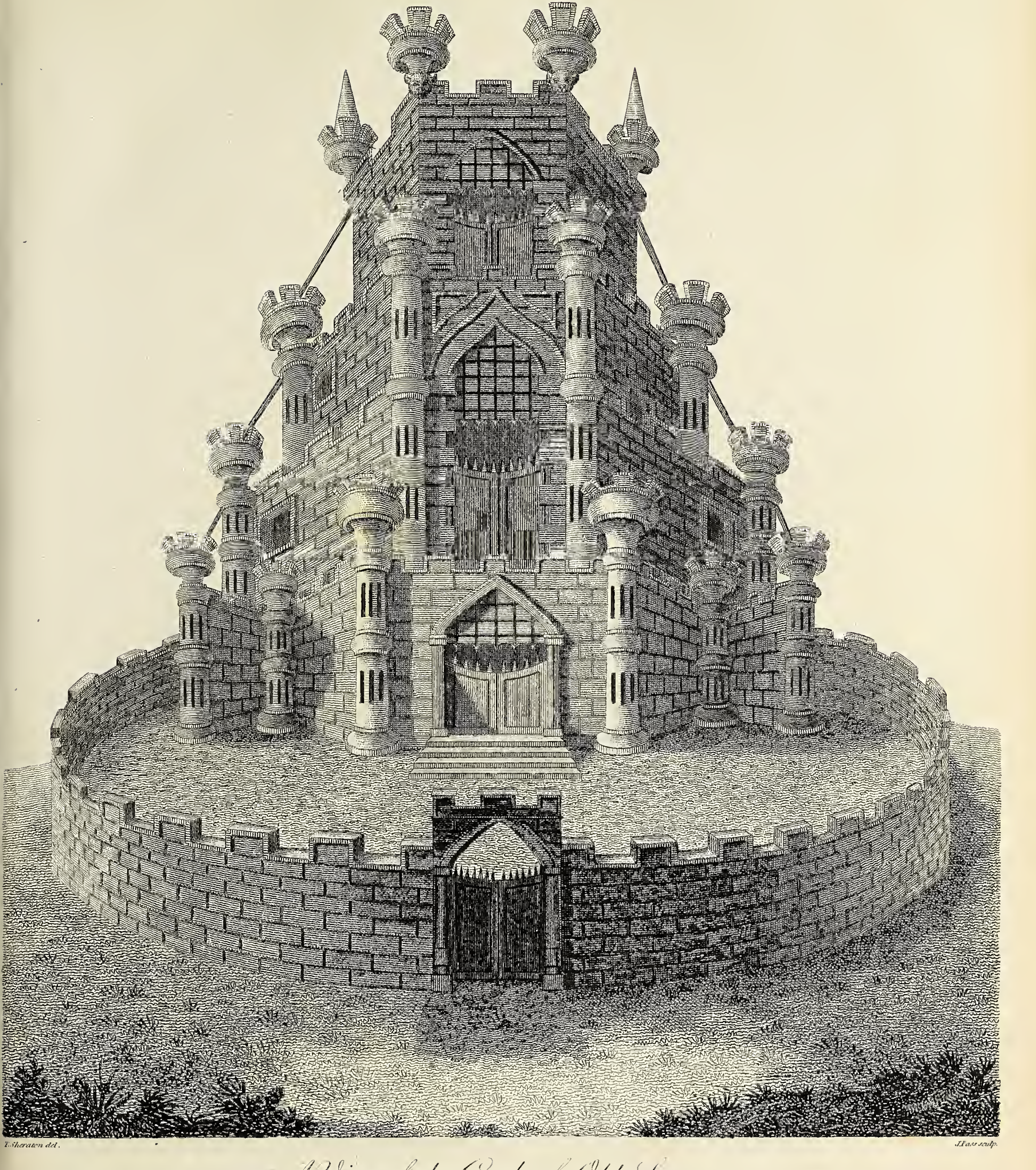
On the ſea-coaſts of Scotland we generally find the ſtrongeſt and moſt ancient, as well as the moſt impregnable, caſtles. Theſe had to defend themſelves from the invaſion of the foreign enemy, as well as the attacks of the domeſtic foe. Thus we find the barons, whoſe lands extended to the ſea-coaſt, perched, like the eagle, on the moſt inacceſſible rocks that lay within their poſſeſſions. Of this kind were Slains caſtle, Tantallon, and Dunotter, on the eaſt coaſt; and Dunvegan in the iſle of Sky, with Dunolly, on the weſt coaſt. Theſe muſt have been moſt uncomfortable retreats, except to a barbarous people, or when a preſſing danger forced the baron to ſeek his ſafety in the only poſſible retreat left him.

Very ſimilar to theſe, as being erected on the ſummit of a lofty and circular hill, was the caſtle of Old Sarum, of which we obtain the following account from Bleſenſis and Camden. "Old Sarum is a place expoſed to the wind, barren, dry, and ſolitary; a tower is there, as in Siloam, by which the inhabitants have for a long time been enſlaved." The ancient caſtle was founded on the extreme point or termination of a high hill, which commands an extenſive proſpect. The whole fortreſs was erected of a circular figure, and occupied a ſpace of near two thouſand feet diameter: but the ancient city ſtood to the ſouth-weſt of the caſtle, and, as it were, under its ramparts. The caſtle was fortified by a deep entrenchment, with a very ſtrong wall upon its inner ramparts, conſiſting of flint, chalk, and rubble, caſed on the outſide with hewn ſtone, as may be ſeen by a part ſtill remaining towards the north. It had two entrances, the principal towards the ſouth-eaſt, guarded by a mole without, but ſo near it, as to admit but of a very narrow paſſage. The outer was to the ſouth-weſt, for bringing water to the garriſon from the river Avon, which runs through the vale below, at the diſtance of about half a mile. Near the north entrance, in the large area within, are part of the foundations of the church; likewiſe the traces of many other buildings. This large area was divided into parts by entrenchments, with ramparts thrown up. At the centre, bounded by the preceding entrenchment, there is another encloſure, guarded with a deep entrenchment and very high rampart inwards, having upon its ſummit the viſible traces of a wall, with the remains of a portal towards the ſouth-eaſt, and of a watch-tower towards the north-weſt, which may, therefore, be reckoned the citadel. Here alſo are diſcovered other foundations of ruined ſtructures. Not far ſouthward from the old watch-tower, a remarkable ſubterraneous paſſage has been lately diſcovered. The earth and timber by which the mouth of it was before concealed having been looſened by the thawing of a deep ſnow, the whole ſuddenly fell in, diſcloſing a vault cut in the ſolid chalk, that extends from the edge of the outer area of the caſtle to the depth of more than forty yards, and runs nearly parallel to the declivity on the outſide. Towards the bottom there are traces of ſteps, which might probably continue ſtill farther than the preſent termination of the paſſage, though whether the latter was intended for a ſally-port, or whether it conducted to ſome ſubterraneous apartment, it is difficult to determine.

No mention is made when or by whom this caſtle was founded, but it certainly was of very ancient date. It appears, by Dugdale's Baronage, that the caſtle of Old Sarum was given, in the year 1447, to one of the lord Stourtons, at that time treaſurer of the houſehold of Henry VI. It muſt then have been detached from the earldom, and in the crown; for, upon being repreſented ſo ruinous as to yield no benefit to the king, the patent ſays, it was granted (25th Henry VI.) to John lord Stourton, in fee, together with the banks, ditches, walls, and gardens, thereunto belonging, to be held by fealty, at the rent of 3s. 4d. per annum. It came again into the gift of the crown, in queen Mary's reign, by the attainder of Charles lord Stourton, who was executed for the murder of Mr. Hartgill and his ſon, (who were Proteſtants,) at his own table. We find it in the reign of James I. in the poſſeſſion of Sir Robert Cecil, ſecond ſon of lord Burleigh, who was then created earl of Saliſbury, whoſe deſcendant, earl James, ſold the manor of Old Sarum, in 1690, to governor Pitt, for 1500l. The governor's nephew, the great earl of Chatham, was born at the manor houſe, and his deſcendant, Thomas Pitt lord Camelford, ſucceeded to it. The buildings and all the outworks were in good repair in the reign of king Stephen; as its ſtyle of architecture was always deemed very curious.

Of MODERN or PRACTICAL ARCHITECTURE.

In the fifteenth and ſixteenth centuries, when learning of all kinds began to revive, the civil architecture of the Greeks and Romans was recalled, as it were, into new life. The firſt improvements in it began in Italy, and owed their exiſtence to the many ruins of the ancient Grecian ſtructures that were to be found in that country, from whence an improved method of building was gradually brought into the other countries of Europe. And though the Italians for a long time retained the ſuperiority as architects over the other European nations; yet, as men of genius began to travel from all quarters into Italy, where they had an opportunity of inſpecting into the originals from whence the Italians copied, architects quickly ſprung up



T. Sheraton del.

J. Pass sculp.

A View of the Castle of Old Sarum.

London Published as the Act directs March 2.1798 by J. Wilkes.

up in England, of the firſt profeſſional eminence and ability. Inigo Jones firſt enriched this kingdom with palaces and noble manſions in the Greek and Roman ſtyle, which are at this day the admired reſidences of ſome of the moſt diſtinguiſhed families in different parts of the country. Sir Chriſtopher Wren ſucceeded, and improved upon the examples of his predeceſſor, until he eclipſed Rome herſelf, by the erection of that ſublime and beautiful ſtructure, St. Paul's cathedral. Sir Chriſtopher brought up his improvements in architecture to the opening of the ſeventeenth century, ſince which time this ſcience has made ſuch aſtoniſhing progreſs in England, that we may with ſafety aſſert we are not excelled, perhaps not equalled, in any part of the univerſe, for the elegance and ſplendour of our modern buildings.

The apparent cauſe of this ſucceſs in our architecture, ſeems to have ariſen from what every profeſſor of it ſhould conſtantly have in view, namely, a happy combination of the uſeful with the ornamental, wherein true proportion, regularity, and beauty, are alike conſpicuous. To effect this, however, is ſometimes attended with great difficulty; nor is every ſtructure calculated to admit of theſe united perfections. In ſuch caſes, the judgment and foreſight of the architect muſt be exerted, to decide upon that which the nature and deſtination of the building requires, to expreſs its leading or prominent feature. The ſafeſt method is in general to prefer utility to ornament, in proportion as the character of the building will admit of it. In palaces, and ſuch buildings as are capable of a variety of uſeful contrivance, regularity ought to be preferred; but in dwelling-houſes that are on too ſmall a ſcale for variety of contrivance, regularity ſhould give place to uſefulneſs, ſo far at leaſt as the former ſtands in direct oppoſition to the latter.

In contemplating the beauty of viſible objects, we diſcover two kinds: the firſt may be termed *intrinſic* beauty, becauſe it is diſcovered in a ſingle object, without relation to another. The ſecond may be termed *relative* beauty, being founded on a combination of relative objects. Architecture admits of both. There is a ſort of beauty or harmony in the whole character of a building, with relation to its intended occupier. Vitruvius, Palladio, and other writers, have been careful to inculcate this doctrine, as abſolutely neceſſary to be obſerved by a good architect. Indeed it is founded on ſelf-evident principles; for all will admit, that the appearance of a palace ought to convey an idea of the majeſty and grandeur which are peculiar to monarchs, ſo that a common obſerver may pronounce, on the firſt view of ſuch an edifice, that it is deſtined to be the habitation of ſo dignified a perſonage. Nature herſelf is a precedent for this doctrine. The vaulted canopy of the heavens, and all their richly ornamented ſpheres, conſtitute a glorious temple, that moſt accurately beſpeaks the character of its divine poſſeſſor. The like conformity, in its humble degree, ſhould appear in thoſe inferior ſtructures erected by art, for the accommodation of the various claſſes of human ſociety. Regard is therefore to be paid to the dignity, rank, or profeſſion, of the intended occupier; but, if a building is deſtined to ſome particular and public profeſſion, then we ſhould regard the public uſe for which it is intended, without confining our ideas to the quality of any individual proprietor.

It is from *relative* beauty, that the proportions of a door are determined by the uſe to which it is deſtined. The door of a dwelling-houſe, which ought to correſpond to the human ſize, is confined to ſeven or eight feet in height, and three or four in breadth. Thoſe proportions aſſigned to a ſtable or coach-houſe are different, for different reaſons. The door of a church ought to be wide, to afford an eaſy paſſage to a multitude; and its height ſhould therefore be in proportion, that its appearance may pleaſe the eye. The ſize of windows ought always to be in proportion to the dimenſions of the room they are intended to illuminate; for if the apertures, or openings, be not large enough to convey light in an equal diſtribution to every part of the room, the whole will have a deformed appearance. Nothing can be more diſagreeable, than to ſee a profuſion and glare of light in one part of a room, whilſt the other is under a ſtrong ſhade; ſuch contrary effects always prove diſadvantageous to the appearance of furniture and other ornaments common to good apartments. Steps or ſtairs ſhould likewiſe receive a ſuitable proportion, and be accommodated to the human figure, without relation to the magnitude of any other part of the building; and therefore in ſmall and in larger houſes they ſhould riſe alike, becauſe men are nearly alike in ſtature. The proportions of rooms are either intrinſic or relative, though in moſt caſes both are included. The intrinſic proportion of a room is its length, breadth, and height; which being properly adjuſted, we pronounce it of a beautiful proportion, without regard to any other part of the building. But the relative beauty of proportion is as the whole area of the room is to the magnitude of the houſe of which it conſtitutes a part. A room may be well proportioned as to itſelf, but may, at the ſame time, be either too large or too ſmall for the whole edifice. In a ſumptuous building, the capital rooms ought to be large, otherwiſe they will not be proportioned to the ſize of the whole; and for the ſame reaſon a very large room is improper in a ſmall houſe; yet every houſe ought to have both large and ſmall rooms, in proportion to itſelf. Yet, in things thus related, the mind requires not a preciſe or ſingle proportion, rejecting all others; on the contrary, different proportions are ſometimes equally agreeable to view. It is only when a proportion becomes looſe and diſtant, that the agreeableneſs abates, and at laſt vaniſhes. With regard to the proportion the height of a room ſhould bear to the length and breadth, it muſt be rather uncertain in ſome caſes, ariſing from that deception to which the eye is ſubject when its height exceeds 16 or 17 feet; yet, if a proper optical allowance be made, we do not think the attainment of a beautiful proportion ſo hazardous or arbitrary a taſk as ſome architects would inſinuate. A room 48 feet in length, and 24 in breadth and height, is well proportioned; but it is well known, that, were we to reduce thoſe to 12 and 24, a room would approach too near the appearance of a gallery. Yet it is evident that, if the proportion be ſo adjuſted as to be in the medium between theſe two, a room cannot produce a bad effect as to its ſize. For inſtance, if the height and breadth be 18 feet each, and the length 36 feet, this proportion of a room is by architects termed harmonic, or agreeable to the eye, anſwering to diapente, one of the chords in muſic, which includes the interval from 1 to 5, and is agreeable to the ear.

Upon this principle there are ſeven proportions aſſigned to rooms, which are termed harmonies or agreeables. The cube, cube and half, double cube, the ſubduple of 4, 3, and 2: ditto of 5, 4, and 3: ditto of 6, 4, and 3: and laſtly, of 3, 2, and 1. Upon this ſcale, if the height of the room be 18 feet, as before, it is of the cube form when its width and length are the ſame, or more properly when the floor, cieling, and ſide-walls, are all of one dimenſion. The ſecond, or cube and half proportion, will be 27 feet long and 18 broad; the third, or double cube proportion, 36 feet by 18 broad; the ſubduple of 4, 3, and 2, produce 36 feet in length and 27 in breadth; ditto of 5, 4, and 3, produce 30 feet by 24 broad; ditto of 6, 4, and 3, produce 36 by 24 broad; ditto of 3, 2, and 1, produce 54 by 36 broad. To find the produce of theſe ſubduples proceed thus: in every caſe divide the given height of the room by the ſmalleſt numbers, 3, 2, or 1, as may be required. Again, multiply the quotient by the middle numbers 4, 3, or 2, and the produce will be the width of the room. Laſtly, multiply the ſaid quotient by the largeſt numbers 4, 5, 6, or 3, and the produce will give the length of the room of the firſt ſub-duplicate, 4, 3, and 2. Example: Diviſ. Divid. Quotient.

2) 18 (9

3 middle number mult.

quotient 9 mult. by the largeſt —

number 4 27 ft. width of the room.

36 ft. length of the room.

If we propoſe 12 feet for the height of the room, proceed as above. Yet it ſhould be obſerved, that the double cube proportion of a room upon this ſcale would be 12 feet in height and width, and 24 in length, which, though admitted amongſt the number of the harmonic proportions for rooms, is liable to approach too near the form of a gallery; and, on the other hand, the cube form might ſometimes be pronounced by the judgment of ſight too broad. This however is to be underſtood only when a room is of large dimenſions; for, when ſmall, it is quite agreeable and convenient. It is evident, then, that the double and ſingle cube are the two extreme proportions for rooms, and that each of them requires a certain ſcale of magnitude to render them beautiful and uſeful; the former being applicable to a large room, the latter to a ſmall one. It is alſo evident, that the doctrine of harmonic proportions of rooms is not quite perfect, otherwiſe there could be no exceptions taken in any caſe. It is not ſo in the proportion of ſounds; every chord is alike pleaſing upon any ſcale; and, though ſome of the chords are leſs perfect than others, yet all of them produce harmony to every ear capable of the ſenſations of muſic. We therefore are diſpoſed to conclude, that, though there exiſts a conſiderable agreement between the doctrine of ſounds and the dimenſions of a room, yet they are not perfectly parallel, conſequently the judicious architect will make his own exceptions. With reſpect to the figure of rooms little need be ſaid, as it is ſelf-evident that thoſe of four ſides with right angles are beſt adapted for the reception of light and the diſtribution of furniture. Thoſe, however, of the circular or regular polygonal kind are preferable, when the light comes in by an aperture in the roof or cieling.

With regard to the external proportions and fronts of houſes, an ingenious author has the following remark: "To ſee, on a conſiderable eminence, the length of a front trifling, and the height diſproportioned, would be as abſurd as to behold a front in a vale long and extended, and elevated only one ſtory. Proportion (ſays he) requires our niceſt choice, which muſt be dependent upon rules; for, as the jarring of inſtruments by blind chance cannot poſſibly pleaſe the ear, ſo the diſproportion of the parts of any object muſt naturally ſhock the eye; and in both, unerring rules muſt ſo proportion the ſounds, and diſpoſe the parts, as the whole may be in complete harmony. Nature has taught mankind, in muſic, certain rules for proportions of ſounds; ſo architecture has its rules dependent on thoſe proportions, or at leaſt ſuch proportions as are in arithmetical harmony; and thoſe we take to be dependent on nature. The ſquare in geometry, the uniſon or circle in muſic, and the cube in building, have all an inſeparable proportion, the parts being equal, and the ſides and angles, &c. give the eye and ear harmonic pleaſure." Yet even this theory, when applied to the whole fabric, gives way to exceptions; for the cube muſt not exceed 50 feet; the cube and half 60 feet; and the double cube 80 feet front. The general rule is as follows: if the cube be 50 feet front, the depth and height will be the ſame. The cube and half is when the front is 60 feet long; the depth and height each 40 feet. The double cube of 60 feet will be 30 feet deep and 30 feet high. In the country, where gentlemen's houſes are detached, and are eaſily viewed in front and depth by an approaching traveller, a ſtrict regard to proportion becomes neceſſary; for, if the cube form be adopted in very large houſes, it will appear uncouth and heavy; whilſt, on the other hand, it is equally diſagreeable to ſee a dwelling-houſe approach to the appearance of a lofty tower. Very high dwelling-houſes prove exceedingly expenſive and inconvenient; and therefore, where beauty of proportion is connected with utility, they ought rather to aſſume the figure of a parallelopipedon reſting on its larger baſe. Hence that form of building which rather ſpreads upon the ground than riſes in height, ſhould be always preferred. In towns, the houſes being generally attached to each other, they unitedly compoſe a regular ſtreet or ſquare; in which caſe, the proportions of an individual front are leſs obvious, and their depth in this reſpect immaterial. The great object of concern is the uniformity of the whole when completed; or of one individual houſe with the whole. In theſe ſituations, the proportions of houſes, and the length and extent of ſtreets, are rather ſubject to acts of parliament than to architectural laws. There are four different rates into which the proportions of houſes in town are divided or claſſed by the legiſlature. The firſt rate, or houſes of the largeſt ſize, are ſuch as exceed nine ſquares of building; thoſe of the ſecond rate, are from five to nine ſquares; thoſe of the third, from three and a half to five ſquares; and of the fourth, not exceeding three ſquares and a half. Their height is regulated in like manner, and the thickneſs of their walls and chimneys. Under ſuch reſtrictions the architect muſt often proceed under great diſadvantages, and muſt occaſionally call forth the good quality of docility recommended by Vitruvius.

Situation is alſo a ſubject highly worthy of the notice and choice of an architect. It muſt be obvious that a riſing ground is much better ſuited for a magnificent palace than a concealed valley; and that it would be incongruous and abſurd to erect a ſumptuous building on a wild, uncultivated, and barren, ground, deſtitute of water, woods, hills, or other natural beauties, which nature has aſſigned to various and even extenſive portions of the earth. Where ſuch ſituations are left to the choice of the architect, it becomes him to apply his taſte in fixing the preciſe ſituation or bearings of his intended work, in the execution of which he muſt attend to the four cardinal points. In the firſt place he muſt obſerve, that every internal diviſion or room may receive a due degree of light and heat, ſuited to its intended uſe, and the different ſeaſons in which it is more particularly to be occupied. Here the ſkilful architect muſt exerciſe ſeveral of thoſe qualifications enumerated by Vitruvius, as eſſentially requiſite to the formation of his character. And indeed, whatever qualifications are neceſſary in the proper choice of the ſituation and plan of a town or city, the ſame will be wanted to complete a country reſidence. The firſt and grand objects of human concern in this life, are health, pleaſure, and convenience; and whatever contributes to theſe muſt be ſtudied with attention. Hence the neceſſity of a ſituation beſt adapted for good air, a ſufficient ſupply of wholeſome water for family uſe, fertile grounds, whoſe produce in ſummer may impregnate and render ſalubrious the element in which we breathe. Directly oppoſed to theſe conſiderations are marſhy, low, and barren, lands, where even the hardy brute animal will ſcarcely thrive. Stagnant waters muſt more eſpecially be avoided.

Palladio ſays, the infallible marks of a good ſituation for health, are where the cattle thrive, and the inhabitants look ruddy and cheerful. In fixing on the preciſe ſpot of ground, that which is moderately elevated, if it be contiguous to ſome river, will be beſt adapted for health, pleaſure, and moſt probably for convenience too. In ſuch a ſituation, the air acquires a conſtant motion and free circulation, by which it purifies itſelf as water does by a current, and becomes more ſalutary to the human frame. And nothing can ſo much contribute to the excellence of a proſpect as a river, eſpecially a winding one; the beauty of which will, in idea, be heightened by its utility, as the means of ſupplying water for family uſe. Theſe moſt eſſential preliminaries being ſettled, the architect proceeds to conſider in what direction his front and flank are to be placed with reſpect to the ſouth or north points. This, in many inſtances, will be cloſely connected with the internal diviſion of the houſe, which aſſigns to each room its particular uſe and ſeaſon. Cool drawing-rooms are ſuitable for ſummer; and for this purpoſe they ſhould be large, and ſituated towards the north, or ſo as to be ſcreened from the ſcorching beams of the ſun. Warm drawing-rooms are adapted for winter; and therefore theſe ſhould be ſmall, and have a place towards the ſouth, or where the reviving rays of the ſun can have free acceſs. Rooms appropriated for ſpring and autumn may be in a medium ſituation to theſe, and ſhould have their windows to look into the different gardens or green walks. Libraries, ſtudies, breakfaſt and other morning rooms, ſhould have the ſame ſort of proſpect, as being moſt conformable to morning exerciſes. Finally, if the houſe be built on ſo large and magnificent a ſcale as to admit the ſame variety in all the different apartments, then the dining-parlours, bed-rooms, &c. will be ſubject to the ſame laws of ſituation, and anſwerable to the different ſeaſons of the year.

It has been a queſtion, whether or not the principal rooms ſhould lie neareſt the grand entrance, as being beſt ſuited to give them their full effect. We ſhall not decide upon this nice point, but will cite the reaſons of an eminent writer why they ought not. "A large and ſpacious room, which is generally the firſt that receives us, is a bad contrivance in ſeveral reſpects. In the firſt place, when immediately from the open air we ſtep into ſuch a room, its ſize is apparently diminiſhed by contraſt; and looks little, compared with the great canopy of the ſky. In the next place, when it recovers its grandeur, as it ſoon does, it gives a minute appearance to the reſt of the houſe; paſſing from it, every apartment looks little. In the third place, by its ſituation it ſerves only for a waiting-room, and a paſſage to the principal apartments. Rejecting therefore this form, a hint may be taken from the climax in writing for another that appears more ſuitable: a handſome portico, proportioned to the ſize and faſhion of the front, leads into a waiting-room of a larger ſize, and this to the great room, all by a progreſſion of ſmall to great."

The ſeveral offices, which have a place in the plan of houſes, ſhould be ſo arranged, as to appear to compoſe an inferior part of the whole building, not totally detached, yet in ſuch order as to keep the more offenſive ones as remote as poſſible from the principal parts of the houſe. This indeed is the true doctrine of nature; for, if we compare the ſeveral parts of a building to the various members which compoſe an animal frame, we ſee that the moſt beautiful parts are moſt conſpicuous, whilſt thoſe that are leſs comely either recede from the view, or are quite concealed.

It has been doubted whether a building can admit of any ornaments beyond ſuch as are uſeful, or at leaſt have the appearance of being ſo. But conſidering architecture no leſs as a fine than as an uſeful art, both kinds may be introduced; though it requires great judgment both as to the quantity and the arrangement. A private houſe, and other edifices, where uſe is the chief aim, admit not indeed of any ornaments but ſuch as have the appearance of utility. But temples, triumphal arches, and ſuch buildings as are chiefly intended for ſhow, may be highly ornamented without any regard to their ſeeming uſefulneſs. Hence it is that a threefold diviſion of ornaments has been ſuggeſted. Theſe are, firſt, ornaments that are beautiful without relation to uſe; ſuch as ſtatues, vaſes, &c. Second, objects in themſelves not beautiful, but poſſeſſing the beauty of utility, by impoſing on the ſpectator, and appearing to be uſeful; ſuch as blind windows. Third, where things are beautiful in themſelves, and at the ſame time aſſume the appearance of uſe; ſuch as pilaſters. With regard to the firſt, we naturally require that a ſtatue ſhall be ſo placed as that it may be ſeen in every direction, and at various diſtances, by having an opportunity of receding or advancing as we pleaſe. Statues placed in the niches of fronts of houſes, or on the tops of their walls and roofs, ought not to be admitted. Their proper places are in large halls, and in paſſages that lead to a grand ſtair-caſe, &c. To adorn the top of the wall with a row of vaſes, is an unhappy conceit, by placing a thing, whoſe natural deſtination is utility, where it cannot have even the leaſt appearance of it. Now, firmneſs and ſolidity being the proper expreſſions of a pedeſtal, and, on the contrary, lightneſs and delicacy of carved work, the pedeſtal, whether of a column or of a ſtatue, ought to be ſparingly ornamented. The ancients never ventured on any bolder ornament than the baſſo relievo.

With reſpect to ornaments of the *ſecond* kind, it is a great error to contrive them ſo as to appear uſeleſs. A blind window, therefore, when neceſſary for regularity, ought to be ſo diſguiſed as to appear a real window: when it appears without diſguiſe, it is diſguſtful, as a vain attempt to ſupply the want of invention; it ſhews the irregularity in a ſtronger light, by ſignifying that a window ought to be there in point of regularity, but that the architect had not ſkill ſufficient to connect external regularity with internal convenience. As to the *third*, it is very injudicious to ſink pilaſters ſo far into the wall, as to remove totally, or moſtly, the appearance of uſe. They ſhould always project ſo much from the wall, as to have the appearance of ſupporting the entablature over them.

Of all ornaments the pillar gives the greateſt elegance to extenſive buildings. The deſtination of a pillar is to ſupport, really, or in appearance, another part, termed the *entablature*. With regard to the form of a pillar, it muſt be obſerved, that a circle is a more agreeable figure than a ſquare, a globe than a cube, and a cylinder than a parallelopipedon. This laſt, in the language of architecture, is ſaying, that a column is a more agreeable figure than a pilaſter; and for that reaſon it ought to be preferred, when all other circumſtances are equal. Another reaſon concurs, that a column annexed to a wall, which is a plain ſurface, makes a greater variety than a pilaſter. Beſides, pilaſters at a diſtance are apt to be miſtaken for pillars; and the ſpectator is diſappointed, when, on a nearer approach, he diſcovers them to be only pilaſters.

Ornaments intended to decorate the orders, ſhould be judiciouſly adapted to the proper character of each. Plain and ruſticated embelliſhments would be extremely diſcordant with the elegance of the Corinthian column; and ſweet and delicate enrichments very ill ſuit the ſtrength and ſimplicity of the Doric. All kinds of fanciful and trifling devices, all faſhionable finery, ſhould be for ever excluded from the ſmalleſt place in our works. Sir Chriſt. Wren very juſtly cenſures this ſpecies of frivolity, when ſpeaking of the palace of Verſailles. "This building (ſays he) called me twice to inſpect it: the mixtures of brick and ſtone, of blue tile and gold, made it look like a rich livery; not a niche in it but is covered with curioſities. Works of filgrand and little trinkets appear in vogue; but building ought always to have the attribute of eternal, and therefore the only thing incapable of new faſhions." Much to the honour of Sir William Chambers, architect of that great national ornament Somerſet-houſe, he has never depraved the art with any kind of capricious innovation. He has ever made the ancients his models; and he has not pretended to vary and to invent, where variation and invention are not only ſuperfluous, but miſchievous. He has only, with great taſte and judgment, ſelected and compounded what he has already found perfect to his hands. His buildings are conſequently always grand, yet ſimple; not diſtracting the eye with broken lines, petty diviſions, or arbitrary and meretricious ornaments; but preſerving always that unity of deſign, and that magic of effect, which render them the beſt comment on his own excellent Treatiſe on the Science of Architecture. We are extremely ſorry to notice, in the third volume of Stuart's Antiquities of Athens, publiſhed by Mr. Revely, an attack made on the acknowledged reputation of this gentleman; to which we are ſatisfied the liberal author himſelf, had he lived to edit his own work, would never have deſcended. The arguments are founded on an erroneous, or, at leaſt, an over-ſtrained, hypotheſis, which might miſlead thoſe who are not well acquainted with the ſubject; and therefore, as it will tend to explain a controverſy on the reſpective merits of the Grecian and Roman architecture, we think it right to ſtate the obſervations made upon this diſpute by the authors of the Monthly Review.

"Sir William Chambers ſtudied in the Roman ſchool, as is evident from the treatiſe which he publiſhed on the decorative parts of civil architecture; which was, and ſtill is, conſidered as a maſterly work: he took much pains to guide the Engliſh ſchool of architecture, and to free it from thoſe ſpurious contortions which had gained ground. The publication, replete with judicious remarks on the detail in architecture, and containing many uſeful deductions from the moſt-eſteemed works, has for many years been conſidered, among architects, as their beſt guide. Sir William declaims againſt general principles, and not againſt perſons; whereas Mr. Revely, in the preface to his third volume of the Antiquities of Athens, has directed his attack, perſonally, againſt his old maſter; with what degree of juſtice, we ſhall now proceed to examine.

“ Mr. Revely has endeavoured to refute Sir William's aſſertion, ‘ that the Parthenon was not ſo conſiderable as the church of St. Martin's in the Fields,’ by comparing the actual dimenſions of thoſe two buildings: for the ſpace which they occupied, Mr. Revely takes the meaſures from the upper ſtep of each, including the periſtyle of columns which ſurrounded the Parthenon: but, we think, a fairer compariſon will be made by taking the meaſures of the bodies, or walls of the buildings, which will make the contents of the Parthenon only 123 ſquare feet more than St. Martin's church; and, as the Parthenon was an hypethral temple, the uncovered ſpace ought to be deducted, which will leave a very conſiderable difference in favour of St. Martin's church. Suppoſing the periſtyle of columns to be included in the compariſons, we have ſtill reaſon to believe that the dimenſions will be in favour of St. Martin's; ſo much of the Parthenon remaining uncovered. Mr. Revely's miſrepreſentation of Sir William's obſervation on St. Martin's ſteeple is, ſurely, unworthy of notice. The compariſon made by Mr. Revely between the maſſive and the lighter Doric columns, we apprehend, will ſtill remain matter of opinion; few, even of the advocates in their favour, as Sir William obſerves, will have the hardineſs to employ theſe Grecian proportions which they ſo much extol. Mr. Stuart, after having been feaſted with the ſight of the ‘ſublime’ Doric at Athens, ſeems to have been enraptured with the lighter Doric of the portico of Philip in the iſland of Delos. Many works, both in art and nature, produce a ſublime effect, of which it would be ridiculous to attempt an imitation. India produces many inſtances of art, the native works of the country, which exhibit ſpecimens of the higheſt claſs of the ſublime: yet, who, in theſe enlightened parts of the world, would recommend them for models? The ſublime, as has been demonſtrated, is produced by the comparative magnitude of the object, exciting, in the mind of the beholder, a degree of mingled terror and admiration; and a character of eternity, no doubt, muſt greatly heighten that effect.

“ By the ſeveral veſtiges which remain of primitive Grecian works, it appears that columns were in a progreſſive ſtate of increaſe, in their proportionate height, until a certain degree of ſlenderneſs was proved, by the many works erected by the Romans, to be ſufficient. What then was the reſult of this experience? certainly that they, at laſt, thought it uſeleſs to give more ſubſtance than was by experience found to be neceſſary for the columns, with ſufficient variation to characteriſe the different orders. We do not ſee how Mr. Revely can prove that the Grecian maſſive Doric ‘ was applied only where the greateſt dignity and ſtrength were required:’ in all the very old examples of the ſame age, we find nearly the ſame proportions preſerved; and no inſtances occur, among thoſe very ancient ſpecimens of the ſame age, in which ſlighter columns, of the ſame order, were uſed in different buildings.

“ Sir William's conjecture, that the hypethral temples were left open, from ignorance of the means of covering them, is not refuted by Mr. Revely's obſervations. The Opiſthodemos, though equal one way to the breadth of the cell, was yet much narrower the other way, and conſequently much eaſier to be roofed. Mr. Revely's idea, ‘ that it would have been juſt as reaſonable to ſuppoſe that the Romans left the circular opening in the dome of the Pantheon from ſimilar ignorance,’ is puerile in the extreme. He is rather unfortunate in citing the Pantheon; for this ſpecimen is a deciſive proof of the ſuperiority of the Romans in the conſtructive part of the architecture, and ſtrongly operates againſt his argument on that ſubject. Thus, Mr. Revely's obſervation, that Sir William's diſquiſition conſiſts ‘ entirely in aſſertions,’ will apply to his own; for no one argument is advanced whence we can conclude, that the Grecian works in architecture were ſuperior to thoſe of the Romans. This might however be an endleſs controverſy, while no *data* are eſtabliſhed by which the arguments may be examined.

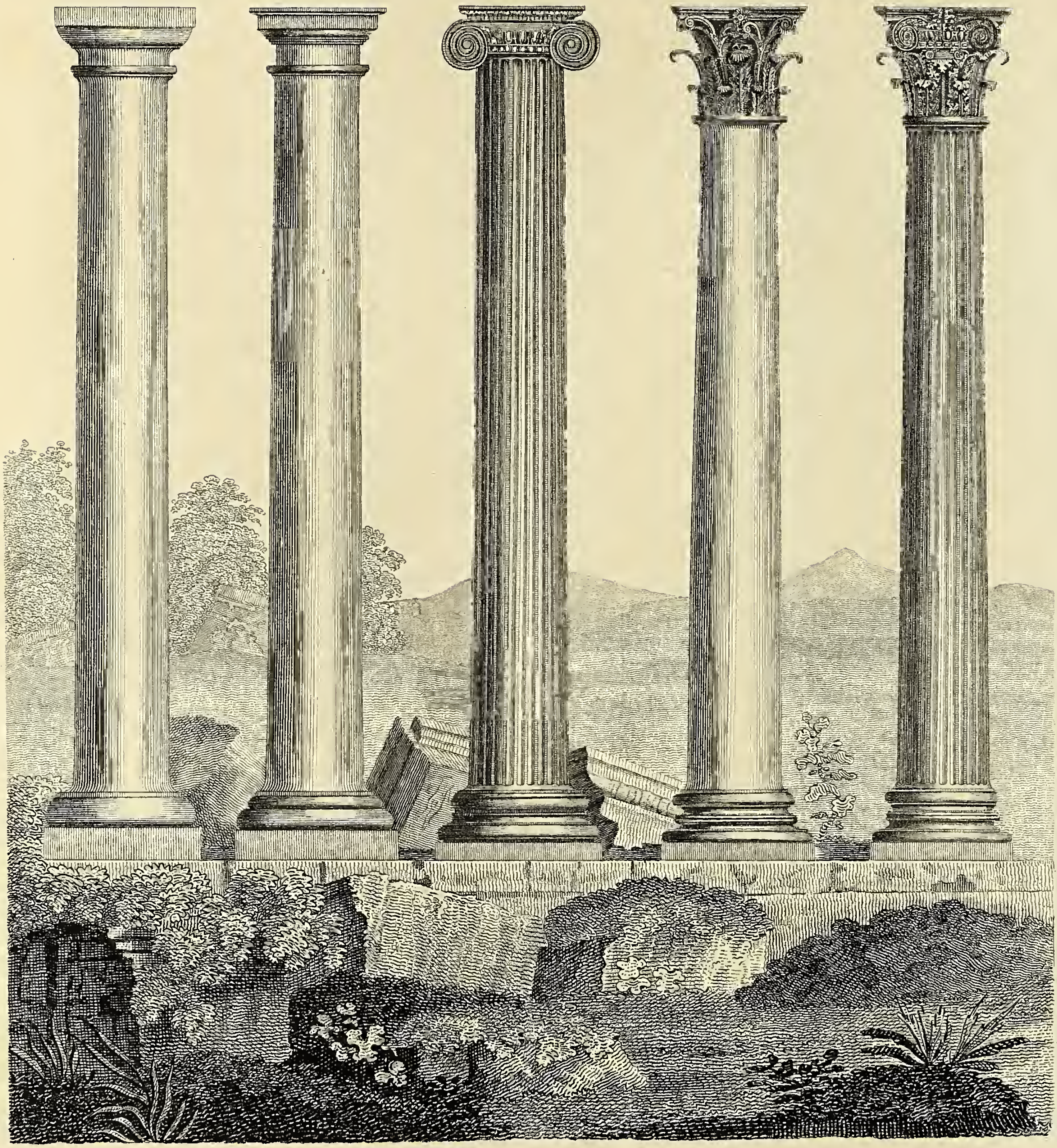
“ The ſum of this controverſy appears to be that, on the one ſide, the panegyriſts of Grecian architecture are of opinion that *that art kept pace with ſculpture*, and arrived at its higheſt perfection in the time of Pericles: or, perhaps allured by the ſight of ſomething novel to them, they are won by its ‘ ſublime appearance,’ and eſteem all other ſpecimens as of inferior excellence: on the other ſide, the partiſans in favour of the Roman ſpecimens of architecture, perhaps accuſtomed to the ſight of thoſe proportions, think that no other can be more beautiful; and that, if a column, of a certain proportioned ſubſtance, be found, by experience, to anſwer the purpoſe, it is unneceſſary to increaſe it to more than double its ſubſtance; which is the difference between the Athenian Doric column of five and a half diameters high, and the Roman Doric of eight.

“ It has, in our opinion, been demonſtrated by many able authors, that architecture did not arrive at its utmoſt perfection in the time of Pericles, but was in a gradual ſtate of improvement until the Romans, by their innumerable works, had an opportunity of proving all its varieties. They ſay that architecture was later in improvement than her ſiſter art, ſculpture; becauſe that, in the laſt, the artiſt had a model and certain guide in nature; while, architecture not being furniſhed with any other model than ſuch as aroſe from an analogous imitation, its advances muſt have been gradual, and muſt have depended on experience for the proof of its juſt proportions: accordingly, ſculpture might quickly emerge from barbariſm, to its utmoſt ſtate of perfection, in the time of Pericles; but architecture, as being neceſſarily founded on ages of experience, could not be ſo ſuddenly brought to excellence. The many architects, ſo much celebrated by Vitruvius, &c. and who flouriſhed ſince the time of Pericles, conſiderably diminiſhed the proportionate bulk of the columns; undoubtedly regarding that diminution as an improvement of their beauty. They had the advantage of experience in the great works produced antecedently to their time; and, certainly, better opportunity of appreciating their merits than we can poſſibly have from the few ſcattered and mutilated remains of the ancient buildings which time has ſpared. Who then are to be eſteemed the beſt judges? Will any modern, with all theſe diſadvantages, preſume to enter into competition with theſe celebrated ancients? The examples of Grecian architecture, regarded in a proper light, will not want due appreciation: purer, as it was nearer to its ſource, it is ſeen without any of thoſe impurities which afterward aroſe. In it we may trace the ſimple origins, from which that excellent art has ſince derived ſo many beautiful forms, and has become ſubſervient to the pleaſures as well as to the wants of mankind.”—See *Monthly Review*, June, 1795.

RULES for WORKING the FIVE ORDERS.

A competent knowledge of the methods of drawing and working the five orders, may be ſaid to be the very foundation of the art of building; ſince from theſe, with their ſeveral proportions and variations, ariſes all that is great, elegant, or harmonious, in the nobleſt ſtructure. It ſhould therefore be the earneſt endeavours of thoſe who ſtudy architecture, to obtain a thorough knowledge of each diſtinct order, its parts, proportions, and genuine figure, as being abſolutely neceſſary to every one who aſpires to eminence in this profeſſion. The following Rules are given with this view, and are adapted to the preſent taſte; and they are ſo clearly explained by the figures and meaſurements on the plates, that a little attention will enable every perſon

ARCHITECTURE.



A Comparative View of the Five Orders of Architecture.

London, Published as the Act directs August 29.1795. by J. Wilkes.

J. Pass sculp

ſon readily to comprehend the proportion, uſe, and ſituation, of each member; and alſo the ſeveral methods adopted in calculating the parts, and for ſetting them off for practice.

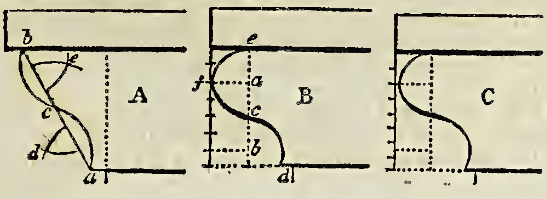
To eſtabliſh a fixed idea in the mind, of the utility and general character of the reſpective orders, we ſhall briefly mention the uſual deſtination of them in modern practice. The *Tuſcan* is characteriſed by its plain and robuſt appearance, and is therefore uſed only in works where ſtrength and plainneſs are wanted; it has been uſed with great effect and elegance in that durable monument of ancient grandeur, the Trajan column at Rome; indeed, general conſent has eſtabliſhed its proportions for ſuch purpoſes, beyond all others. The *Doric* poſſeſſes nearly the ſame character for ſtrength as the Tuſcan, but is enlivened by its peculiar ornaments; the triglyph, mutule, and guttæ or drops under the triglyph: theſe decorations characteriſe the Doric order, and in part are inſeparable from it. Its proportions recommend it where united ſtrength and grandeur are wanted. The *Ionic* partakes of more delicacy than either of the former, and therefore, as well as on account of its origin, is called *Feminine*, and not improperly compared to a matronic appearance; it is a medium between the maſculine Tuſcan and Doric, and the virginal ſlenderneſs of the Corinthian; the boldneſs of the capital, with the beauty of the ſhaft, makes it eligible for porticos, frontiſpieces, entrances to houſes, &c. Denteles were firſt added to the cornice of this order. The *Corinthian* poſſeſſes more delicacy and ornament than any other order; the beauty and richneſs of the capital, with the delicacy of the pillar, render it very properly adapted whenever magnificent elegance is required: it is frequently uſed for internal decoration to large ſtate rooms; its appearance is of virginal delicacy and gay attire. The *Compoſite* order is ſimilar to the Corinthian in its proportions, and nearly alike in its effects: the addition of the modern Ionic volute to the capital gives it a bolder projection; and it is therefore applicable to theatres, ball and aſſembly rooms, ſaloons, and other ſtately apartments, in the ſame manner as the Corinthian. The mode of working theſe orders, and their reſpective ornaments and parts, is the next object of conſideration.

Of REGULAR, and QUIRKED, MOULDINGS.

The *regular* mouldings are ſuch as were uſed by the ancients, and are already ſhewn in the plate of Baſes, &c. in *Ancient Architecture*, p. 71. The height of the regular mouldings are generally equal to the projection, or nearly ſo; but there are other forms in practice, called *modern*, or *quirked*, mouldings, where the projection is often leſs than the height, and the curvature much flatter. The readieſt mode of projecting them may be ſeen in the following figures:

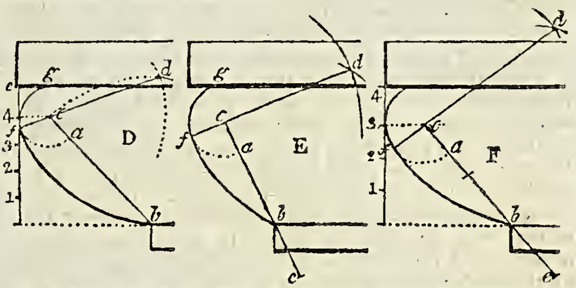
To deſcribe the quirked cima reverſa, A.—Join the projections at each end by the right line *a b*; divide it into two equal parts at *c*, and to give a bolder effect, divide *a b* into three equal parts, or nearly ſo, and with one-third, on *a* and *c* as centers, deſcribe arcs, cutting each other at *d*; and in like manner find the interſection on the oppoſite ſide of the line at *e*; laſtly, on *d* and *e* deſcribe the arcs *a c* and *b c*, and it will form the cima reverſa required.

To deſcribe the quirked cima reverſa, B.—Divide the perpendicular height into ſeven parts; with two of the parts deſcribe a ſemicircle *c e*; on *a* draw a line from *e c*, and on the height of the firſt diviſion from the bottom *b*, deſcribe the arc *c d*, and it will complete the moulding. *The quirked cima reverſa* C, is deſcribed in a ſimilar manner, as is plain on inſpecting the following figures:

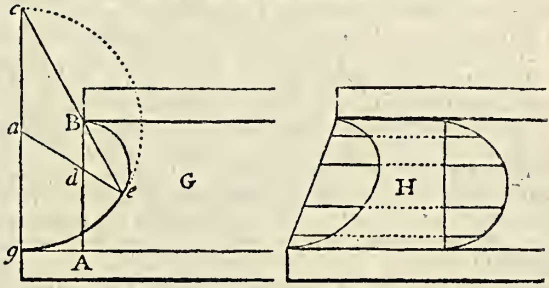


To deſcribe the quirked ovolo, D.—Divide the height into four equal parts, with one part on *c*, deſcribe the ſemicircle *a f g*. Join *c b* to the end of the fillet below; on *b* deſcribe the arc *c d*, on *c*, with the diſtance *a b*, deſcribe an arc cutting the former at *d*; through *d*, and *c*, draw the line *d c f*, cutting the ſmall circle at *f*; then with a radius, *d f*, deſcribe the arc *f b*, and it will complete a quirked ovolo.

To deſcribe the quirked moulding E, *flatter in the lower part than that at* D.—Deſcribe the ſmaller circle as in the laſt; and through its centre, and the end *b* of the fillet, draw the line *c b e*, taking the point *e* according as you intend to have the under part of the moulding flatter or quicker: take the diſtance *e c*, and on *b* deſcribe an arc at *d*, then take the diſtance *e a*, that is *e c*, made leſs by the radius *c a*, of the ſmaller arc *a f g*, on *c*, with that diſtance, deſcribe an arc, cutting the former at *d*; laſtly on *d*, with a radius *d f*, deſcribe the arc *f b*, and it will complete the quirked ovolo required. The quirked ovolo at F, is deſcribed in the ſame manner as E; the only difference being in the projection, which is greater.



To deſcribe the ſcotia, G.—From the top of the fillet draw B A, perpendicular, cutting the bottom of the fillet at A on *g*, the end of the bottom fillet; draw the line *g a c*, parallel to A B, make *g a*, equal to twice *g* A, on *a*, deſcribe the ſemicircle *g e c*, cutting the line *g a c*, at *c*, through *c*, and the end of the fillet, at B, draw the line *c* B *e*, cutting the ſemicircle at *e*, draw the line *a d e*, cutting A B, in *d*; laſtly on *d*, deſcribe the arc, *e* B, and it will complete the ſcotia. *Fig.* H is a ſcotia, deſcribed after another method, viz. through points found from a ſemicircle, to the height of the moulding.



Of Gluing up the BASE, SHAFT, and CAPITAL.

To each order there is a particular kind of baſe, as deſcribed in *Ancient Architecture*, p. 71, and illuſtrated in the Plate facing that page. When the orders are executed in ſtone, the buſineſs is maſonry; when in wood, it is the art of the joiner; but an architect muſt be a competent judge of both. What follows, will relate principally to the execution of the orders by the joiner, conſequently the workmanſhip of the reſpective parts will be in wood. The firſt operation, therefore, is that of gluing up the baſe, which is exemplified in the annexed Plate, at *fig.* 1. ſhewing in what manner the bottom courſe is mitred together, which muſt be done on a flat board, and all the joints fitted as cloſe as poſſible. This courſe being glued together with great care, and well ſecured in the inſide with blocks at the angles, and the glue being thoroughly dry, plane the top of the courſe quite ſmooth, and what workmen technically call *out of winding*; then glue on the next courſe, breaking the joint in the middle of the under courſe, as ſhewn by the dotted lines in the Plate; and proceed thus with as many courſes as are required, and, when the whole is thoroughly dry, it may be ſent to the turner. The beading joints may be on one ſide of a fillet, as ſhewn in the elevation of the baſe *fig.* 2, A A, B B, and C C. A baſe glued up in this manner will be the ſtrongeſt poſſible, and be leſs liable to crack and ſplit than by any of the methods heretofore adopted.

The *ſhaft* of the column ſhould be glued up in eight or more ſtaves, according to its intended dimenſions; obſerving always to have the joint in the middle of a fillet, and not in a flute, as it would very much weaken it; in the annexed Plate, *fig.* 3 and 4, is ſhewn the plan of the upper and lower ends, or the horizontal ſection at top and bottom. If eight pieces are ſufficient for the column, deſcribe an octagon round the ends, then draw lines from each angle of the octagon to the centre, and it will give the bevil of the edges of the ſtaves for the joints, which muſt be quite ſtraight from top to bottom; only, that the ſtaves be narrower at the top, as is ſhewn in the plate, *fig.* 4. The ſtaves muſt be of ſufficient thickneſs, becauſe the outſide is to be curved to the ſwell of the column, by means of a diminiſhing rule: then proceed to glue the pieces together, one after the other as the glue dries; block them well at the corners in the inſide, which will greatly ſtrengthen the joints; proceed in this manner to the laſt ſtave; all the blocks muſt be glued on and dried before the laſt ſtave can be glued in: or pieces may be glued quite acroſs for the laſt ſtave, fixed to the inſide of the two adjoining ſtaves, or they may be fixed by ſcrews to each ſtave; then the under-ſide of the laſt ſtave muſt be planed ſo as to rub well on the croſs pieces, and when the ſtave is put in, and glued upon the croſs pieces, it may be driven tight home like a wedge, and the whole will be firm and ſubſtantial throughout; but care muſt be taken that the ſtaves and blocks are quite dry, otherwiſe the column after ſome time will be in danger of coming to pieces at the joints: in gluing each piece, care muſt alſo be taken to try it to the plan, or backing mould, as a trifling difference in each will make a very ſenſible error in going round the column after the gluing. When the glue in the column is dry, proceed to work off the angles regularly all round; the column will then have double the number of ſides, or cants; proceed in the ſame manner, working off the angles as before, ſo as to make the column have its ſides, or cants, quite regular; laſtly, make a plane to fit the curve of the column at the bottom, or rather flatter; then round off all the angles, until the ſurface of the column is quite ſmooth: there is, however, one thing to be obſerved in reſpect to the moulds for jointing the ſtaves together; that is, they are not exactly true when applied in a direction perpendicular to the joint; the proper method to find them true is the ſame as is uſed to find the backing of a hip rafter, or of a pitch ſky-light; but however, this exactneſs is not always attended to, the deviation from the truth being ſo ſmall as ſcarcely to be diſcerned. After the column is quite finiſhed, it ought to be well painted, to preſerve it from being injured by the weather.

Another method is, glue up the column into two halves, and then glue theſe together; the blockings may be put in a conſiderable way by hand; but, if the column is too long, a rod of ſufficient length may be uſed. Both of theſe methods have ſome inconveniencies which cannot be avoided; by the former method the laſt joints cannot be rubbed together becauſe of the tapering of the ſtave; but if it is glued quickly, it will be pretty ſound: by the latter method there will be an uncertainty of the blockings being ſound. In all caſes, however, obſerve that the grain of the blocking pieces be put the ſame way as the grain of the column, that if affected by weather they may expand alike.

To Glue up the Ionic Capital.

The manner of gluing up the Ionic capital for a column, is repreſented in the annexed Plate, at *fig.* 5. The parts marked B B, &c. are triangular blocks of wood, glued upon the front, in order to complete the angular ſquare; then the pieces A A A, &c. are glued upon them; this is conſidered as the beſt method of gluing up the capital. Another method is, to glue the triangular blocks C C, at the angle of the abacus; then the four ſides of the abacus as D E F, may be made of one entire length, and mitered at the horns; or they may have a joint in the middle of the abacus, where the roſe is placed, as the workman ſhall think fit; this method will either do for a column or a pilaſter.

Methods of Diminishing Columns.

In effecting the diminution of the ſhaft of a column, the ancients adopted a variety of methods; beginning ſometimes from the foot of the ſhaft, and at others from one quarter, or one-third, of its height; the lower part being perfectly cylindrical. The former of theſe was moſt in uſe amongſt the ancients; and, being the moſt natural and graceful, ought to have the preference, though the latter has been more univerſally practiſed by modern artiſts. The firſt architects, ſays M. Auzoult, probably made their columns in ſtraight lines, in imitation of trees; ſo that their ſhaft was a fruſtrum of a cone: but, finding this form abrupt and diſagreeable, they made uſe of ſome curve, which, ſpringing from the extremities of the ſuperior and inferior diameters of the column, ſwelled beyond the ſides of the cone, and by that means gave a more pleaſing figure to the contour. Vitruvius, in the ſecond chapter of his third book, mentions this practice, but in ſo obſcure and curſory a manner, that his meaning has not been underſtood; and ſeveral of the modern architects, intending to conform themſelves to his doctrine, have made the diameters of their columns greater in the middle than at the foot of the ſhaft. Leon Baptiſta, Alberti, and others of the Florentine and Roman architects, have carried this to a very great exceſs; for which they have been juſtly blamed, as it is neither natural, reaſonable, nor beautiful. M. Auzoult obſerves that a column, ſuppoſing its ſhafts to be the fruſtrum of a cone, may have an additional thickneſs in the middle, without being ſwelled there beyond the bulk of its inferior parts; and ſuppoſes the addition mentioned by Vitruvius to ſignify nothing but the increaſe towards the middle of the column, occaſioned by changing the ſtraight line, which at firſt was in uſe, for a curve. This ſuppoſition is extremely juſt, being founded on what is obſerved in the works of antiquity; where there is no inſtance of columns thicker in the middle than at the bottom, though all have the ſwelling hinted at by Vitruvius, all of them being terminated by curves; ſome granite columns excepted, which are bounded by ſtraight lines; a proof, perhaps, of their great antiquity. M. Blondel teaches various methods of diminiſhing columns; the beſt of which is by means of the inſtrument which Nicomedes invented to deſcribe the firſt conchoid: for this, being applied at the bottom of the ſhaft, performs at one ſweep both the ſwelling and the diminution; giving ſuch a graceful form to the column, that it is generally allowed to be the moſt perfect practice hitherto diſcovered. The columns in the Pantheon, accounted the moſt beautiful among the antiques, are made in this manner; as appears by the exact meaſures of one of them to be found in Deſgodetz's Antiquities of Rome. To have an accurate idea of the operation, it will be neceſſary firſt to deſcribe Vignola's method of diminution, on which it is grounded. Having deſcribed the height of the ſhaft, and its inferior and ſuperior diameters, draw a line indefinitely from C, through D perpendicular to the axis of the column, as at *fig.* 1. of the following ſcheme; this done, ſet off the diſtance C D, which is the inferior ſemi-diameter, from A, the extreme point of the ſuperior diameter, to B, a point in the axis. Then from A, through B, draw the line A B E, which will cut the indefinite line C D in E; and from this point of interſection E, draw through the axis of the column any number of rays, as E *b a*; on each of which,

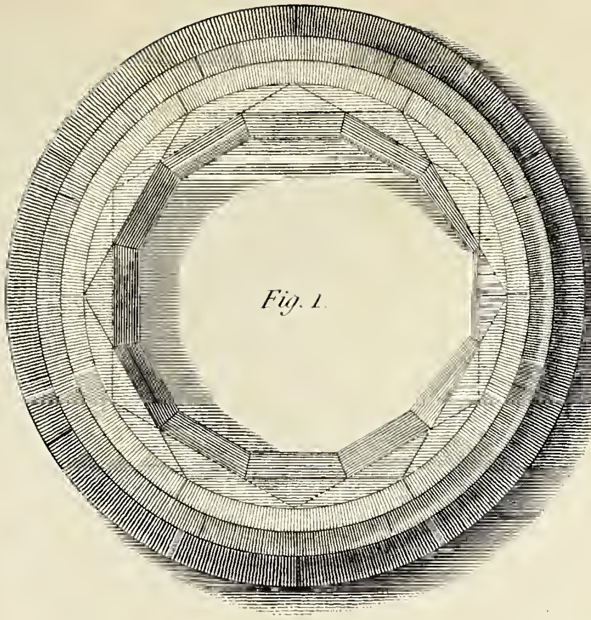


Fig. 1.

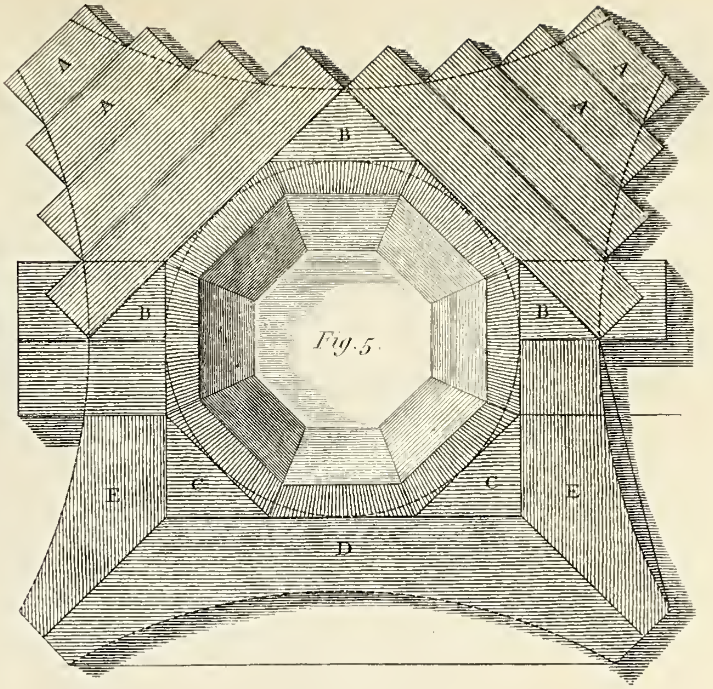
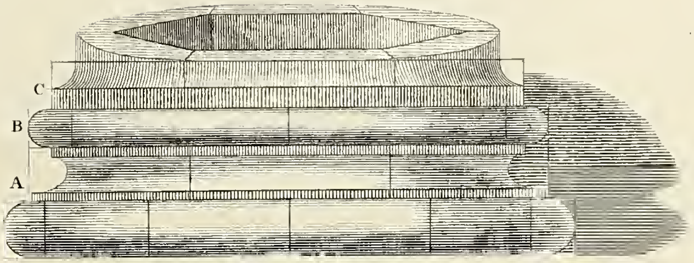


Fig. 5.

Fig. 2.



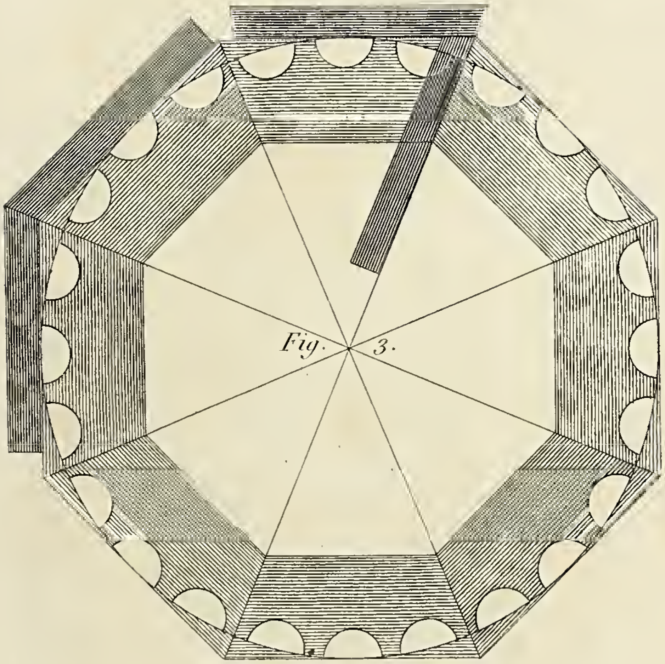


Fig. 3.

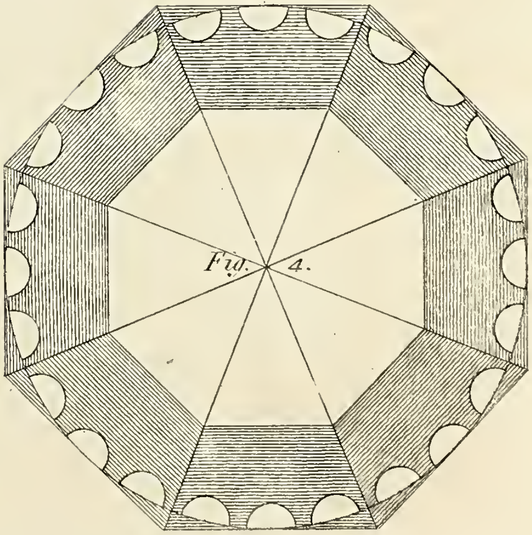


Fig. 4.

T. Sheraton del.

J. Pass sculp.

Method of Glewing up Columns.

London Publish'd as the Act directs, Jan.y 27, 1797, by J. Wilkes

Fig. 6

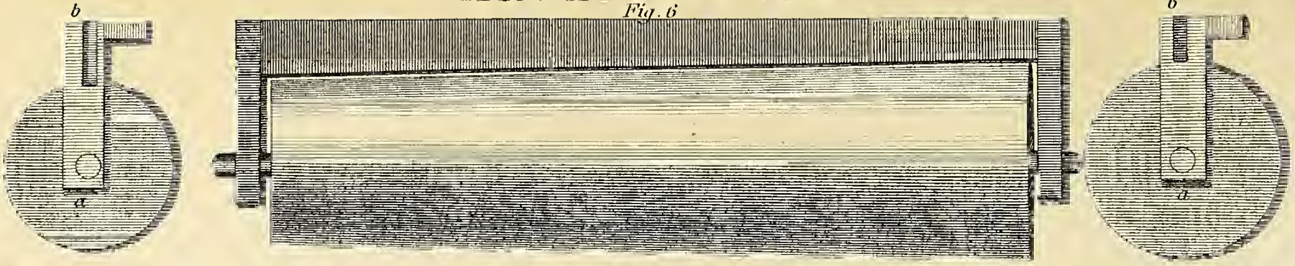
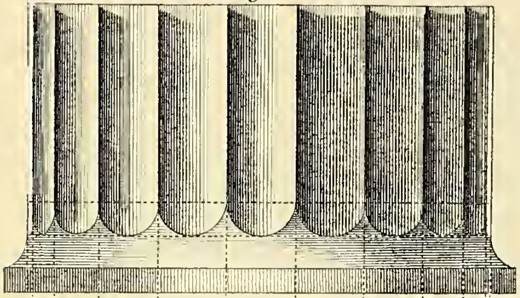


Fig. 3



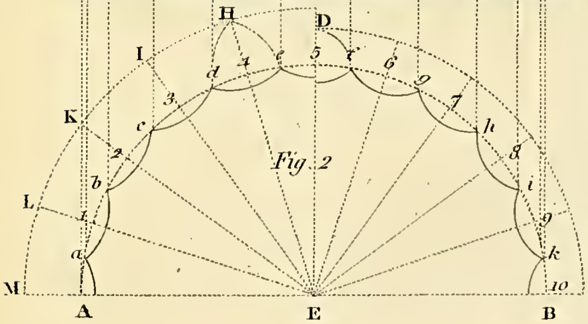


Fig. 1

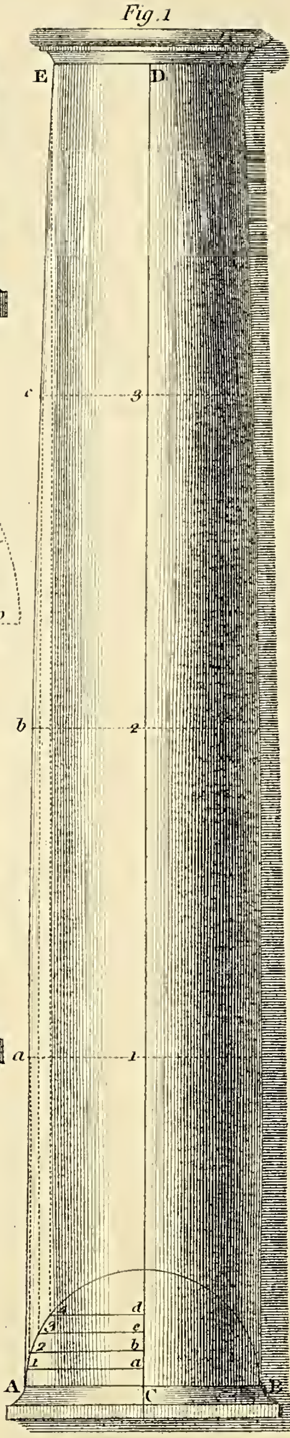


Fig. 7

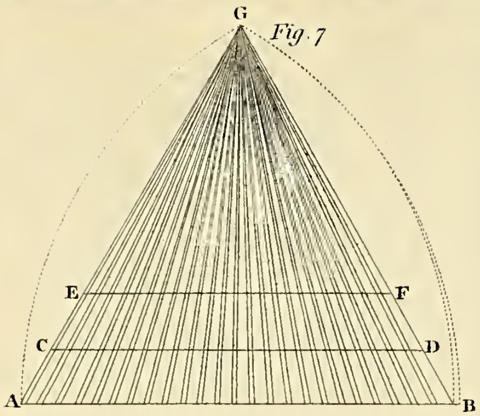


Fig. 8

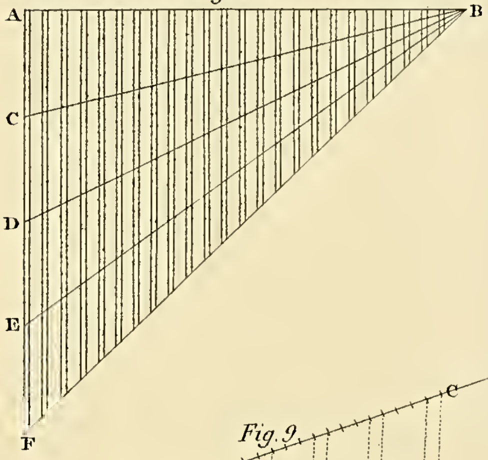
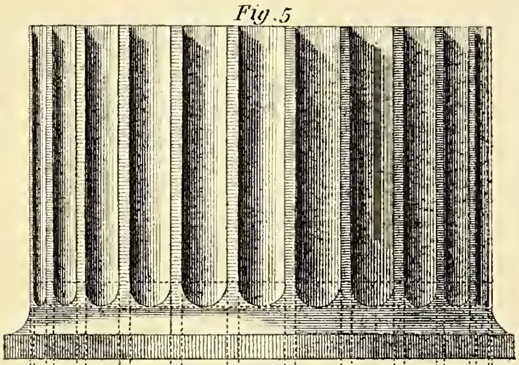


Fig. 5



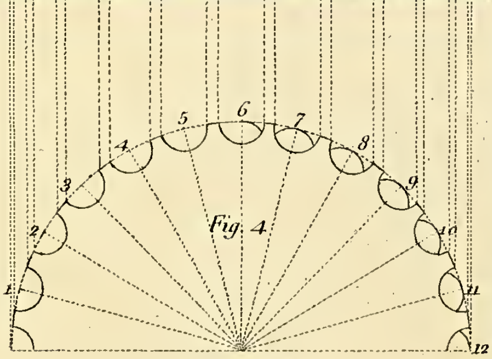
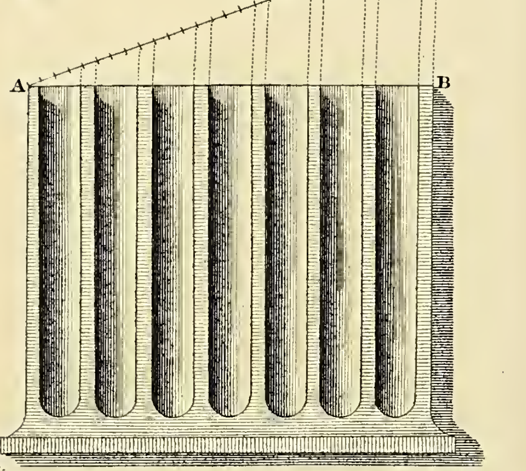


Fig. 9



T. Sheraton del.

Method of diminishing and fluting Columns.

J. Pass sculp.

London. Published as the Act directs, Dec.r 1.1797, by J. Wilkes.

which, from the axis towards the circumference, ſetting off the interval C D, may be found any number of points, as *a a a*, &c. through which, if a curve be drawn, it will deſcribe the ſwelling and diminution of the column.

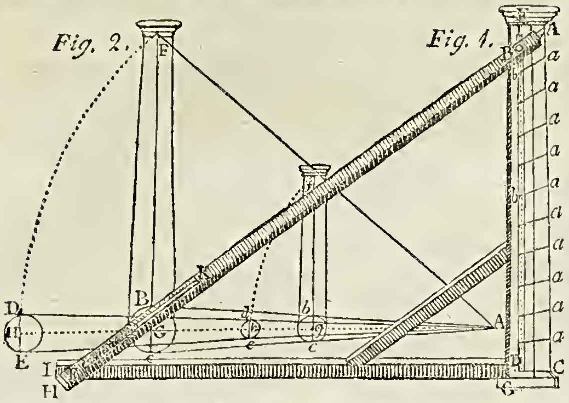


Fig. 2. Fig. 1.

Though this method be ſufficiently accurate for practice, eſpecially if a conſiderable number of points be found, yet, ſtrictly ſpeaking, it is defective, as the curve muſt either be drawn by hand, or by applying a flexible ruler to all the points; both of which are liable to variations. Blondel, therefore, to obviate this objection, after having proved the curve paſſing from A to C, through the points *a a a*, &c. to be of the nature of the firſt conchoid of the ancients, employed the inſtrument of Nicomedes to deſcribe it; the conſtruction of which is as follows: having found the length of the ſhaft, with the inferior and ſuperior diameters of the column, and the length of the line C D E, in *fig.* 1. as before; take three rulers, either of wood or metal, as F G, I D, and A H; of which let F G and I D be faſtened together at right angles in G. Cut a dove-tail groove in the middle of F G, from top to bottom; and at the point E on the ruler I D, (whoſe diſtance, from the middle of the groove in F G, is the ſame as that of the point of interſection from the axis of the column,) fix a pin; then on the ruler A H ſet off the diſtance A B, equal to C D the inferior ſemi-diameter of the column, and at the point B fix a button, whoſe head muſt be exactly fitted to the groove made in F G, in which it is to ſlide; and, at the other extremity of the ruler A H, cut a ſlit or channel from H to K, whoſe length muſt not be leſs than the difference of length between E B and E D, and whoſe breadth muſt be ſufficient to admit the pin fixed at E, which muſt paſs through the ſlit, that the ruler may ſlide thereon. The inſtrument being thus completed, if the middle of the groove in the ruler F G be placed exactly over the axis of the column, it is evident that the ruler A H, in moving along the groove, will, with its extremity A, deſcribe the curve A *a a* C; which curve is the ſame as that produced by Vignola's method of diminution, ſuppoſing it done with the utmoſt accuracy; for the interval A B, *a b*, is always the ſame; and the point E is the origin of an infinity of lines, of which the parts B A, *b a*, *b a*, extending from the axis to the circumference, are equal to each other, and to D C. And if the rulers be of an indefinite ſize, and the pins at E and B be made to move along their reſpective ruler, ſo that the intervals A B and D E may be augmented or diminiſhed at pleaſure, it is likewiſe evident, that the ſame inſtrument may be thus applied to columns of any ſize.

With regard to the generally-received opinion, that, in proportion as columns are elevated, the eye is deceived in the contour, and therefore they require a difference in the diminution to allow for this effect, it ſeems proved by Perrault to be on moſt occaſions a miſtake; for, if we judge by the rigour of optical laws, it muſt be remembered, that the proper point of view for a column of fifty feet high is not the ſame as for one of fifteen; but on the contrary more diſtant, in the ſame proportion as the column is higher; and that conſequently, the apparent relation between the lower and upper diameters of the column will be the ſame, whatever be its ſize. For, if we ſuppoſe A, *fig.* 2. to be a point of view, whoſe reſpective diſtance from each of the columns *f g*, F G, is equal to the reſpective heights of each, the triangles *f* A *g*, F A G, will be ſimilar; and A *f*, or A *h*, which is the ſame, will be to A *g*, as A F, or its equal A H, is to A G: therefore if *d e* be in *reality* to *b c*, as D E is to B C, it will likewiſe be *apparently* ſo; for the angle *d* A *e*, will then be to the angle *b* A *c*, as the angle D A E, is to the angle B A C; and, if the *real* relations differ, the *apparent* ones will likewiſe differ. In this figure, the eye of the ſpectator at A, is ſuppoſed to be in a line perpendicular to the foot of the ſhaft; but, if the columns be proportionably raiſed to any height above the eye, the argument will ſtill remain in force, as the point of view muſt of courſe be proportionably more diſtant; and even when columns are placed immediately on the ground, which ſeldom or ever is the caſe, the alteration occaſioned by that ſituation is too trifling to deſerve notice. When therefore a certain degree of diminution, which by experience is found pleaſing, has been fixed upon, there will be no neceſſity for changing it, whatever be the height of the column; provided the point of view is not limited. But in cloſe places, where the ſpectator is not at liberty to chooſe a proper diſtance for his point of ſight, the architect, if he inclines to be ſcrupulouſly accurate, may vary; though it is in reality a matter of no importance, as the nearneſs of the object will render the image thereof indiſtinct, and conſequently any ſmall variation will be imperceptible.

By the following method alſo, columns may be diminiſhed with great eaſe and facility, only by the help of a common meaſuring rule, which every workman may make. Deſcribe a ſemicircle, on the bottom of the column A B, as ſhewn at *fig.* 1. in the annexed Plate; from the top of the column draw the line E 4, parallel to the axis D C, or middle line of the column, cutting the ſemicircle at the baſe in 4; divide the arc A 4, into four, or any other number of equal parts, and divide the height C D, into the ſame number of equal parts; as 1, 2, 3, through the diviſions 1, 2, 3, 4, of the ſemicircle at the baſe, draw lines 1 *a*, 2 *b*, 3 *c*, and 4 *d*, parallel to A B; ſet off thoſe parts from each ſide of the axis, on the correſponding numbers on the ſhaft; then, by bending a thin lath or ſlip round pins or nails fixed in theſe points, it will give the contour, or curve of the column: and the reverſe of this will be the edge of the diminiſhing rule for working it by. Or, divide the height of the diminiſhing rule A E, into any number of equal parts; as four, at *a*, *b*, *c*, and divide the difference of the ſemi-diameter at the top and bottom, into the ſame number, viz. four, and draw lines from each diviſion parallel to the baſe, through 1, 2, 3, which points will produce a curve of a very regular and pleaſing form, that may be drawn on the edge of the rule, or on the column itſelf, as is moſt convenient for the workman.

TO PROJECT the FLUTES and FILLETS, and place them round the COLUMN.

To project the flutes of the Doric column, let A B, *fig.* 2 and 3, in the annexed Plate, be the diameter of the column; on which deſcribe a ſemicircle into ten equal parts; (as the Doric column uſually contains twenty flutes, which are in general made ſhallow, and without fillets;) through every two of the diviſions draw the lines E 1, E 2, E 3, E 4, &c. to E 10; between any two diviſions, as 3 and 4, deſcribe an equilateral triangle, whoſe vertex is C; on E, with a radius E C, deſcribe the quadrant M L K I H G, cutting the lines E A, E 1, E 2, E 3, E 4, &c. in the points G H I K L M, which are the centres for the flutes; but, if the flutes are required to be deeper, make the diſtance 5 D equal to one diviſion on the arc; and proceed as ſhewn on the other quadrant, and from *a b c*, &c. draw perpendiculars to the bottom of the column, *fig.* 3. The

Ionic, Corinthian, and Compoſite, orders, have in general twenty-four flutes, with a fillet between each; (the fillet one-third of a flute;) in order to have that number, and preſerve the juſt proportion of a flute to a fillet, obſerve the following rule: divide the ſemi-circumference, *fig.* 4, into twelve equal parts; at 1, 2, 3, 4, 5, &c. to 12; divide any diviſion into eight equal parts, as that between 5 and 6; then take three of theſe parts, and on 1, 2, 3, &c. to 12, as centres, deſcribe arcs which are nearly ſemicircular, as in the Plate: then draw them to the column, *fig.* 5, and the work will be completed.

To ſet off the flutes and fillets round the column, proceed in the following manner. Whether the columns be of ſtone, or wood, the whole or any part may be fluted in the ſame manner; after being properly rounded, and the ends or joints made parallel to each other, and the centres of the circles at each end; and, if they are not already found, cut two holes, directly in the middle at each end perpendicular to the joints, ſo that the centres ſhould be in the middle of the holes; this being done, drive in two pieces of wood, ſo as to be quite tight in the holes, and to project out about five or ſix inches; let the projecting parts be well rounded off, ſo as to be exactly in the middle of the ends; then make a diminiſhing rule, as in *fig.* 1, of the foregoing Plate. To fit the curve of the column, let the ends of this diminiſhing rule be fixed into two pieces, *a b*, *a b*, which are made to revolve round the pins at the ends by means of notches, or any other convenient way; ſo that the curved edge of the rule be adjuſted to the curved ſurface of the column, and to play round it. To keep the rule from bending ſideways, fix a piece to the other ſide, the whole length of the diminiſhing rule, of a ſufficient ſtrength to keep it from bending; ſo that the breadths will be at right angles to each other, the two end pieces and diminiſhing rule being faſt fixed together; the whole may be turned round the pins at the ends as centres, like one entire piece: then the operation of drawing the flutes and fillets will be performed as follows: ſuppoſe it were required to flute the Ionic, Corinthian, or Compoſite, columns; the circumference at either end will be divided into ſix equal parts, by taking half the diameter at that end, and applying it round the circumference; then each of theſe diviſions being divided into four, the whole circumference will be divided into twenty-four: in order to have the proportion of a flute to a fillet, as 1 to 3, divide any one of the laſt diviſions into four equal parts, and one of theſe parts will be the breadth of a fillet, which being ſet off from the ſame ſide of each diviſion, the whole column will be divided into flutes and fillets; then, by turning the rule round to each mark or diviſion, the flutes and fillets may be ſet off upon the ſhaft of the column with the greateſt exactneſs. The above method is by far the moſt ready, as well as the moſt correct of any yet known; and the inſtrument or machine by which it is performed, is repreſented at *fig.* 6 of the foregoing Plate, a careful inſpection of which will render it ſufficiently plain. There are other methods of drawing the flutes on the ſhaft of a column, as by drawing two parallel lines through the centre at each end of the pillar, and dividing the circumferences at the ends into the number of flutes and fillets, then bending a thin rule from the reſpective diviſions at each end; it is neceſſary however to be very careful that the edge of the rule touch the curved ſurface of the column only: but this method, however ſimple, is very liable to error. Another method that ſome workmen make uſe of for ſetting off the flutes and fillets round the ſhaft of a column, is as follows: Let A B, in *fig.* 7, be any line divided into flutes and fillets, greater than the circumference of the column at either end; on A B, deſcribe the equilateral triangle A B G; draw all the diviſions on A B, to G; then if G C, and G D, are equal to the circumference of the column at the bottom, the line C D, will be equal to the ſame circumference; lay a piece of parchment, or any thing that is pliable, on C D, and mark all the flutes and fillets on it, then apply this round the column at the bottom, and prick them round it; divide the circumference at top in the ſame manner as E F, and draw the flutes with a thin rule as before.

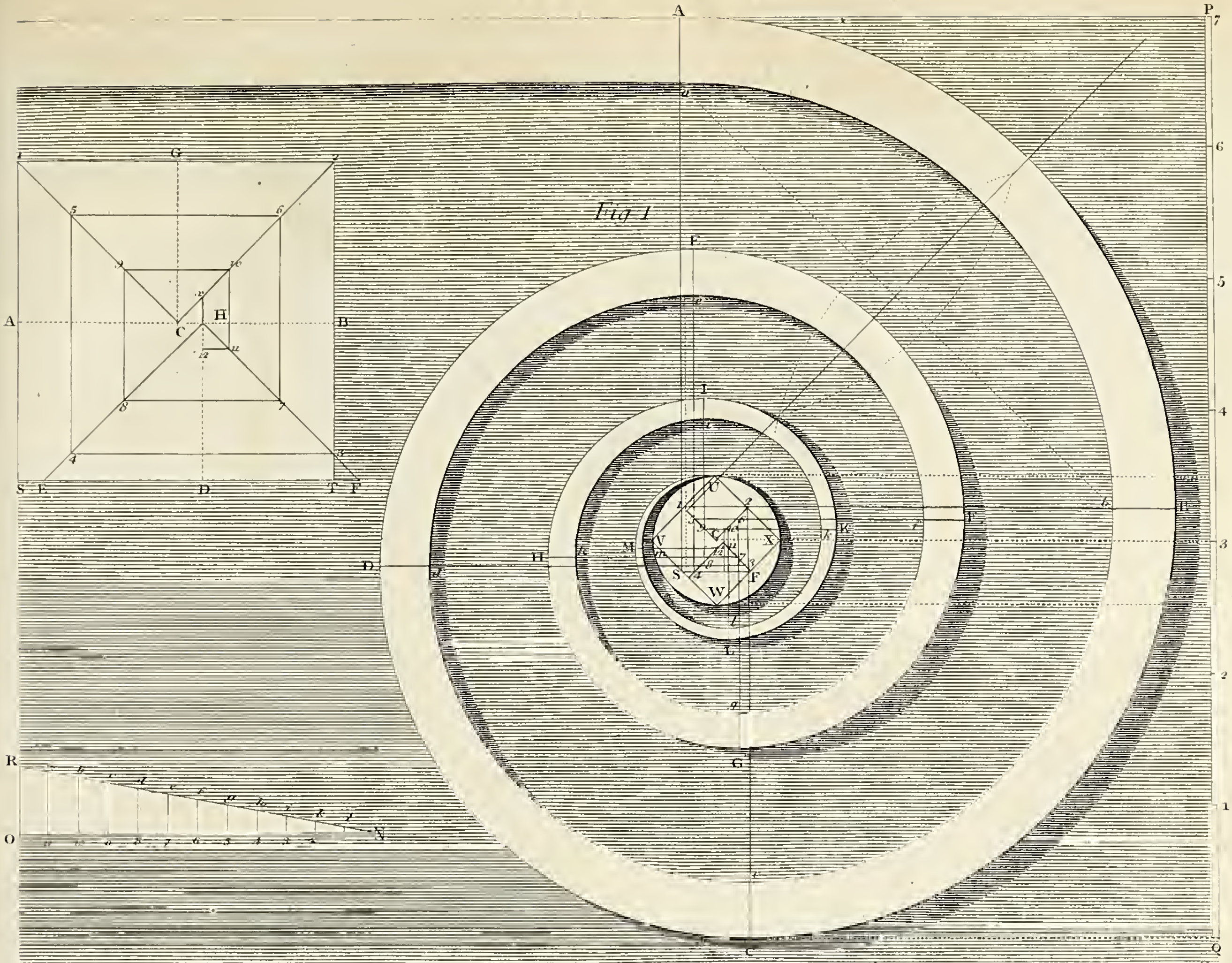
Fig. 8, is another method for marking the flutes and fillets round the ends of the column; the line A B, is a line divided into flutes and fillets, leſs than the circumference of the top part of the column; draw any number of parallel lines from the diviſions of A B; let B C, B D, B E, be the top or bottom diameter; ſet one foot of the compaſſes in B, and croſs the line A F, at C D, or E; draw the line C D, or E, and either will be divided into flutes and fillets, as before.

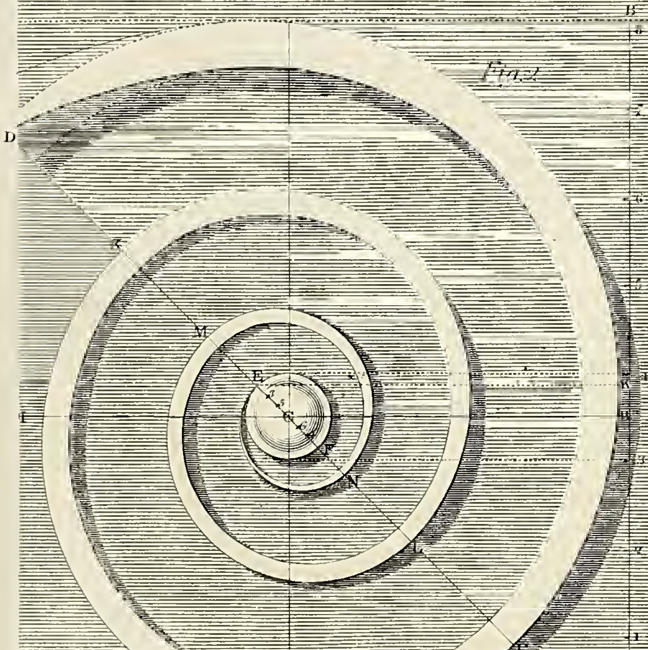
To ſet off the flutes and fillets on a pilaſter, proceed as follows: Let A B, *fig.* 9, of the ſame Plate, be the breadth of the pilaſter; draw a line from A to C; place the compaſſes at any convenient opening, and divide the line into twenty-nine equal parts from A to C, and join C B; then ſet a bevel to the angle A C B, and from the diviſions on A C, draw lines cutting A B, as is ſhewn by the figure; and from the diviſions on A B, draw the flutes and fillets with a common gauge.

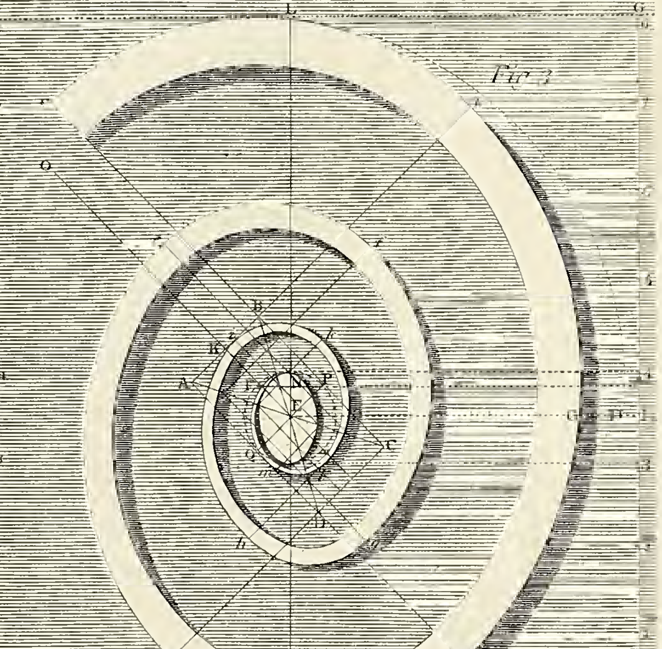
To describe the Ionic Volute.

The volute, which is a very principal member of the Ionic capital, is executed in various forms. The Grecian volute has a double fillet winding round to its eye, which, by the partings or ſpaces between, produces a variety of light and ſhade, and affords to the whole convolution additional grace and beauty. The lateſt and moſt approved method of deſcribing it is as follows: divide the height P Q into ſeven equal parts, as repreſented in *fig.* 1. of the annexed Plate; upon the third diviſion deſcribe a circle about C as a centre, whoſe diameter will be equal to one of the parts; draw the ſquare V W X U, and in that ſquare draw another, whoſe angles ſhall touch the ſides of the former ſquare in the middle. In order to make the conſtruction of the centres appear plain, the centre part is ſhewn at the ſide, of a larger ſize; divide C 1 and C 2 each into three equal parts at 9, 5; 10, and 6; divide C 10 into two equal parts at *x*, if the volute is intended to be at the right hand, as in this example; but if on the left, divide C 9 into two equal parts, and proceed in each caſe as follows: from *x* draw the perpendicular line, cutting the ſide S F of the ſquare at D; from D make D E and D F equal to G 1, or G 2; join E H and F H, draw 5, 4 . . 9, 8 . . 10, 11, and 6, 7, parallel to the perpendicular ſide of the ſquare, cutting, E H and F H, at 4, 8 . 3 . 7 . 11; then 1 . . 2 . . 3 . . 4 . . 5 . . 6 . . 7 . . 8 . . 9 . . 10 . . 11 . . and 12 are the centres. Begin at 1, and with the radius 1 A, deſcribe the quadrant A B, of the volute; on 2, with the radius 2 B, deſcribe the quadrant B C; on 3, deſcribe the quadrant C D; proceed in this manner with all the quadrants, till you touch the eye at U, and it will complete one ſide of the fillet. Then, to draw the inſide of the fillet, divide the thickneſs of the liſt A *a* at the top into twelve equal parts, by means of the ſcale N O R, as follows: begin at N, and with any opening of the compaſs run it twelve times from N to O; draw O R, making any angle with O N; make O R equal the thickneſs of the fillet at A *a*; join R N, draw *a* 11, *b* 10, *c* 9, *d* 8, &c. parallel to R O; make the thickneſs of the liſt at B *b*, equal to *a* 11; and D *d*, equal to *b* 10, &c. at the beginning of every quadrant; join *ab*, and biſect it by a perpendicular meeting the eye a little within the firſt centre; ſet the ſame ſmall diſtance within all the other centres, and proceed to deſcribe the inſide of the liſt, in the ſame manner as the outſide, and it will end in a point with the outſide at U; and thus the volute will be completed.

To deſcribe the Angular Volute.—Divide the perpendicular height A B, as in *fig.* 2 of the annexed Plate, into twenty-three equal parts; take the centre G, ten diviſions from the bottom, or thirteen from the top; through the centre G draw H I perpendicular to A B; biſect the angle B H I by the diagonal line D C; through the firſt diviſion K above H, on the line A B, draw K E parallel to H I, cutting the line







T. Sheraton del.

J. Pass sculp.

Method of describing the Ionic Volutes, common, angular & elliptical.

London Published as the Act directs, Decr. 16.1797 by J.Wilkes

ARCHITECTURE.

Fig. 1.

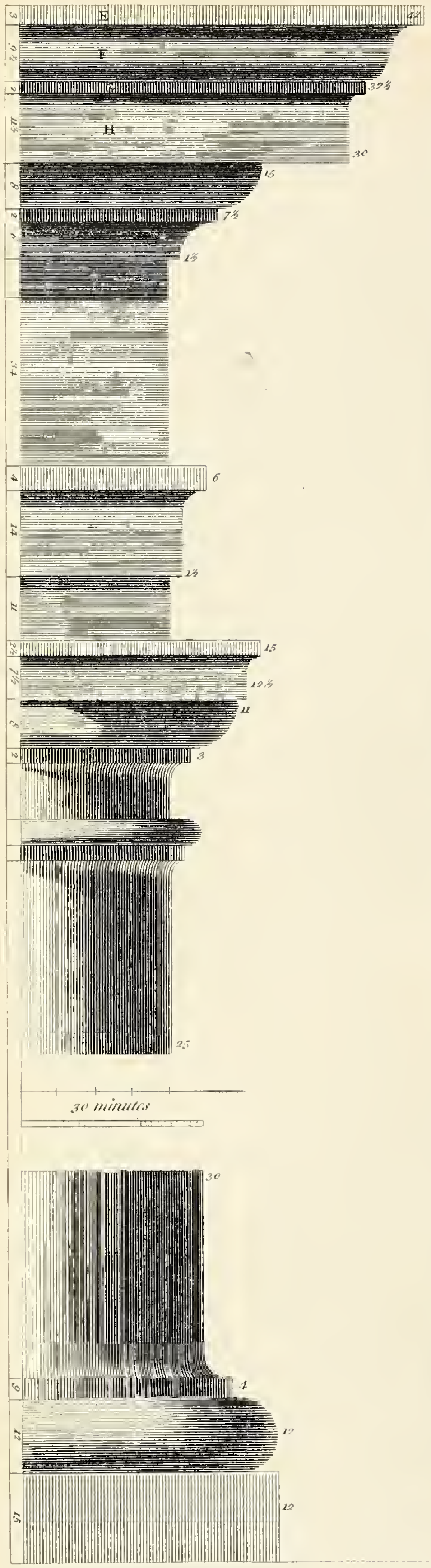


Fig. 2.

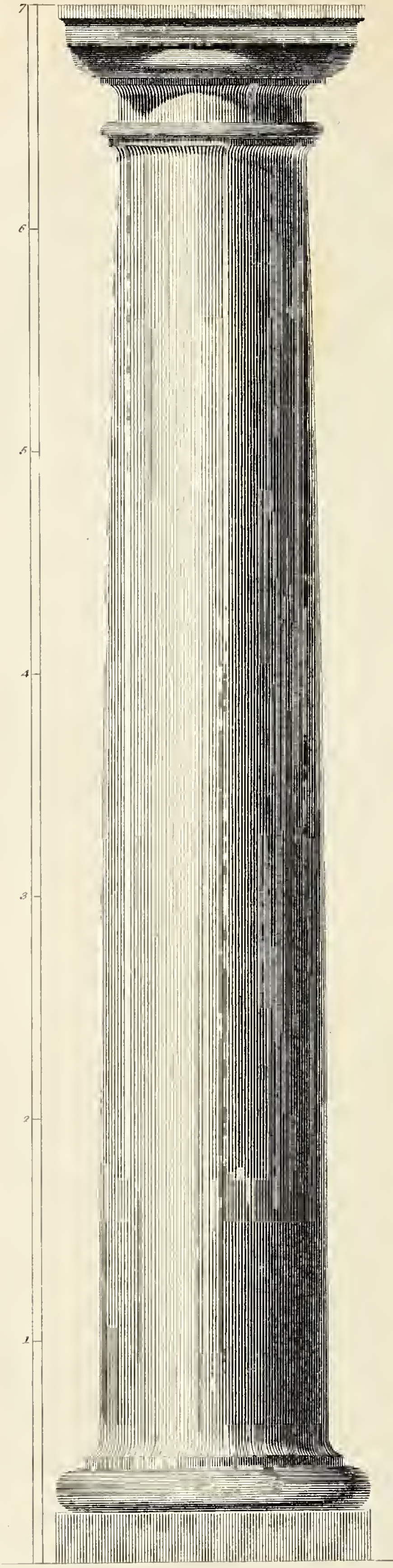
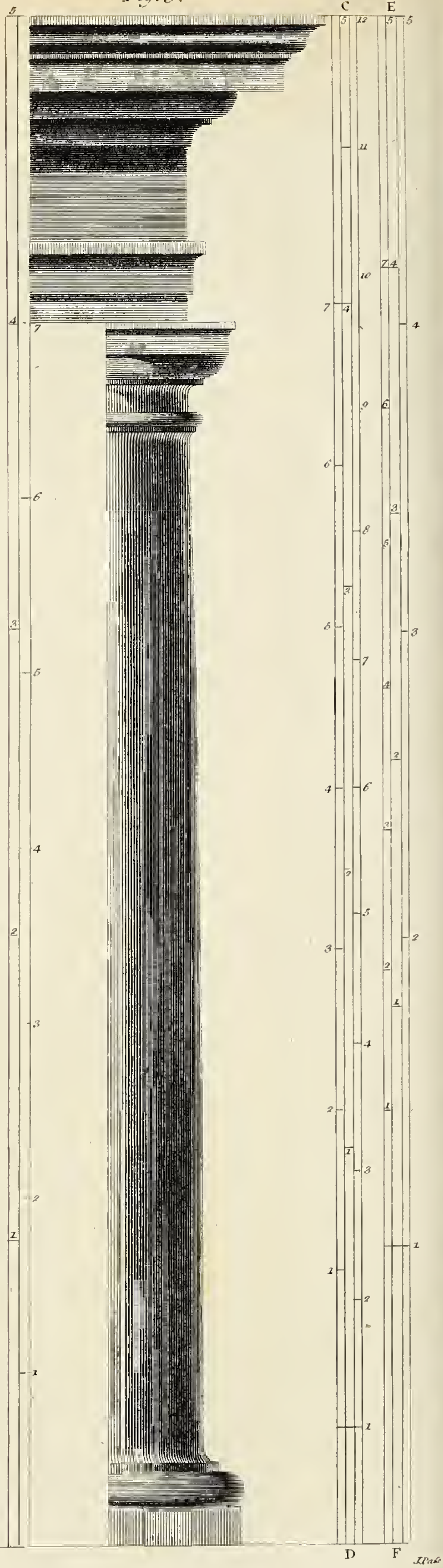


Fig. 3.



T. Sheraton del.

J. Pass sculp

Method of setting off the Tuscan Order.

London Published as the Act directs, Apr. 14, 1798 by J. Wilkes.

line D C at E; on G as a centre, with a radius G E, deſcribe a circle cutting D C on the oppoſite ſide of the centre at F; divide F E in ſix equal parts at 4, 6, G, 5, 3; then on E as a centre, with a radius D B, deſcribe an arc B C cutting D C at C; on F, with a radius F C, deſcribe the ſemicircle C A K, cutting C D at K; on 3, with a diſtance 3 K, deſcribe a ſemicircle K L; on 4 as a centre, with the radius 4 L, deſcribe a ſemicircle L M; on 5 as a centre, with a radius 5 M, deſcribe a ſemicircle M N; laſtly, on C, with a radius 6 N, deſcribe a ſemicircle N E, touching the centre at E, and the figure will be completed. This method will alſo deſcribe an elliptical volute to a given height, but not to any given width, this being only a preparation to the following:

To deſcribe an Elliptical Volute to any given Height and Projection from the Centre.—Divide the given height L M, *fig.* 3, into twenty-three equal parts as before, taking the centre E ten from the bottom, or thirteen from the top; through N the firſt diviſion above E draw N F, cutting the diagonal line E O at F; on E as a centre, with a radius E F, deſcribe the dotted circle, or through E draw P Q at right angles to the diagonal line O E; make E P and E Q each equal E F; on F as a centre, with the diſtance L F, deſcribe an arc L H, cutting E H at right angles to L M at H; from E make E G equal to the diſtance the projection of the volute is intended to be from the centre, divide G H into ſix equal parts, and ſet one of the parts to I; make E K and E R each equal to the ſum of the two lines E F and G I, through the points K P R Q; complete the parallelogram A B C D, whoſe ſides A B, D C, are parallel to P Q and A D, B C parallel to K R; draw the diagonals A C and B D, and divide each of them into ſix equal parts; then, on B as a centre, with the radius B L, deſcribe the arc L *b*, cutting A B produced at *b*; on A as a centre, with the radius A *b*, deſcribe the arc *bc*, cutting A D produced at *c*; on D as a centre, with the radius D *c*, deſcribe an arc *cd*, cutting C D produced at *d*; on C as a centre, with a radius C *d*, deſcribe an arc *de*; on 5 as a centre, with a radius 5 *e*, deſcribe an arc *ef*; on 6 as a centre, with the radius 6 *f*, deſcribe an arc *fg*; on 7 as a centre, with the radius 7 *g*, deſcribe an arc *gh*; on 8 as a centre, with the radius 8 *h*, deſcribe an arc *hi*; proceed in this manner, beginning the third revolution at 9, and ending at 12; laſtly, deſcribe an ellipſis touching the laſt centre of the third revolution E, being its centre; and its tranſverſe and conjugate axis being in the ſame ratio as the length or height of the volute is to its width, it will complete the figure. If due attention be paid to the figures projected on the Plate, it is impoſſible to miſtake any part of the operation.

To PROJECT, SET OFF, or DRAW, the FIVE ORDERS.

Suppoſe it be required to project or ſet off the Tuſcan Order: for this purpoſe make a ſcale to the diameter of the column at the bottom; firſt divide it into ſix equal parts, and divide the firſt of theſe into ten; each of theſe parts is called a minute; then every member of the order is ſo many minutes of this ſcale, either in height or projection. The operation is as follows: draw an axis or perpendicular through the middle of the column; on this line ſet off all the heights, or on any other line parallel to it; then make another line parallel to the axis at the diſtance of twenty-five minutes, which allows five minutes on each ſide for the diminution at top; from this line ſet off the projections, as figured in *fig.* 1, of the annexed Plate; for example, the projection of the top fillet E is forty-two minutes, and the projection of the next fillet G is thirty-two minutes and a half; then proceed to deſcribe the cima recta, and all the other members unto the baſe, which is ſet off from the outer extremity of the column, that is, thirty minutes from the axis.

In the Tuſcan Order, the column is ſeven diameters high, that is, ſeven times its diameter at the baſe, the entablature is one-fourth of the height of the column: but if the order has a pedeſtal, which is ſeldom the caſe, it will be one-fifth part of the entire order in height. To make this practice obvious to the reader, the following examples will be uſeful:

To find the Diameter of the Tuſcan Column, when that alone is to be executed.—RULE. Divide the height of the column by ſeven, and the quotient will be the diameter.

Ex. 1. Suppoſe it were required to execute the Tuſcan column alone, to the height of twenty-two feet three inches; demanded the diameter of the column.

7) 22 .. 3
3 .. $2\frac{1}{7}$

So that the diameter of the column is three feet two inches and one-ſeventh part of an inch.

To find the Height of the Tuſcan Entablature, and the Diameter of its Column, the entire height of the column and entablature being given.—RULE. Divide the height by five, and the quotient will give the height of the entablature; ſubtract the height of the entablature laſt found from the entire height, and the remainder will be the height of the column; divide this remainder by ſeven, as before, and the laſt quotient will be the diameter of the column.

Ex. 2. Suppoſe it were required to execute the Tuſcan with its entablature, to the height of twenty-two feet one inch; demanded the height of the entablature, and the diameter of its column.

5) 22 .. 1
4 .. 5 height of the entablature
7) 17 .. 8 height of the column
2 .. $6\frac{2}{7}$ diameter of the column.

The diameter of the column being thus found, it will eaſily be put in, as follows: Suppoſe it were required to execute a column to two feet ſix inches and two-ſeventh parts of an inch; take a rod of that dimenſion, and divide it into ſix equal parts, and the firſt part again into ten, for minutes; then proceed for practice in the ſame manner as if the drawing were to be on paper.

To find the Diameter of the Column, the Height of the Entablature, and Height of the Pedeſtal, when the whole is to be executed to a given height.—RULE. Divide the entire height by five, and the quotient will be the height of the pedeſtal; ſubtract this height from the entire height, and the remainder will be the height of the column, with its entablature. Divide the remainder again by five, and the quotient will be the height of the entablature; ſubtract the quotient from the firſt remainder, and the laſt remainder will be the height of the column; and this laſt remainder, being divided by ſeven, will give the diameter of the column.

Ex. 3. Let it be required to execute the Tuſcan Order complete, with an entablature, column, and pedeſtal, to the height of thirty feet; demanded the height of the pedeſtal, height of the entablature, and diameter of the column?

5) 30
6 feet, the height of the pedeſtal
5) 24 height of the column and entablature
4 .. $9\frac{3}{5}$ height of the entablature
7) 19 .. $2\frac{2}{5}$ height of the column
2 .. 8^{6} diameter of the column.

To draw the Tuſcan Column to a given Height.—Divide the height into ſeven equal parts, as in the ſecond example; one will be the diameter of the column, and a ſcale whereby to proportion the other parts, as is illuſtrated by *fig.* 2, in the annexed Plate.

To draw the Tuſcan Column, with its Entablature, to a given Height.—Divide the given height into five equal parts; allow one for the height of the entablature; and then divide the remaining four into ſeven parts, of which one will be the diameter of the column, as ſhewn in *fig.* 3, of the annexed Plate.

To draw the Tuſcan Column and Entablature, ſtanding upon a Sub-plinth.—Divide the whole height, as C D, in the ſcale, into twelve equal parts, one will be height of the ſub-plinth; divide the remaining eleven into five equal parts, one will be the height of the entablature; divide the remaining four parts into ſeven, and one will be the diameter of the column.

To draw the Tuſcan Order entire with a Pedeſtal.—Divide the whole height, as in the ſcale E F, into five equal parts, the lower one will give the height of the pedeſtal; divide the remaining four into five equal parts, the upper one will give the height of the entablature; divide the remaining four of theſe into ſeven equal parts, and one is the diameter of the column. The whole Tuſcan column, thus completed in all its parts, is ſhewn in the Plate, and explained by the following Table:

In the ENTABLATURE.		In the COLUMN.	
E Fillet	In the Cornice	Q Fillet	In the Capital
F Cimata Recta		R Faſcia	
G Fillet		S Ovolo	
H Corona		T Fillet	
I Ovolo		U Neck of the Capital	
K Fillet			
L Cavetto		V Bead	In the Shaft
M - -	the Frize	W Fillet	
N Tenia	In the Architrave	X Fillet	In the Baſe
O Upper Faſcia		Y Torus	
P Lower Faſcia		Z Plinth	

The manner of ſetting off the parts of the Doric Order, is much the ſame as in the Tuſcan; the heights and projection of the parts being taken from the diameter of the column at bottom, forms a ſcale for each of the Orders; ſo that the drawing and executing of the Tuſcan, if well underſtood, teaches to draw the Doric, or any other Order, without further inſtruction or repetition. The greateſt difficulty of the Doric Order are the triglyphs; theſe in modern buildings are placed exactly over the centre of the column, thirty minutes wide, ſo that fifteen minutes are on each ſide of the axis of the column; the mutules in the cornice are exactly over them, and of the ſame breadth; the ſmall conical fruſtum under the triglyphs are called drops, or bells; the manner of drawing the triglyphs and bells is as follows: Divide the breadth into twelve equal parts, give one to each half-channel on the outſide; two for each ſpace or interval, and two for each channel, and one ſpace will remain in the middle; every two diviſions or parts is the width of a bell; the ſide of every bell, if continued, would terminate in a point at the top of the fillet above them; the ſpaces between the triglyphs, called metopes, are always ſquare, and ſometimes enriched with ox-heads, and ſometimes with pateras, according to fancy; when the column is fluted it has twenty in number, and without fillets. The annexed Plate, *fig.* 1, repreſents a modern Profile of the Doric Entablature and Capital, which will ſerve to illuſtrate this ſubject in the moſt obvious manner.

To PROJECT the DORIC ORDER to a GIVEN HEIGHT.

For the Column.—Divide the height into eight equal parts, one of the parts is the diameter of the column, which diameter is to be divided into ſixty minutes, as before directed, for practice.

For the Column and Entablature.—Divide the given height into five equal parts, and the upper part will give the height of the entablature; divide the remaining four into eight equal parts, and one will give the diameter of the column.

For the Column and Entablature upon a Sub-plinth.—Divide the given height into twelve equal parts, the lower one will give the height of the ſub-plinth; divide the remaining eleven into five equal parts, the upper one is the height of the entablature; divide the remaining four parts into eight, and one of theſe is the diameter of the column.

For the Column and Entablature upon a Pedeſtal.—Divide the given height into five equal parts, the lower one is the height of the pedeſtal; divide the remaining four into five equal parts, and the upper one is the height of the entablature; divide the remaining four of theſe into eight equal parts, and one will give the diameter of the column.

To PROJECT the IONIC ORDER to a GIVEN HEIGHT.

For the Column and Entablature.—Divide the whole height into ſix equal parts, give the upper one to the entablature, divide the lower five into nine parts, and one will give the diameter of the column, to be divided into ſixty minutes as a ſcale either to work or draw by.

For the Column and Entablature on a Sub-plinth.—Divide the whole height into twelve equal parts, give the lower one to the ſub-plinth, and proceed with the remaining eleven as above, which will give the height of the entablature, and the diameter of the column.

For the Column, Entablature, and Pedeſtal.—In this, or any of the five Orders, the height of the pedeſtal is always one-fifth part of the entire height; therefore the height of the entablature, and diameter of the column, may be found as before. In *fig.* 2, of the annexed Plate, is given a Front Elevation of the Ionic Capital, in the mode now practiſed. All the parts being fully deſcribed on the Plate, will require no further explanation here. *Fig.* 3, is a Profile of Caryatides, which may be applied to any purpoſe either of ornament or ſupport, where ſuch a ſtyle is requiſite, and they may be crowned with any of the feminine or delicate orders.

To DRAW, or PROJECT, the CORINTHIAN ORDER.

Fig. 4, of the annexed Plate, repreſents a modern Profile of the Corinthian Order, decorated with olive-leaves, inſtead of thoſe of the acanthus, after the Roman manner. To find the places of the ſtems of the leaves, divide the ſemi-plan into eight equal parts, and draw the plan of the leaves, with their ſtems; from the ſide of each ſtem draw the perpendicular lines to the elevation of the capital, and it will give the breadth of each ſtem on the front; the projection of the tops of the leaves is from a line joining the top of the abacus, and the aſtragal, at the bottom of the capital. All the different parts of this order being figured on the Plate, will render any further explanation unneceſſary. With reſpect to the meaſurement, the diameter of the column is one-tenth part of its height; the height of the entablature, and pedeſtal, are found in the ſame manner as in the Ionic Order; that is, the height is divided into ſix equal parts, the upper one is for the height of the entablature, one half of which will of courſe be the diameter of the column. The pedeſtal takes one-fifth of the entire Order, the ſub-plinth one-twelfth. The diameter of the column is one-tenth of its height.

To DRAW, or SET OFF, the COMPOSITE ORDER.

The upper part of this Order being the ſame as the Ionic angular capital, and the lower part for leaves, the ſame as the Corinthian; the general heights of the cornice, frize, architrave, capital, ſhaft, and baſe, are conſequently the ſame as that of the Corinthian; the diameter of the column is one-tenth part of its height, as in the Corinthian; the heights and projections of the members are obvious by the ſame rules.

The five Orders, correctly drawn and highly finiſhed, from the moſt approved antiques, being given in three Plates in *Ancient Architecture*, might be there referred to as a further illuſtration of the preſent ſubject.

APPLICATION of the ORDERS in BUILDING.

Among the ancients, as we have already ſeen, the uſe of the orders was very frequent; many parts of their cities were provided with ſpacious porticos, their temples were ſurrounded with colonades, and their theatres, baths,

Fig. 1.

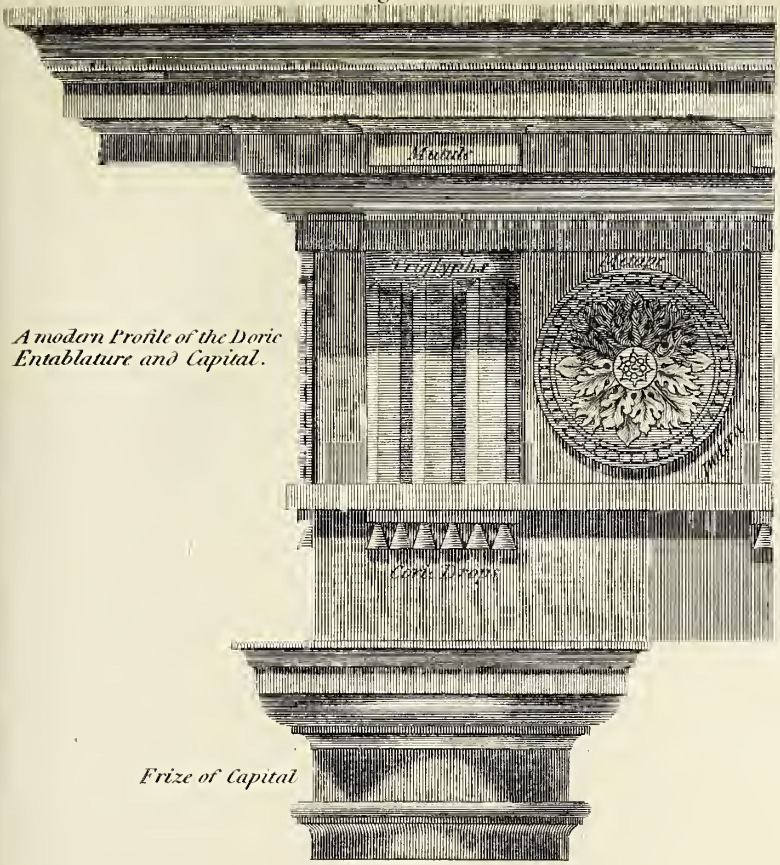

A modern Profile of the Doric Entablature and Capital.

Fig. 2.

Half the front and end of the Ionic Capital.

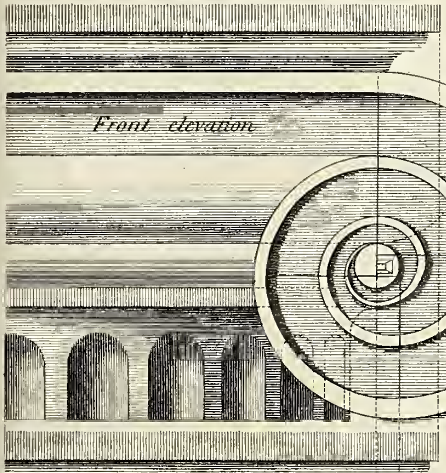


Fig. 3.

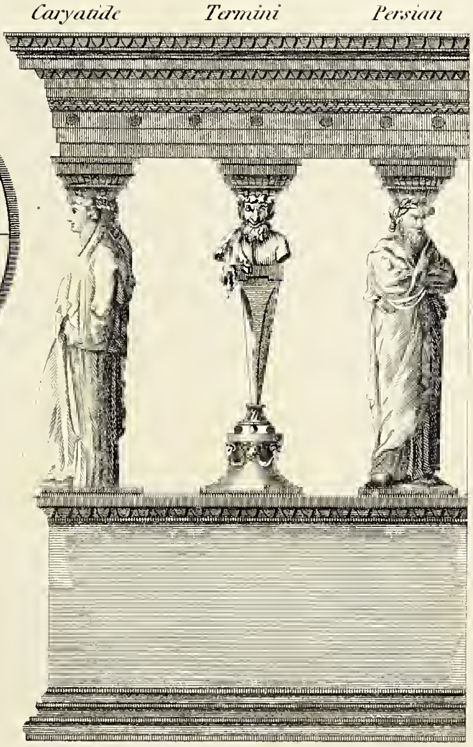
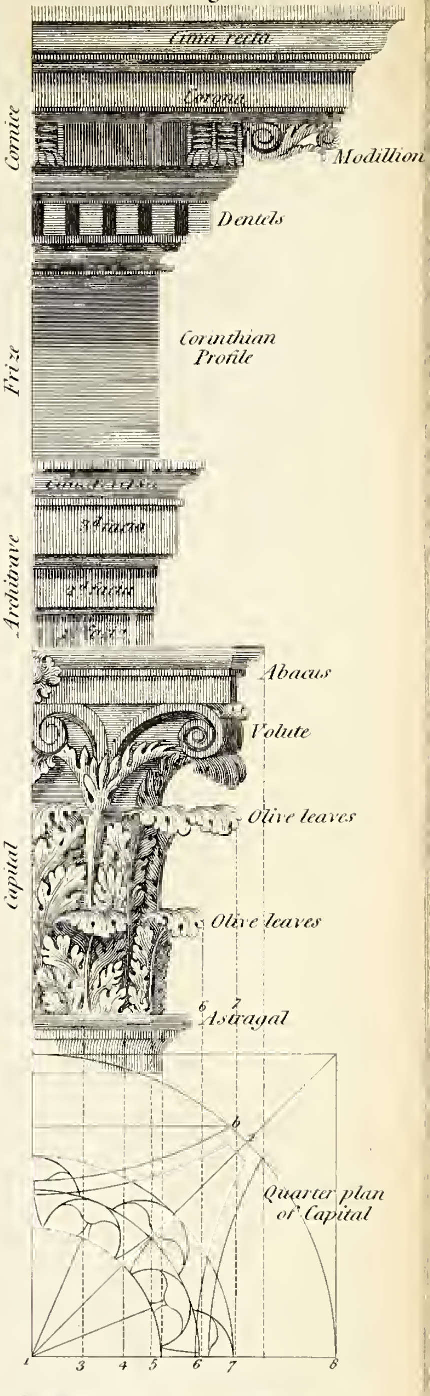
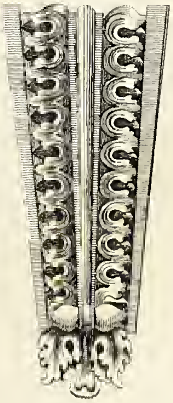
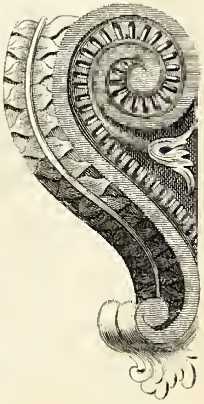


Fig. 4.


Corinthian Profile


Cartouche


Console

Modern Profiles, of the Doric, Ionic & Corinthian Orders.

Sheraton del.

Pass sculp.

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baſilicas, triumphal arches, mauſoleums, bridges, and other public buildings, were profuſedly enriched with columns; as were likewiſe the courts, veſtibules, and halls, of their private villas and houſes.

In imitation of the ancients, the moderns have made the orders of architecture the principal ornaments of their ſtructures. We find them employed in almoſt every building of conſequence; where they are ſometimes merely ornamental, but at other times of real uſe, ſerving to ſupport the incumbent weight of any ſtructure erected upon them. On ſome occaſions they are employed alone; the whole compoſition conſiſting only of one or more ranges of columns, with their entablature. Upon other occaſions the intervals between the columns are filled up and adorned with arches, doors, windows, niches, ſtatues, baſſo-relievos, and other ſimilar inventions. The columns are either placed immediately on the pavement, or raiſed on plinths, pedeſtals, or baſements; either engaged in the walls of the building, or ſtanding detached, either near, or at ſome diſtance from them; and frequently different orders are placed one above another, or intermixed with each other on the ſame level. In theſe, and in all other caſes, in which the orders are introduced, particular meaſures, rules, and precautions, are to be obſerved, which we ſhall now endeavour to explain and illuſtrate.

Of INTERCOLUMNIATIONS and ARCADES.

Columns are either engaged or inſulated; and, when inſulated or detached from the wall, they are either very near, or at a conſiderable diſtance from it. When they are placed at a conſiderable diſtance from the wall, they are deſtined to ſupport the entablature; and their diſtance from each other ſhould be conſiſtent both with their real and apparent ſolidity. Engaged columns are attached to the wall, and are not limited in their intercolumniations, as they depend on the breadth of the arches, doors, windows, niches, or other decorations, placed in them.

Palladio ſays, the intercolumniation of the Tuſcan order was adapted to farm-houſes and other ruſtic works, as it afforded a paſſage for carts, and was attended with the leaſt expence. In ſtructures built entirely of ſtone, they uſed a ſhorter interval, more ſuitable to the length of their marble blocks, and more agreeable to the ponderous fabric which they occaſionally ſupported; for which reaſon the diaſtyle and euſtyle modes were ſometimes applied to this order. The moderns have indeed adopted theſe two as their general rule, and apply them to every order except the Doric. The areoſtyle, however, is ſometimes, by a modern contrivance authoriſed by a few examples of the ancients, introduced in porticos and periſtyles. This mode of the areoſtyle is from Perrault, and is managed by placing two columns together at the angles, ſo cloſe as to admit the two capitals nearly into contact. This manner, which is termed grouping, takes off from the exceſſive width of this kind of interval, whilſt it adds to it both real and apparent ſtrength, as is exemplified in St. Paul's church in London, and in the palace of the Louvre at Paris.

Arches, or arcades, are not ſo magnificent as colonnades; but they are more ſolid and leſs expenſive. They are proper for triumphal entrances, gates of cities, of palaces, of gardens, and of parks, and, in general for all openings that require an extraordinary breadth. There are various manners of adorning arches. Sometimes their piers are ruſticated; ſometimes they are adorned with pilaſters, termini, or caryatides; and ſometimes they are made ſufficiently broad to admit niches or windows. The circular part of the arch is either ſurrounded with ruſtic key-ſtones, or with an archivolt enriched with mouldings; which, in the middle, is ſometimes interrupted by a conſole, or maſk, ſerving at the ſame time as a key to the arch, and as a ſupport to the architrave of the order. The archivolt is ſometimes ſupported by an impoſt at the head of the pier; and at others by columns placed on each ſide of it, with a regular entablature, or architrave and cornice. There are alſo inſtances of arcades without piers, the arches being turned on ſingle columns, as in the temple of Faunus at Rome, &c. But this practice ought to be ſeldom imitated, as it is neither ſolid nor handſome. When, however, arcades are employed to ornament domeſtic apartments, the breadth of the pier need not exceed one-quarter of the opening of the arch. When arches are cloſed up to receive doors, windows, or niches, the receſs ſhould be ſufficient to contain all the projections of what is placed therein, otherwiſe their appearance is clumſy, and will become too principal, which produces a bad effect in the compoſition.

When arches are large, the key-ſtone ſhould never be omitted, but cut in the form of a conſole, and carried cloſe under the ſoffit of the architrave, which, on account of its extraordinary length, requires a ſupport in the middle. The impoſts of arches ſhould never be omitted; at leaſt, if they be, a platform ought to ſupply their place. If columns are employed without pedeſtals in arcades, they ſhould always be raiſed on a plinth. In arches of great magnitude, the circular part ought not to ſpring immediately from the impoſt, but take its riſe at ſuch a diſtance above it as is neceſſary in order to have the whole curve ſeen at the proper point of view.

The void or aperture of arches ſhould never be higher, nor much lower, than double their breadth; the breadth of the pier ſhould ſeldom exceed two-thirds, nor be leſs than one-third, of the breadth of the arch; and the angular pier ought to be broader than the others, by one-half, one-third, or one-fourth: the impoſt ſhould not be more than one-ſeventh, nor leſs than one-ninth, of the aperture; and the archivolt muſt not be more than one-eighth, nor leſs than one-tenth, of it. The breadth of the conſole muſt, at the bottom, be equal to that of the archivolt; and its ſides muſt be drawn from the centre of the arch: the length of it muſt not be leſs than one and a half of its ſmalleſt breadth, nor more than double. The thickneſs of the pier depends on the breadth of the portico; for it muſt be ſtrong enough to reſiſt the preſſure of its vault. But, to give beauty to the building, it ſhould not be leſs than one-quarter of the breadth of the arch, nor more than one-third.

The proportions peculiar to the Tuſcan arch, without pedeſtals, are as follow: In height, their aperture is ſeven diameters and a quarter, in width four, and from centre to centre of the columns ſix diameters. According to the preceding remarks, the archivolt and impoſts are half a diameter, and from the top of the archivolt to the under ſide of the architrave ſhould not be leſs than fifteen minutes. The breadth of the key-ſtone at the bottom is equal to its archivolt; and its ſpreading ſides are determined by lines drawn from the centre of the arch. The Tuſcan arch with pedeſtals is in width four and a half, and in height eight diameters and a quarter; and from centre to centre of each pier is ſix and three-quarters. In every other particular they are ſubject to the preceding rules.

The intercolumniation of the Doric order is often attended with peculiar difficulty, ariſing from the ſtrict regard that is neceſſarily paid to the width of the triglyph, and the perfectly-ſquare form of the metopes, or their intervals. Beſides that, it is abſolutely requiſite, that a triglyph ſhould be placed exactly over the centre of every column. For theſe reaſons, the mutules and triglyphs have been omitted in capital works, both ancient and modern, as in the Coliſeum at Rome, and the Royal Hoſpital at Greenwich. Palladio has, however, given one inſtance of an ancient temple with angular triglyphs. This ſtructure, which he terms the Temple of Piety, is mentioned by Vitruvius, with an eye to the difficulty occaſioned by the triglyphs being thus placed; which reduces the intercolumniation of the two angular columns to one diameter and a quarter, which is leſs than the pycnoſtyle. The next intercolumniation is ſtill greater, approaching nearly to the pireoſtyle, as is evidently neceſſary to bring the triglyph over the centre of the third column from the angle. The next, which is the centre intercolumniation, and faces the entrance of the temple, is rather more than euſtyle, or two diameters and a quarter; and has, in the metopes, ditriglyph. But the intervals between the triglyph are much too narrow for their height, ſo as to produce an unfavourable effect. The other ſpaces are monotriglyph, and are perfect. The regular intercolumniation of the Doric order is the monotriglyph, or pycnoſtyle, which admits of one between two columns. The ditriglyph, or euſtyle, admits two; and the aræoſtyle is tritriglyph, or conſiſting of three; but the moſt perfect of theſe is the ditriglyph.

When the capitals and baſes of coupled Doric columns have their proper projections, and are at any diſtance from each other, the metope between them will be rather too wide; but that may be avoided by confining the projections, or making the triglyph one minute more than it really ſhould be, and placing or removing its centre a minute within the axis of the column, which trifling differences will not be perceived without the niceſt examination. In ſmall buildings, ſuch as temples and other ſimilar ornaments for gardens, the intercolumniations may be determined without paying a ſtrict regard to the general rules for the diſtances of columns; always obſerving, however, that ſuch works muſt have an interval that will admit of an eaſy paſſage between them.

Doric arches, without pedeſtals, are ſeven diameters and three-fourths high, and in width four diameters and fifteen minutes. The piers are two modules in front, and in thickneſs one module twenty-two minutes and a half; or in proportion to their diſtance from the wall. From centre to centre of each pier is ſix diameters and fifteen minutes. Arches of this order, with pedeſtals, have their apertures in height nine diameters and thirty minutes, and in their width five diameters fifteen minutes. The piers are two diameters and fifteen minutes wide in front, and from centre to centre of each is 7 diameters 15 minutes.

With reſpect to the intercolumniation of the Ionic, Corinthian, and Compoſite, orders, what has been already obſerved on the ſubject will ſuffice: and, as to the arches peculiar to each order, all that is neceſſary, after what has been remarked on the two preceding orders, is a careful inſpection of the plates, whereon all the dimenſions are aſcertained.

Of ORDERS upon ORDERS, and of BASEMENTS.

When, in a building, two or more orders are employed, one above another, the laws of ſolidity require the ſtrongeſt ſhould be placed lowermoſt. Hence the Tuſcan muſt ſupport the Doric, the Doric the Ionic, the Ionic the Compoſite or Corinthian, and the Compoſite the Corinthian. This rule, however, is not always ſtrictly adhered to. Moſt authors place the Compoſite above the Corinthian. There are likewiſe examples where the ſame order is repeated, as in the theatre of Statilus Taurus, and in the Coliſeum; and others, where an intermediate order is omitted, and the Ionic placed on the Tuſcan, or the Corinthian on the Doric. But none of theſe practices ought to be imitated. In placing columns above one another, the axis of all the columns ought to correſpond, or be in the ſame perpendicular line, at leaſt in front.

With regard to the proportions of columns placed above each other, Scamozzi's rule, That the lower diameter of the ſuperior column ſhould conſtantly be equal to the upper diameter of the inferior one, is univerſally eſteemed the beſt, and gives all the columns the appearance of one long tapering tree, cut into ſeveral pieces. In this country, there are few examples of more than two ſtories of columns in the ſame elevation; and though in Italy, and other parts of Europe, we frequently meet with three, and ſometimes more, yet it is a practice by no means to be imitated; for there is no poſſibility of avoiding many ſtriking inconſiſtencies, or of preſerving the character of each order in its intercolumnial decorations.

Inſtead of employing ſeveral orders one above the other, the ground-floor is more judiciouſly made in the form of a baſement, on which the order that decorates the principal ſtory is placed. The proportions of theſe baſements are not fixed, but depend on the nature of the rooms on the ground-floor. In the palace of the Porti in Vicenza, the height of the baſement is equal to that of the order. In ſome buildings, its height exceeds two-thirds of that of the order; and, in others, only half the height of the order. It is not, however, adviſeable to make the baſement higher than the order it ſupports: neither ſhould it be lower than one-half of the order.

The uſual method of decorating baſements is with ruſtics of different kinds. The beſt, where neatneſs and finiſhing is aimed at, are ſuch as have a ſmooth ſurface. Their height, including the joint, ſhould never be leſs, nor much more, than half a module of the order placed on the baſement. Their figure may be from a ſquare to a ſeſquialtera; and their joints may be either ſquare or chamfered. The ſquare ones ſhould not be broader than one-eighth of the height of the ruſtic, nor narrower than one-tenth; and their depth muſt be equal to their breadth; thoſe that are chamfered muſt form a rectangle; and the breadth of the whole joint may be from one-fourth to one-third of the height of the flat ſurface of the ruſtic.

Of PEDIMENTS.

Pediments, among the Romans, were uſed only as coverings to their ſacred buildings, till Cæſar obtained leave to cover his houſe with a pointed roof, after the manner of temples. In the remains of antiquity we meet with two kinds of pediments, the triangular and the circular. The former of theſe are promiſcuouſly applied to cover ſmall or large bodies: but the latter, being of a heavier figure, are only uſed to cover doors, niches, windows, or gates.

As a pediment repreſents the roof, it ſhould never be employed but as a finiſhing to the whole compoſition. The ancients introduced but few pediments into their buildings, uſually contenting themſelves with a ſingle one to adorn the middle or principal part. But ſome of the moderns, and particularly the Italians, have been ſo immoderately fond of them, that their buildings frequently conſiſt of ſcarcely any thing elſe. The girder being a neceſſary part in the conſtruction of a roof, it is an impropriety to intermit the horizontal entablature of a pediment, by which it is repreſented, to make room for a niche, an arch, or a window.

In regular architecture, no other form of pediments can be admitted beſides the triangular and circular. Both of them are beautiful; and when a conſiderable number of pediments are introduced, as when a range of windows are adorned with them, theſe two figures may be uſed alternately, as in the niches of the Pantheon, and in thoſe of the temple of Diana at Niſmes. The proportion of pediments depends upon their ſize; for the ſame proportions will not do in all caſes. When the baſe of the pediment is ſhort, its height muſt be increaſed; and, when the pediment is long, the height muſt be diminiſhed. The beſt proportion for the height is from one-fifth to one-fourth of the baſe, according to the extent of the pediment, and the character of the body it covers. The materials of the roof muſt alſo be attended to; for, if it be covered with tiles, it will be neceſſary to raiſe it more than one quarter of the baſe, as was the cuſtom of the ancients in their Tuſcan temples. The tympan is always on a line with the front of the frieze; and, when large, admits of various ornaments, as in the pediment to the weſtern elevation of the temple of Minerva at Athens, which may be ſeen in Plate VIII. of Architecture.

Of BALLUSTRADES.

Balluſtrades are ſometimes of real uſe in buildings; and at other times they are only ornamental. Such as are intended for uſe, as when they are employed in ſtair-caſes, before windows, or to incloſe terraces, &c. muſt always be nearly of the ſame height; never exceeding three feet and a half, nor ever leſs than three. But thoſe that are principally deſigned for ornament, as when they finiſh a building, ſhould be proportioned to the architecture they accompany; and their height ought never to exceed four-fifths of the height of the entablature on which they are placed: nor ſhould it ever be leſs than two-thirds thereof, without counting the zocholo, or plinth, the height of which muſt be ſufficient to leave the whole balluſtrade expoſed to view.

The beſt proportion for balluſtrades is to divide the whole given height into thirteen equal parts; eight of theſe for the height of the balluſtre, three for the baſe, and two for the cornice or rail; or into fourteen (if it be required to make the balluſter leſs), giving eight parts to the balluſter, four to the baſe, and two to the rail. One of theſe parts may be called a *module*; and, being divided into nine minutes, may ſerve to determine the dimenſions of the particular members.

In balluſtrades, the diſtance between two balluſtres ſhould not exceed half the diameter of the balluſtre meaſured in its thickeſt part, nor be leſs than one-third of it.

The breadth of the pedeſtals, when they are placed on columns or pilaſters, is regulated by them; the dye never being made broader than the top of the ſhaft, nor much narrower; and, when there are neither columns nor pilaſters on the front, the dye ſhould not be much lower than a ſquare, and ſeldom higher. On ſtairs, or any other inclined planes, the ſame proportions are to be obſerved as on horizontal ones.

Of NICHES and STATUES.

It has been the cuſtom of every age to enrich different parts of buildings with repreſentations of the human body. Thus the ancients adorned their temples, baths, theatres, &c. with ſtatues of their deities, heroes, and legiſlators. The moderns ſtill preſerve the ſame cuſtom, placing in their churches, palaces, &c. ſtatues of illuſtrious perſons, and even groups compoſed of various figures, repreſenting occurrences collected from hiſtory, fables, &c. Sometimes theſe ſtatues or groups are detached, raiſed on pedeſtals, and placed contiguous to the walls of a building, or in the middle of a room, court, or public ſquare. But they are moſt frequently placed in cavities made in the walls, called niches. Of theſe there are two ſorts; the one formed like an arch in its elevation, and ſemicircular or ſemi-elliptical in its plan; the other is a parallelogram both in its plan and elevation. The proportion of both theſe niches depends on the characters of the ſtatues, or the general form of the groups placed in them. The loweſt are at leaſt a double ſquare in height; and the higheſt never exceed two and a half of their breadth.

With regard to the manner of decorating them, when they are alone in a compoſition, they are generally incloſed in a pannel, formed and proportioned like the aperture of a window, and adorned in the ſame manner. In this caſe the niche is carried quite down to the bottom; but on the ſides and at the top, a ſmall ſpace is left between the niche and the architrave of the pannel. And when niches are intermixed with windows, they may be adorned in the ſame manner with the windows, provided the ornaments be of the ſame figure and dimenſions with thoſe of the windows.

The ſize of the ſtatue depends on the dimenſions of the niches. They ſhould neither be ſo large as to have the appearance of being rammed into the niches, as in Santa Maria Majora at Rome; nor ſo narrow as to ſeem loſt in them, as in the Pantheon. The diſtance between the outline of the ſtatue and ſide of the niche ſhould never be leſs than one-third of a head, nor more than one-half, whether the niche be ſquare or arched; and, when it is ſquare, the diſtance from the top of the head to the cieling of the niche ſhould not be greater than the diſtance on the ſides. Statues are generally raiſed on a plinth, the height of which may be from one-third to one-half of a head; and ſometimes, where the niches are large, the ſtatues may be raiſed on ſmall pedeſtals. The character of the ſtatue ſhould always correſpond with the character of the architecture with which it is ſurrounded. Thus, if the order be Doric, Hercules, Jupiter, Mars, Æſculapius, and all male ſtatues, repreſenting beings of a robuſt and grave nature, may be introduced; if Ionic, then Apollo, Bacchus, &c. and, if Corinthian, Venus, Flora, and others of a delicate nature, ſhould be employed.

Of CHIMNEYS and CHIMNEY-PIECES.

Chimney-pieces are either made of ſtone, of marble, or of a mixture of theſe; alſo of wood, ſcagliola, or-moulu, or ſome other unfragile ſubſtances. Thoſe of marble are moſt coſtly, but they are alſo moſt elegant, and the only ones uſed in highly-finiſhed apartments; where they are ſeen either of white or variegated marbles, ſometimes inlaid and decorated with the materials juſt mentioned. All their ornaments, figures, or profiles, are to be made of the pure white ſort; but their friezes, tablets, pannels, ſhafts of columns, and other plain parts, may be of party-coloured marbles, ſuch as the yellow of Sienna, the Brocatello of Spain, the Diaſpers of Sicily, and many other modern as well as antique marbles, almoſt always to be had in London. Feſtoons of flowers, trophies and foliages, frets, and other ſuch decorations, cut in white ſtatuary marble, and fixed upon grounds of theſe, have certainly a very delicate effect. But there ſhould never be above two, or at moſt three, different ſorts of colours in the ſame chimney-piece, all brilliant, and harmonizing with each other. Neither the Italians nor French have excelled in compoſitions of this kind; but Britain, poſſeſſed of many able ſculptors at different times, has occaſionally ſurpaſſed all other nations, both in taſte of deſign and workmanſhip.

The ſize of the chimney muſt be regulated by the dimenſions of the room where it is placed. In the ſmalleſt apartments, the breadth of the aperture ſhould never be leſs than three feet, or three feet ſix inches. In rooms from twenty to twenty-four feet ſquare, or of equal ſuperficial dimenſions, it may be from four to four and a half feet broad; in thoſe of twenty-four to twenty-ſeven, from four and a half to five; and, in ſuch as exceed theſe dimenſions, the aperture may even be extended to five and a half or ſix feet. The chimney ſhould always be ſituated ſo as to be immediately ſeen by thoſe who enter the room. The middle of the partition-wall is the moſt proper place in halls, ſaloons, and other rooms of paſſage; but in drawing-rooms, dreſſing-rooms, and the like, the middle of the back-wall is the beſt ſituation. In bed-rooms, the chimney is always in the middle of one of the partition-walls: and in cloſets and other very ſmall places, to ſave room, it is put in a corner. Wherever two chimneys are uſed in the ſame room, they ſhould be placed either directly facing each other, if in different walls, or at equal diſtances from the centre of the wall in which they both are.

The proportion of the apertures of chimney-pieces of a moderate ſize is generally a perfect ſquare; in ſmall ones it is a trifle higher; and, in large ones, a trifle lower. In deſigning them, regard muſt be had to the nature of the place where they are to be employed. Such as are intended for halls, ſaloons, guard-rooms, galleries, and other large places, muſt be compoſed of large parts, few in number, of diſtinct and ſimple forms, and having a bold relief; but chimney-pieces for drawing-rooms, dreſſing-rooms, &c. may be of a more delicate and complicated nature.

Of DOORS and WINDOWS.

The general proportion for the apertures of doors, whether arched or quadrangular is, that the height be about double their breadth, or a trifle more. Neceſſity probably gave birth to this proportion, which habit confirmed and rendered abſolute. In primitive huts, the entries were doubtleſs ſmall; perhaps no larger than was ſufficient for a man to creep through. For thoſe rude buildings being intended merely as retreats in the night, or in ſtormy and tempeſtuous weather, it is natural to ſuppoſe they made the entrance into them as ſmall as poſſible, to exclude the wind and rain. But when architecture improved, and methods were diſcovered of ſhutting the door occaſionally, they made it of ſuch a ſize as was neceſſary for giving admittance to a tall bulky man, without ſtooping or turning aſide; that is, they made it about three feet wide, and ſix feet high, or twice as high as broad; which proportion, being become habitual, was preferred to any other, and obſerved, even when the ſize of the entrance was conſiderably augmented, and other proportions would have been equally convenient. But, though theſe proportions are generally adopted in moſt private houſes, yet in palaces, or capital manſions, where much company reſorts, the doors even of the common apartments ſhould not be leſs than ſeven feet high, elſe a tall man with a hat, or a lady with feathers, cannot paſs without ſtooping. And in the ſtate apartments, where all the doors are frequently thrown open for the reception of company, they ſhould be four, five, or ſix, feet wide, with folding leaves, which fall back into the thickneſs of the party-wall, and afford a free and open paſſage from one room to another through the whole ſuite of apartments. Inſide doors, leading from halls, veſtibules, or antichambers, either to the principal apartments, or even to the inferior ones, ſhould be in the middle of the room, if poſſible, and facing a window. Thoſe that lead to galleries, or any other long rooms, ſhould open in the centre of one of the ends; and, in general, the opening of all doors ſhould be ſo contrived, as to offer to view, at the firſt glance, the moſt magnificent and extenſive proſpect of the place they open into. The doors of communication from one room to another ſhould be at leaſt two feet diſtant from the front or back walls, that the tables, chairs, and other furniture, may not ſtand in the way of thoſe who paſs. In bed-rooms care ſhould be taken to make no doors on the ſame ſide with the bed, unleſs to a water-cloſet, wardrobe, bath, or other conveniency of that kind. Neither ought doors to be placed near chimneys, as the opening them would always diſturb thoſe who ſit by the fire.

The common method of adorning doors, is with an architrave ſurrounding the ſides and top of the aperture, on which are placed a regular frieze and cornice. Sometimes the cornice is ſupported by a couple of conſoles, placed one on each ſide of the door; and ſometimes, beſides an architrave, the aperture is adorned with columns, pilaſters, caryatides, or terms, ſupporting a regular entablature, with a pediment, or with ſome other termination either of architecture or ſculpture. Front doors, that have any of the orders for their embelliſhment, ſhould not be leſs than three feet ſix inches wide; the height ſhould be twice the width and one-ſixth part more, which might alſo be the height of the column; then the abacus will be taken out of that dimenſion, to ſeparate the door from the fan-light.

With regard to windows, the firſt conſiderations are, their number, and their ſize; which muſt be ſuch as neither to admit more nor leſs light than is requiſite. In the the determination of this object, regard muſt be had to the climate, the aſpect, the extent and elevation of the building, and its deſtination, and, in a certain degree, to the thickneſs of the walls in which the windows are made, as on that circumſtance will in ſome meaſure depend the greater or leſs quantity of light admitted through the ſame. In hot countries, where the ſun is ſeldom clouded, and where its rays dart more intenſely upon the earth, the light is ſtronger than in thoſe which are temperate or cold; therefore a ſmaller quantity of it will ſuffice; and more than ſufficient ſhould not be admitted, as the conſequence is the admiſſion of heat likewiſe. The ſame is the caſe with a ſouthern aſpect, which receives more heat, and conſequently more light, than a northern, or even an eaſtern or weſtern, one. A large lofty ſpace requires a greater quantity of light than one circumſcribed in its dimenſions; and art demands, that the quantity introduced ſhould be ſo regulated, that it may excite gay, cheerful, or ſolemn, ſenſations in the mind of a ſpectator, according to the nature and purpoſes for which the ſtructure is intended.

Wherever ſunſhine predominates, light muſt be admitted and diſtributed with caution; for, when there is an exceſs, its conſtant attendant heat becomes inſufferably incommodious to the inhabitant. In Italy, and ſome other hot countries, although the windows be leſs in general than ours, their apartments cannot be made habitable but by keeping the window-ſhutters almoſt cloſed, while the ſun appears above the horizon. But in regions where clouds prevail eight months of the year, it will always be right to admit a ſufficiency of light to counteract the gloom of wet and cloudy ſeaſons, and have recourſe to blinds or ſhutters whenever the appearance of the ſun renders it too abundant.

The proportions of the apertures of windows depend upon their ſituation. Their width in all the ſtories muſt be the ſame: but the different heights of the apartments make it neceſſary to vary the height of the windows likewiſe. In the principal floor, it may be from two and one-eighth of the width to two and one-third, according as the rooms have more or leſs elevation. In the ground ſtory, where the apartments are lower, the apertures of the windows ſeldom exceed a double ſquare; and, when they are in a ruſtic baſement, they are frequently made much lower. The height of the windows of the ſecond floor may be from one and a half of their width, to one and four-fifths; and Attics and Mezzanines may be either a perfect ſquare, or ſomewhat lower.

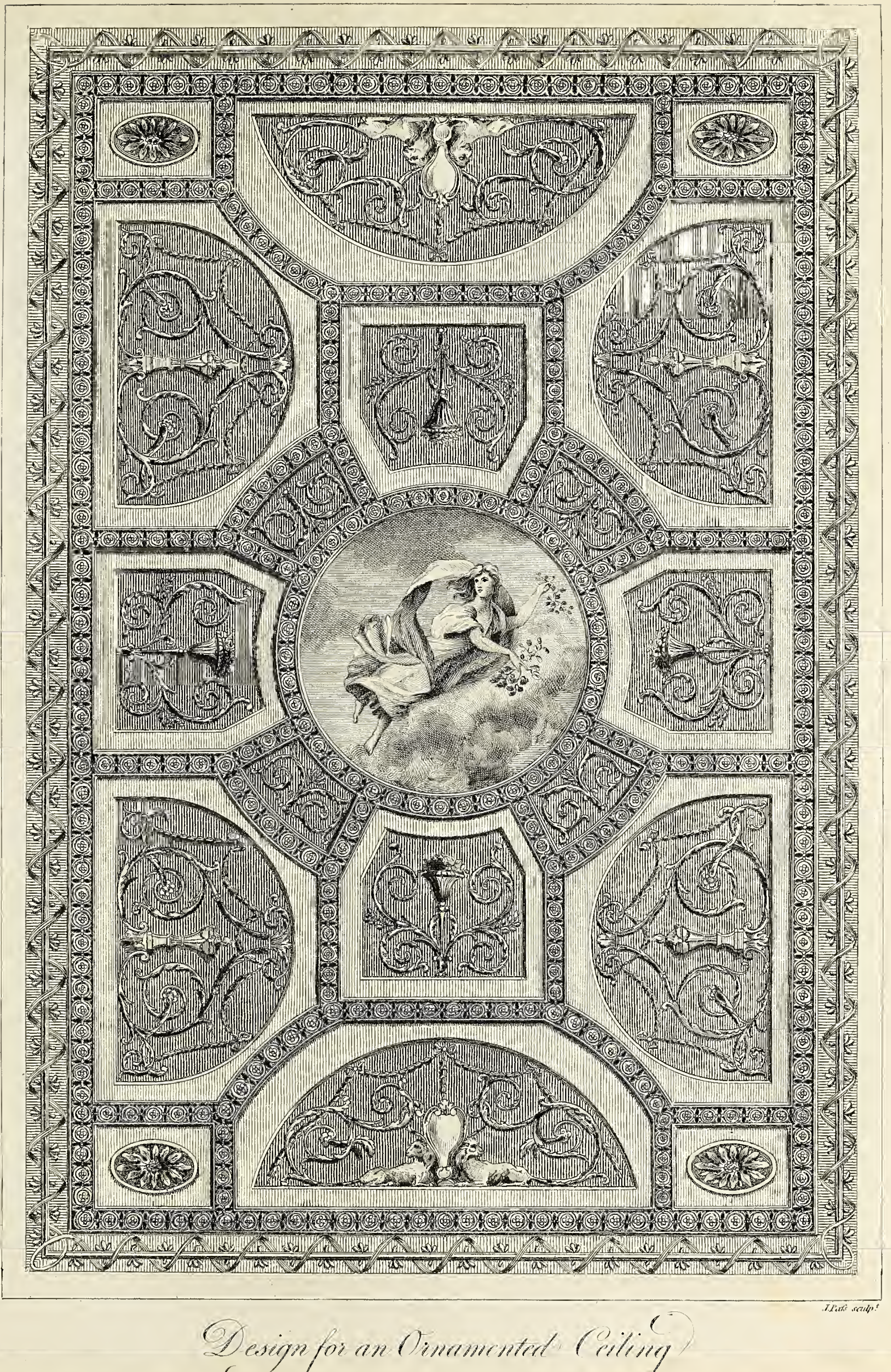
The windows of the principal floor are generally moſt enriched. The ſimpleſt method of adorning them is, with an architrave ſurrounding the aperture, and crowned with a frieze and cornice. The windows of the ground-floor are ſometimes left entirely plain, without any ornament; and at others they are ſurrounded with ruſtics, or a regular architrave with a frieze and cornice. Thoſe of the ſecond floor have generally an architrave carried entirely round the aperture; and the ſame is the method of adorning Attic and Mezzanine windows: but the two laſt have ſeldom either frieze or cornice; whereas the ſecond-floor windows are often crowned with both. The breaſts of all the windows on the ſame floor ſhould be on the ſame level, and raiſed above the floor from two feet nine inches to three feet ſix inches at the very moſt. When the walls are thick, the breaſts ſhould be reduced under the apertures, for the conveniency of looking out. When the building is ſurrounded with gardens, lawns, or other beautiful objects, the French method of continuing the windows quite down to the floor renders the rooms exceeding pleaſant.

The interval between the apertures of windows depends in a great meaſure on their enrichments. The breadth of the aperture is the leaſt diſtance that can be between them; and twice that breadth ſhould be the largeſt in dwelling-houſes; otherwiſe the rooms will not be ſufficiently lighted. The windows in all the ſtories of the ſame aſpect muſt be placed exactly above one another. The mathematical rule of apportioning light to rooms, is as follows: Multiply the length of the room by the breadth, and multiply the height by the product of the length and breadth; and out of that product extract the ſquare root, which is the light required. For example, Suppoſe a room to be forty feet by thirty, and the height ſixteen feet; the ſquare root will be 138 feet four inches, which may be divided into four windows, and each window will contain thirty-ſix feet ſuperficial. The height of each of theſe windows will be nine feet, and the width four feet.

Suppoſe a room to be thirty-ſix feet by twenty-four, and fifteen feet in height; the ſquare root will be 113 feet, which divided into four parts, or windows, will give twenty-eight feet three inches to each window. The height of theſe windows will be eight feet ſix inches, and the width three feet four inches; and ſo for any others by the ſame rule of proportion.

Of CEILINGS.

Ceilings are either flat, or coved in different manners. The ſimpleſt of the flat kind are thoſe adorned with large compartments, ſurrounded with one or ſeveral mouldings, or borders, either let into the ceiling, or projecting beyond its ſurface: and when the mouldings that form the compartments are enriched, and ſome of the compartments



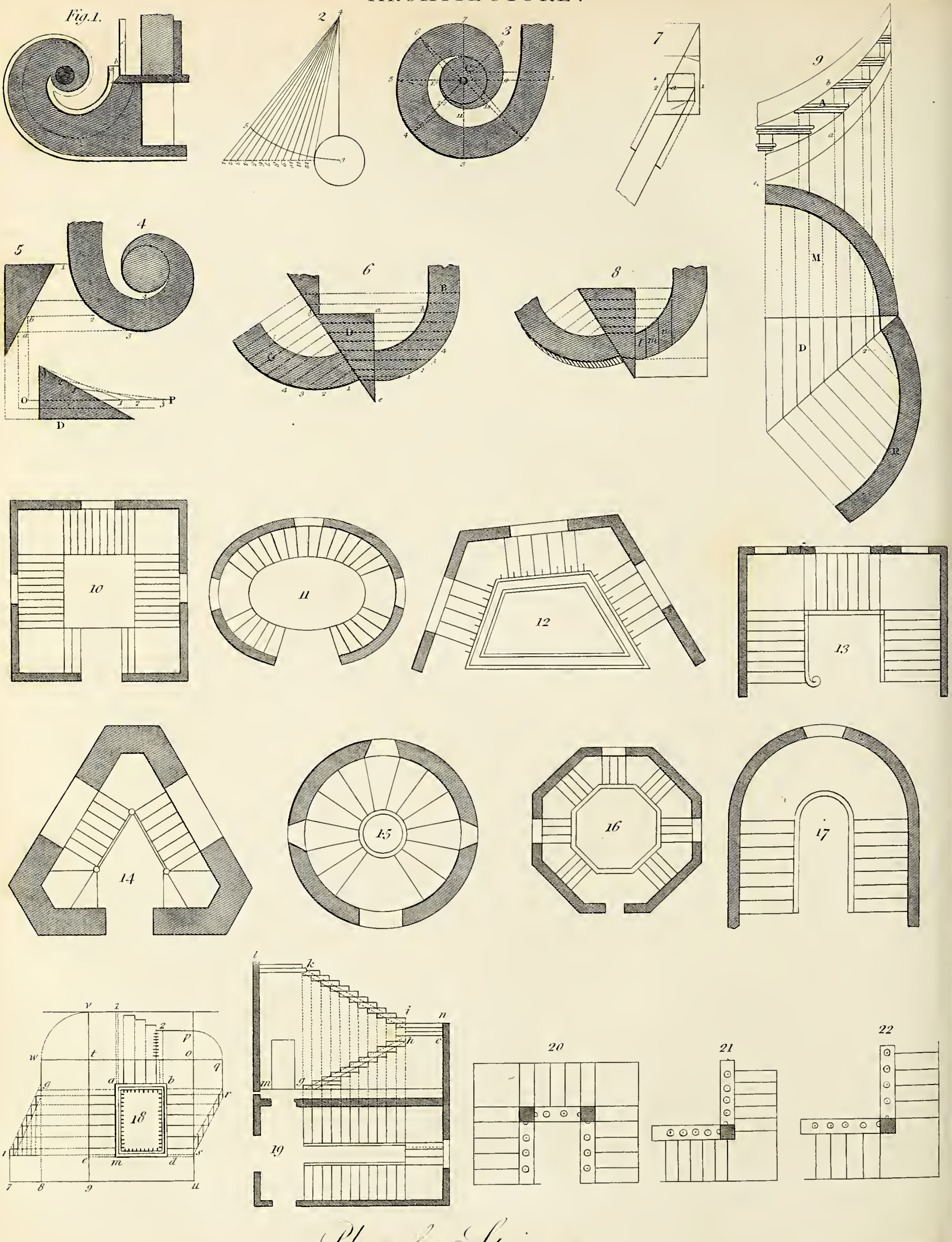
J. Pass sculp.t

Design for an Ornamented Ceiling

London, Published as the Act directs, August 5.th 1797, by J. Wilkes.

ARCHITECTURE.

Plate XXV.



Plans for Staircases.

Pass sculp.

London Published as the Act directs April 6.1798 by J.Wilkes.

adorned with well-executed ornaments, ſuch ceilings have a good effect. The ornaments and mouldings do not require a bold relief; but, being near the eye, they muſt be finiſhed with taſte and neatneſs. The principal effect of all flat ceilings depends very much upon the richneſs and beauty of the cornice.

Coved ceilings are more expenſive; but they are likewiſe more beautiful. They are uſed promiſcuouſly in large and ſmall rooms, and occupy from one-fifth to one-third of the height of the room. If the room be low in proportion to its breadth, the cove muſt likewiſe be low; and, when it is high, the cove muſt be ſo likewiſe: by which means the exceſs of the height will be rendered leſs perceptible. But, where the architect is at liberty to proportion the height of the room to its ſuperficial dimenſions, the moſt eligible proportion for the cove is one-fourth of the whole height. The figure of the cove is commonly either a quadrant of a circle or of an ellipſis, taking its riſe a little above the cornice, and finiſhing at the border round the great pannel in the centre. The border projects ſomewhat beyond the coves on the outſide; and, on the ſide towards the pannel, it is generally made of ſufficient depth to admit the ornaments of an architrave. In Britain, circular rooms are not much in uſe; but they are very beautiful. Their height muſt be the ſame with that of ſquare rooms; their ceilings may be flat; but they are handſomer when coved, or of a concave form.

When the profiles of rooms are gilt, the ceilings ought likewiſe to be gilt. The uſual method is to gild all the ornaments, and to leave the grounds white, pearl colour, light blue, or of any other tint proper to ſet off the gilding to advantage. Hiſtorical and other paintings are often introduced with good effect in the centre and angular compartments of large ceilings; and ſince the rapid and elegant improvements in plaſter and ſtucco have been introduced, a late invention of painted ſilk and ſattin in various ornaments, from antiques, have likewiſe been adopted, to adorn the profiles or walls of rooms. Theſe are incloſed in pannels, pilaſters, and tablets, according to their deſtination; and, when they have ſuitable gilt mouldings, they produce a very gay and ſplendid effect.

The annexed Plate exhibits a deſign for a Flat Ceiling in the modern taſte, which is adapted to any withdrawing, dining, or other principal, room in genteel houſes.

Of STAIRCASES.

Staircaſes are the means of aſcending to the different ſtories of a building, and ought to be ſo conſtructed as to make the aſcent ſafe, agreeable, and eaſy. To fix on a proper and advantageous ſituation for a ſtaircaſe is often attended with difficulty; but without which the internal convenience and beauty of a houſe will be much injured. Palladio is of opinion, that the entrance to a ſtaircaſe ought to be ſituated, ſo as the principal parts of a building may be ſeen before we aſcend the ſteps: and upon this principle it is obſervable, that a more eaſy acceſs is gained to the principal apartments on the ground-floor.

To render ſtairs eaſy of aſcent, the height of a ſtep ought not to exceed ſeven inches, nor in any caſe be leſs than four; but ſix inches is a general height. The breadth of the ſteps ſhould not be leſs than twelve inches, if it can poſſibly be avoided; nor ſhould they ever be more than eighteen; and, to render our aſcent free from the interruption of perſons deſcending, their length ſhould not exceed twelve, nor be leſs than four, feet, except in common and ſmall buildings, whoſe area will not admit of a ſtaircaſe of more than three feet. That the aſcent may be both ſafe and agreeable, it is requiſite alſo to introduce ſome convenient aperture for light, which ought to be as nearly oppoſite to our firſt entrance to the ſtairs, as the nature of the building will admit of. An equal diſtribution of light to each flight of ſtairs ought to be particularly regarded; for which reaſon theſe apertures or windows are commonly placed at the landings or half-ſpaces; though ſometimes the whole is lighted from a dome.

Staircaſes are of various kinds: ſome wind round a newel in the middle, and the riſers of the ſteps are ſtraight, and ſometimes curved. Others have their plan circular, but form a well in the centre. The ſame may be obſerved of thoſe whoſe plans are elliptical: the moſt common, however, are thoſe whoſe plans are a ſquare or parallelogram. The ancients paid a ſuperſtitious regard to an odd number in their flights of ſteps; as three, five, ſeven, &c. in order that, in their aſcent, they might begin and finiſh with the right foot. Palladio, therefore, allows to the ſtaircaſe of a dwelling-houſe eleven or thirteen ſteps to each flight. When a ſtaircaſe winds round a newel or column, whether its plan be circular or elliptical, the diameter being divided into three equal parts, two are ſet apart for the ſteps, and one for the column. But in circular or elliptical ſtaircaſes that are open, or which form a well in the middle, the diameter is divided into four equal parts; two for the ſteps, and two for the void ſpace or well in the centre. Modern ſtaircaſes, however, have often a kind of well of a mixed form; ſtraight on each ſide, and circular at the returns of each flight. The openings of theſe wells are various in width, but ſeldom exceed eighteen or twenty inches.

To moſt ſtaircaſes it is abſolutely neceſſary, both for convenience and ornament, to have hand-rails; and theſe generally begin from the ground by a twiſted ſcroll, which, when ſkilfully managed, produces a very good effect. To explain the conſtruction of theſe, we ſhall offer the following obſervations, as illuſtrated by the various figures in the annexed Plate. *Fig.* 1, is the plan of the firſt ſtep, formed with a ſcroll to receive the newel-poſt and balluſters of the twiſted hand-rail; *a* is the projecting noſing of the ſtep; *b* the thickneſs of the bracket, and *c* the ſtring-board. To draw the ſcroll proceed thus: Let the ſpace 1, 3, in *fig.* 2, be conſidered as equal to the ſpring of the ſcroll from its centre to the ſtraight part of the hand-rail, as from O, in the centre of the ſcroll, to 1, *fig.* 3. Divide 1, 3, as in *fig.* 2, into three equal parts; and drawing the line 4, 3, at right angles to 1, 3, make it equal to one more of theſe parts. Draw then the diagonal 4, 1; and, from the centre 4, deſcribe the arch 3, 5. Divide the arch into twelve equal parts; and through theſe diviſions, draw the radii till they interſect the line 3, 1, as at 2, 3, 4, &c. which completes the ſcale for drawing the ſcroll. Suppoſing that the ſeveral radial lines 1, 2, 3, 4, &c. in *fig.* 3, are already drawn, proceed thus: Take from *fig.* 2, the ſpace 3, 2, and place it at *fig.* 3, from the centre O to 2. On 2 with the ſame opening, fix one foot of the compaſſes, and with the other ſtrike a ſhort curve line, as at C, and from 1 with this opening, deſcribe another, interſecting it at C. From the centre C thus found, draw the arch 2, 1. Again from *fig.* 2, take the ſpace 3, 3, and place it from O on the radial 3: with this opening, find the centre as before, and draw the arch 3, 2, proceeding in the ſame manner with the reſt. By contracting the line 4, 3, in *fig.* 2, it is evident, that a ſcroll may be drawn more open, or with leſs convolution, as in *fig.* 4; conſequently, by increaſing the length 4, 3, the ſcroll will acquire more convolution; and therefore we may, by theſe means, vary the ſcroll as we pleaſe. In *fig.* 5, is ſhewn the pitch-board or raking of the ſteps, in order to determine the falling mould of the twiſt. The dotted lines drawn from the hand-rail to the pitch-board ſhew its width, which is to be kept level, as it winds about. The lines *a*, 3, *b*, 2, continued round to D, ſhew how much half the width of the rail riſes on the pitch-board, from its firſt beginning to 3. D exhibits the ſame pitch-board; and the method of finding the outſide mould for the twiſt of the hand-rail, after its ſides are ſo ſquared as to be every way in a perpendicular direction to its ground-plan. But this cannot be done without firſt finding the mould for the hand-rail, which may be done thus: Conſider B in *fig.* 6, as that part of the plan of the hand-rail, comprehended between 1, 3, *fig.* 3. D is the pitch-board, which gives the rake or bevel of the hand-rail; which, being divided into any number of equal parts, draw ordinates to the plan B, as a, b. From the raking-line e, d, draw the correſponding ordinates at right angles with it; and by the compaſſes transfer the ſeveral ordinates from 3 to G, as a, b, to c, d, and 1, 2, 3, 4, reſpectively: then, by drawing a curve line through theſe points, G will become an accurate mould for the upper ſide of the hand-rail.

But, as the twiſt of the hand-rail requires a greater ſubſtance of wood than the ſtraight part, this may eaſily be determined thus: Draw the ſquare of the hand-rail on the pitch-board, as a in *fig*. 7; and parallel lines from the oppoſite angles will ſhew the thickneſs required, as at 1, 2. Agreeably to this, l, m, n, in *fig*. 8, ſhew the manner of glueing the rail with the additional thickneſs of wood before deſcribed. It is made of ſo many pieces, and varied in glueing, to aſſiſt in more eaſily forming the twiſt. The beſt method, in fact, is to glue theſe in the ſtraight way of the grain, by which, if the wood be properly matched, the whole will appear one ſolid piece. To reduce theſe pieces properly, and to produce in the whole twiſt an agreeable turn, it will be requiſite to have a falling mould, that when each part of the twiſt is ſo ſquared, as in every part to anſwer to a perpendicular line over its plan when placed in its due poſition, it may be applied to the outſide of the rail round the twiſt. In *fig*. 5, therefore, conſider D the pitch-board and OP the level of the ſcroll at 3, 4. Take the ſtretch of a line ſuppoſed to be girted from 1 to 3, *fig*. 3, which transfer to OP at D. Divide each ſide of the angle formed by the raking and level line into any number of equal parts, as 1, 2, 3, each way, and the points produced by the interſections of the lines drawn from each diviſion, will form a curve, perfectly eaſy and ſufficiently accurate for the purpoſe.

If a ſcroll is required to take its ſpring from any part of the ſecond ſtep, then draw the pitch-board as at *fig*. 6, and proceed in every particular as before. *Fig*. 9, is a plan of a hand-rail, including five ſteps. M is the quarter-plan, and D is the pitch of five ſteps; and R the face-mould for the hand-rail if it be cut out of the ſolid; if otherwiſe, thin veneers are glued round a cylinder made for the purpoſe, and on which muſt be marked each ſtep and riſer as ſhewn at A, that the thin ſlips at b for the hand-rail, and thoſe at a for the ſtringing-board, may be correctly laid down.

To illuſtrate this ſubject as much as poſſible by engravings, we have given plans of eight different kinds of Staircaſes: *fig*. 10, is a geometrical ſquare; 11, is the elliptical form; 12, is a trapezia; 13, a parallelogram; 14, the triangular; 15, the circular; 16, the octangular; and 17, the ſemicircular form; all of which are now occaſionally executed in London, upon geometrical principles, with ſuch magnificence and grandeur, as both excite our admiration, and juſtly diſplay the improved ſtate of ſcience in that great metropolis.

From this variety of plans for ſtaircaſes, it will be eaſy to ſelect ſuch as might be adapted to almoſt every ſpecies of building, from the princely palace to the rural cottage. But before any kind of ſtaircaſe is erected, it is neceſſary that the following general rules ſhould be well conſidered. Firſt, the height of the floor to which we are to aſcend. Secondly, the riſe, and number of ſteps that are neceſſary for the height. Thirdly, to divide the number of ſteps by ſuch half-ſpaces (or breathing-places) as are neceſſary for repoſing on the way. Fourthly, that the ſpace above the head, commonly called head-way, be ſpacious. And, laſtly, that the breadth of the aſcent be proportionable to the whole building, and ſufficient for the purpoſe intended; ſo as to avoid encounters by perſons aſcending and deſcending at the ſame time. The light to a ſtaircaſe ſhould always be liberal, to avoid ſlips, falls, &c. and which may proceed from the ſides, from a cupola, or ſky-light at the top, as the ſituation will beſt admit. And, before this kind of work is begun, it is beſt to make a plan, and to lay out the whole in ledgement, as follows:

Let t, o, 9, 11, at *fig*. 18, of the ſame Plate, be the given plan; make ds equal to the breadth of the aſcent, which may be made from three feet and a half to ten feet. Draw db, ba, and am, parallel to the outlines of the plan. Divide db, ba, and am, each into ſuch a number of ſteps, whoſe ſeveral heights are equal to the whole height to be aſcended; within the parallelogram $abmd$, draw the thickneſs of the hand-rail. Add into one ſum the heights of the ſeveral ſteps, between b and d, and at that diſtance draw qr, parallel to os; draw the hypothenuſal line rs, and continue out the plan of each ſtep to meet the line rs at s; ſet up the height of the firſt ſtep, and draw it parallel to os, until it meet the baſe-line of the ſecond ſtep; then ſet up the height of the ſecond ſtep, and draw it parallel to os; proceed in like manner to ſet up the heights of all the remaining ſteps unto r: make op equal to oq, and draw $2p$ parallel to to; at the point 2, begin to ſet up the ſteps unto the point 1, and draw $v1$ parallel to to: make tw equal to tv, and draw $w8$ parallel to $t9$; at g begin to ſet the ſteps as aforeſaid unto i, then will ie be equal to the height of the ſtory, and the ſeveral figures $oqrs$, $op21vt$, $twgi79$, will be the ſides of the ſtaircaſe laid out in ledgement, as required. The plan, *fig*. 19, is in like manner repreſented above, which may be conſidered as its ſection, wherein lm is the height to be aſcended; gh the firſt flight, ho the half-ſpace; hi the ſecond flight, in the half-ſpace; ik the laſt flight, whoſe landing, as the workmen term it, is lk.

The next thing to be conſidered is the manner of placing the newels to ſtairs and half-ſpaces. In *fig*. 20, the half-ſpaces are made ſquare to the angles of the newels, which cauſes the hand-rail of the firſt flight to drop the height of two ſteps below the rail of the ſecond flight. In *fig*. 21, the ſtairs are ſet to the middle of the newel, which cauſes its rail to drop two ſteps; and in *fig*. 22, they are placed to the outſide of the newel, and drop but one ſtep. Thus variations may be made, to ſuit a variety of caſes, as the architect, under different circumſtances, judges neceſſary.

Of LINES for DESCRIBING SOFFITS and NICHES.

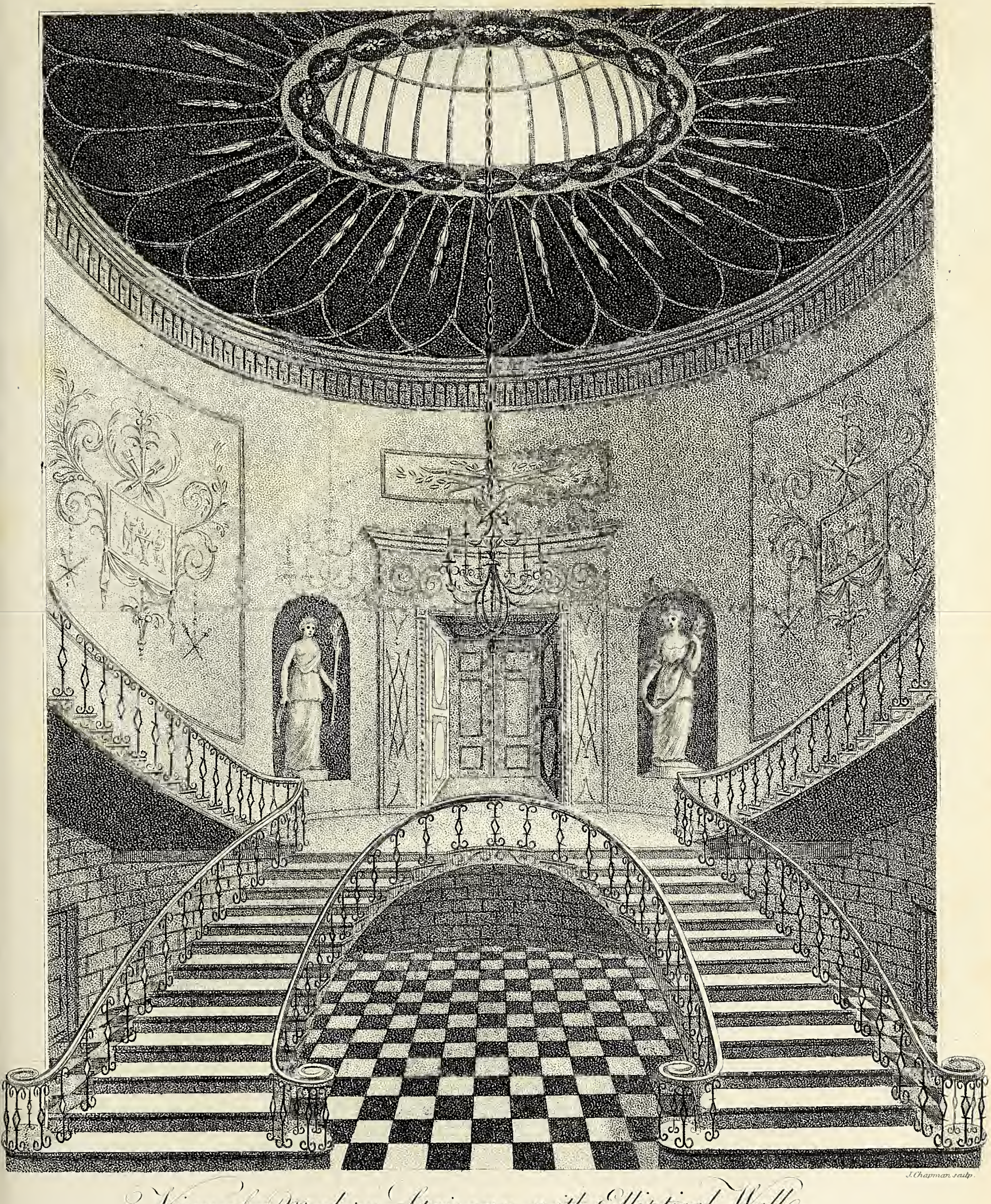
Soffits denote any timber-ceilings formed of croſs-beams of flying cornices, whether plain or enriched; or the under ſide of a corona, arch, or architrave; or the covering of any ſurface whatever with wood, ſpread out on a plane.

To deſcribe a Soffit in a ſtraight Wall, fluing equally all round, with a circular Head.—Let the ſides of the plan A be continued, as in the annexed Plate, at *fig*. 1, that is ac and bd to meet at e; then about the centre e, and from the points a and c, deſcribe the ſoffit C, and ſtretch the ſemicircle B along the outſide of the ſoffit C, and it will be completed.—*Demonſtration.* Conceive the ſemicircle B to be turned at right angles to the plan A, then every point in the circumference of the ſemicircle B will be at an equal diſtance from the point e; but the ſoffit C is deſcribed with the ſame radius, therefore the edge of the ſoffit C, that is, the arch-line af, will exactly coincide with the arch of the ſemicircle B, which was required to be proved.

To deſcribe a Soffit in a circular Wall, fluing equally all round, with a circular Head, as in *fig*. 2, of the annexed Plate.—The ſtretch-out of this ſoffit is managed in the ſame manner as the foregoing; and, for the other parts, proceed as follows: Draw the ordinates of the ſemicircle B, as ſhewn in the figure; continue them to f, the centre of the flue, and at the points $abcde$, where they interſect the plan, draw the parallel lines ae, bf, cg, &c. and from the points $efgh$, circle lines to $abcd$, round the centre f, which will give the half of one edge of the ſoffit, the other half being pricked from it; the reverſe edge is to be found in the ſame manner. Obſerve that this cannot be pricked from the plan, as the others are, becauſe the lines round the flue are not level with the plan, but will be longer than thoſe on the plan.—*Demonſtration.* It is eaſy to conceive, from the firſt example, that if the ſemicircle B is turned up, and the ſoffit at C bent round it, the points 1 2 3 4, at C, will coincide with the equal diviſions in the ſemicircle B, and the points $abcd$, at C, will fall perpendicularly over the points $abcd$, in the plan A; for

the

ARCHITECTURE.



J. Chapman sculp.

View of a Modern Stair case, with Elliptical Well.

London published as the Act directs June 30.1798. by J. Wilkes

Fig. 1.

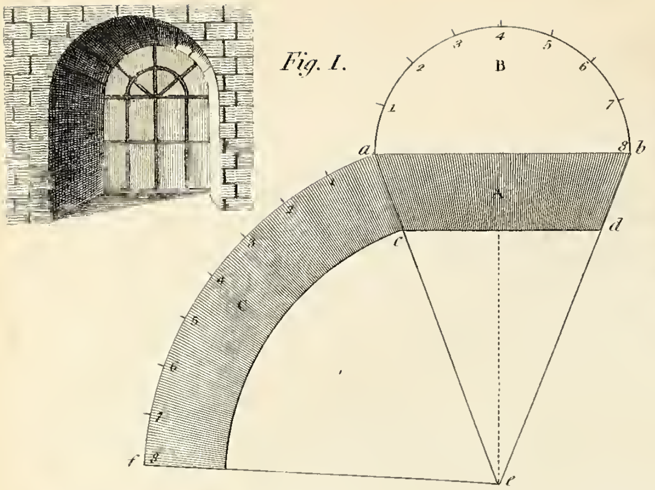


Fig. 2.

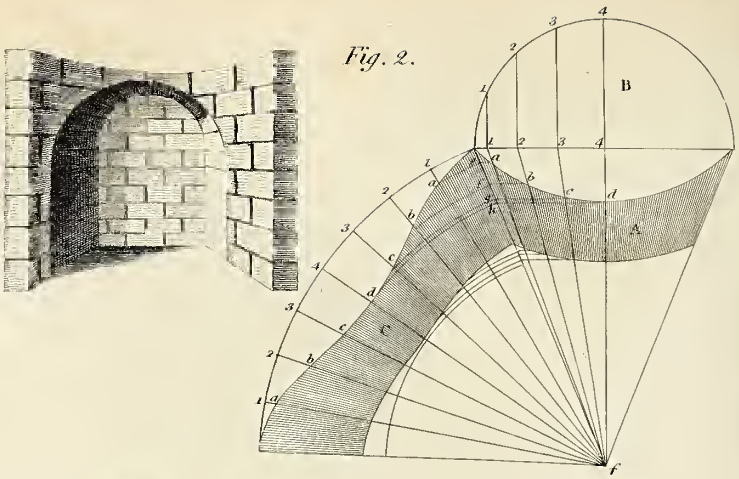


Fig. 3.

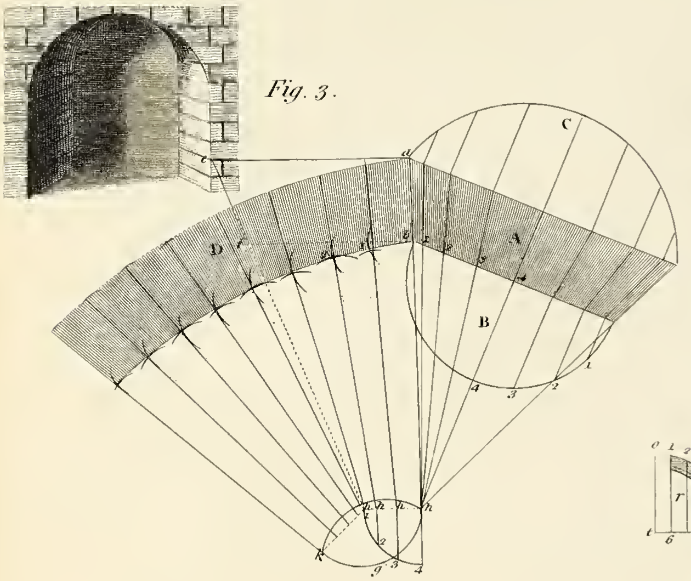


Fig. 4.

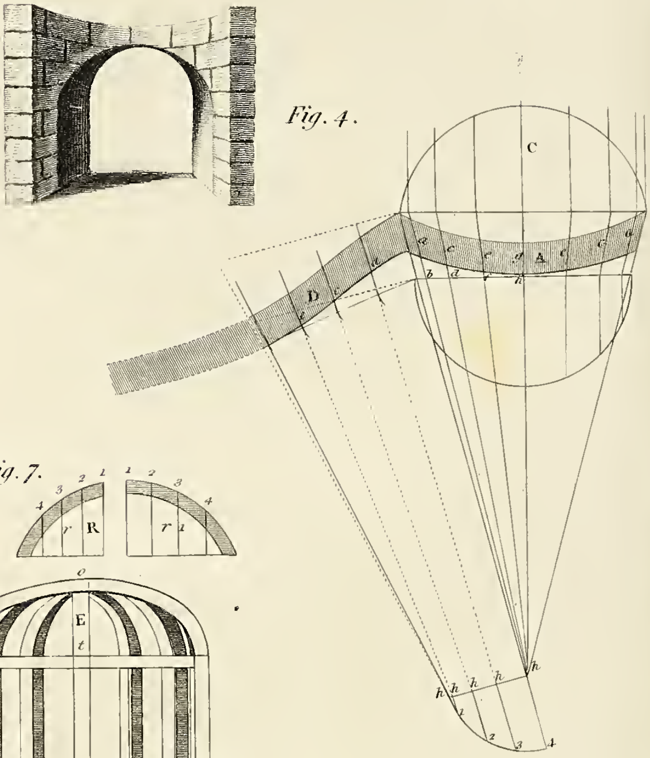


Fig. 7.

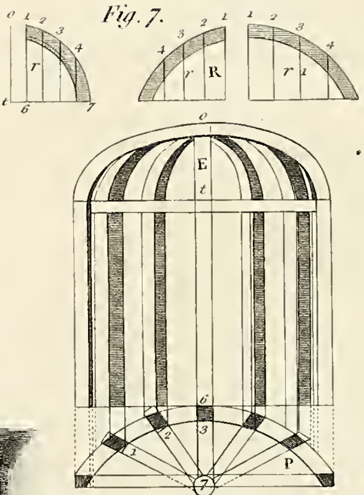
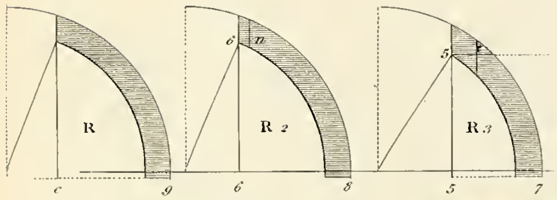
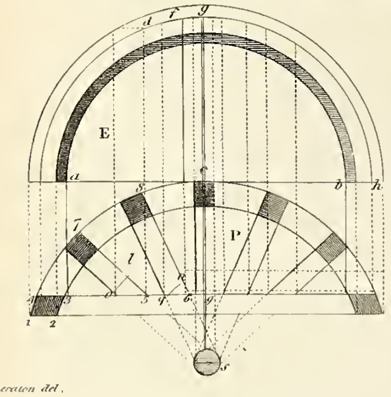


Fig. 6.





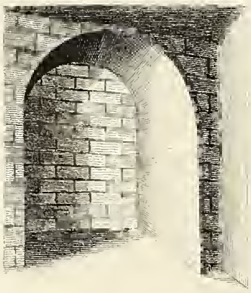
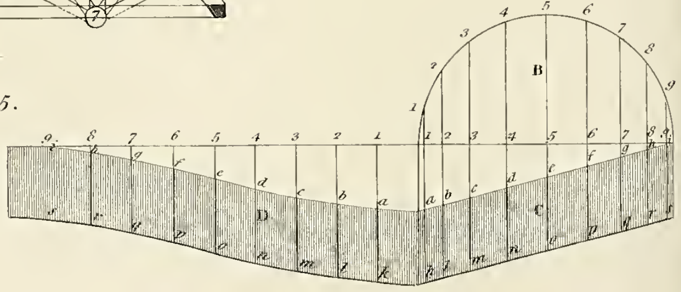


Fig. 5.



Sheraton del.

Pass sculp.

Plans for Soffits and Niches.

London, Publish'd as the Act directs, April 7.1798, by J.Wilkes.

the arches *ae*, *bf*, *cg*, and *dh*, at C, will fall over the parallel ſtraight lines *ea*, *fb*, *gc*, and *hd*, in the plan A, which it was required to demonſtrate.

To deſcribe a Soffit in a ſtraight Wall, fluing from the Jambs, and level at the Crown.—This is ſhewn in the ſame Plate, at *fig.* 3, where A is the plan of the wall, B is a ſemicircle on the outſide, and C is an ellipſis in the inſide, traced from B, or deſcribed by a trammel; draw the lines *ae*, *bf*, and *hh*, perpendicular to *ab*, the ſide of the flue of A; then take half the compaſs of B, and lay it on *bf* in D; alſo take half the compaſs of C, and lay it from *a* to *e* in D, and through the points *e* and *f* draw a line to cut the line *hhh*, &c. in *h*, and continue it to *g*; ſet the foot of the compaſs in the centre of the flue at *h*, and deſcribe the quadrant 1 2 3 4, which is divided into four equal parts; and draw the ordinates 4*h*, 3*h*, &c. then take one of the diviſions of the ſemicircle B, and ſet the foot in *b*, and make the ſmall arch at 1, and take *h* 1 from the centre of the flue in A; then place the foot of the compaſs in *h*, in the ſoffit, and with the other point croſs the ſmall arch at 1; again, with the diviſion at B, ſet the foot of the compaſs in 1 in the ſoffit D, and deſcribe the ſmall arch at 2; and take *h* 2 from the centre of the flue, and ſet that to its correſpondent *h* 2 in D, and by this means one-half of the ſoffit will be correctly obtained. Then, ſet the foot of the compaſs in *h*, and with the other extreme *h*, draw a circle *hgk*; again, ſet the foot in *g*, and with the diſtance *gh*, that is, from *gh* the centre of the flue, deſcribe an arch from *h* round to *k*, and draw the line *hk*, where theſe two arches interſect; then ſet the diviſions of *hhh*, &c. on *hk*, and deſcribe the other half in the ſame manner, and thus the outline of the ſoffit will be completely ſhewn.

To deſcribe a Soffit in a circular Wall, fluing from the Jambs, and level at the Crown.—This is repreſented at *fig.* 4. Proceed as in the laſt example, to project the line *bdfh*; then prick off the ſoffit D from the plan A, according to the reſpective letters, and it will be completed. In the ſame manner may any other ſoffit, fluing from the jambs and level at the crown, be deſcribed, let the form of the wall be what it will, by firſt finding the line *bdfh*; for then the ſoffit may be correctly pricked from the plan, whatever may be its form.

To ſtretch out a Soffit, when a Window or Door, having a ſemicircular Head, cuts into a ſtraight Wall, in an oblique direction.—In *fig.* 5, let C be the plan or opening of the window, and let the baſe of the ſemicircle B be drawn at right angles to the jambs or ſides of the plan C; divide the ſemicircle into any number of equal parts, as ten, and draw the ordinates acroſs the plan C; then ſtretch the diviſions round B along the ſoffit D, in the ſame ſtraight line with the baſe of B; and the ordinates being all drawn acroſs, and traced off from the plan C, as the figures and letters direct, the ſoffit will be completed.

In all kinds of ſoffits, when the two jambs are parallel, the ſtraight line which the ſoffit is traced from, muſt be drawn at right angles to the jambs, as ſhewn in this figure. For want of this conſideration they are often projected in books upon wrong principles. In the four firſt ſoffits, where the jambs are not parallel, they muſt be continued till they meet in a point, and the line which the ſoffit is to be traced from, muſt be made to form an iſoſceles triangle with the jambs.

To find the Ribs of a circular Niche, whoſe Plan is a Segment, and Elevation a Semicircle.—Let P, in *fig.* 6, of the ſame Plate, be the plan, and E the elevation, of the niche. From the centre *s*, draw the place of the ribs on the plan P, and from 1, 2, 3, 4, raiſe perpendiculars to the baſe-line *ab*, of the elevation E; from the centre *c* deſcribe ſemicircles from each perpendicular, at *a* and *b*, which give to the front rib together with what workmen term its backing, or levelling off its under and upper edge, ſo as to correſpond with the curvature of the niche. From the points 5, 6, 9, raiſe alſo perpendiculars, till they cut at *dfg*, which perpendiculars from the baſe-line at *b* will give reſpectively the heights of the back ribs, as ſhewn at R, R2, and R3. Take then *ch* and *cb* at E, and draw the external and internal curves for each rib, from the ſeveral centres at R, R2, and R3; then take from the plan 7 5, 8 6, and *c* 9, the projection of each of the back ribs, and place them at their reſpective places in the figure, and from 5, 6, *c*, raiſe likewiſe perpendiculars, which will give the ribs. Laſtly, to find the bevel of the upper end of the ribs R2, R3; from the centre *s* deſcribe the arches *ol*, *qn*, and take the diſtances 5 *l*, 6 *n*, and place them reſpectively at 6 *n*, 5 *l*, in R2, and R3, as ſhewn in the figure, and they will give the true bevel required.

To find the Ribs of a Niche, whoſe Plan and Elevation are a Semi-ellipſis.—Conſider P, in *fig.* 7, as the given plan, and E the elevation, whoſe tranſverſe and conjugate axes are ſimilar. Deſcribe the places of the ribs on the plan, as at 1, 2, 3, &c. whence it will appear, that the ribs will all unite perpendicularly over the centre, and therefore their riſe will be nearly equal, as may be ſeen at *r*, *r*R, and *r*1; conſequently from E, the elevation, take *ot*, the ſemi-conjugate axis, and place at *r*, and with it deſcribe the quadrant of a circle; then from the plan P take the ſpace 6 7, and place it where the figure directs, and raiſe a perpendicular, which will give the length of the centre rib. In like manner take the other ribs 1, 2, from the plan, and place them at *r*R, and *r*1, which divide into any number of equal parts, and draw their ordinates 1, 2, 3, 4, &c. at pleaſure. From *r*, take the perpendicular heights 1, 2, 3, 4, and transfer them to their correſpondent ordinates at *r*R and *r*1, through which points deſcribe the curves, and they will give the other ribs, which, being placed over their reſpective plans, will be found exactly to coincide with each other. Laſtly, the backing may be found as at 1, 2, &c. on the plan, where the ſmall tranſverſe lines are drawn from the centre, and ſhew how much bevelling is requiſite at the foot of each rib, which muſt gradually decreaſe in an elliptic curve, till it terminates in a point at the top.

Of LINES for DESCRIBING PEDIMENTS.

To elucidate this ſubject, we have given, at *fig.* 1, in the annexed Plate, an elevation of a triangular pediment, with its whole extent divided into nine equal parts, two of which are aſſigned for the perpendicular height of the pitch, ſet off from the upper line of the entire level cornice. If the pediment is intended to be open, divide the raking pitch into five equal parts, as in the figure, and give one from the centre each way, for the opening. The ſame proportions are to be adopted when the pediment is circular, whether it be cloſe, or open; and, to deſcribe the curve, nothing more is requiſite, than to conſider the raking-lines of this *fig.* 1, as chord-lines of a circular pediment, which being biſected, and lines drawn at right angles to the rake, will meet in the true centre from which the arch is to be deſcribed. In this example, the raking cornice conſiſts only of the cima recta, which may be practiſed in caſes where the tympan is required to be large, for the admiſſion of groups, or other conſiderable ornaments. Commonly, however, the entire cornice is placed in the raking part, whether cloſe or open; and it muſt ever be obſerved, that the face of the tympan, and that of the frieze of the level cornice, muſt be in a right line with each other. It muſt alſo be obſerved, with reſpect to pediments of the different orders, that when mutules, or modillions, or denteles, are introduced in the level or lower cornice, the ſame are likewiſe to be placed in the raking part, and in a line with them. And hence, in an open pediment, the due ſpace aſſigned for the opening muſt always give way to a punctual regard to place dentele perpendicularly over dentele, from end to end of the pediment. But let it be remembered, that open pediments ought never to be adopted in exterior works.

In order to manage with accuracy the mitering of the raking mouldings with their reſpective returns, let it be obſerved that three different profiles are requiſite, as ſhewn at *fig.* 2, and 3, where *a* is the level, *b* the raking, and *c* the return, moulding of an open pediment. Divide the contour of *a* into four or more equal parts, as at 1, 2, 3, &c. through which draw right lines parallel with the rake, and from the points 1, 2, 3, 4, draw lines parallel with the level moulding; then draw *e d* at *b* perpendicular to the rake, and take the projections 4, 4, &c. and place them on the rake at *b*, as ſhewn in the figure; and through theſe points deſcribe the contour of the cima recta moulding of the raking cornice. Laſtly, at C, divide *f g* in the ſame manner as before at *a*, and let fall perpendiculars, which by interſecting their reſpective raking-lines, will give the true curve, as will evidently appear by inſpecting *fig.* 2, where obſerve, that the projections of the level moulding *a* are taken from level lines; but, at *b*, the ſame projections are laid on the raking-lines. Again alſo at C, 1, 2, 3, are on a level line, taken from 1, 2, 3, on the rake; and the ſame points may be found by taking the ſeveral lengths at 1, 2, 3, 4, on the raking-lines of *a*, and placing them on the ſimilar raking-lines at C. Some architects perform this operation by biſecting the hypothenuſal lines of each moulding, which anſwering as chords to each curve, the centre at L, *fig.* 3, is found by the common method of deſcribing a circle that will paſs through three given points.

Of BRICK and PLASTER GROINS.

Groins are the angular curves made by the interſections of ſemi-cylinders or arches; and are either regular, or irregular. A regular groin is when the interſecting arches, whether ſemicircular or ſemi-elliptical, are of the ſame diameters and heights; an irregular groin is where one of the arches is ſemicircular, and the other ſemi-elliptical. *Fig.* 4, in the preceding Plate, is the plan of an *irregular* brick groin, whoſe body-arch A is a ſemicircle, and whoſe interſecting or ſide arches BB are ſemi-elliptical. In *fig.* 5, is given a perſpective view of a *regular* brick groin, whoſe arches are ſemicircular, and of the ſame diameter, interſecting each other at right angles; and, ſince any oblique ſection of a cylinder produces a regular elliptic curve, it muſt be evident that the angular ribs of ſuch groins will be ſemi-ellipſes, having their tranſverſe axes horizontal, and their ſemi-conjugate vertical. And this alſo will be the caſe when the interſecting or ſide arches, as BB, *fig.* 4, are elliptical; for, as 1, 2, 3, 4, are evidently the baſe-lines of ſuch ſections, it is eaſy to conceive that their ordinates will coincide with thoſe of the body-arch A, which is a ſemicircle, and conſequently produces an elliptic arch, as ſhewn at *fig.* 6, having its horizontal axis equal to 1 2, or 3 4, and its vertical to A *b*. The reader will by this time have noticed, that the interſecting arches BB, are formed by the erection of what workmen call the *jack ribs*, a perſpective view of which is given at *fig.* 6, where 2, 3, 4, exhibit the manner of their being fixed on the body-arch A, after it is boarded over. To keep theſe jack ribs true, and in a right line at the top, workmen place a tranſverſe board upon the crown of the arch, as ſhewn in *fig.* 6, and fix it ſufficiently low to receive the thickneſs of the covering, that the body and interſecting arches may be perfectly even when the whole is covered with boards, as in *fig.* 5, which repreſents the ſtate of the groin ready for turning the brick-work over the arches. Let it therefore be obſerved, that the body-arch A, *fig.* 6, is already completely covered, independent of the erection of the jack ribs, whoſe ſeat on the body-arch, and their ſeveral heights, may be found as ſhewn at C 2, 3, 4, in *fig.* 6, the bare inſpection of which will afford a ſufficient explanation. It may however be obſerved, that as the ſeat of the ſeveral jack ribs on the covering of the body-arch, will produce an elliptic curve, which being deſcribed on a level plane, as ſhewn at *fig.* 7, it may be found thus: Let *a b c* be the body-arch, and *a d e* the interſecting elliptic arch; draw ſimilar ordinates to both arches, as 1, 2, 3, &c. make them interſect each other, and produce them each way at pleaſure. Then make *g h* equal to the girt or circumference of *a b*, and *g k* equal to the girt of *a d* 3 2 1. Divide *g h* and *g k* into four equal parts, for the quadrant of each arch was ſo divided; then through each diviſion draw perpendicular lines cutting at right angles the ordinates which were drawn out at pleaſure; and through their interſections, as at 5, 6, 7, 8, 9, 10, if curves be drawn, they will produce correct moulds, by which the mitering of each arch may be deſcribed, or their reſpective coverings. Suppoſe it be required to mark a line on the body-arch at *fig.* 6, to touch the extremity of each jack rib at the baſe; we take the mould 5, 6, 7, and, imagining it to be made of very thin pliable wood, we place the end *h* to the crown of the body-arch at *h*, *fig.* 6, which being ſecured to that point, we preſs the other end 5, to the foot of the jack rib at 5, and by a pencil deſcribe the curve ſought. By the like proceſs the other mould 8, 9, 10, may be applied to the interſections of the elliptic arch; and, ſuppoſing it to be covered, as at *fig.* 5, and we imagine the arch to be drawn back and ſeparated from the body, the mould 8, 9, 10, bent over the boards, would coincide with their ends, provided the arches were of the ſame dimenſions, which, however, is not the caſe in this example, although in theory the principle is preciſely the ſame. Yet we cannot, with ſome architects, affirm, that the mould, 8, 9, 10, is of any utility in covering the jack ribs with boards; for, if we would cover the ribs 2, 3, 4, at *fig.* 6, the boards muſt be applied ſingly, and each made to join cloſe on the boards of the body-arch. It is evident, therefore, that to mark each board by the mould 8, 9, 10, and particularly if the boards are conſidered as retaining their natural level ſurface, it would be a blind and uncertain method, and quite inadequate to the purpoſe.

In fixing the ribs of the body-arch, at *fig.* 5, *c d* are ſtrong wooden poſts, and *i i* are blocks, or the ends of beams extending the whole length of the groin, and are ſupported by poſts under each rib. Between is the girder of each rib, which is omitted at *e*, in order to give an inſide view of the arch. Theſe long beams alſo act on the principle of wedges, as may be ſeen at *e*; ſo that, when the brick-work is properly ſet, they are gradually eaſed, and the whole of the wooden ribs, beams, and poſts, are by this means ſtruck, and readily cleared away.

Fig. 8, is the plan of an *aſcending* or *deſcending* groin, the ſide-arches of which being given, it is required to find the interſections of the angles upon the plan, and the moulds for deſcribing the curvature of the interſecting arches, in a ſimilar manner as on the coverings above deſcribed.

After what has been ſtated in the foregoing example, the ſolution of the preſent queſtion will require but little explanation, becauſe the general principles are the ſame in both caſes, as well as in all thoſe which follow. To project the preſent figure, divide one quarter of the body rib B into four equal parts, as at 1, 2, 3; from which draw lines to the perpendiculars 4, 5, and continue them round to 4, 6; then draw the lines of deſcent 4 8, 6 7, &c. and make C equal to the given ſide arches in the deſcent; it matters not how many there are. From the ſeveral points 1, 2, 3, &c. of the arch C, where the lines of deſcent cut the periphery of C, draw lines perpendicular to the lines of deſcent, and continue them at pleaſure. Again, from the ſame points 1, 2, 3, &c. at C, draw lines at right angles to the ſides of the plan A, and from the points at B do the ſame, and their interſections will give the curves of the arches on the plan, as is obvious from inſpecting the figure. Having thus drawn lines from C, perpendicular to the lines of deſcent, take the girt of the quarter arch at B, and transfer it to the centre line at C, as 4, *a*, *b*, *c*, *d*, through which diviſions draw lines parallel to the deſcent, and their interſections will produce the curve for the mould, which is to be applied exactly in the ſame manner as deſcribed in the preceding example. Groins of this deſcription are to be ſeen in the utmoſt perfection under the Adelphi buildings, in the Strand, London, which have a very rapid deſcent.

Fig. 9, repreſents a groin, whoſe interſecting or ſide arch is Gothic, and under pitch, that is, when the perpendicular height of the ſide arch, as B, is lower than the body arch, as A, which is a ſemicircle. At B, the inter-

Fig. 1.

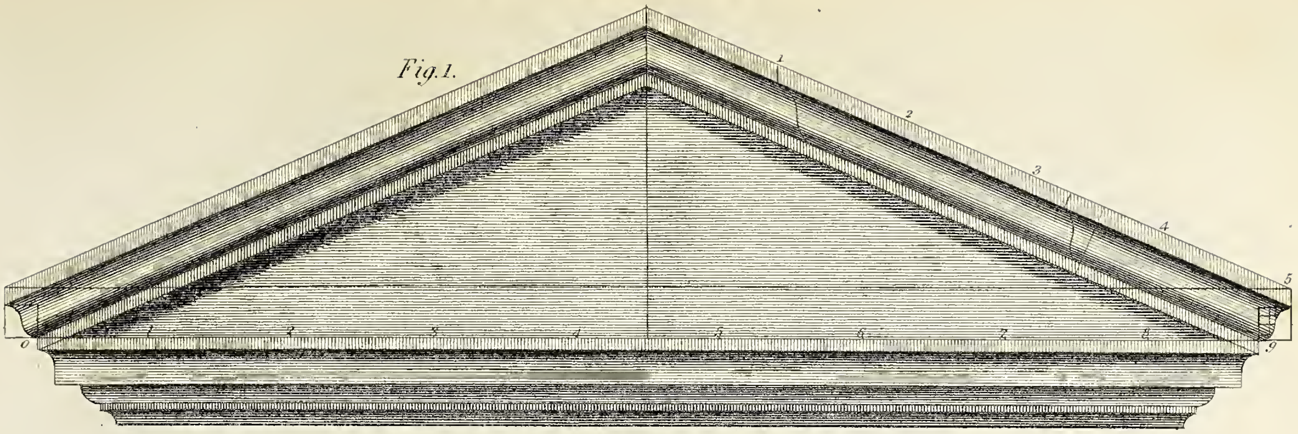


Fig. 2.

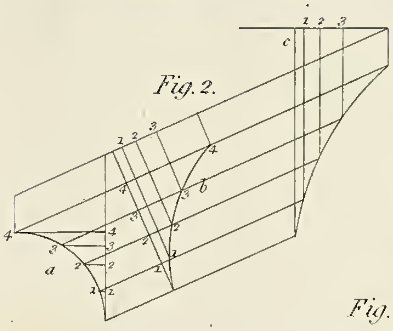


Fig. 3.

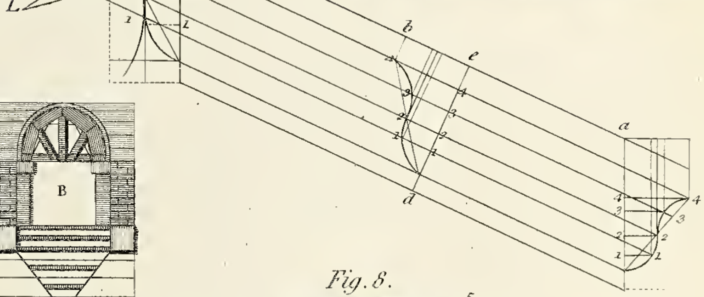


Fig. 6.

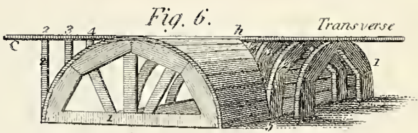


Fig. 4.

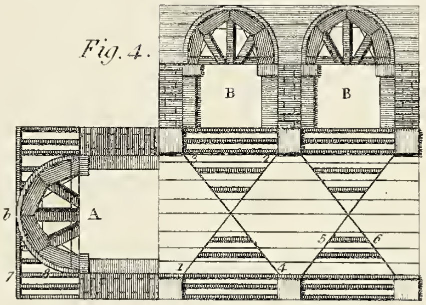


Fig. 7.

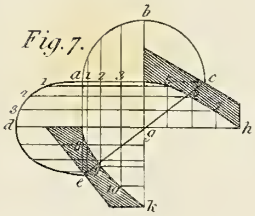


Fig. 8.

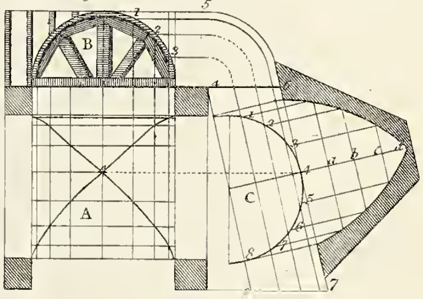


Fig. 9.

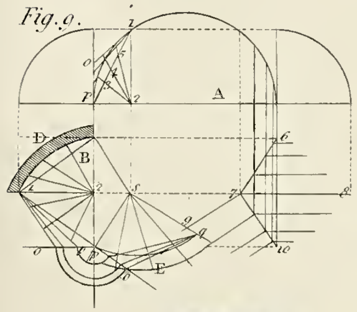


Fig. 5.

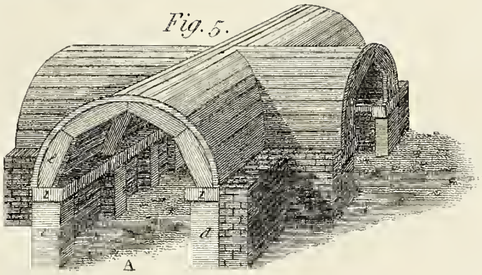


Fig. 10.

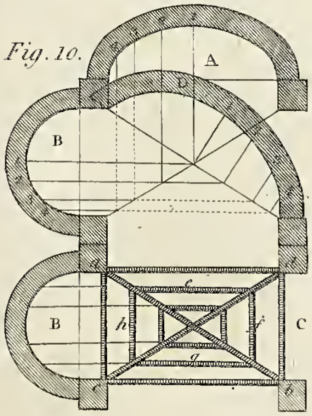


Fig. 12.

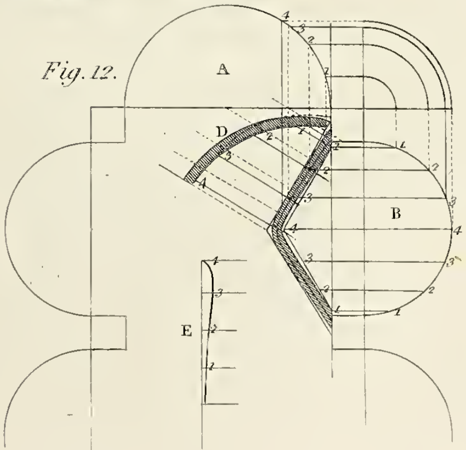
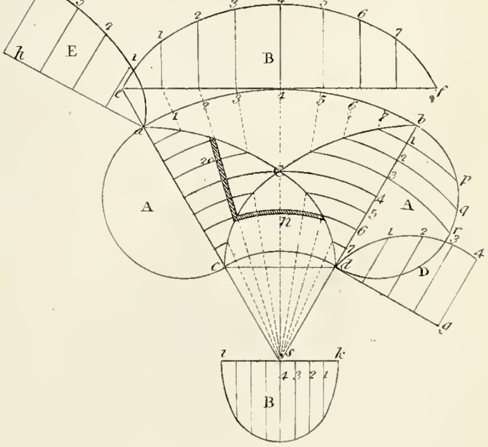


Fig. 11.



Plans for Pediments, and Groins.

T. Sheraton del.

J. Pass sculp.

London Publish'd as the Act directs Apr. 28.1798 by J.Wilkes.

ſecting arch, project a line from 1 round to 1 at the body arch A, and from 1 let fall a perpendicular to *s*, the centre of the ſide arch: draw at A the chord line 3, 4, 5, and divide it into four equal parts: alſo draw lines from 2 through each diviſion, till they cut the arch; and from 1 draw lines through the points on the arch to the perpendicular *o p*: take *o p*, and place it on the ſide arch B, making the ſame diviſions as at A; draw then the chords of the ſide arch, and divide them into four equal parts, and proceed as before at A: laſtly, draw lines from *o p* to 1, which will interſect the radials iſſuing from the centre 2, and the points will give the curve of the ſide rib D. Having drawn the plan-line *p s*, of the angular rib, draw *s q* perpendicular to it, and take the height of the interſecting arch 1 2, and place it to 9: draw the chord-line *p q*, and proceed with the reſt as before, and they will produce the angular rib E, as required. The ſame operation may be performed by ordinates, in the common way, as repreſented on the oppoſite ſide of the figure. But, this groin being intended for *plaſter*, it requires great exactneſs in the angular ribs, and the utmoſt correctneſs on the under ſide, to give ſmoothneſs and regularity to the ceiling.

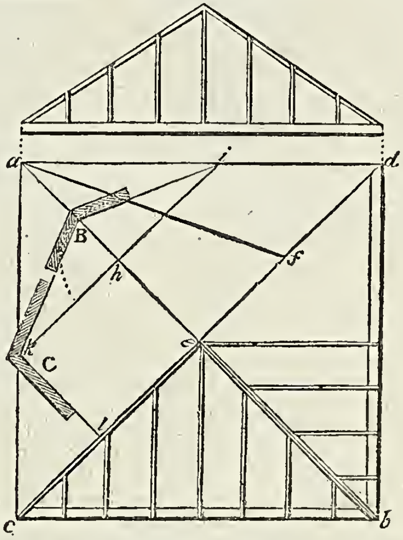
Fig. 10, is the plan of another plaſter groin, whoſe body arch A is a ſemi-ellipſis, and the interſecting ones at BB are ſemicircular. D is the angular rib, deſcribed by ordinates, as the correſponding numerals ſhew, and which has been already taught. The plan at C exhibits the jack and angular ribs, as deſcribed in the foregoing examples.

Fig. 11, repreſents the plan of a curved groin, which may be applied either to brick-work or plaſter; though we ſhall here deſcribe it for the uſe of the latter. Let *a*, *b*, *c*, *d*, be the plan of the body arch, which might be continued round till it form a complete circle; in which caſe nothing more would be required than repetitions of what is exhibited in the figure before us. Let AA be the body arch, and BB the interſecting arches; to find the curvatures of the angular ribs, proceed as follows: divide the arch A at its baſe into eight equal parts, from which raiſe perpendiculars to *p*, *q*, *r*; continue the ſides of the plan *a c*, *b d*, until they meet at *s*; divide the curve *a b* into eight equal parts, from which draw right lines to the centre *s*; interſect theſe by deſcribing the ſeveral curves by the centre *s*, from the reſpective diviſions at A; through the points thus found draw the ſeveral curve lines, and they will form the correct plan of the angular ribs, when placed perpendicularly on their baſe. We next proceed to find the vertical curve of the ribs thus: draw *d g*, which make in length equal to the curve line C *d*; and alſo take the girt of the curve line C *a*, and lay it from *a* to *h*, and divide both into four equal parts. Then take the ordinates from A, and transfer them to their correſponding places in E and D, and the curve paſſing through theſe points will be the vertical arch of the angular ribs. But obſerve, when E and D are fixed on the plan, they are ſuppoſed capable of being bent to coincide with the angular curves on the plan; otherwiſe they muſt be ſhaped to that curve out of timber of a ſuitable thickneſs. For the interſecting arches, divide the curves of their plan into the ſame number of equal parts as before, which is exemplified at *e f* B, where *e f* is made equal to *a b* on the curve, and *i s k* equal to the curve *c d*; and, their ordinates being drawn, it only remains to transfer the ſeveral correſpondent ones from A, by which the elliptic curves of the interſecting arches are found, and which, when placed on their plan, and muſt, by the ſame means uſed with the angular ribs, be made to coincide with their curved plans *a b* and *c d*. The jack ribs of the body arches AA will be ſtraight on their plan, as at *w*, and muſt be placed in the direction of the radials from the centre *s*. Thoſe of the interſecting arches muſt be curved on the plan, conformable to their diſtance from the centre *s*, as is *n*.

Fig. 12, is the plan of a Welſh groin, or one under pitch, having its body and interſecting arches compoſed of ſemicircles; or they may be of ſimilar ſegments, whoſe interſections meet on a curved plane, and conſequently their plan will be in a curve, as in the preceding groin. The interſecting arch B being divided into any number of equal parts, draw lines perpendicular to its baſe, at pleaſure. From 1, 2, 3, 4, direct lines round to the body arch A, as at 1, 2, 3, 4; from whence draw lines perpendicular to the baſe line of A, and where theſe interſect at 4, 3, 2, 1, draw a curve line, which gives the plan of the angular rib of the arch; and the rib itſelf at D, may be found in the uſual manner, to which the numerals direct. To find the mould that will deſcribe the curvature of the interſecting arches when laid on the body arch A, take the girt of the angular rib D in the inſide, at 1, 2, 3, 4, and, drawing a right line at E, take the ordinates from the chord line of the plan of the angular rib, and place them reſpectively at 1, 2, 3, 4, which will give the mould required. And as the angular rib in this figure will be curved both ways, ſimilar to thoſe in the circular groin already deſcribed, the ſame means that were uſed in deſcribing them muſt be adopted in the preſent inſtance.

OF SKY-LIGHTS.

To find the Length of the Hips of a Sky-light, ſtanding upon a ſquare Plan, the Height being given.—Draw the diagonals *a b*, and *c d*, as in the figure, and they will biſect each other at right angles at *e*; take *a e* for the baſe of any hip; from *e* make *e f* equal to the height of the ſky-light; from *a* to *f* draw a line *a f*, and it will be the length of the hip required.

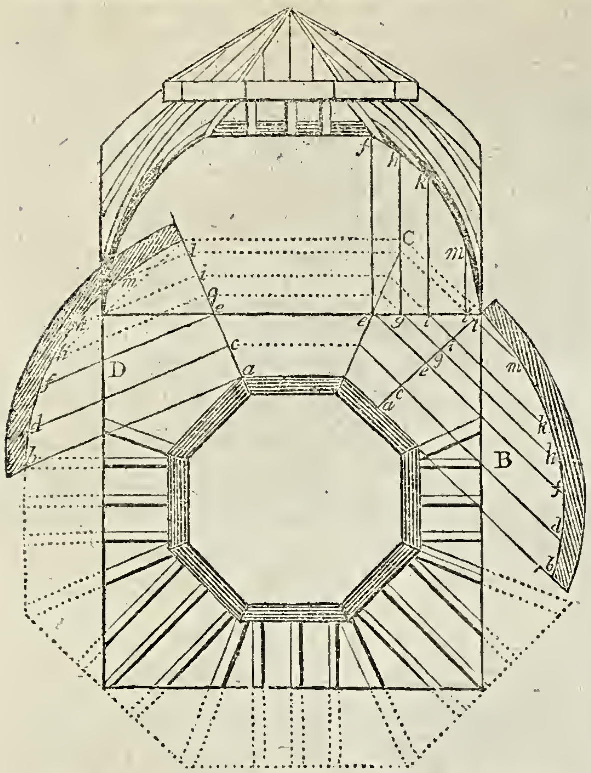


To find the Backing of the Hip.—Draw any line, as *k i*, at right angles to *a e*, the baſe of the hip rafter, to cut it in the point *h*; ſet the foot of the compaſs in *h*, as a centre, and with the other deſcribe a circle to touch *a f*, the hip rafter, to cut the baſe line *a e*, at *g*; then draw *g i* and *g k*; then the angle *k g i* will be the backing of the hip, as is ſhewn by the bevel at B; but the beſt way to work the hips is to apply a bevel to the parallel ſides of the hips, as is ſhewn at C, by making the other ſide of the bevel parallel to *a e*, the baſe of the hip.

The ſame lines will extend to any ſky-light, whatever may be the form of its plan. If it be any polygon, to find the length of the hip rafter, draw a line through any point in its baſe at right angles to it, ſo as to cut the two contiguous ſides to that baſe, and on the ſaid point as a centre deſcribe a circle to touch the hip rafter from the point where this circle cuts the baſe line, draw two lines to meet the ends of the perpendicular line at the ſides of the polygon, and the angle formed by theſe two lines will be the backing required.

For a domical Sky-light.—Suppoſe one of the ribs of a dome be given, and the plan of the opening of the ſtaircaſe be ſquare, with an octagon curb at the top for a ſky-light;

it is required to find the ribs and the curve on each ſide of the opening of the ſtaircaſe, where the feet of the ribs are to fall, in order that the inferior part of the dome ſhould make an octagon finiſh, to correſpond with the curb.

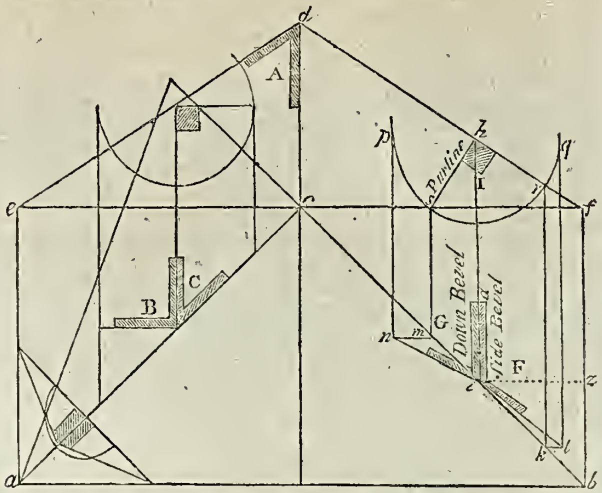


Let B be the given rib; take any number of perpendicular ordinates to its baſe at pleaſure; from the points *a*, *c*, *e*, *g*, *i*, *l*, where they interſect its baſe, draw parallel lines to the ſides of the curb, returning round each diagonal, if there be more than one, until it cut the baſe of the angle rib D; at the points *a*, *c*, *e*, *g*, *i*, *l*, draw the ordinates of D, which trace from B, and it will give the angle rib; and at the points *e*, *g*, *i*, *l*, at C, upon the ſide of the opening of the ſtaircaſe, draw the perpendicular ordinates, and trace C from B agreeable to the letters; then the curve C will be the true place for the feet of the ribs upon the ſide of the ſtaircaſe, and the part that lies in the middle is a ſtraight line parallel to the horizon.

Domical ſky-lights well executed, and properly enriched, make an elegant finiſh to a ſuperb ſtaircaſe, whether framed to a circular, octangular, or elliptical, plan. To illuſtrate this, we have given, in the annexed Plate, a very handſome deſign for an elliptical domical ſky-light, which was executed by Mr. Paine, over the great ſtaircaſe at Brocket Hall, in Hertfordſhire.

Of ROOFS.

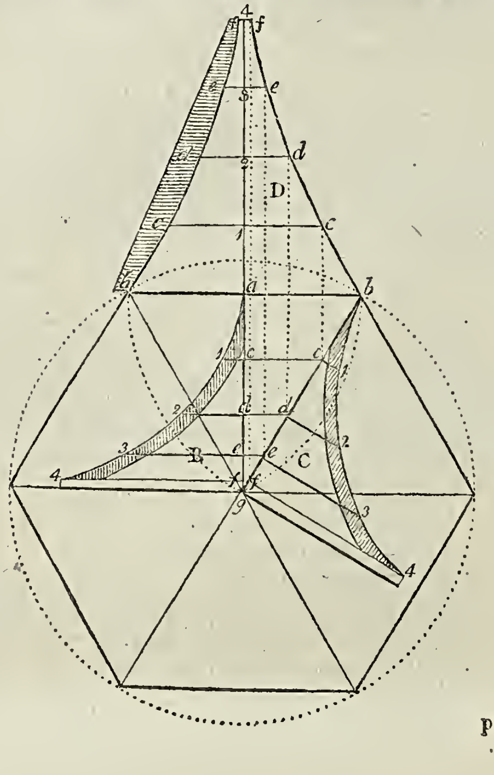
The lines for roofing, at leaſt for the length and backing of the hip, muſt be found in the ſame manner as directed for the ſky-lights; and if it be required to find the end of a horizontal bar, ſo that it ſhall fit againſt the hip, it will be performed in the ſame manner as finding the form of the end of a purline, ſo as to fit againſt the ſide of a hip rafter, as deſcribed below: the ſame may be ſaid of the jack bars to be fitted againſt the hip of a ſky-light, as in a roof. In the following figure one end of the roof is ſhewn, in order to determine two caſes: the firſt is when the purline lies level, or having two ſides parallel to the horizon; the ſquare at B, and the bevel at C, will direct how to draw the end of the purline in this eaſy caſe; but the following method is univerſal in all poſitions of the purline. Let *a b* be the width of a ſquare roof; make *b f*, or *a e*, one half of the width, and make *c d* perpendicular in the middle of *e f*, the height of the roof, which is here one-third, and draw *d e*, and *d f*, which are each the length of a common rafter.



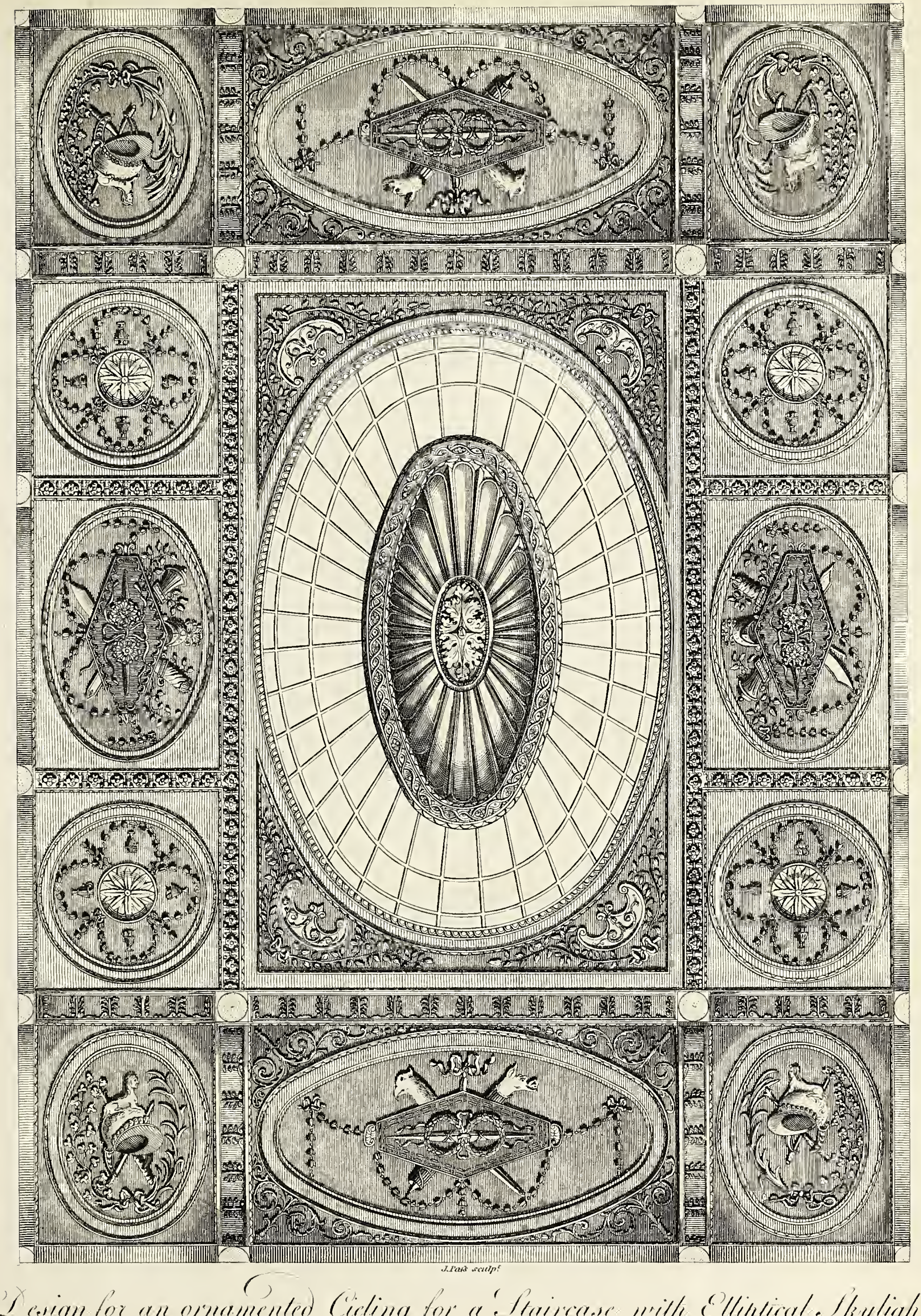
To find the Bevels of a Purline againſt the Hip Rafter.—Let the purline be in any place of the rafter, as at I, and in its moſt common poſition, that is, to ſtand ſquare, or at right angles to the rafter; and from the point *h*, as a centre, with any radius, deſcribe a circle. Draw two lines *q l*, and *p n*, to touch the circle in *p* and *q*, parallel to *f b*; and at the points *s* and *r*, where the circle and two ſides of the purline interſect, draw two parallel lines to the former, to cut the diagonal in *m* and *k*; and draw *m n* and *k l* perpendicular to *s m* and *r k*, and join the points *n i* and *k i*; then G is the down bevel, and F the ſide bevel of a purline: theſe two bevels, when applied to the end of the purline, and when cut by them, will exactly fit the ſide hip rafter.

To find the Bevels of a Jack Rafter againſt the Hip.—By turning the ſtock of the ſide bevel of the purline, at F, from *a*, round to the line *i z*, will give the ſide bevel of the jack rafter. And the bevel at A, that is, the top of a common rafter, is the down bevel of the jack rafter.

For a Polygon Roof.—Suppoſe the plan of a polygon roof be given, and one of the common ribs ſtanding upon that



plan;



J. Pass sculp.^{t}

Design for an ornamented Cieling for a Staircase, with Elliptical Skylight.

London Publish'd as the Act directs, Sept.^{r} 24.th 1797, by J. Wilkes.

Fig. 1.

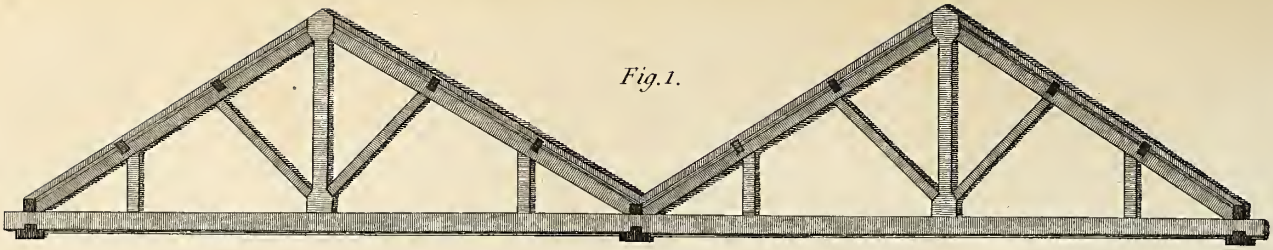


Fig. 2.

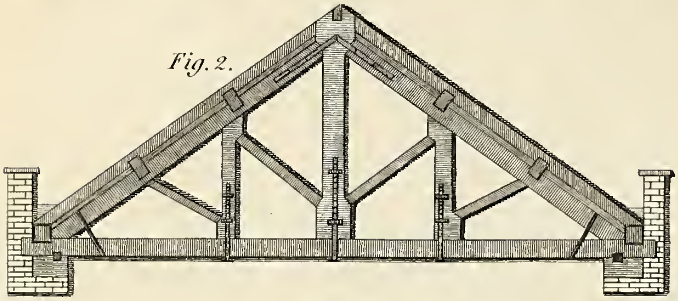


Fig. 3.

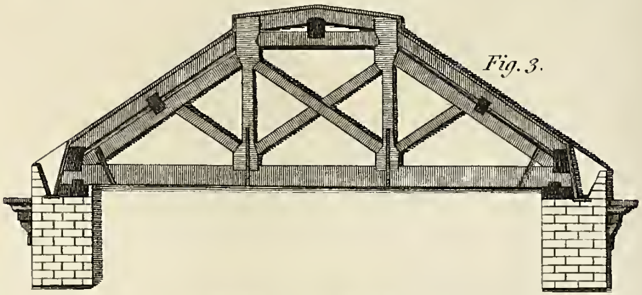


Fig. 4.

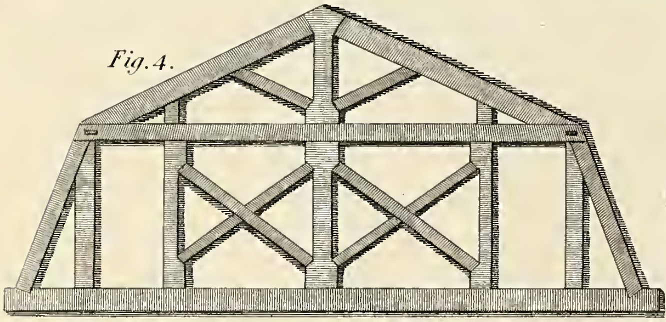


Fig. 5.

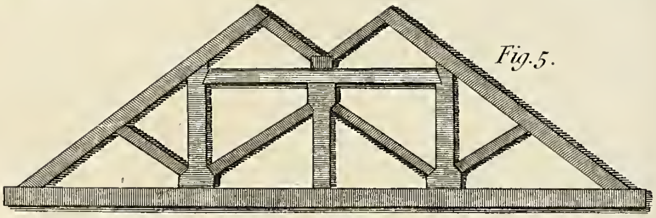


Fig. 6.

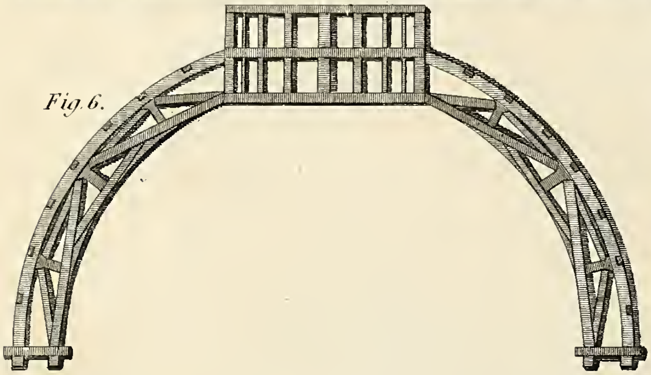


Fig. 7.

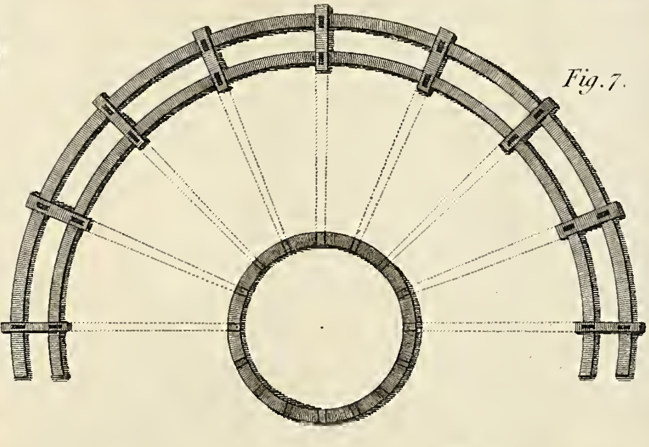


Fig. 9.

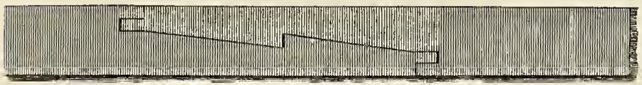


Fig. 8.

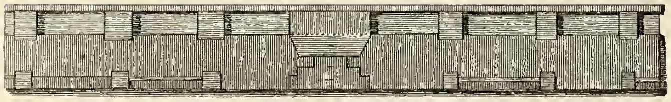


Fig. 10.

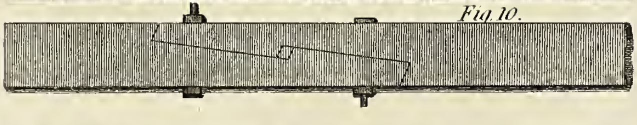


Fig. 11.

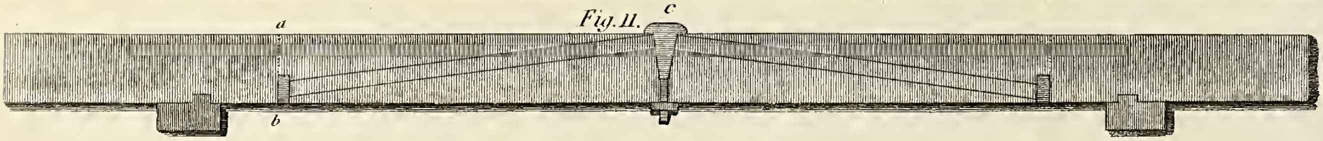
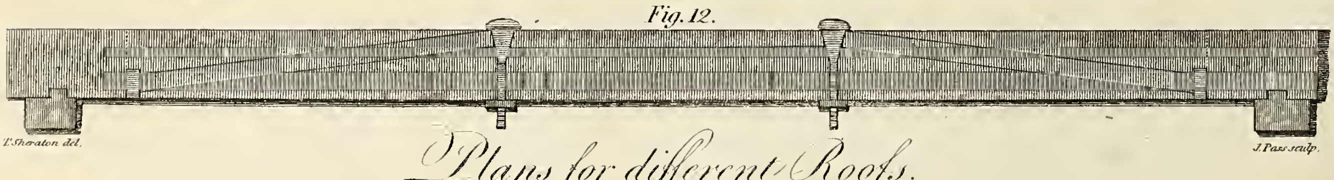


Fig. 12.



T. Sheraton del.

J. Pass sculp.

Plans for different Roofs.

London Publish'd as the Act directs by J. Wilkes Feb. 20 1798.

plan; it is required to find the angle rib, and the form of the boards that will cover it when the ribs are fitted up. Let B in the figure be the given rib; divide the curve into any number of equal parts, as four, and lay them at D from *a* to 4, which biſects *b b*, the ſide of the polygon, at right angles; through theſe points draw lines parallel to the ſide *b b* of the polygon; at B and D make 1 *c* at D equal to *c c*, between B and C 2 *d* equal to *d d*, and 3 *e* equal to *e e*, &c. and through the points *b*, *c*, *d*, *e*, *f*, draw a curve line, which will be the form of the boarding; from the points *g*, *f*, *e*, *d*, *c*, draw lines at right angles to *g b*, the baſe of the angle rib, and trace the rib C from D as they are marked by the letters, which is plain. The more parts there are in this operation, the truer it will be, or any other of this nature; and in the ſame manner may the covering and angle ribs of any other polygon be found, whatever may be the form of the ribs.

With reſpect to the timbers employed in roofing, many opinions have been offered by different architects. It ſeems generally agreed, that all beams of twenty feet and upwards ought to be truſſed up in one or more places. Beams ſhould never exceed fifteen feet in bearing, nor rafters more than ten, eſpecially in roofs of very low pitch, whoſe coverings have a much greater preſſure on their rafters than thoſe of higher pitches. It ſhould alſo be remembered, that timber is much weakened by its own weight, unleſs it ſtand perpendicular; and that, whenever a mortice is to be cut in the ſide of a piece of timber, it will be much leſs weakened when cut near the top, than if cut near the bottom, provided the tenon be driven in hard to fill up the mortice. The bending of timber will always be nearly in proportion to the weight that is laid upon it; no beam ought to be truſted for any length of time with above one-third or one-fourth of the weight it will abſolutely carry; for experiment proves, that a far leſs weight will break a piece of timber when hung to it for any conſiderable time, than what is ſufficient to break it when firſt applied.

If ſeveral pieces of timber of the ſame ſcantling and length are applied one above another, and ſupported by props at each end, they will be no ſtronger than if they were laid ſide by ſide; or, which is the ſame thing, the pieces that are applied one above another are no ſtronger than one ſingle piece, whoſe width is the width of the ſeveral pieces collected into one, and its depth the depth of one of the pieces; it is therefore uſeleſs to cut a piece of timber lengthways, and apply the pieces ſo cut one above another, for theſe pieces are not ſo ſtrong as before, even if bolted. For, ſuppoſe a girder 16 inches deep, and 12 inches thick, the length is immaterial, and the depth be cut lengthways in two equal pieces; then will each piece be 8 inches deep, and 12 inches thick. Now, according to the rule of proportioning timber, the ſquare of 16 inches, that is, the depth before it was cut, is 256, and the ſquare of 8 inches is 64; but twice 64 is only 128, therefore it appears that the two pieces applied one above another are but half the ſtrength of the ſolid piece, becauſe 256 is double 128.

Theſe obſervations will be found of uſe, when timber is wanted to ſupport a great weight; for, by knowing the ſuperincumbent weight, the ſtrength may be computed to a great degree of exactneſs, ſo that it ſhall be able to ſupport the weight required. The conſequence is almoſt as bad when there is too much timber, as when there is too little; for nothing is more requiſite than a juſt proportion throughout the whole, in order that the ſtrength of every part may always be in proportion to the ſtreſs; for, when there is more ſtrength given to ſome pieces than to others, it encumbers the building, and conſequently the foundations are leſs capable of ſupporting the ſuperſtructure. No judicious perſon, who has the care of conducting buildings, ſhould therefore rely on tables of ſcantlings, ſuch as are commonly found in books; for example, in ſtory poſts the ſcantlings, according to ſeveral authors, are as follow:

For 9 feet high	6 inches ſquare
12 ——	8
15 ——	10
18 ——	12, &c.

Now, according to this table, the ſcantlings are increaſed in proportion to the height; but there is no propriety in this, for each of theſe will bear weight in proportion to the numbers 9, 16, 25, and 36, that is, in proportion to the ſquare of their heights, 36 being 4 times 9; therefore the piece that is 18 feet long will bear four times as much weight as that piece which is 9 feet long; but the 9 feet piece may have a much greater weight to carry than an 18 feet piece, ſuppoſe double, in this caſe it muſt be near 12 inches ſquare inſtead of 6. The ſame is alſo to be obſerved in breaſt-ſummers, and in floors where they are deſtined to ſupport a great weight; but in common buildings, where there are only cuſtomary weights to ſupport, the common tables for floors will be near enough for practice. In chooſing timber, care ſhould be taken to avoid knotty and croſs-grained wood, &c. ſuch pieces being not ſo ſtrong as thoſe which are ſtraight in the grain; and, if care be not taken in ſelecting the timber for a building, all rules that can be laid down will be uſeleſs and nugatory in regard to its ſtrength. Let it alſo be remembered, that in all timber there is moiſture, wherefore all bearing timber ought to have a moderate camber or roundneſs on the upper ſide, for till that moiſture is dried out the timber will ſwag with its own weight. And obſerve, that it is beſt to truſs girders when they are freſh ſawn out, for by their drying and ſhrinking, the truſſes become more and more tight. Alſo let all beams or ties be cut, or in framing forced to a rounding ſuch as an inch in twenty feet length, and that principal rafters alſo be cut or forced in framing, as before; becauſe all joiſts, though ever ſo well framed, by the ſhrinking of the timber and weight of the covering will ſwag, ſometimes ſo much as not only to be viſible, but to offend the eye; by this precaution the truſs will always appear well. Likewiſe obſerve, that all caſe bays, either in floors or roofs, do not exceed twelve feet if poſſible; that is, do not let the joiſts in floors exceed twelve feet, nor the purlines in roofs, &c. but rather let their bearing be eight, nine, or ten, feet; this ſhould be regarded in forming the plan. In bridging floors, do not place the binding or ſtrong joiſt above three, four, or five, feet apart, nor the bridging or common joiſts above ten or twelve inches apart, that is, between one joiſt and another. Alſo, in fitting down tie beams upon the wall plates, never make the cocking too large, nor too near the outſide of the wall plate; for the grain of the wood being cut acroſs in the tie-beam, the piece that remains upon its end will be apt to ſplit off, but keeping it near the inſide will tend to ſecure it. And obſerve further, never to make double tenons for bearing uſes, ſuch as binding joiſts, common joiſts, or purlines; for, in the firſt place, it very much weakens whatever it is framed into, and in the ſecond place, it is very rare to have a draught in both tenons, that is, to draw both joints cloſe; for the pin in paſſing through both tenons, if there is a draught in each, will bend ſo much that, unleſs it is as tough as wire, it will break in driving, and conſequently do more hurt than good. Roofs will be much ſtronger if the purlines are notched above the principal rafters, than if they are framed into the ſide of the principals; for by this means, when any weight is applied in the middle of the purline, it cannot bend, being confined by the other rafters; and, if it do, the ſides of the other rafters muſt neceſſarily bend with it, conſequently it has the ſtrength of all the other rafters ſideways added to it.

To give an idea of the beſt mode of framing roofs, and truſſing up the timbers, we have delineated the ſeveral figures in the annexed Plate, of which the following is an explanation. *Fig.* 1, is a deſign for a double roof, and is recommended to be uſed inſtead of an M roof, upon all occaſions where the ſpan is great, and the pitch not very high. *Fig.* 2, is a deſign for a ſingle roof, of conſiderable ſpan; and the connection of the roof in the walls is likewiſe ſhewn. *Fig.* 3, is the plan of a roof to finiſh with a parapet, when covered in; and may be uſed in any extent from thirty to forty feet. *Fig.* 4, is a curb roof, with two doors in the partition, being calculated for two rooms. *Fig.* 5, is the plan of an M roof, which is uſeful in ſome caſes where the ſpan is great, and no wall between, and the roof is required not to appear of a great height; but this ſeldom occurs in practice, for if there be any intermediate wall between the external ones, the roof ſhould be made double, as ſhewn at *fig.* 1, which is the moſt compact and ſecure. *Fig.* 6, is a deſign for a domical roof; and *fig.* 7, ſhews the manner of framing the curb for it to ſtand upon. *Fig.* 8, ſhews the method of framing a bridge-floor. *Fig.* 9, and 10, ſhew the methods of ſcarfing timber. *Fig.* 11 and 12, ſhew the methods of truſſing girders, as uſed by the greateſt maſters at this time; *a* and *b* ſhew the ſections of the butments, and *c* ſhews the king bolt, which is made with a wedge-way upon the top, ſo that it may force out the truſſes upon the butments.

With reſpect to the materials uſed for healing in or covering roofs, the kinds practiſed in England are lead, pantiles, plain tiles, and ſlates. Coverings of lead are doubtleſs the beſt and moſt durable; but on account of their expence they are ſeldom choſen, except for magnificent buildings. Lead is moſtly uſed on roofs of a very low pitch, where tiling or ſlating would not be ſafe. But for theſe purpoſes, and for flat roofs and gutters, a cheap and excellent ſubſtitute has lately been invented, conſiſting of large ſheets of tinned copper. Pantile coverings may be uſed for low roofs, where the pitch is about three-eighths of the width of the building. Coverings of plain tiles and ſlates are generally allowed the higheſt pitch, becauſe when they are laid on low roofs, the rain will more eaſily find its way between them. Theſe ought to have a pitch, the length of whoſe rafters is three-fourths of their girder; or, at leaſt, the ſides of the roof ought to be at right angles with each other.

Of ENTRANCE GATES and PIERS.

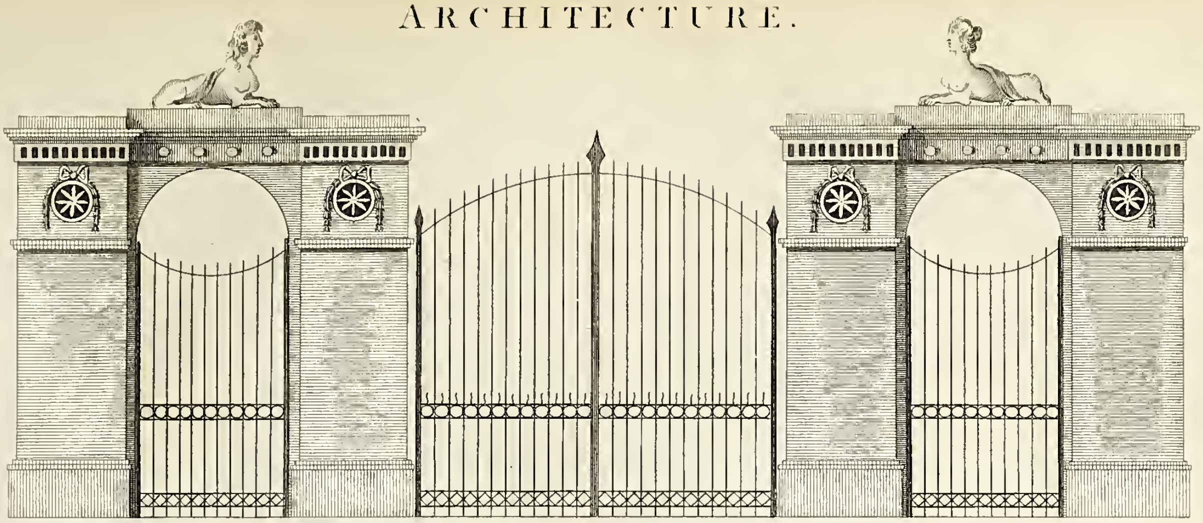
The apertures of gates being always wide, they ſhould be made in the form of an arch, that figure being the ſtrongeſt and moſt elegant. In their compoſition they ſhould be characteriſtic, and expreſs the nature of the place they open into, and by their ſtyle and dimenſions give ſome previous idea of its extent and importance. The ſmalleſt width that can be given to the aperture of a gate, is nine feet, which is but barely ſufficient for the free paſſage of coaches; therefore, if carts or waggons are occaſionally to paſs, it ſhould be made ten or eleven feet wide.

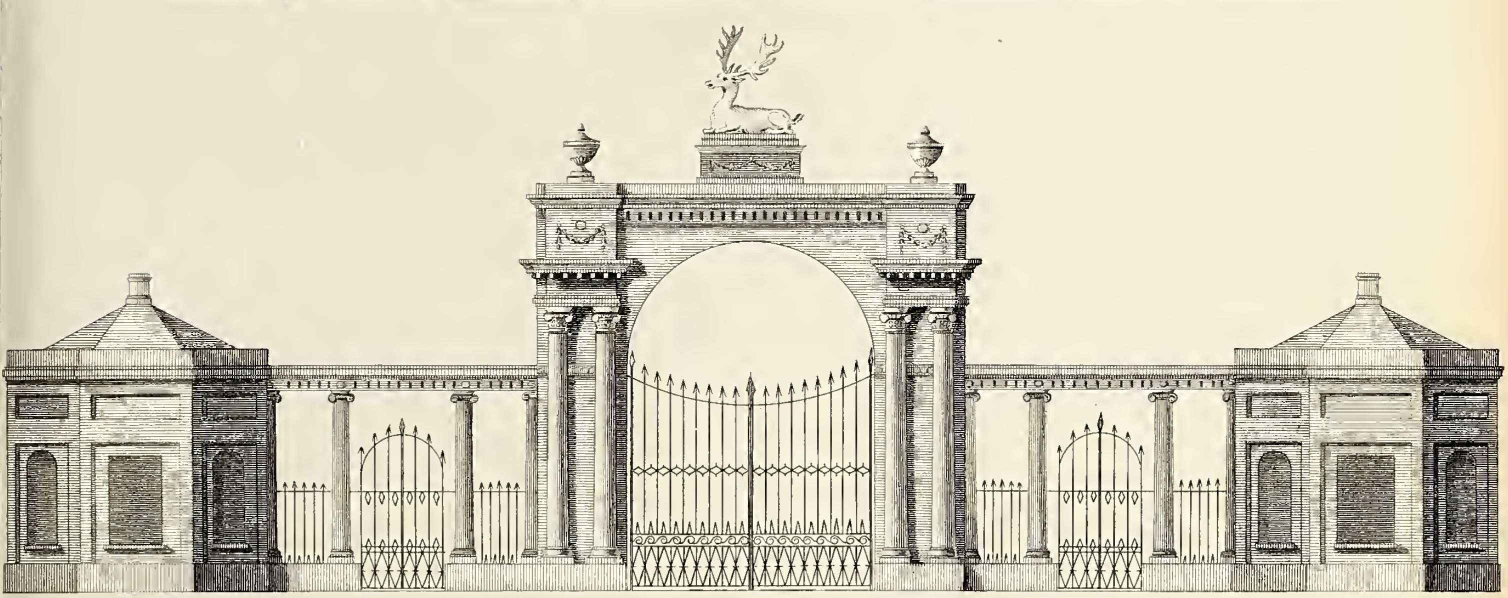
The moſt common, and indeed almoſt the only, ornaments for gates, are the piers by which they are ſupported, and which were originally no more than bare poſts into which the hinges of the gate were driven. Though this, however, is the only proper uſe of piers, it ſhould be concealed as much as poſſible; and they muſt ſeem as if placed there only for ornament. As they are to be fixed to the wall before the houſe or park, ſo they muſt alſo be proportioned to it; and as they are to be ſeen in the ſame view, or nearly ſo, with the front of the houſe, their correſpondence with it is equally neceſſary. They are to be placed on a plinth, and ſomething muſt be allowed by way of ornament and finiſhing at the top. All the luxuriance of fancy may be employed in the decoration of piers: but it will be proper to obſerve this general rule, that, the pier being an inferior building, it muſt never be richer than the front of the houſe. If, for inſtance, the front of the houſe is ornamented with columns of the Doric order, the Ionic ſhould not be uſed in the piers; and it will be found better to omit columns altogether, than to make uſe of the Tuſcan order for piers in any caſe. If the Ionic or Compoſite orders are employed in the front of the houſe, the Ionic or Corinthian may be uſed in the piers. The entrance gates to parks, or magnificent villas, may with propriety be compoſed of the moſt delicate orders, and be adorned in the higheſt degree. In different deſigns, columns, pilaſters, entablatures, pediments, ruſtics, impoſts, archivolts, conſoles, maſks, &c. may occaſionally be employed. In the annexed Plate, three deſigns are given to illuſtrate this ſubject; all of which are calculated for the entrances into parks, lawns, court-yards, gardens, &c. The lowermoſt of theſe deſigns was executed for his grace the duke of Northumberland, at the entrance to Sion Houſe, near Brentford, by the ingenious Meſſrs. Adam; of whoſe ability and proweſs in architecture the Adelphi in London will prove a laſting monument.

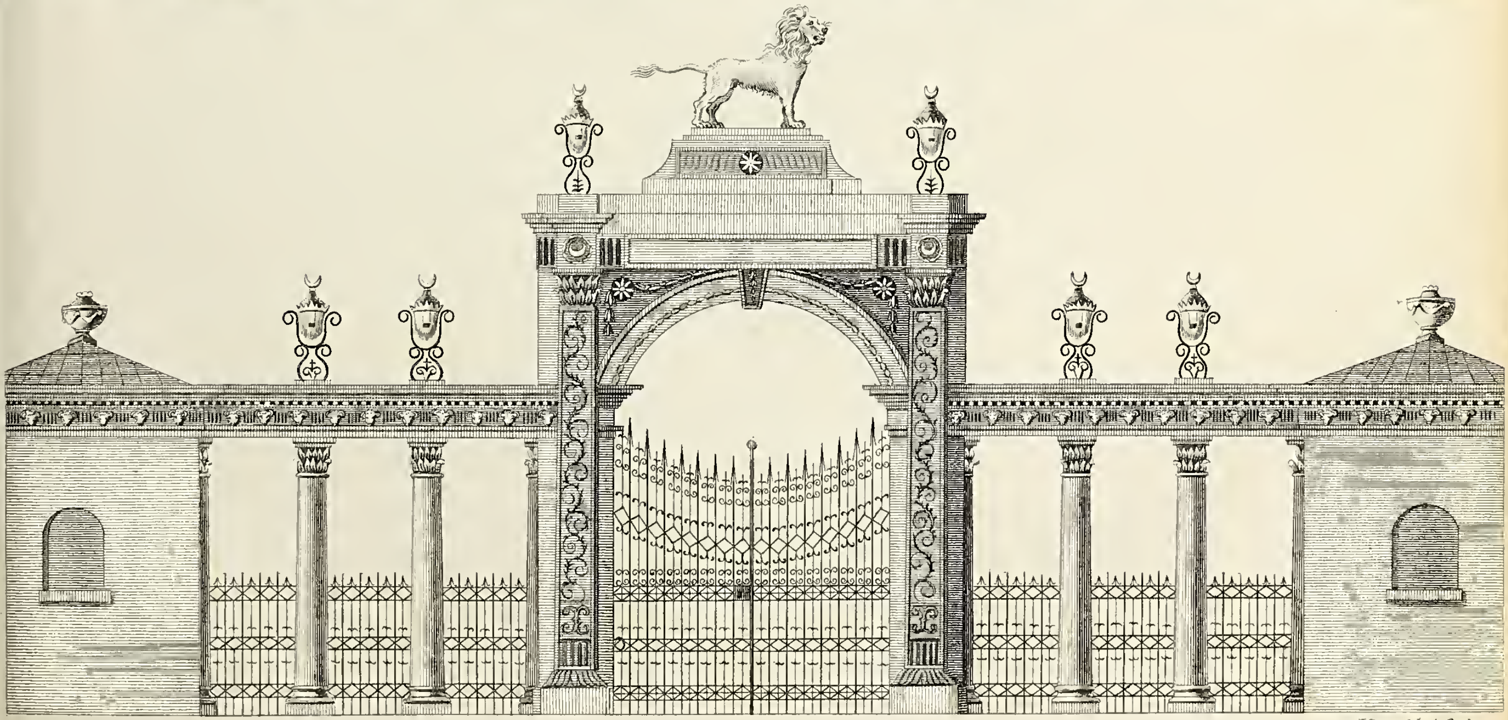
Of the FOUNDATION and SUPERSTRUCTURE of BUILDINGS.

The rules of building require, that, in a whole fabric judiciouſly and elegantly erected, there ſhould be ſolidity, convenience, and beauty; to which, according to the taſte of ſome of the moſt refined maſters, are added, order, diſpoſition, proportion, decorum, and economy. Theſe eight particulars are conſidered by the moſt ſkilful architects as abſolutely requiſite in the planning, erecting, and finiſhing, an entire fabric. Solidity implies the choice of a good foundation, proper materials to work with, as well as their judicious application. Convenience demands ſuch a diſpoſition of the various parts of a ſtructure, that they may not crowd and embarraſs each other, or appear diſagreeable to a ſpectator. Beauty, of which we have ſpoken in another place, is that engaging form, and pleaſing appearance, which captivates at one glance the eye of the obſerver. Order gives each part of the building a proportionate extent; ſuch as is adapted to the magnitude of the whole. Diſpoſition is the due ranging and agreeable union of all the parts, including a proper and convenient arrangement of the various apartments of the whole fabric. Proportion is the relation that the whole work has to its conſtituent parts, and which each part has to the complete idea of the whole; for, in buildings that are perfect in their kind, from any particular part we may form a tolerable judgment of the whole. Decorum conſiſts in making the whole aſpect of the fabric ſo correct, that nothing ſhall appear, but what is founded on the principles of reaſon, geometry, and delicacy of judgment. Deſign, in the limited ſenſe here uſed, is the choice of one ſituation in preference to another, which we may conceive better adapted for the kind of building we are about to erect. Economy inſtructs the architect to have regard to the expence of his whole deſign, which will be greatly effected by a choice of ſuch materials as are not only proper for his purpoſe, but of the cheapeſt of the kind, and of ſuch as are neareſt at hand.

The beſt foundation is that which conſiſts of gravel or ſtone; but, in order to know whether the inferior ſtrata are ſufficient for the ſupport of the building, it will be adviſable to ſink wells at ſome little diſtance. By attending to what is thrown up in digging theſe, the architect will be acquainted with what lies under the ſtony or gravelly bed which on the ſurface promiſes ſo much ſecurity, and will know what meaſures to take. But though a ſtony or gravelly bottom is undoubtedly the moſt ſure and firm, where all is ſound beneath, there is no kind of ground which may prove more fallacious, or occaſion ſuch terrible accidents. The reaſon of this is, that ſuch kind of ground often contains abſolute vacuities; nor is rock itſelf, though a foundation upon a rock is ſtrong even to a proverb, free from dangers of the ſame kind. Caverns are very frequent in rocky places; and, ſhould a heavy building be erected over one of theſe, it might ſuddenly fall down altogether. To guard againſt accidents of this kind, Palladio adviſes the throwing down great weights forcibly on the ground, and obſerving whether it ſounds hollow, or ſhakes. He ſays, if a drum be placed on the ſuſpected ground near to a veſſel filled with water, a gentle ſtroke will not reſound nor ruffle the ſurface of the water, if the earth be ſolid; but, if it be hollow, the effects produced will very clearly ſhew it. Where the foundation is gravel, it will be proper to examine the thickneſs of the ſtratum, and the qualities of thoſe that lie under it, as they have appeared in digging. If the bed of gravel is thick, and the under ſtrata be alſo of a ſound and firm kind,







J. Pass del et Sculp.

Designs for Entrance Gates.

London Published as the Act directs June 21 1797 by J. Wilkes

there needs no aſſiſtance; if otherwiſe, we muſt have recourſe to various methods in order to ſupply the defect.

The other matters which may occur for a foundation, are clay, ſand, common earth, or rotten boggy ground. Clay will often both raiſe and ſink a foundation; yet it has a ſolidity which, with proper management, is very uſeful. The marſhy, rotten, or boggy, ground, is of all others the worſt; yet even upon this great buildings may be raiſed with perfect ſafety, provided proper care be taken. In caſe of boggy earths, or unfirm ſand, piling is one of the moſt common methods of ſecuring a foundation; and, notwithſtanding the natural diſadvantage of the earth, piles, when properly executed, are one of the firmeſt and moſt ſecure foundations. The piles ſhould be placed about fifteen or eighteen inches apart, and driven till they come to a ſolid bottom; the heads ſhould then be made level, with ſleepers laid upon them, and brick-work between the ſleepers, even with the tops; the whole is then to be planked over with ſtrong four-inch plank, to receive the building.

In foundations near the edge of waters, we ſhould always be careful to found to the very bottom, as many accidents have happened from the ground being undermined by rivers. The ſame method is to be followed when the ground has been dug or wrought before. It ought never to be truſted in the condition in which it is left; but muſt be dug through into the ſolid and unmoved ground, and ſome way into that, according to the weight and magnitude of the intended edifice. The church of St. Peter's at Rome is an inſtance of the importance of this laſt obſervation. That church is in great part built upon the old circus of Nero; and, the builders having neglected to dig through the whole foundation, the ſtructure is conſequently ſo much the weaker. The walls were judged of ſtrength enough to bear two ſteeples upon the corners of the frontiſpiece; but the foundation was found too weak, when it was impoſſible to remedy the defect.

Before the architect begins to lay the foundation of the building, it will be proper to conſtruct ſuch drains as may be neceſſary for carrying off the rain, or other refuſe water that would otherwiſe be collected and lodge about the houſe. In making drains for carrying off this water, it will be neceſſary to make large allowances for the different quantities that may be collected at different times. It muſt alſo be conſidered, that water of this kind is always loaded with a vaſt quantity of ſediment, which by its continual falling to the bottom will be very apt to choak up the drain, eſpecially at thoſe places where there happen to be angles or corners in its courſe. The only method of preventing this is by means of certain cavities diſpoſed at proper diſtances from one another. Into theſe the ſediment will be collected, and they are for that reaſon called *ſeſs-pools*. With regard to theſe, the only directions neceſſary are, that they be placed at proper diſtances, be ſufficiently large, and placed ſo as to be eaſily cleaned.

All drains ought to be arched over at top, and may be moſt conveniently built of brick. According to their different ſizes, the following proportions of height and thickneſs may be obſerved. If the drain is eighteen inches wide, the height of the walls may be one foot, and their thickneſs nine inches; the bottom may be paved with brick laid flatwiſe, and the arch turned four inches. If the drain be twenty-two inches wide, the ſide walls are then to be one foot three inches in height, and the reſt conſtructed as before. If it is fourteen inches wide, the height of the walls may be nine inches, and the ſweep of the arch four. A drain of a yard wide ſhould have the ſame height, and the arch turned over it ought to be nine inches thick. Upon the ſame principles and proportions may other drains of any ſize be conſtructed.

The ſewers and drains being conſtructed in a manner proportioned to the ſize of the intended building, the architect may next proceed to lay the foundation of the walls. Here his firſt care muſt be, that the floor of the foundation be perfectly ſmooth and level. The Italians begin with laying over it an even covering of ſtrong oak plank; and upon that they lay, with the moſt exact care, the firſt courſe of the materials. Whether we take this method, or begin upon the naked floor, all muſt be laid with the moſt exact truth by rule and line. When the board plat is laid, a courſe of ſtone is the beſt firſt bed, and this is to be laid without mortar; for lime would make the wood decay, which otherwiſe, in a tolerably good ſoil, will laſt for ages. After this, all the courſes ſhould follow with the ſame perfect evenneſs and regularity. If the materials are brick, they ſhould be laid on with an equal, and not too great, quantity of mortar: if ſtone, they ought to be placed regularly, and in the ſame ſituation in which they lay in the quarry; for many ſtones which will bear any weight flatwiſe, and in their natural poſition, are of ſuch a grain, that they will ſplit otherwiſe. The leſs mortar there is in a foundation, the better. Its uſe is to cement the bricks and ſtones together; and the evener they are, the leſs will be required for that purpoſe. Where mortar is uſed to fill up cavities, it becomes part of the wall; and not being of equal ſtrength with the ſolid material, it takes from the firmneſs of the building. For the ſame reaſon, nothing can be more abſurd than to fill up a foundation with looſe ſtones or bricks thrown in at random; and, where this is done, the ruin of the building is inevitable. Where the foundation of a principal wall is laid upon piles, it will be neceſſary alſo to pile the foundations of the partitions, though not ſo ſtrongly.

The thickneſs of foundation-walls in general ought to be double that of the walls which they are to ſupport. The looſer the ground, the thicker the foundation-wall ought to be; and it will require the ſame addition alſo in proportion to that which is to be raiſed upon it. The plane of the ground muſt be perfectly level, that the weight may preſs equally every where: for, when it inclines more to one ſide than another, the wall will ſplit. The foundations muſt diminiſh as they riſe, but the perpendicular is to be exactly kept in the upper and lower parts of the wall; and this caution ought to be obſerved all the way up with the ſame ſtrictneſs. In ſome ground, the foundation may be arched; which will ſave materials and labour, at the ſame time that the ſuperſtructure has an equal ſecurity. This practice is peculiarly ſerviceable where the foundation is piled. As the foundation-walls are to diminiſh in thickneſs, ſo are thoſe which are built upon them. This is neceſſary in order to ſave expence, but is not abſolutely ſo to ſtrengthen the wall; for this would be no leſs ſtrong though it was continued all the way to the top of an equal thickneſs, provided the perpendicular was exactly kept. In this the ancients were very expert; for we ſee, in the remains of their works, walls thus carried up to an exorbitant height. The thickneſs and diminution of walls is in a great meaſure arbitrary. In common houſes built of brick, the general diminution from the bottom to the top is one-half the thickneſs at the bottom; the beginning is two bricks, then a brick and a half, and laſtly one brick in thickneſs. In larger edifices, the walls muſt be made proportionally thicker; but the diminution is preſerved much in the ſame manner. When ſtones are uſed, regard muſt be had to their nature, and the propriety of their figures for holding one another. Where the wall is to be compoſed of two materials, as ſtone and brick, the heavieſt ought always to be placed undermoſt.

There is one farther particular regarding the ſtrength of a plain wall, and that is, the fortifying its angles. This is beſt done with good ſtone on each ſide, which gives not only a great deal of ſtrength, but a great deal of beauty. Pilaſters properly applied are a great ſtrengthening to walls. Their beſt diſtance is about every twenty feet, and they ſhould riſe ſix inches from the naked of the wall. A much ſlighter wall of brick, with this aſſiſtance, is ſtronger than a heavier and maſſier one built plain. In brick walls of every kind, it is alſo a great addition to their ſtrength to lay ſome chief courſes of a larger and harder matter; for theſe ſerve like ſinews to keep all the reſt firmly together, and are of great uſe where a wall happens to ſink more on one ſide than another. As the openings in a wall are all weakenings, and as the corners require to be the ſtrongeſt parts, there ſhould never be a window very near a corner. Properly, there ſhould always be the breadth of the opening firm to the corner. In the moſt perfect way of forming the diminution of walls, the middle of the thinneſt part being directly over the middle of the thickeſt, the whole is of a pyramidal form; but, where one ſide of the wall muſt be perpendicular and plain, it ought to be the inner, for the ſake of the floors and croſs walls. The diminiſhed ſide, in this caſe, may be covered with a faſcia or cornice, which will at once be a ſtrength and ornament.

In the conſtruction of walls, that of the chimneys muſt alſo be conſidered; for errors in theſe will render the moſt elegant building extremely diſagreeable. The common cauſes of ſmoking are either that the wind is too much let in above at the mouth of the ſhaft, or the ſmoke is ſtifled below; and ſometimes a higher building, or a great elevation of the ground, behind, is the ſource of the miſchief; or laſtly, the room in which the chimney is may be ſo ſmall or cloſe, that there is not a ſufficient current of air to drive up the ſmoke. Almoſt all that can be done, while the walls are conſtructing, to prevent ſmoke, is, to twiſt the flue, and make the chimney-vent narrower at bottom than at top: yet this muſt not be carried to an extreme; becauſe the ſmoke will then linger in the upper part, and all the force of the draught will not be able to ſend it up.

After the walls are finiſhed, the next object is the roof, the weight of which muſt be proportioned to the ſtrength of the walls. It muſt alſo be ſo contrived as to preſs equally upon the building; and the inner walls muſt bear their ſhare of the load as well as the outer ones. A roof ought neither to be too maſſy, nor too light; as being neceſſary for keeping the walls together by its preſſure, which it is incapable of doing while too light; and, if too heavy, it is in danger of throwing them down. Of theſe two extremes the laſt error is to be accounted the worſt.

With regard to the floors, they are moſt commonly made of wood; in which caſe, it will be neceſſary that it ſhould be well ſeaſoned, by being kept a conſiderable time before it is uſed. The floors of the ſame ſtory ſhould be all perfectly on a level, not even a threſhold riſing above the reſt; and, if in any part there is a room or cloſet whoſe floor is not perfectly level, it ought not to be left ſo, but raiſed to an equality with the reſt; what is wanting of the true floor being ſupplied by a falſe one.

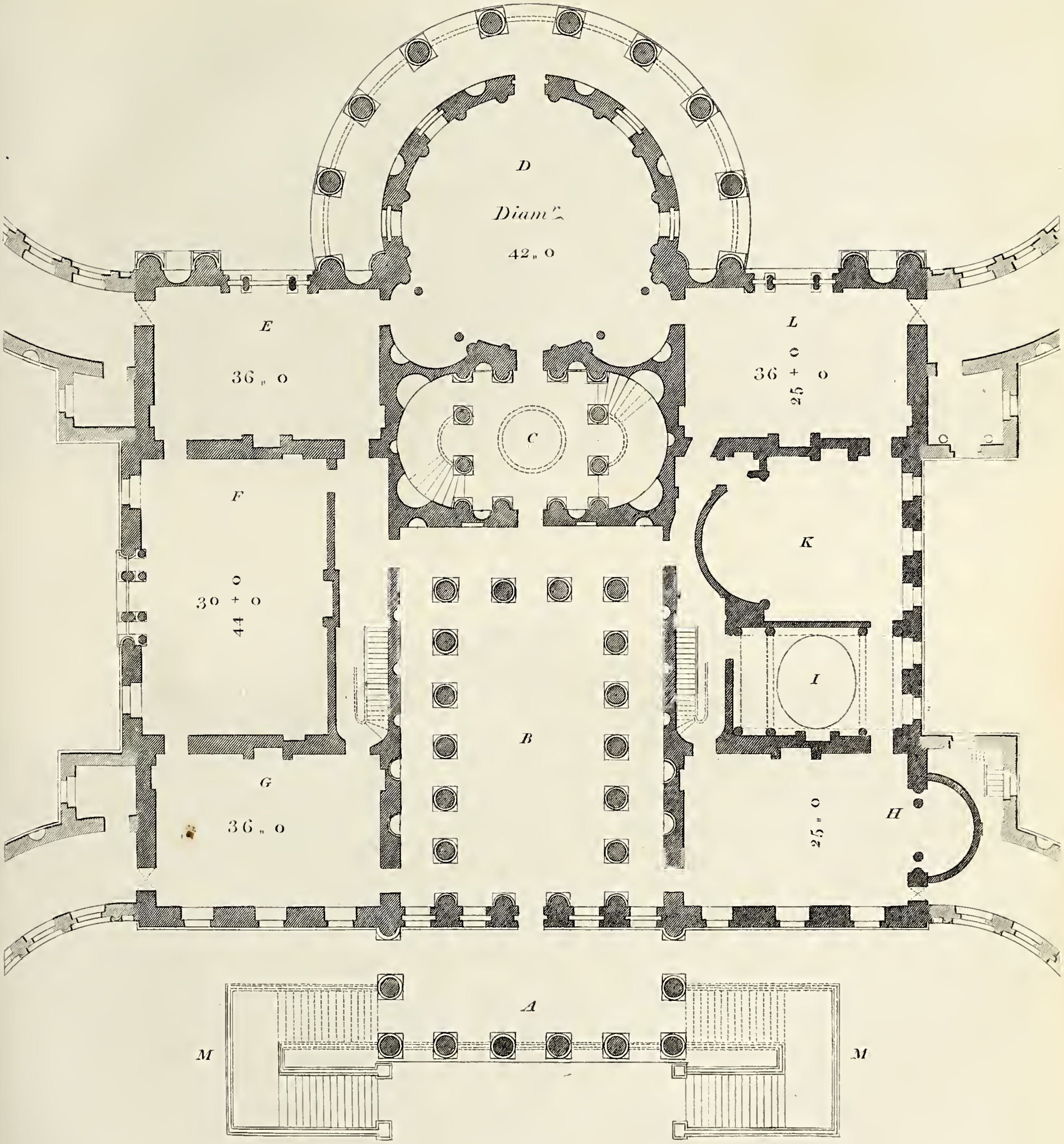
In mean houſes, the ground floors may be made of clay, ox-blood, and a moderate portion of ſharp ſand. Theſe three ingredients, beaten thoroughly together and well ſpread, make a firm good floor, and of a beautiful colour. In elegant houſes, the floors of this kind are made of plaſter of Paris, beaten and ſifted, and mixed with other ingredients. This may be coloured to any hue by the addition of proper ſubſtances; and, when well worked and laid, makes a very beautiful floor. Beſides theſe, halls, and ſome other ground-rooms, are paved or floored with marble or ſtone; and this either plain or dotted, or of a variety of colours: but the univerſal practice of carpeting has, in a great meaſure, ſet aſide the beſtowing any ornamental workmanſhip upon floors.

Manſion-houſes being generally erected to give ſtability to the comforts and conveniences of thoſe who are at the expence of building them, the diſtribution of the apartments, and the deſtination of the offices and inferior parts, together with the ornaments and ſtyle of finiſhing, muſt of courſe differ in a variety of reſpects, inaſmuch as they are neceſſarily adapted to the fortune, fancy, engagements, and way of life, of the proprietor. For this reaſon, as well as from the different opinions of builders, and the infinite variety of the ſubordinate parts in architecture, almoſt every new ſtructure is marked with its own peculiarities, which are objections to its becoming a model for other perſons to follow. Hence the difficulty of ſuggeſting plans and elevations of buildings, which may be ſuitable to the different views and purpoſes of individuals. We ſhall, however, by way of illuſtration, annex the plan, elevation, and ſection, of a manſion-houſe, in an elegant ſtyle of modern conſtruction; ſhewing how the ſame may be reduced to a more plain and ſimple edifice, or enlarged, to ſuit the magnificence and ſplendour of any nobleman.

The annexed Plate of Architecture, is the plan of the principal ſtory of a manſion-houſe; from which the baſement and attic ſtories might eaſily be conceived and added, according to the fancy of the architect, or the conveniencies required by thoſe who have occaſion to build. The preſent ſtructure is ſuppoſed to have two principal fronts, the one to the north, by which it is to be approached, the other to the ſouth, overlooking the beautiful lawns and pleaſure grounds. The common entrance is intended to be in the baſement ſtory, by an arcade, which leads to all the domeſtic offices of the family. The entrance into the principal ſtory is ſupported by the arcade, and is aſcended by a double flight of ſteps, marked MM, leading to an hexaſtyle portico of the Corinthian order, marked A; from thence we enter by a ſtately hall, decorated with fourteen whole, and four three-quarter, columns, which ſupport a coved ceiling highly enriched. From hence we approach the grand ſtaircaſe, marked C, which receives its light from above, and is enriched with a coved ceiling and domical ſky-light, with ſuitable ornaments; and from this ſtaircaſe we have immediate communication with all the principal apartments in the houſe. Paſſing on, we enter a circular withdrawing-room in the center of the ſouth front, forty-two feet in diameter, marked D, which is crowned with a dome, highly finiſhed and beautifully enriched. Returning from hence, on the right hand, we enter an apartment in the ſouth-eaſt corner, marked E, thirty-ſix feet by twenty-five, intended for the ſtate bed-room. In the center of the eaſt wing is the ſaloon, marked F, forty-four feet by thirty, ſuitably ornamented and enriched. In the north-eaſt corner is the library, marked G, thirty-ſix feet by twenty-five, in which niches for buſts and globes are intended between the compartments and book-caſes. From the library we croſs the hall to the north-weſt angle, where we enter the great dining-parlour, marked H, thirty-ſix feet by twenty-five, with the addition of a circular receſs for a ſideboard, ornamented with two columns of the Compoſite order. The ſide room marked I, is calculated to ſerve the purpoſe of conveniently placing the remove of the courſes, deſerts, &c. The room next adjoining, marked K, is intended for a breakfaſt or common dining parlour; and that marked L, in the ſouth-weſt angle, might be uſed as an inferior withdrawing-room, or common ſitting parlour for the family, being thirty-ſix feet by twenty-five. A common ſtaircaſe for ſervants, &c. is placed nearly in the center of each wing, on the external ſides of the great hall. The attic ſtory of this deſign is calculated for ſix beſt bed-chambers, excluſive of as many inferior ones.

The other Plate exhibits the elevation of the ſouth front of this noble manſion, with a ſection through the center of the great hall, the ſtaircaſe, and the withdrawing-room; whereby the coved ceiling, and manner of framing the roof over the ſame; together with the conſtruction of the domical ſky-light, and the dome, are all brought into view. The manner of compoſing doors and windows, with ſuitable enrichments for the internal and external finiſhings of a ſuperb edifice, might here likewiſe be ſeen; with the method of arranging and diſpoſing the ſeveral apartments. And let it here be noticed, that, in all buildings of this magnitude, the interior diſpoſition of the doors of communication from one room to another ſhould be ſituated in a right line from one angle to another on all ſides of the houſe. The advantages are theſe; that it contributes towards the regularity of the decoration, facilitates and ſhortens the paſſage through the apartments, and in ſummer, or on public occaſions, when the doors are ſet open, it produces a more ſalubrious circulation of air, and likewiſe gives a much more ſplendid appearance to the apartments, by expoſing at once to view the whole ſeries of rooms; which is more particularly ſtriking when the apartments are illu-

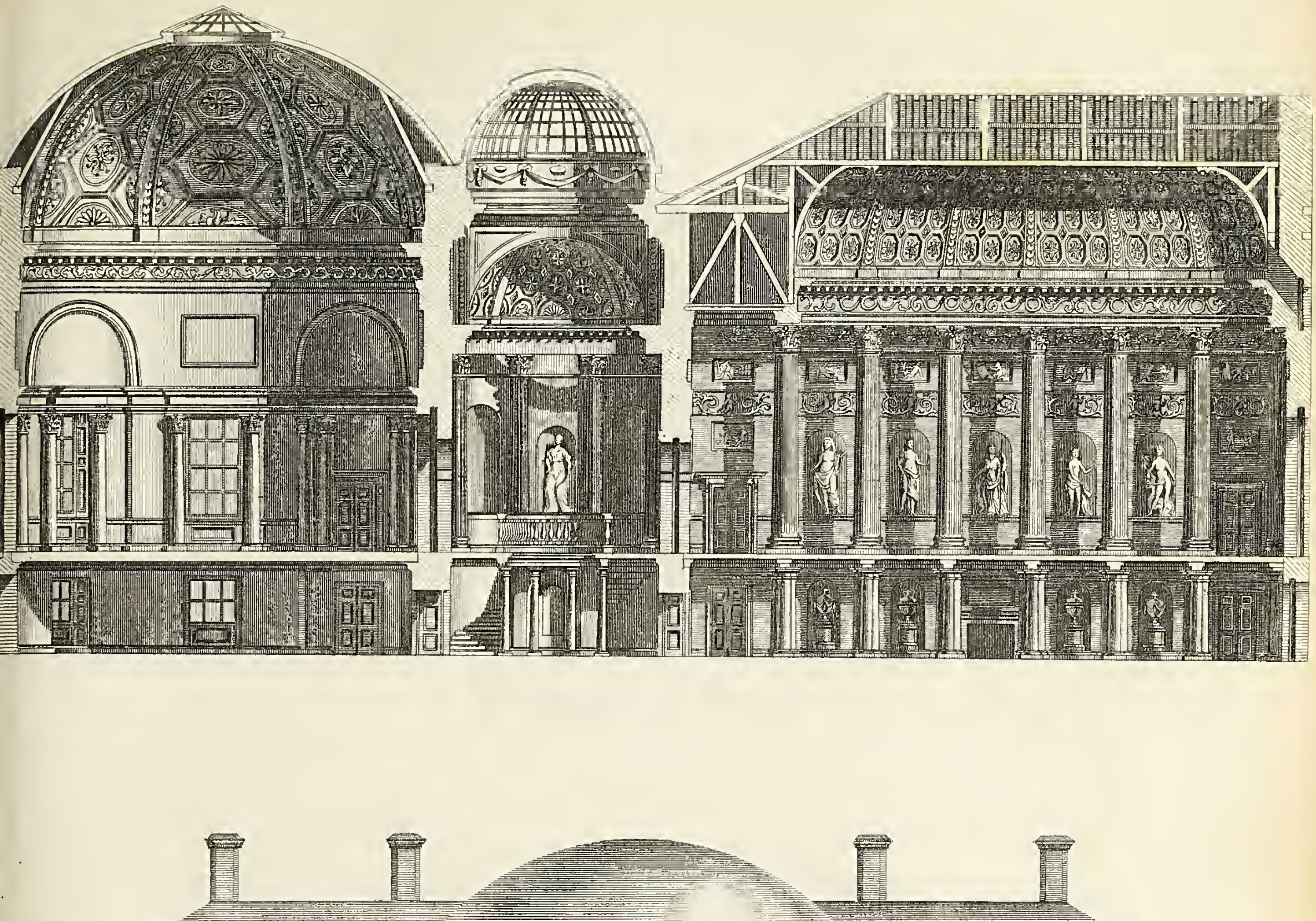
ARCHITECTURE.



J.Pass sculp^t

Plan of a Design for a Mansion House, in the Modern ſtyle.

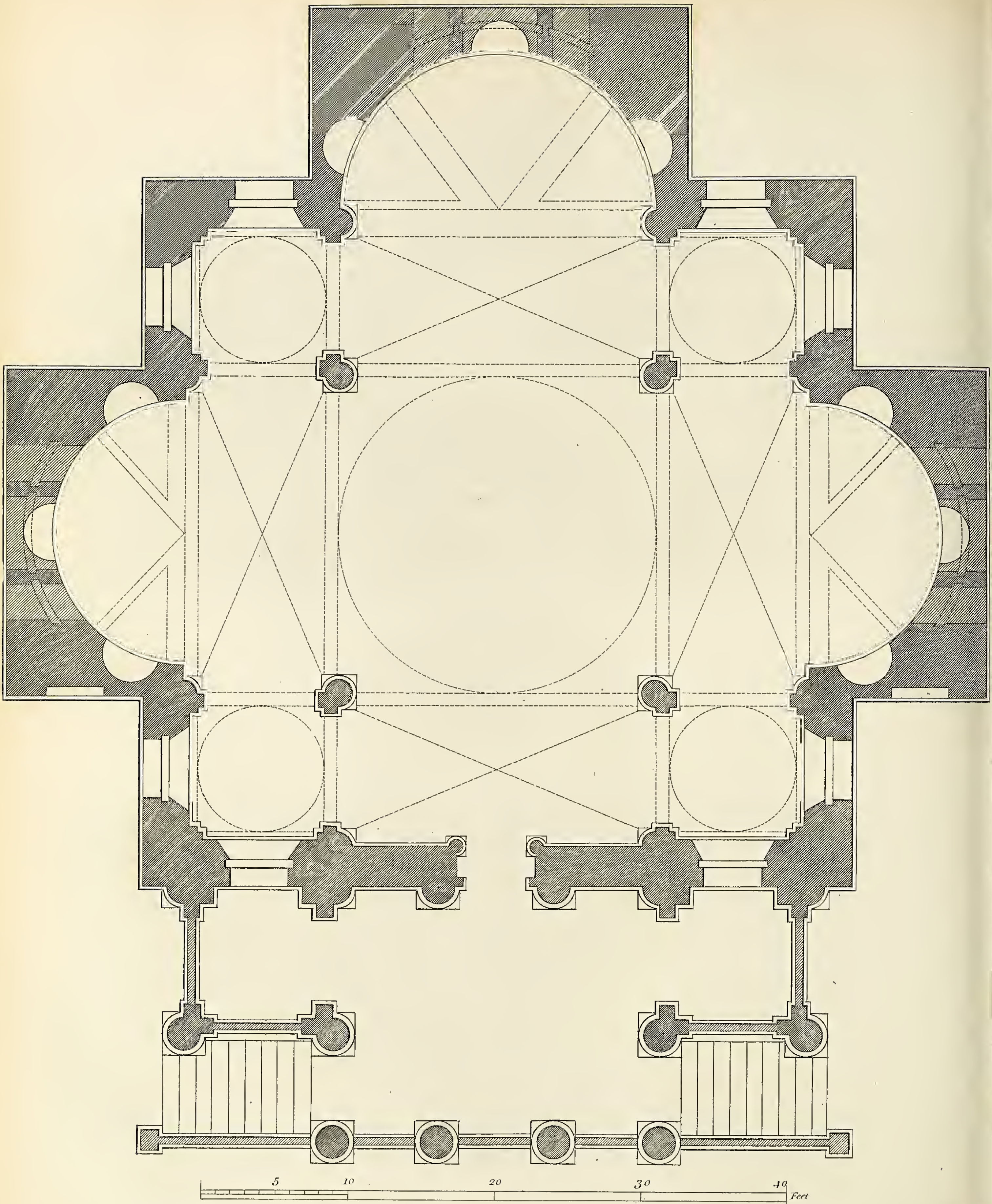
London Published as the Act directs, Oct. 28, 1797, by J.Wilkes.



J.Pass sculp.

Elevation and Section of the Design for a Mansion House.

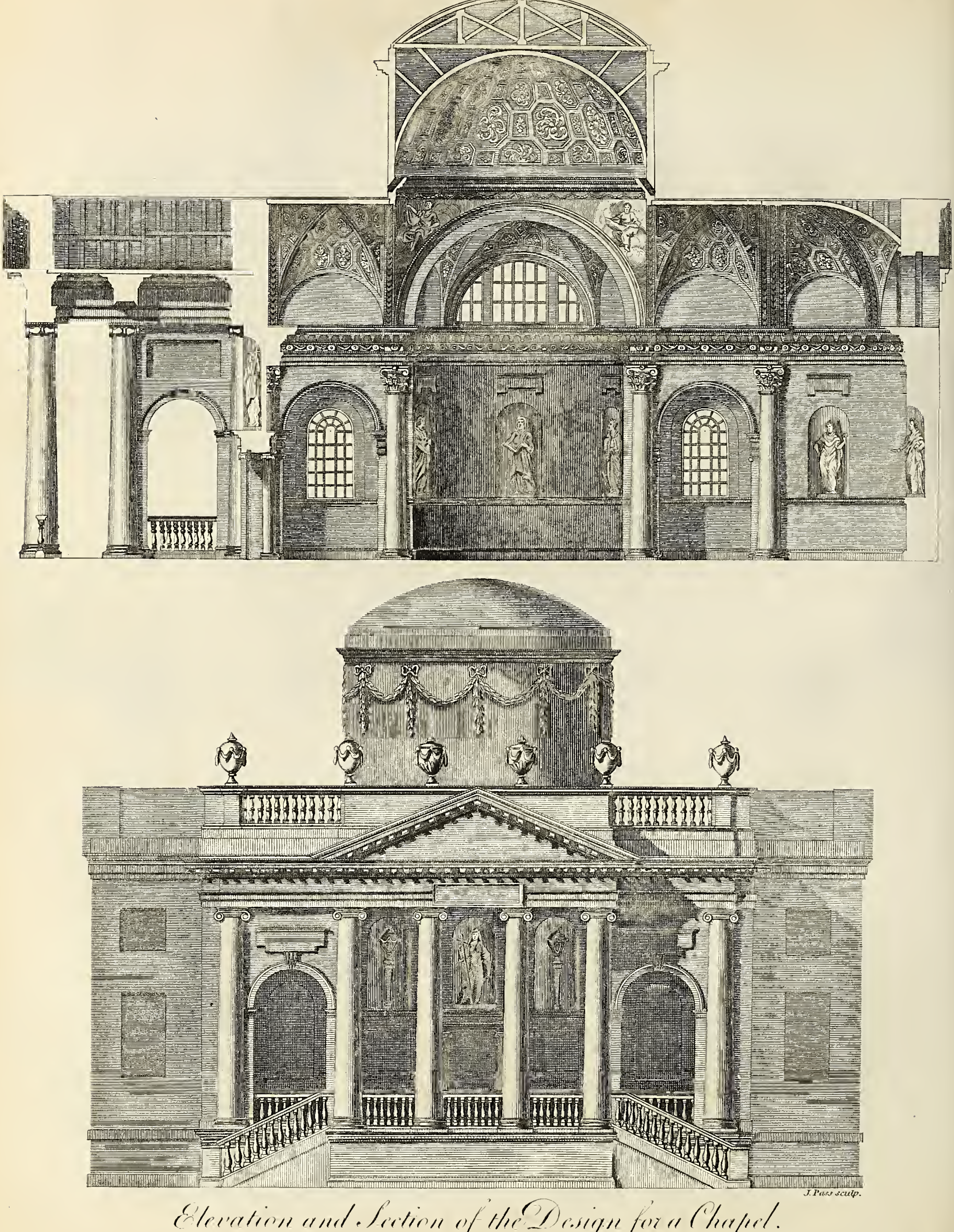
London. Publish'd as the Act directs, Sept.15.1797, by J.Wilkes.



Plan of a Design for a Chapel.

J. Pass sculp.

London Publish'd as the Act directs, Sept. 23. 1797, by J. Wilkes.



J. Pass sculp.

Elevation and Section of the Design for a Chapel.

London Published as the Act directs Nov. 4th 1797 by J. Wilkes.

minated, as will frequently happen in times of public entertainment, ſuch as birth-day balls, maſquerades, routs, or other rejoicings. There ſhould indeed be contrived, in the angles of the building, windows ſo ſituated, as directly to face the line of doors of communication, that ſo the view from end to end of every ſeries of apartments may be ſtill more extended, by taking in at once, not only the rooms, but likewiſe ſuch parts of the gardens, lawns, or other proſpects, as enrich the ſcite of the building. When windows cannot be thus contrived, it is adviſeable to place mirrors to terminate the view, at the end of each proſpect through the line of doors; or elſe to erect blind or counterfeit doors, and fill them with large plates of glaſs, or with ſaſhes and ſquares of looking-glaſs, which by reflection multiplies the number of objects, and makes a ſuite of apartments, though limited or ſmall, appear to conſiderable advantage.

We will now ſuppoſe it were the wiſh of any gentleman to erect a manſion-houſe upon this plan, but in a more ſimplified and leſs expenſive ſtyle; for this purpoſe it will only require to omit the colonades, the internal and external enrichments, the coved ceilings, the circular drawing-room and dome, the niches, ſtatues, and vaſes; by which ſeveral thouſand pounds would be ſaved, and yet a noble manſion-houſe might be erected, equally extenſive and commodious, and with more accommodations in the attic ſtory. Should a ſtill leſs expenſive edifice be required, but yet upon a grand ſcale, it is only to contract the plan, by reducing the ſize of the hall and ſtaircaſe, and all the ſurrounding apartments, to any dimenſions that might be deemed adequate to the purpoſes of the family intending to occupy the premiſes, and a further very conſiderable ſaving would be made, and yet the ſame number of rooms and the ſame conveniences would ſtill be retained. Again, ſuppoſe a country-houſe or villa were deſired, upon a reſpectable but economical plan, requiring accommodations and apartments to be erected, nearly ſimilar to the above; it would then only be neceſſary to omit the arcades in the baſement ſtory, to cloſe all the apertures horizontally, to contract the whole quadrangle of the building by omitting the central apartments, and narrowing the hall and ſtaircaſe, whereby four excellent rooms would be contained in the principal ſtory, to anſwer all the requiſites of a common breakfaſt or ſitting room, a large dining-parlour, an elegant withdrawing-room, and a commodious library or ſtudy; an apartment that ſhould be inſeparable from every country reſidence. The baſement ſtory would ſtill be ample for all the family offices, and the attic ſtory might furniſh ſix capital bed-rooms. A coach-houſe and ſtables, throughout all the gradations of this plan, with ſuitable lodging-rooms for ſervants of that claſs, are ſuppoſed to ſtand at a diſtance from the manſion, partially obſcured by plantations and ſhrubberies.

But ſuppoſe it be required to adapt this plan to a nobleman's family, or any other conſiſting of a large retinue; all that is requiſite will be, to retain the original extent of the ſtructure, either with, or without, the colonades, and other embelliſhments, as fancy or inclination might dictate, and to add detached wings to the principal front. By this means the baſement ſtory might furniſh ſeveral additional apartments, for the accommodation and convenience of the principals in the family; becauſe the kitchen and all the culinary offices would be removed into one of the detached wings, whilſt the laundry and other domeſtic conveniences might occupy the other; and both would contribute to ſupply lodging-rooms for all the upper and inferior orders of ſervants, as well as for ſtrangers and tradeſmen coming occaſionally on buſineſs. And ſhould it happen, as it frequently does, in buildings of this magnitude, or rather, for the accommodation of the noble founder thereof, that a private chapel is required, it would then add conſiderable magnificence and grandeur to the fabric, if detached wings were likewiſe added to the ſouth front, facing the pleaſure-grounds and lawn; in one of which a very elegant and commodious chapel might be erected, and in the other a billiard-room, by way of affording exerciſe and amuſement to the family in wet and dreary weather, when excurſions abroad cannot ſo well be taken, particularly by the ladies. A communication with each of theſe wings from the four angles of the manſion-houſe, ought to be by colonades, of ſuch extent and altitude as as the architect and proprietor of the building ſhall deem requiſite. The mode of adding theſe communicatiens are ſet off upon each angle in the plan; and the whole deſign of ſuch a ſtructure complete might be ſeen in the ſuperb work of the ingenious Mr. Paine, who intended it for the ſeat of the right honourable lord Scarſdale, in the county of Derby.

To the ſame eminent architect we are indebted for the annexed Plates of a Plan and Elevation of a Chapel, deſigned for the private uſe of a nobleman or gentleman, either in a detached wing, as recommended above, or in a diſtinct building; and it may be ſuited to the purpoſes of any individual in London, Bath, Briſtol, or elſewhere, who may have it in contemplation to erect a private chapel in an elegant ſtyle by ſubſcription. We have added theſe plans and elevations purpoſely to illuſtrate and embelliſh the *practical* part of modern architecture, the rapid progreſs of which, in this kingdom, only within the laſt fifty years, is perhaps without example in any age or country ſince the Romans. It is not only the magnificent ſtructures of London and Bath that excite our admiration, but the vaſt number of elegant ſeats and villas erected in every part of the country by the nobility and gentry; than which nothing can more clearly manifeſt the refined taſte, good ſenſe, and opulence, of a people, nor beget in the minds of foreigners and ſtrangers a deeper ſenſe of veneration and regard for the national character.

The greateſt ornaments, and completeſt models, of modern architecture in Great Britain, or perhaps in Europe, are generally admitted to be, Somerſet-place in the Strand, and St. Paul's cathedral; and, as they might juſtly be conſidered national ſpecimens of the "ſublime and beautiful in building," we think it incumbent upon us to deſcribe them here.

Somerſet-place is erected on the ſcite of old Somerſet-houſe, on the banks of the Thames. The front towards the Strand is but little more than one hundred and thirty feet long; and all that an architect could do in ſo ſmall a compaſs, and all that he ſeems to have wiſhed, was to produce an object that ſhould indicate ſomething more conſiderable within, and excite the ſpectator's curioſity to a nearer examination of the whole fabric, of which this is only one external part. His ſtyle, in conſequence, is bold, ſimple, and regular. It is an attempt to unite the chaſtity and order of the Venetian maſters with the majeſtic grandeur of the Roman. The parts are few, large, and diſtinct: the tranſitions ſudden, and ſtrongly marked. No breaks are ſeen in the general courſe of the plan, and little movement in the outline of the elevation; whence the whole ſtructure has acquired an air of conſequence, which few artiſts, in ſo narrow a limit, would have given it. This front conſiſts of a ruſtic baſement, ſupporting columns of the Corinthian order, crowned in the centre with an attic, and at the extremities with a balluſtrade. The baſement is compoſed of nine large arches, the three centre ones of which, being open, form the principal entrance; the others are filled with Doric windows, ornamented with pilaſters, entablatures, and pediments. The key-ſtones of the arches are adorned with nine maſks or heads, finely carved in alto relievo, deſcriptive of the ocean, and the following principal rivers of England; Thames, Severn, Humber, Merſey, Tyne, Medway, Dee, and Tweed; and to theſe maſks are added various emblematical devices, denoting the reſpective properties and peculiarities of each; and, as they are executed with much taſte and ſkill, they merit a particular deſcription.

Ocean is placed in the centre, and is repreſented by the venerable head of an old man, whoſe flowing beard reſembles waves, which are filled with various kinds of fiſh.

A

A creſcent is on his forehead, denoting the influence of the moon on its waters, and his temples are adorned with crowns, tridents, and other marks of royalty. Thames is on the right of Ocean; a majeſtic maſk, crowned with billing ſwans, and luxuriant garlands of fruits and flowers. The hair and beard are nicely dreſſed and plaited, and the features are expreſſive of good ſenſe, good humour, and every ſpecies of urban perfection. Humber is the next in order to the right of the centre; a ſtriking contraſt to the Thames. It is an athletic hardy countenance, with the beard and hair diſordered by the fury of tempeſts. The cheeks and eyes are ſwollen with rage, the mouth is open, and every feature diſtorted, expreſſive of the boiſterous intractable character of that river. Next are the Merſey and the Dee; one crowned with garlands of oak, the other with reeds, and divers aquatic productions. The four firſt of theſe are executed by Mr. Wilton, and the laſt by Signor Carlini.

The maſks which decorate the arches on the left ſide, are, firſt, the Medway; a head ſimilar to that of the Thames, but expreſſive of leſs urbanity, more negligently dreſſed, and bearing for emblems the prow of a ſhip of war, with feſtoons of hops, and ſuch fruits as enrich its banks. Tweed is next in order; a ruſtic maſk, with lank hair, a rough beard, and other marks of rural ſimplicity; yet hath the ingenious ſculptor artfully given it a character of ſagacity, valour, fortitude, and ſtrength. It is crowned with a garland of roſes and thiſtles. Theſe are by Mr. Wilton. Tyne and Severn are the remaining two. Tyne is a head-dreſs artfully compoſed of ſalmon, intermixed with kelp, and other ſea-weeds. Severn is a ſimilar head-dreſs, compoſed of ſedges and cornucopias, from whence flow abundant ſtreams of water, with lampreys and other fiſh that abound in that river. Theſe are by Signor Carlini.

The floor conſiſts of a principal, and a mezzanine; and before the windows of the building is a balluſtrade. They are beſides ornamented with Ionic pilaſters, entablatures, and pediments; and the three central ones have large tablets, covering the architrave and frize, on which appear medallions of the king, the queen, and the prince of Wales, ſupported by lions, and ornamented with garlands of myrtle, oak, and laurel. The windows of the mezzanine floor are only ſurrounded with architraves. The attic conſiſts of three diviſions, ſeparated by Coloſſal figures, placed above each of the columns. The figures repreſent four venerable ſtateſmen, in ſenatorial robes, each having on his head a cap of liberty, and in their hands they bear the emblems of ſtrength and power, derived from unanimity, and maintained by juſtice, prudence, moderation, and valour. The attic is crowned with a group, conſiſting of the imperial arms of the kingdoms, one ſide of which is ſupported by the Genius of England, and the other by Fame, ſounding her trumpet.

The front of this building, towards the principal court, is conſiderably longer than that towards the Strand, being near two hundred feet in extent. The centre of this front is alſo better diſtinguiſhed than that towards the Strand: it exhibits a plainneſs and repoſe, whereon the eye may reſt with pleaſure, as on a principal. It is compoſed of a *corps de logis*, with two projecting wings: the ſtyle of decoration is however nearly the ſame; the principal variation conſiſting in the doors, windows, or ſmaller parts, which are of other forms, and of different dimenſions. The five maſks on the key-ſtones of the arches repreſent tutelar deities of the place, executed by Mr. Nollekens. Near this front are two ſunken courts, ſurrounded with elegant arcades, ſerving to give light to the baſement ſtory of the royal academy, the royal ſociety, and the rooms wherein are depoſited the national records. In the middle of each of theſe courts is a reſervoir of water, for the purpoſe of ſerving the apartments below, and to be ready in caſe of fire. They are ſupplied from the New River.

The buildings towards the court form three ſides of a ſquare; the ſtyle of architecture, and the decorations of the wings, differing in form and dimenſions. The ſtatues of the attic repreſent America breathing defiance, with the three other quarters of the globe loaded with fruits and other tributary treaſures; and theſe are crowned with the Britiſh arms on a cartel, ſurrounded with ſea-weeds, ſupported by Tritons armed with tridents, and holding nets containing fiſh and other maritime productions.

This truly magnificent building is conſtructed for the purpoſe of tranſacting the buſineſs of ſeveral of his majeſty's public offices, viz. the privy-ſeal and ſignet, the navy, navy-pay, victualling, ſick and wounded, ordnance, ſtamp, lottery, ſalt-tax, hackney-coach, hawkers and pedlars, the ſurveyor general of crown lands, the duchies of Cornwall and Lancaſter, the two auditors of impreſts, the pipe, comptroller of pipe, clerk of the eſtreats, and treaſurer's remembrancers. Here are houſes for the treaſurer, the pay-maſter, and ſix commiſſioners, of the navy. Alſo for three commiſſioners of the victualling, and their ſecretary; for one commiſſioner of the ſtamps, and one of the ſick and wounded; and other apartments for inferior officers.

That part of the edifice which fronts the Strand is in poſſeſſion of the royal ſociety, the antiquarian ſociety, and the royal academy of artiſts; and here the annual exhibition of paintings and ſculpture is held. Theſe reſpectable bodies are alſo accommodated with halls and apartments for their libraries, models, &c. with rooms for their officers, and every other requiſite which their national conſequence could demand from an enlightened and liberal government.

The buildings which contain the above-mentioned public offices form the principal court. They are grand, elegant, and lofty, of great extent, and ſtrikingly indicate an exertion of great inventive faculties in the architect, Sir William Chambers; while the general diſpoſition affords a pleaſing ſatisfaction. The front towards the Thames is truly magnificent; it is finiſhed with a noble terrace, with a balluſtrade towards the river, and an extenſive gravel-way for carriages to go all round the external fronts of the whole building.

The next noble ſtructure, which does honour to the national character, as well as to the cauſe of religion, is the cathedral church of St. Paul. This amazing edifice is ſituated upon a riſing ground, between the entrances of Cheapſide and Ludgate-ſtreet, in the very centre of the city of London, and upon the ſcite of the old cathedral, which was burnt to the ground in the general conflagration of 1666. Sir Chriſtopher Wren was the architect; and he was deſired to prepare the plan of a new fabric, that ſhould excel every building in the univerſe for magnificence and ſplendour. To give effect to the execution of ſo grand a deſign, the chamber of London was made an office for the receipt of contributions to defray the expences; into which, in ten years only, was paid the ſum of 126,000l. Charles II. generouſly gave a thouſand pounds a year out of his privy-purſe, beſides a duty on coals, which produced 5000l. a year, over and above all other grants in its favour. Sir Chriſtopher prepared a deſign well ſtudied and truly magnificent, conformable to the beſt ſtyle of the Greek and Roman architecture, which all approved except the biſhops, who thought it not ſufficiently laid out in the cathedral faſhion. The deſign was therefore varied in many reſpects, until the plan of the preſent mighty ſtructure, which is in the form of a long croſs, was unanimouſly approved; ſoon after which the building was put in hand, and the firſt ſtone was laid by Sir Chriſtopher himſelf, on the 21ſt of June, 1675.

The foundations being laid, Portland ſtone was choſen to complete the ſuperſtructure. The walls are wrought in ruſtic, and ſtrengthened, as well as adorned, by two rows of double pilaſters, one over the other; the lower of the Corinthian order, and the upper of the Compoſite. The ſpaces between the arches of the windows and the architrave of the lower order, are filled with a great variety of grand enrichments, as are alſo thoſe above. The weſt front, towards Ludgate-ſtreet, has a moſt noble appearance, and is ornamented with a magnificent portico, a grand pediment, and two ſtately turrets. The aſcent is by a beautiful flight of ſteps, of black marble, that extends the whole length of the portico, which is formed of twelve lofty Corinthian columns below, and eight of the Compoſite order above: theſe are all coupled and fluted. The upper ſeries ſupport a noble pediment, crowned with its acroteria, in which is a beautiful repreſentation, in baſs-relief, of the converſion of St. Paul, executed in a very maſterly manner. The magnificent figure of St. Paul on the apex of the pediment, with St. Peter on his right hand, and St. James on his left, have alſo a fine effect. The four evangeliſts, with their proper emblems, on the front of the towers, are judiciouſly diſpoſed and well executed. St. Matthew is diſtinguiſhed by an angel, St. Mark by a lion, St. Luke by an ox, and St. John by an eagle. In the area of this front, on a pedeſtal of excellent workmanſhip, is the ſtatue of queen Anne, formed of white marble, with proper decorations. The figures on the baſe repreſent Britannia with her ſpear, Gallia with a crown, Hibernia with a harp, and America with a bow. On aſcending the ſteps, we approach the interior of the church by three doors, ornamented on the top with baſs-relief: the middle door, which is by far the largeſt, is caſed with white marble, and over it is a fine piece of baſſo-relievo, in which St. Paul is repreſented preaching to the Bereans. To the north portico there is an aſcent by ſeventeen circular ſteps of black marble; and it has a dome, ſupported by ſix large fluted columns of the Corinthian order, forty-eight inches in diameter. Beneath the upper part of its dome, is a large and well-proportioned urn, finely ornamented with feſtoons, and over it a pediment, ſupported by pilaſters in the walls, in the front of which is carved the royal arms, with the regalia, ſupported by angels; and on the top, at proper diſtances, are placed the ſtatues of five of the apoſtles. The ſouth portico anſwers in uniformity to the north, and has a dome ſupported by ſix beautiful Corinthian columns; but, as the ground is conſiderably lower on this than on the other ſide of the church, the aſcent is by a flight of twenty-five ſteps. This portico has alſo a pediment above, in which is a phœnix riſing out of the flames, with the motto *Reſurgam,* underneath it, as being emblematical of the preſent cathedral's riſing out of the fire of London. On this ſide of the building are alſo five ſtatues, which take their ſituation from that of St. Andrew, on the apex of the laſt-mentioned pediment. At the eaſt end of the church is a ſweep, or circular projection, for the altar, finely ornamented with a great variety of the orders, and decorated with ſculpture.

The dome, that great maſter-piece of claſſical architecture, which riſes in the centre of the whole fabric, appears exceedingly grand; twenty-five feet above the roof of the church, is a circular range of thirty-two columns, with niches placed exactly againſt others within; theſe are terminated by their entablature, which ſupports a handſome gallery, adorned with a balluſtrade; above theſe columns is a range of pilaſters, with windows between, and from the entablature of thoſe the diameter decreaſes very conſiderably, and two feet above that it is again contracted. From this part the external ſweep of the dome begins, and the arches meet at fifty-two feet above: on the top of the dome is an elegant balcony, and from its centre riſes the lantern, adorned with Corinthian columns; and the whole is terminated by a ball, on which ſtands a croſs, both of which are elegantly gilt. When theſe parts are viewed from below, they greatly deceive the eye of the beholder, on account of their great height, as they appear exceeding ſmall in compariſon with their real ſize, which is amazingly large.

This extenſive fabric is ſurrounded, at a proper diſtance, by a dwarf ſtone wall, on which is placed the moſt magnificent balluſtrade of caſt iron, perhaps in the univerſe, of about five feet ſix inches in height, excluſive of the wall. In this incloſure are ſeven beautiful iron gates, which, together with the balluſtrades, in number about 2500, weigh 200 tons and 81lb. which having coſt 6d. per pound, the whole, with other charges, amounted to 11,202l. 0s. 6d. The total coſt of the whole fabric, even in thoſe cheap times, was 736,752l. 2s. 3¼d.

On entering at the weſtern door, the mind is ſtruck by the grandeur of the viſta: an arcade ſupported by maſſy and lofty pillars on each ſide, divide the church into the body and two ailes, and the view is terminated by the upper extremity of the choir; though it is in ſome meaſure obſtructed by the organ. The pillars are adorned with columns and pilaſters of the Corinthian and Compoſite orders, and the arches of the roof are enriched with ſhields, feſtoons, chaplets, and other ornaments. Its dimenſions are as follow:

The PLAN, or LENGTH and BREADTH.	Feet.
Whole length of the church and porch	500
Whole length of the croſs	250
Breadth of the front with the turrets	180
Breadth of the front without the turrets	110
Breadth of the church and three naves	130
Breadth of the church and wideſt chapels	180
Length of the porch within	50
Breadth of the porch within	20
Length of the platea at the upper ſteps	100
Breadth of the nave at the door	40
Breadth of the nave at the third pillar, and tribuna	40
Breadth of the ſide-ailes	17
Diſtance between the pillars of the nave	25
Breadth of the ſame, ſingle pillars	10
Two right ſides of the great pilaſters of the cupola	25·35
Diſtance between the ſame pilaſters	40
Outward diameter of the cupola	145
Inward diameter of the ſame	100
Breadth of the ſquare by the cupola	43
Length of the ſame	328
From the door within to the cupola	190
From the cupola to the end of the tribuna	170
Breadth of each of the turrets	35
Outward diameter of the lantern	18
Whole ſpace upon which one pillar ſtands	875
Whole ſpace upon which all the pillars ſtand	7000

The ELEVATION.

From the ground without to the top of the croſs	340
The turrets	222
To the top of the higheſt ſtatutes on the front	135
The firſt pillars of the Corinthian order	33
The breadth of the ſame	4
Their baſis and pedeſtals	13
Their capital	5
The architrave, frieze, and cornice	10
The Compoſite pillars at St. Paul's	25
The ornaments of the ſame pillars above and below	16
The ball in height	8
The croſs, pedeſtal, and baſe	29
The triangle of the mezzo relievo, with its cornice	18
Width	74
The baſis of the cupola to the pedeſtals of the pillars	38
The pillars of the cupola	28
Their baſis and pedeſtals	5
Their capitals, architrave, frieze, and cornice	12
From the cornice to the outward ſlope of the cupola	40
The lantern from the cupola to the ball	50
The ſtatues upon the front, with their pedeſtals	15
The outward ſlope of the cupola	50
The cupola and lantern, from the cornice of the front to top of the croſs	240
The height of the niches in the front	14
Width	5
The firſt windows in the front	13
Width	7

The extent of the ground-plot, on which the building ſtands, is two acres, ſixteen perches, twenty-three yards, and one foot.

All the floor of the church and choir, to the altar, is paved with marble; the altar is paved with porphyry, poliſhed, and laid in ſeveral geometrical figures. The vaulting of the roof is hemiſpherical, conſiſting of twenty-four cupolas, cut off ſemicircular, with ſegments to join to the great arches one way, and the other way they are cut acroſs with elliptical cylinders, to let in the upper lights of the nave; but in the ailes, the leſſer cupolas are cut both ways in ſemicircular ſections, and altogether produce a graceful geometrical effect, diſtinguiſhed with circular wreaths, which is the horizontal ſection of the cupola. The arches and wreaths are of ſtone, carved; the ſpandrels between are of ſound brick, inveſted with ſtucco of cockle-ſhell lime, which becomes as hard as Portland-ſtone; and which, having large planes between the ſtone-ribs, are capable of further ornaments of painting, if required. Beſides theſe twenty-four cupolas, there is a half-cupola at the eaſt, and the great cupola of 108 feet diameter in the middle of the croſſing of the great ailes; it is extant out of the wall, and is illumined by the windows of the upper order, which ſtrike down the light through the great colonnade that encircles the dome without, and ſerves for the butment of the dome, which is brick, of two bricks thick; but, as it riſes every way five feet high, it has a courſe of excellent brick of eighteen inches long, bending through the whole thickneſs; and, to make it ſtill more ſecure, it is ſurrounded with a vaſt chain of iron, ſtrongly linked together at every ten feet: this chain is let into a channel cut into the bandage of Portland ſtone, and defended from the weather by filling the groove with lead. Over the firſt cupola is raiſed another ſtructure of a cone of bricks, ſo built as to ſupport a ſtone lantern of an elegant figure, and ending in ornaments of copper, gilt; the whole church above the vaulting being covered with a ſubſtantial oaken roof and lead, ſo this cone is covered and hid out of ſight by another cupola of timber and lead; between which and the cone are eaſy ſtairs, which aſcend to the lantern. The contrivance here is aſtoniſhing. The light to theſe ſtairs is from the lantern above.

The inſide of the dome is painted and richly decorated, by that eminent Engliſh artiſt Sir James Thornhill, who, in eight compartments, has repreſented the principal paſſages in the hiſtory of St. Paul's life; namely, his converſion; his puniſhing Elymas the ſorcerer with blindneſs; his preaching at Athens; his curing the poor cripple at Lyſtra, and the reverence there paid him by the prieſts of Jupiter as a god; his converſion of the gaoler; his preaching at Epheſus, and the burning the magic books in conſequence of the miracles he there wrought; his trial before Agrippa; his ſhipwreck on the iſland of Melita, or Malta, and his miracle of the viper.

The higheſt or laſt ſtone, on the top of the lantern, was laid by the hands of Chriſtopher Wren, the ſurveyor's ſon, in the year 1710. Thus was this mighty fabric, lofty enough to be diſcerned at ſea eaſtward, at Windſor weſtward, in the ſpace of thirty-five years, begun and finiſhed by one architect, and under one biſhop of London, Dr. Henry Compton. Whereas St. Peter's at Rome, the only edifice that can come in competition with it, continued in building 145 years, under twelve ſucceſſive architects, aſſiſted by the police and intereſts of the Roman ſee; attended by the beſt artiſts of the world in ſculpture, ſtatuary, painting, and moſaic work, and facilitated by the ready acquiſition of marble from the neighbouring quarries of Tivoli.

This grand cathedral, thus finiſhed, as an excellent author obſerves, "is undoubtedly one of the moſt magnificent modern buildings in Europe; all the parts of which it is compoſed are ſuperlatively beautiful and noble. The north and ſouth fronts in particular are very perfect pieces of architecture; neither ought the eaſt to go without due applauſe. The two ſpires at the weſt end are in a finiſhed taſte; and the portico with the aſcent, and the dome that riſes in the centre of the whole, afford a very auguſt and ſurpriſing proſpect." In ſhort, in ſurveying this ſtupendous monument of our country's genius, the imagination is filled with a lofty kind of admiration, which no building of leſs majeſty and grandeur could poſſibly excite.

The favourite deſign of Sir Chriſtopher himſelf, however, though it was not adopted, would in many reſpects have excelled the preſent ſtructure. He had intended a very rich baldaquino for the altar, ſimilar to that of St. Peter's at Rome; Dr. Compton had even ſent for the marbles for its compoſition; but, as they were defective, Sir Chriſtopher would not uſe them, and the deſign was given up. He wiſhed the dome to have been painted in moſaic, on account of its durability; and to have filled up the piers with ſtone inſtead of rubble; but this alſo was oppoſed.

The preſent liberal chapter of this cathedral having admitted ſculpture into it without fees, in the monuments of Dr. Johnſon and Mr. Howard, it is to be hoped that the illuſtrious architect of the fabric itſelf will yet partake of the honour of a ſtatue in his own church; and that the ſacred building of St. Paul's will become the Britiſh Temple of Fame; particularly ſince Weſtminſter-abbey is ſo crouded with monuments, that the late Sir Joſhua Reynolds could not find a proper place for the ſtatue of his learned friend Dr. Johnſon. The fine effect of decorations on the interior of St. Paul's, was ſhewn in one of the deſigns of Sir Chriſtopher; which, with all his other plans and elevations, are in the library of All Souls college, in Oxford, and conſiſt of ſeveral volumes. Many of them are intereſting, and deſerve to be engraved. That learned and wealthy ſociety, perhaps, will ſome day or other, with the liberality of gentlemen and of ſcholars, give them in that form to the public. Though the perſpective of St. Paul's hath undoubtedly a fine effect from its principal entrance, yet to enlarge the proſpect, and give awe and harmony to the view, the immenſe organ that croſſes the front of the choir ſhould be placed on one ſide, as is done at Wincheſter, and painted glaſs ſhould be introduced into the eaſt window, to over-ſhadow the choir with the majeſty of that "dim religious light," which adds ſo much to the ſolemnity of the cathedral ſervice.

Sir Chriſtopher uſed to tell his friends, with ſingular pleaſure and ſatisfaction, that juſt as he began the building of St. Paul's, he ordered one of the workmen to bring him a ſtone, for ſome temporary purpoſe; the man accidentally took up the piece of an old grave-ſtone, which he carried to him, and upon which was inſcribed RESURGAM, *I ſhall riſe again.* This he conſidered as a lucky omen, portending that he ſhould live to ſee the edifice completed; and to this accident is attributed the Phœnix, with this motto, in the pediment over the ſouth entrance.

When Sir Chriſtopher built the church of St. Dunſtan's in the Eaſt, the nobleſt monument of his geometrical ſkill, he had moſt certainly in his eye the High-church of Edinburgh, and St. Nicholas's church at Newcaſtle-upon-Tyne. His towers that adorn the front of Weſtminſter-abbey, were taken from thoſe of Beverley minſter in Yorkſhire. This great architect intended a ſpire for the middle of the church, but he gave it up, from an apprehenſion that the ſtrength of the fabric was not ſufficient to bear its weight.

Of AQUATIC BUILDINGS.

Of all aquatic works, bridges are confeſſedly the moſt intereſting and important, whether conſtructed of wood or ſtone; but the laſt, being evidently the ſtrongeſt and moſt durable, ſhould in all caſes be preferred, where the means of erecting them can be amply provided for and borne. Bridges are commonly very difficult to execute, on account of the inconvenience of laying foundations and walling under water. The earlieſt rules and inſtructions for building of bridges are given by Alberti, in his Archit. i. 8. Other rules were afterwards laid down by Palladio, Serlio, and Scamozzi, which are collected by Blondel, in his *Cours d'Archit.* p. 629. The beſt of theſe rules were alſo given by Goldman, Baukhurſt, and in Hawkeſmoor's Hiſtory of London-bridge. M. Gautier has written expreſsly on bridges; ſo alſo hath Riou, Emerſon, Muller, Labelye, &c.

The conditions required in a bridge are, that it be well deſigned, commodious, durable, and ſuitably decorated. It ſhould be of ſuch a height as to be quite convenient for the paſſage over it, and yet eaſily admitting through its arches the veſſels that navigate upon it, and all the water, even at high tides and floods: the neglect of this precept has been the ruin of many bridges. Bridges are commonly continued in a direction perpendicular to the ſtream; though ſome think they ſhould be made convex towards the ſtream, the better to reſiſt floods, &c. And bridges of this ſort have been executed in ſome places, as Pont St. Eſprit near Lyons. Again, a bridge ſhould not be made in too narrow a part of a navigable river, or one ſubject to tides or floods: becauſe, the breadth being ſtill more contracted by the building, it will increaſe the depth, velocity, and fall, of the water under the arches, and endanger the whole bridge and navigation. There ought to be an uneven number of arches, or an even number of piers; both that the middle of the ſtream or chief current may flow freely without the interruption of a pier; and that the two halves of the bridge, by gradually riſing from the ends to the middle, may there meet in the higheſt and largeſt arch; and alſo, that, by being open in the middle, the eye in viewing it may look directly through. This is indeed founded, not merely on the principles of beauty, but of philoſophy and reaſon; ſince, in general, it is found, that the ſtrongeſt current runs in the centre of a river, which the more readily clears itſelf in the aperture of a bold arch, and renders floods and ſpring-tides leſs injurious to the whole fabric. When the middle and ends are of different heights, their difference however ought not to be great in proportion to the length, that the aſcent and deſcent may be eaſy; and in that caſe alſo it is more beautiful to make the top in one continued curve, than two ſtraight lines forming an angle in the middle. Bridges ſhould rather be of few and large arches, than of many ſmaller ones, if the height and ſituation will poſſibly allow of it; for this will leave more free paſſage for the water and navigation, and be a great ſaving in materials and labour, as there will be fewer piers and centres, and the arches, &c. will require leſs materials; a remarkable inſtance of which appears in the difference between the bridges of Weſtminſter and Blackfriars, the expence of the former being more than double the latter.

For the proper execution of a bridge, and making an eſtimate of the expence, &c. it is neceſſary to have three plans, three ſections, and an elevation. The three plans are ſo many horizontal ſections, viz. firſt a plan of the foundation under the piers, with the particular circumſtances attending it, whether of gratings, planks, piles, &c. the ſecond is the plan of the piers and arches; and the third is the plan of the ſuperſtructure, with the paved road and banquette. The three ſections are vertical ones: the firſt of them a longitudinal ſection from end to end of the bridge, and through the middle of the breadth; the ſecond a tranſverſe one, or acroſs it, and through the ſummit of an arch; and the third alſo acroſs, but taken upon a pier. The elevation is an orthographic projection of one ſide or face of the bridge, or its appearance as viewed at a diſtance, ſhewing the exterior aſpect of the materials, with the manner in which they are diſpoſed, &c.

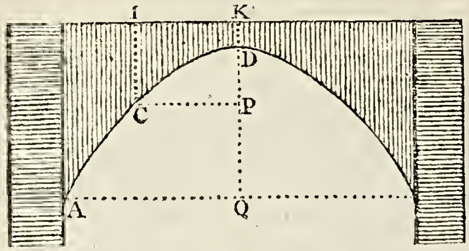
When bridges form the entrance to or from the principal ſtreet of a capital city, their conſtruction is generally attended with great expence, and a degree of elegance and durability is required in their formation, that calls for the utmoſt ſkill and ingenuity of the architect. Palladio, in this caſe, tells us, that bridges ought to have the ſame qualifications that are judged neceſſary in all other buildings, namely, that they ſhould be convenient, beautiful, and laſting. The perfection of a bridge, therefore, conſiſts in its having a good foundation, which makes it laſting; an eaſy aſcent, which makes it convenient; and a juſt proportion in its ſeveral parts, which renders it beautiful. In erecting ſtone-bridges, therefore, there are ſeveral requiſites which peculiarly demand our attention. In the firſt place, the butments not only receive the preſſure of the arches, with which they are connected, but they muſt be capable of reſiſting in ſome meaſure the force of the whole combined. Hence the neceſſity of a ſolid foundation at the oppoſite ſides of the river, without which the ſeveral arches will be liable at leaſt to partial rents. The direction of the whole ſtructure ought always to be at right angles with the current; and the ſize of the piers ought not to be larger than what is eſſentially requiſite to the ſupport of the arches; for the unneceſſary thickneſs of piers has the effect of contracting the current of the water, which, as we obſerved before, increaſes its velocity, and renders the foundation of each pier more liable to be undermined. Laſtly, we are to decide on the number and figure of the arches, which are points of great conſequence to the whole, in relation to ſtrength, uſefulneſs, beauty, and economy.

In the choice of arches, we find great difference of opinion among different architects. Some contend, that the ſemicircular arch is in moſt caſes to be preferred, becauſe they preſs more perpendicularly on their piers, and in proportion to their number will relieve the butments. Others prefer the elliptical arch, particularly where they are to be large, and few in number; becauſe the extenſive radius of the ſemicircular arch would occaſion the centre of the bridge to be ſo high as to render the paſſage of carriages exceedingly troubleſome, an objection which is completely obviated by the elliptical form, whoſe elevation is conſiderably below that of a ſemicircle; and Mr. Muller contends, "that the elliptical arch does not preſs againſt the piers with a greater force than a circular one; and, being lighter, and conſtructed with leſs materials, will conſequently be more laſting." There are others, however, who prefer the catenarian arch to all others, for the purpoſe of bridges. Mr. Emerſon, in his Principles of Mechanics, inſiſts, "that it is the ſtrongeſt arch poſſible to be made, for ſupporting a great weight." This is again contradicted by Dr. Hutton, profeſſor of mathematics in the Royal Academy at Woolwich, who is the lateſt writer on the ſubject; and, as the ſtrength and ſolidity of a bridge muſt unqueſtionably depend on mathematical principles, we ſhall here give Dr. Hutton's opinion in his own words:

"For the figure of the arches, ſome prefer the ſemicircle, though perhaps without knowing any good reaſon why; others the elliptical form, as having many advantages over the ſemicircular; and ſome talk of the catenarian arch, though its pretended advantages are only chimerical; but the arch of equilibration is the only perfect one adapted to the principles of bridges. This arch, being in exact equilibrium in all its parts, and having no tendency to break in one part more than in another, is therefore the ſafeſt and ſtrongeſt. Every particular figure of the extrados, or upper ſide of the wall above an arch, requires a peculiar curve for the under ſide of the arch itſelf, to form an arch of equilibration, ſo that the incumbent preſſure on every part may be proportional to the ſtrength or reſiſtance there. When the arch is equally thick throughout, a caſe that can hardly ever happen, then the catenarian curve is an arch of equilibration; but in no other caſe: and therefore it is a great miſtake in ſome authors to ſuppoſe that this curve is the beſt figure for arches in all caſes; when in reality it is commonly the worſt. Whenever the upper ſide of the wall is a ſtraight horizontal line, as in the following figure, the equation of the curve is thus expreſſed,

$$y = h \times \frac{\text{log. of } \dfrac{a + x + \sqrt{2ax + xx}}{a}}{\text{log. of } \dfrac{a + r + \sqrt{2ar + rr}}{a}};$$

where $x = \text{DP}$, $y = \text{PC}$, $r = \text{DQ}$, $h = \text{AQ}$, and $a = \text{DK}$. And hence, when a, h, r, are any given numbers, a table is formed for the correſponding values of x and y, by which the curve is conſtructed for any particular occaſion. Thus,



ſuppoſing a or $DK=6$, h or $AQ=50$, and r or $DQ=40$; then the correſponding values of KI and IC, or horizontal and vertical lines, will be as in this Table:

Table for conſtructing the Curve of Equilibration.

Value of KI.	Value of IC.	Value of KI.	Value of IC.	Value of KI.	Value of IC.
0	6·000	21	10·381	36	21·774
2	6·035	22	10·858	37	22·948
4	6·144	23	11·368	38	24·190
6	6·324	24	11·911	39	25·505
8	6·580	25	12·489	40	26·894
10	6·914	26	13·106	41	28·364
12	7·330	27	13·761	42	29·919
13	7·571	28	14·457	43	31·563
14	7·834	29	15·196	44	33·299
15	8·120	30	15·980	45	35·135
16	8·430	31	16·811	46	37·075
17	8·766	32	17·693	47	39·126
18	9·168	33	18·627	48	41·293
19	9·517	34	19·617	49	43·581
20	9·934	35	20·665	50	46·000

"Among all the arches there is no one, except the mechanical curve of the arch of equilibration, that can admit of a horizontal line at top: yet this arch is of a form both graceful and convenient, and it may be made higher or lower at pleaſure, with the ſame ſpan or opening. All other arches require extrados that are curved, more or leſs, either upwards or downwards. Of theſe, the elliptical arch approaches the neareſt to that of equilibration for equality of ſtrength and convenience; and it is alſo the beſt form for moſt bridges, as it can be made of any height to the ſame ſpan, its hanches being at the ſame time ſufficiently elevated above the water, even when it is very flat at top: elliptical arches alſo look bolder and lighter, are more uniformly ſtrong, and much cheaper than moſt others, as they require leſs materials and labour. Of the other curves, the cycloidal arch is next in quality to the elliptical one, for thoſe properties, and, laſtly, the circle. As to the others, the parabola, hyperbola, and catenary, they are quite inadmiſſible in bridges that conſiſt of ſeveral arches; but may, in ſome caſes, be employed for a bridge of one ſingle arch which may be intended to riſe very high, as in ſuch caſes they are not much loaded at the hanches."

The ſize of the piers for bridges is to be determined by that of the arch; and, according to Palladio, they ſhould never be leſs than one-ſixth part of its width, nor more than one-fourth. In the plans of piers for bridges they are generally drawn of an hexagonal figure, having two long ſides parallel to each other, and at the ends are placed two ſhort ones facing the courſe of the river at right angles to each other. Palladio ſays, they are ſometimes made ſemicircular facing the ſtream in order to divide the the water, that thoſe things which are impetuouſly brought down the river, when they ſtrike againſt them, may be thrown from the piers, and paſs through the middle of the arch. With reſpect to the dimenſions of the key-ſtones, or archivolts, he gives to their height a ſeventeenth part of the width of the arch. This proportion is ſomewhat ſmaller than that propoſed by M. Gautier, an experienced engineer, who makes the length of the arch-ſtones, of an arch twenty-four feet wide, two feet; and to arches forty-five, ſixty, ſeventy-five, or ninety, feet wide, he gives three, four, five, and ſix, feet reſpectively, and more than this when the ſtone is of a ſoft nature. But Mr. Belidore ſays, the length of the key-ſtones ought always to be one-twenty-fourth part of the width of the arch, whether the ſtone be hard or ſoft, becauſe, if they are ſoft, their weight is proportionably leſs. It appears ſomewhat ſtrange, that ſcientific men ſhould differ ſo widely about the ſize of a key-ſtone. However, as a juſt and proper medium between the two extremes, we may ſafely venture to recommend the judicious proportion adopted by Palladio. Of a bridge which that celebrated architect deſigned at the requeſt of ſome gentlemen, he mentions the following proportions: The river was 180 feet wide, which he divided into three arches, giving ſixty feet to the centre arch, and to the other two forty-eight feet each. The piers, which he terms *pilaſters*, were twelve feet thick, or one-fifth of the width of the middle arch, and a fourth of the ſmaller ones. The arches were a ſmall portion leſs than a ſemicircle; and their archivolt one-ſeventeenth part of the aperture of the centre arch, and a fourteenth part of the other two. According to this proportion, the key-ſtone of the centre arch was three feet ſix inches long, but, according to M. Gautier, it ſhould have been four feet, and agreeably to Mr. Belidore only two feet ten inches. In an arch of twenty-four feet, Palladio's rule makes the length of the key-ſtone a ſmall part more than ſixteen inches, which is a much more eligible ſize than either the one or the two feet key-ſtone of the former gentlemen.

The width commonly allowed to bridges is thirty feet: but, in large ones near great towns, a banquette is generally added on each ſide for foot paſſengers of ſix to nine feet each, raiſed about a foot above the common road; the parapet-walls are about eighteen inches thick, and four feet high; they generally project from the bridge with a cornice underneath: ſometimes balluſtrades of ſtone or iron are placed upon the parapet, as at Weſtminſter; but this is only practiſed where a bridge is of great length, and built on a magnificent plan. The ends of bridges open from the middle of the two large arches with two wings, making an angle of forty-five degrees with the reſt, in order to make their entrance more free: theſe wings are ſupported by a continuation of the arches; that immediately under each wing being ſmaller than the reſt. But the wings of bridges are generally ſupported by the ſolid butment alone.

The moſt proper ſeaſon for beginning the work, and laying the foundations of a bridge, is in autumn, when the waters are loweſt, and the weather moſt ſuitable for aquatic undertakings. The ancients uſed ſeveral methods to obtain a laſting foundation for their ſtone bridges. Some of theſe it will be proper to deſcribe, in order that the reader may form his own judgment, by drawing a compariſon between what they have done ſo long before our time, and what architects are doing now.

Alberti, who is reckoned among the firſt who wrote on bridges, gives us the following directions for laying the foundation of a pier: "Firſt raiſe an encloſure to keep off the water, by driving a double row of ſtakes very cloſe and thick ſet, with their heads above the top of the water like a trench. Then put hurdles within this double row of ſtakes. Cloſe that ſide of the row which is next to the intended pier, and fill up the hollow between the two rows with ruſhes and mud, ramming them together ſo hard, that no water can poſſibly get through. Then whatever you find within this incloſure, water, mud, ſand, or whatever elſe is a hindrance to you, throw out, and dig till you come at a ſolid foundation; or, if you find it neceſſary, make a foundation of wooden piles burnt at the ends, and driven in as cloſe together as poſſible. And here I have obſerved, that the beſt architects uſed to make a continued foundation of the whole length of the bridge, and not merely under each pier; and this they did, not by ſhutting out the whole river at once by one ſingle incloſure, but by firſt excluding one part, then another, and ſo joining the whole together by degrees: for it would be impoſſible to withſtand and repel the whole force of the water at once. We muſt therefore, while we are at work on one part, leave another part open for a paſſage for the ſtream. You may leave theſe paſſages either in the channel itſelf, or, if you think it more convenient, you may frame wooden dams or hanging channels, by which the ſuperfluous water may run off: but, if you find the expence of a continued foundation for the whole bridge too great, you may only make a ſeparate foundation for every particular pier, in the form of a ſhip, with one angle in the ſtern and another in the head, lying directly even with the current of the water, that the force of the water may be broken by the angles. We are to remember that the water is much more dangerous to the ſtern than to the head of the pier."

Palladio, who is the next writer, ſays, "To lay the foundations of pilaſters, if the bed of the river be ſtone, or gravel-ſtone, you have the foundation without any trouble; but, in caſe the bottom be quickſand, or gravel, you muſt dig therein till you come to ſolid or firm ground; or, if that ſhould be found too laborious or impracticable, you muſt dig moderately deep in the ſand or gravel, and then you muſt thruſt in oaken piles, which will reach the ſolid or firm ground, with the iron by which their points are to be armed. A part only of the bed of the river muſt be incloſed from the water, and then we are to build there; that the other part being left open, the water may have its free current; and ſo go on from part to part."

Scamozzi propoſes three different methods; the firſt is, by driving a double row of piles, and filling in between them chalk, or ſome cloſe materials, and afterwards pumping out the water, and then driving other piles within theſe to form the foundation of the piers. This being done, a platform of oak-plank is to be framed and laid upon theſe piles, on which the ſtone-work of the pier is to reſt. His ſecond method is: after having ſounded the river and levelled its bed, he propoſes to make a ſtrong oaken-frame, or grillage, which is to be buoyed up with boats, and laying on it a thick ſtratum or layer of ſtones, well cramped together with iron, and jointed with ſtrong terrace-mortar, he directs it to be let down gently to the bed of the river. The third method is as follows: after having turned off the courſe of the river to one ſide, by means of fences or channels ſunk on one ſide of the bed of the river, he made a dam with piles entirely acroſs the river, ſufficiently wide to form the piers in; and, when he had by digging obtained a proper foundation, he proceeded to build all his piers together, and, having raiſed them above low-water mark, he again turned the channel of the river into its former place.

It evidently appears, on the face of this author's account, that the various circumſtances attendant on rivers gave occaſion to theſe three methods in the courſe of his practice, and not that he conſidered any one of them as alike practicable in all caſes. His firſt method, we preſume, was applied in thoſe caſes where a river was deep, and deſtitute of a natural good bed. His ſecond was probably adopted when a river was moderately deep, but of a natural good foundation in its bed, and capable of ſupporting a heavy pier, founded on a ſtrong frame of oak immediately let down upon it, without the infinite trouble of piling, damming, and pumping off the water. His third ſcheme we ſuppoſe to have been applied in fordable, ſhallow, and narrow, rivers, canals, or brooks, &c. where there was a ſuitable place for turning the courſe of the water, either by a wooden fence placed in a diagonal or ſloping direction acroſs the river, or when the ground on one ſide of the river formed a peninſula, or ſomething approaching to it; in which caſe, by digging through the neck of land, it was eaſy to turn off the ſtream to one ſide, and equally eaſy to bring it back again. Moſt of the French bridges have been built on the principles of Scamozzi's firſt method, viz. by driving oak piles and keeping off the water; this they call a batardeau, and we name it a coffer-dam.

The piers of Weſtminſter-bridge were founded by an improved kind of coffer-dam, made capable of floating and riſing again after being ſunk with two or three of the firſt courſes of ſtone for the pier. The bed of the river being of the beſt kind, they had little more to do than to level it; for previous to this operation, they had driven in large piles all round, about five feet clear of the dimenſions of the coffer-dam. Theſe piles ſerved both as a defence to the coffer-dams, and to ſecure them in their place when ſunk. Having laid the firſt courſe of ſtones on the bottom of the coffer-dam, they drew it exactly over the place where it was to be ſunk, and, by opening a ſluice made for the purpoſe in the ſide of this veſſel, the water came in and ſunk it. During about two hours before low-water mark, they employed their pumps to draw off the water again, by which means the coffer-dam was once more raiſed to the ſurface, ſo as to afford them an opportunity of correcting ſuch uneven parts of the foundation as they might have obſerved in their experiment. To the firſt courſe they now added two more, cramping each ſtone together, and filling every joint with terrace-mortar; and, after having ſo done, they again opened their ſluice and ſunk the machine, and depoſited the ſtone-work in the manner juſt related. By this means they ſoon brought the work to within two feet of low-water mark, and by the next tide they were enabled to get above it. The ſides of the coffer-dam were ſo contrived, that, by relieving a number of iron-wedges, they detached themſelves from the bottom, and were at liberty to be uſed for another pier, by being again fixed to a new bottom. It ſhould alſo be obſerved, that when the tide was at its height, the coffer-dam was about ſix feet under the ſurface of the water; but, being loaded with three courſes of ſtones, and well ſecured by ropes faſtened to the piles, it remained unmoved by the tide. Here it will be very natural to enquire why the coffers were not made ſufficiently deep to exclude the water at its greateſt height? The anſwer is eaſy, when the circumſtances are known; for, if it be conſidered, that the water at its full height roſe ſixteen feet, and that the bed of the river where the pier ſtood was ſunk about ſix feet, a coffer twenty-two feet high would have been required, a ſize completely unmanageable; and, as they alſo had a ſluice in the ſide of the coffer juſt on a level with low-water mark, and by which all the ſuperincumbent water was eaſily got rid of, it was evidently unneceſſary to have the coffer higher than ſixteen feet. The circumſtance of the coffer's being ſo much under water, far from impeding, rather facilitated, the execution of the work; for all the water above the edges of the coffer cleared itſelf with greater facility than that within, which paſſed through the ſluice. As for the remaining water below the ſluice, it was carried off by a number of chain-pumps, ſo that the workmen were ſhortly enabled to bring the pier above water.

In the year 1753, the foundation of Eſſex-bridge in Dublin was laid in a very deep and rapid ſtream by Mr. Semple, who adopted the following method: Round the place where the intended pier was to reſt, the workmen drove, at about thirty inches diſtance from each other both ways, two rows of ſtrong piles, which were left at the height of low-water mark. Theſe piles were lined with planks, within which they rammed a quantity of clay, and thus formed the external wall of the coffer-dam. Within this wall, and at about the ſame diſtances, they drove in a row of piles dove-tailed at their edges ſo as to receive each other, and which formed the extremities of the plan of the piers at the level of the bed of the river. After having dug to a fine ſtratum of ſand about four feet lower, within theſe there were a great number of other piles driven as deep as they poſſibly could be made to penetrate. They next filled up the voids or intervals of theſe piles; and, in order to produce a ſolid and petrified foundation, they employed mortar of a peculiar quality, made up of roach-lime and ſharp gravel; and with this they began to lay the firſt courſe, ramming in large flat ſtones upon it to about a foot thick. On this firſt courſe they laid a plentiful coat of dry lime and gravel of the ſame quality, on which they again laid ſtones, and then proceeded to lay mortar as at firſt, and continued to do ſo alternately till they came to a perfect level with the piles. Faſtened down to the end of theſe piles were laid three beams, ſtretching the whole length of the pier from ſterling to ſterling, the intervals of which being filled up with maſonry. On this platform, which was four feet ſix inches under low-water mark, they began to lay the firſt courſe of ſtones for the pier, cramped together, and jointed with terrace-mortar as uſual, and went forward till they came to a level with the water at ebb-tide.

About the year 1765, the foundation of a ſtone bridge acroſs the river Tees, near Stockton, was laid by Mr. Shout. The workmen began with firſt making very ſtrong coffers of ſolid fir-timber about ten feet ſquare, which they piled, jointed, and ſecured, one upon another, till they had gained a ſufficient height to exclude the water at its higheſt tide. The joints of theſe timbers they caulked in the ſame manner as ſhips are; and, launching them without any bottoms, they fixed them down to their reſpective ſtations in the river. On the outſide and inſide they drove a number of piles, which they boarded and rammed with clay, to prevent the water from oozing in at the bottom of the coffers. This indeed was their greateſt difficulty, for, owing to quickſands and other looſe ſtrata through which the water ſprang in, the labour of digging to the proper kind of foundation was immenſe. The chain-pumps played inceſſantly, and by a reſolute perſeverance, the work, which at ſome periods ſeemed to bid defiance to human induſtry and ſkill, was at length brought above low-water mark. The bridge is neat and plain, and continues to the preſent time a proof of the ſolidity of its foundation.

With reſpect to wooden bridges, there are various methods of conſtructing them, ſo as to anſwer valuable purpoſes, and even to laſt a conſiderable time. The invention of wooden bridges was certainly prior to thoſe erected of ſtone; two or three different kinds are deſcribed by Palladio, after the manner of the ancients. Some of theſe are one continued frame of wood compoſed of a number of parts, and connected together by lap-joints and iron-bolts extending quite acroſs the river, without any piles to ſupport them; depending entirely on the truſſed parapets, and on the manner of fixing theſe frames on the ſtone butments. The principal and moſt eſſential points of wooden-bridge building are two; firſt, to ſeaſon and prepare the wood ſo as to make it laſting; and ſecondly, to lay a proper and durable pavement on the top.

In ſeaſoning the wood for this purpoſe, the following particulars ſhould be attended to: the ſudden decay of fir timber generally is owing to the ſappy nature of its exterior ſurface, which is by no means capable of being remedied by any immediate application of paint previous to its being ſeaſoned: on the contrary, it has been proved, that ſuch an application is actually injurious, ſince it hinders the free admiſſion of air and heat, which would have the property of extracting that ſappy quality which ſo much contributes to decay and rottenneſs. In conſequence of this practice, the ſap ſtrikes inwardly and makes its way to the heart of the wood, the ſubſtance of which is preſently contaminated and deſtroyed. As a means of preventing this evil, ſome burn and ſcorch the timber over a flaming fire, turning it about till every ſide acquires a ſort of cruſty ſurface; and, in doing this, it neceſſarily follows that the external moiſture is diſſipated. After this proceſs, a mixture of pitch and tar, ſprinkled with ſand and powdered ſhells, may be advantageouſly applied to the parts under water. Thoſe more in ſight, after being well ſcorched, and while the wood is hot, ſhould be rubbed over with linſeed oil mixed with a little tar. This will ſtrike deeply into the grain of the wood, and will ſoon harden ſo as to receive as many coats of paint as may appear neceſſary. It has been found that fir-timber thus prepared is nearly equal to oak for durability.

Among the Romans, the repairing and building of bridges were committed to the prieſts, thence named *pontifices*; next to the cenſors, or curators of the roads; but at laſt the emperors took the care of the bridges into their own hands. Thus, the Pons Janiculenſis was built of marble by Antoninus Pius; the Pons Ceſtius was reſtored by Gordian; and Arian built a new one which was called after his own name. In the middle age, bridge-building was counted among the acts of religion; and, toward the end of the twelfth century, St. Benezet founded a regular order of hoſpitallers, under the name of *pontifices*, or bridge-builders, whoſe office was to aſſiſt travellers, by making bridges, ſettling ferries, and receiving ſtrangers into hoſpitals, or houſes, built on the banks of rivers. We read of an hoſpital of this kind at Avignon, where the hoſpitallers reſided under the direction of their firſt ſuperior St. Benezet: and the Jeſuit Raynaldus has a treatiſe on St. John the bridge-builder.

Among the bridges of antiquity, that built by Trajan over the Danube, it is allowed, is the moſt magnificent. It was demoliſhed by his next ſucceſſor Adrian, and the ruins are ſtill to be ſeen in the middle of the Danube, near the city Warhel in Hungary. It had twenty piers, of ſquare ſtone, each of which was 150 feet high above the foundation, ſixty feet in breadth, 170 feet diſtant from one another, which is the ſpan or width of the arches; ſo that the whole length of the bridge was more than 1530 yards, or one mile nearly.

In France, the Pont de Garde is a very bold ſtructure; the piers being only thirteen feet thick, yet ſerving to ſupport an immenſe weight of a triplicate arcade, and joining two mountains. It conſiſts of three bridges one over the other; the uppermoſt of which is an aqueduct. The bridge of Avignon, which was finiſhed in the year 1188, conſiſts of eighteen arches, and meaſures 1340 paces, or about 1000 yards in length.

The famous bridge at Venice, called the Rialto, paſſes for a maſter-piece of art, conſiſting of only one very flat and bold arch, near 100 feet ſpan, and only twenty-three feet high above the water: it was built in 1591. Poulet alſo mentions a bridge of a ſingle arch, in the city of Munſter in Bothnia, much bolder than that of the Rialto at Venice. Yet theſe are nothing to a bridge in China, built from one mountain to another, conſiſting only of a ſingle arch, 400 cubits long and 500 cubits high, whence it is called the flying-bridge. Kircher alſo ſpeaks of a bridge in the ſame country 360 perches long without any arch, but ſupported by 300 pillars.

There are many bridges of conſiderable note in our own country. The triangular bridge at Crowland in Lincolnſhire, it is ſaid, is the moſt ancient Gothic ſtructure remaining entire in the kingdom; and was erected about the year 860. London-bridge is on the old Gothic ſtructure, with twenty ſmall locks or arches, each of them only twenty feet wide; but there are now only eighteen open, two having lately been thrown into one in the centre, and another next one ſide is concealed or covered up. It is 900 feet long, ſixty high, and 74 wide; the piers are from twenty-five to thirty-four feet broad, with ſterlings projecting at the ends; ſo that the greateſt water-way, when the tide is above the ſterlings, was 450 feet, ſcarcely half the breadth of the river; and, below the ſterlings, the water-way was reduced to 194 feet, before the late opening of the centre. London-bridge was firſt built with timber between the years 993 and 1016; and it was repaired, or rather new built, with timber, 1163. The ſtone bridge was begun in 1176, and finiſhed 1209. It is probable there were no houſes on this bridge for upwards of 200 years; ſince we read of a tilt and tournament held on it in 1395. Houſes it ſeems were erected on it afterwards; but, being found of great inconvenience and nuiſance, they were removed in 1758, and the avenues to it enlarged, and the whole made more commodious; the two middle arches were then thrown into one, by removing the pier from between them; the whole repairs amounting to above 80,000l.

There are ſtill more bridges in England built in the old manner of London-bridge; as the bridge at Rocheſter, and ſome others; alſo the late bridge at Newcaſtle-upon-Tyne, which was broken down by a great flood in the year 1771, for want of a ſufficient quantity of water-way through the arches. The longeſt bridge in England is that over the Trent at Burton, built in the twelfth century, of ſquared free-ſtone, and is ſtrong and lofty; it contains thirty-four arches, and the whole length is 1545 feet. But this falls far ſhort of the wooden bridge over the Drave, which according to Dr. Brown is at leaſt five miles long. But one of the moſt ſingular bridges in Europe is that built over the Taaf in Glamorganſhire, by William Edward, a poor country maſon, in the year 1756. This remarkable bridge conſiſts of only one ſtupendous arch, which, though only eight feet broad, and thirty-five feet high, is no leſs than 140 ſpan, being part of a circle of 175 feet diameter. There is alſo a remarkable bridge of one arch, built at Colebrook Dale in 1779, of caſt-iron: and another ſtill larger, of the ſame metal, over the river Wear, at Sunderland, the arch being of 240 feet ſpan.

Of modern bridges, perhaps, the two fineſt in Europe are, the Weſtminſter and Blackfriars bridges over the river Thames at London. The former is 1220 feet long, and forty-four feet wide, having a commodious broad foot-path on each ſide for paſſengers. It conſiſts of thirteen large and two ſmall arches, all ſemicircular, with fourteen intermediate piers. The arches all ſpring from about two feet above low-water mark; the middle arch is ſeventy-ſix feet wide, and the others on each ſide decreaſe always by four feet at a time. The two middle piers are each ſeventeen feet thick at the ſpringing of the arches; and the others decreaſe equally on each ſide by one foot at a time; every pier terminating with a ſalient right angle againſt either ſtream. This bridge is built of the beſt materials, and in a neat and elegant taſte, but the arches are too ſmall for the quantity of maſonry contained in it. This bridge was begun in 1738, and opened in 1750; and the whole ſum of money granted and paid for the erection of this bridge, with the purchaſe of houſes to take down, and widening the avenues, &c. amounted 389,500l.

Blackfriars-bridge, nearly oppoſite the centre of the city of London, was begun in 1760, and completed in ten years and three-quarters; and is an exceeding light and elegant ſtructure; but the materials unfortunately do not ſeem to be of the beſt, as many of the arch-ſtones are decaying. It conſiſts of nine large, elegant, elliptical, arches; the centre-arch being 100 feet wide, and thoſe on each ſide decreaſing in a regular gradation, to the ſmalleſt, at each extremity, which is ſeventy feet wide. The breadth of the bridge is forty-two feet, and the length from wharf to wharf 995. The upper ſurface is a portion of a very large circle, which forms an elegant figure, and is of convenient paſſage over it. The whole expence was 150,840l. and Mr. Milne was the architect.

There are various ſorts of bridges, of ſtone, wood, or iron, of boats or floats, pendant or hanging bridges, draw-bridges, flying bridges, &c. &c. for which ſee the article Bridge.

Of QUAYS or HARBOURS.

The firſt thing to be conſidered in forming a quay or harbour, is the chooſing a ſituation favourable by nature to the end propoſed; ſuch as a large creek or baſon, where ſhips can lie ſafe in ſtormy weather, and where there is likewiſe a ſufficient depth of water for large ſhips to enter and remain without touching the ground. The depths of water where the piers are to be built muſt be taken at every ten, fifteen, or twenty, feet diſtance, and marked upon piles driven here and there, in order that the workmen may be directed in laying the foundation. It muſt be next conſidered what kind of materials are to be uſed, whether ſtone, brick, or wood. If ſtones are to be had at a moderate price, they ſhould be preferred, becauſe the work will be much ſtronger, and want fewer repairs: but, when ſtones are too expenſive, the foundation may be made of ſtone as high as low-water mark, and the reſt finiſhed with brick. If this ſhould ſtill be too expenſive, wood muſt be uſed; and piles driven cloſe, and faſtened together by croſs-bars, covered with ſtrong oaken planks, ſo as to form a kind of coffer, which may be filled with ſtones, chalk, ſhingles, &c.

The manner of laying the foundation in different depths of water, and in various ſoils, requires different methods to be followed. When the water is very deep, a coffer muſt be made with dove-tailed piles of about thirty yards long, and as wide as the thickneſs of the foundation is to be: then the ground is dug and levelled, and the wall is built with the beſt mortar. As ſoon as the mortar is tolerably dry, the piles at the end of the wall are drawn out, the ſide-rows are continued to about thirty yards farther, and the end incloſed; then the foundation is cleared, and the ſtones laid as uſual. But it muſt be obſerved, that the end of the foundation is left rough, in order that the part next to it may incorporate with it in a proper manner; but if it is not very dry, it will incline that way of itſelf, and bind with the mortar that is thrown next into it: this method is continued till the whole pier is entirely finiſhed.

Another method is to build in coffers, much after the ſame manner as was done in building the piers of Weſtminſter-bridge; but as in this caſe the ends of the coffers are left in the wall, and prevent their joining ſo well as to be water-tight, the water may penetrate through, and render the work inſecure. The proper thickneſs of piers can only be determined by experience. Some architects ſuppoſe, that if the thickneſs of a pier be equal to the depth of the water, it is ſufficient; but for a greater ſecurity they allow two, three, or four, feet more. This might probably do, if the pier were built with ſolid ſtones cramped together; but, as its inſide is filled up with ſhingles, chalk, or other looſe materials, their rule is not to be depended on; beſides, it makes the ſpace above too narrow for lading and unlading ſhips, unleſs in a great depth of water: ſo that it does not appear that their method can be followed, except in a very few caſes where the water has no conſiderable motion.

The wall muſt be built with terrace-mortar from the bottom to the height of low-water mark, and the reſt finiſhed with cinder or tile-duſt mortar, which has been found ſufficiently good in thoſe places where the wall is wet and dry alternately. The upper part of the pier ſhould be paved with flat hewn ſtones laid in ſtrong mortar, in order to prevent any water from penetrating into it. Iron rings ought alſo to be fixed here and there at proper diſtances, to faſten the ſhips, and prevent them from ſtriking againſt the pier. Wooden fenders or piles ſhould be driven at the inſide cloſe to the wall, and cramped to it with iron, to prevent the ſhips from touching them, and doing miſchief by their continual motion. Where the ſea breaks againſt the piers with great violence, breakers ſhould be made at proper diſtances; namely, two rows of piles driven nearly at right angles to the piers for the length of about twelve or fifteen feet, and at about eight or ten feet diſtance from each other; and then another to join the two former: theſe piles being covered with planks, and the inſide being filled with ſhingle and rubble ſtones, the top is then paved with ſtones of about a foot in length, ſet longwiſe to prevent the waves from tearing them up. This precaution is abſolutely neceſſary where the tide flows in very rapidly.

ARCHI'THOLUS, *ſ.* [αρχιθολος, from αρχη, the firſt, and θολος, a chamber.] The ſudatorium, or principal room of the ancient baths.

ARCHI'TIS, the name of Venus, who was worſhipped on mount Libanus.

AR'CHITRAVE, *ſ.* in architecture, that part of a column which lies immediately upon the capital, being the loweſt member of the entablature. Over a chimney, this member is called the *mantle-piece*; and over doors or windows, the *hyperthyron*.

ARCHITRI'CLINUS, *ſ.* in antiquity, the maſter or director of a feaſt, charged with the order and œconomy of it, the covering and uncovering of the tables, the command of the ſervants, &c. The architriclinus was ſometimes called *ſervus tricliniarcha*, and by the Greeks προγευστης, i. e. *prægustator*, or *fore-taſter*. Potter alſo takes the architriclinus for the ſame with the ſympoſiarcha.

ARCHIVAU'LT, or ARCHIVO'LT, *ſ.* in architecture, implies the inner contour of an arch, or a band adorned with mouldings, running over the faces of arch-ſtones, and bearing upon the impoſts. It has only a ſingle face in the Tuſcan order, two faces crowned in the Doric and Ionic, and the ſame mouldings as the architrave in the Corinthian and Compoſite.

AR'CHIVES, *ſ. without a ſingular*, [*archiva*, Lat.] A chamber or apartment wherein the records, charters, and other papers and evidences, of a ſtate, houſe, or community, are preſerved, to be conſulted occaſionally. It is perhaps ſometimes uſed for the writings themſelves. We ſay, the *archives* of a college, of a monaſtery, &c. The archives of ancient Rome were in the temple of Saturn; the archives of the court of chancery are in the rolls office.

AR'CHIVIST, *ſ.* [*archiviſta*, Lat.] A keeper of the archives. Under the emperors, the archiviſt was an officer of great dignity, held equal to the proconſuls, veſted with the quality of a count, ſtyled *clariſſimus*, and exempted from all public offices and taxes. Among the ancient Greeks and Perſians, the truſt was committed to none but men of the firſt rank; among the Franks, the clergy, being the only men of letters, kept the office among themſelves. Since the erection of the electoral college, the archbiſhop of Mentz has had the direction of the archives of the empire.

ARCHMAR'SHAL, *ſ.* the grand marſhal of the empire, a dignity belonging to the elector of Saxony.

AR'CHONS, *ſ.* in Grecian antiquity, were magiſtrates appointed after the death of Codrus. They were choſen from the moſt illuſtrious families till the time of Ariſtides, who got a law paſſed, by which it was enacted, that, in electing theſe magiſtrates, leſs regard ſhould be paid to birth than to merit. When any obſcurity occurred in the laws relative to religion and the worſhip of the gods, the interpretation was ſubmitted to the tribunal of the archons. Ariſtotle obſerves, that Solon, whoſe aim was to make his people happy, and who found their government in his time ariſtocratical, by the election of the nine archons, who were annual magiſtrates, tempered their power, by eſtabliſhing the privilege of appealing from them to the people, called by lot to give their ſuffrage, after having taken the oath of the Heliaſtæ, in a place near the Panathenæum, where Hiſſus had formerly calmed a ſedition of the people, and bound them to peace by an oath. The archons were the principal officers, not only in civil, but likewiſe in ſacred, matters, and eſpecially in the myſteries of Bacchus. The archons, however, who were ſurnamed *eponymi*, were chiefly employed in civil affairs; yet they preſided at the great feaſts, and held the firſt rank there. Hence they are ſometimes ſtyled *prieſts*.

ARCHON is alſo applied by ſome anthors to divers officers, both civil and religious, under the eaſtern or Greek empire. Thus biſhops are ſometimes called *archontes*; and the ſame may be ſaid of the lords of the emperor's court. We alſo read of the *archon of the antimenſia*, *archon of archons*, *grand archon*, *&c.*

ARCHON'TICS, heretics ſo called, either from Archon, their ringleader, or becauſe they held that archangels created the world; they denied the reſurrection, and ſaid, That the God of Sabbath exerciſed a cruel tyranny in the ſeventh heaven; that he engendered the devil, who begat Abel and Cain upon Eve.

AR'CHOS, *ſ.* [αρχος, an arch.] The anus, ſo called from its ſhape.

ARCHOPTO'MA, *ſ.* [αρχος, anus, and πιπτω, to fall down.] A bearing down of the rectum.

ARCH'TELIN, *ſ.* a corn-meaſure at Rotterdam, being three pecks, five quarts, and near a pint.

AR'CHWISE, *adv.* In the form of an arch.

AR'CHYLUTE, or ARCILEU'TO, *ſ.* a long and large lute, having its baſs ſtrings lengthened after the manner of the theorbo, and each row doubled, either with a little octave or an uniſon. It is uſed by the Italians for playing a thorough baſs.

AR'CHYTAS, of Tarentum, a celebrated mathematician, coſmographer, and Pythagorean philoſopher. He flouriſhed about 400 years before Chriſt; and was the maſter of Plato, Eudoxus, and Philolaus. He gave a method of finding two mean proportionals between two given lines, and thence the duplication of the cube, by means of the conic ſections. His ſkill in mechanics was ſuch, that he was ſaid to be the inventor of the crane and the ſcrew; and he made a wooden pigeon that could fly about, when it was once ſet off, but it could not riſe again of itſelf, after it reſted. He wrote ſeveral works, though none of them are now extant, particularly a treatiſe περι τȣ Παντος, *de Univerſo*, cited by Simplicius in Ariſtot. Categ. It is ſaid he invented the ten categories. He acquired great reputation both in his legiſlative and military capacity; having commanded an army ſeven times without ever being defeated. He was at laſt ſhipwrecked, and drowned in the Adriatic ſea.

ARCIS-SUR-AU'BE, a ſmall handſome town of France, in the department of Aube, and late province of Champagne, ſeated on the river Aube; thirteen miles N. of Troyes. Lat. 48. 40. N. lon. 4. 15. E.

ARCITE'NENT, *adj.* [*arcitenens*, Lat.] Bow-bearing.

AR'CO, a town of Italy, on the river Sarca, near the N. extremity of the Lake de Garda, ſixteen miles S. W. of the city of Trent. Lat. 46. 0. N. lon. 11. 12. E.

ARCO'NA, a ſtrong town ſituated on the iſland of Rugen, in the Baltic. It ſtood on a high promontory, with the eaſt, north, and ſouth, ſides defended by ſteep and lofty precipices, and the weſt by a wall fifty feet high, proportionably thick, and ſecured by a deep and broad ditch. It was, however, taken and ruined, in 1168, by Valdemar king of Denmark. One of the conditions impoſed by the conqueror was, that the inhabitants ſhould deſtroy a temple they had erected to St. Vitus, and deliver up the vaſt treaſure belonging to this tutelary ſaint. Another was, that they ſhould pay forty ſilver yokes for oxen, and enter as ſoldiers in the Daniſh ſervice when called upon.

AR'COS, a ſtrong city of Andaluſia, in Spain, ſeated on a high craggy rock, at the bottom of which runs the Gaudeleto. Its ſtrength lies not only in its ſituation, but in the works erected for its defence, and it is inacceſſible on every ſide but one. The governor reſides in an old caſtle, from whence there is a delightful proſpect, which extends very far into the neighbouring country. Lat. 36. 40. N. lon. 2. 10. W.

ARCOT', a large city, the capital of the Carnatic, in the peninſula of Hindoſtan. It is 73 miles from Madras, and 217 from Seringapatam. Lat. 12. 30. N. lon. 79. 0. E.

ARCTA'TION, *ſ.* [from *arcto*, to ſtraiten.] Straitening; confinement to a narrower compaſs. In medicine, is when the inteſtines are conſtipated from an inflammation; alſo a preternatural ſtreightneſs of the *pudendum muliebre*.

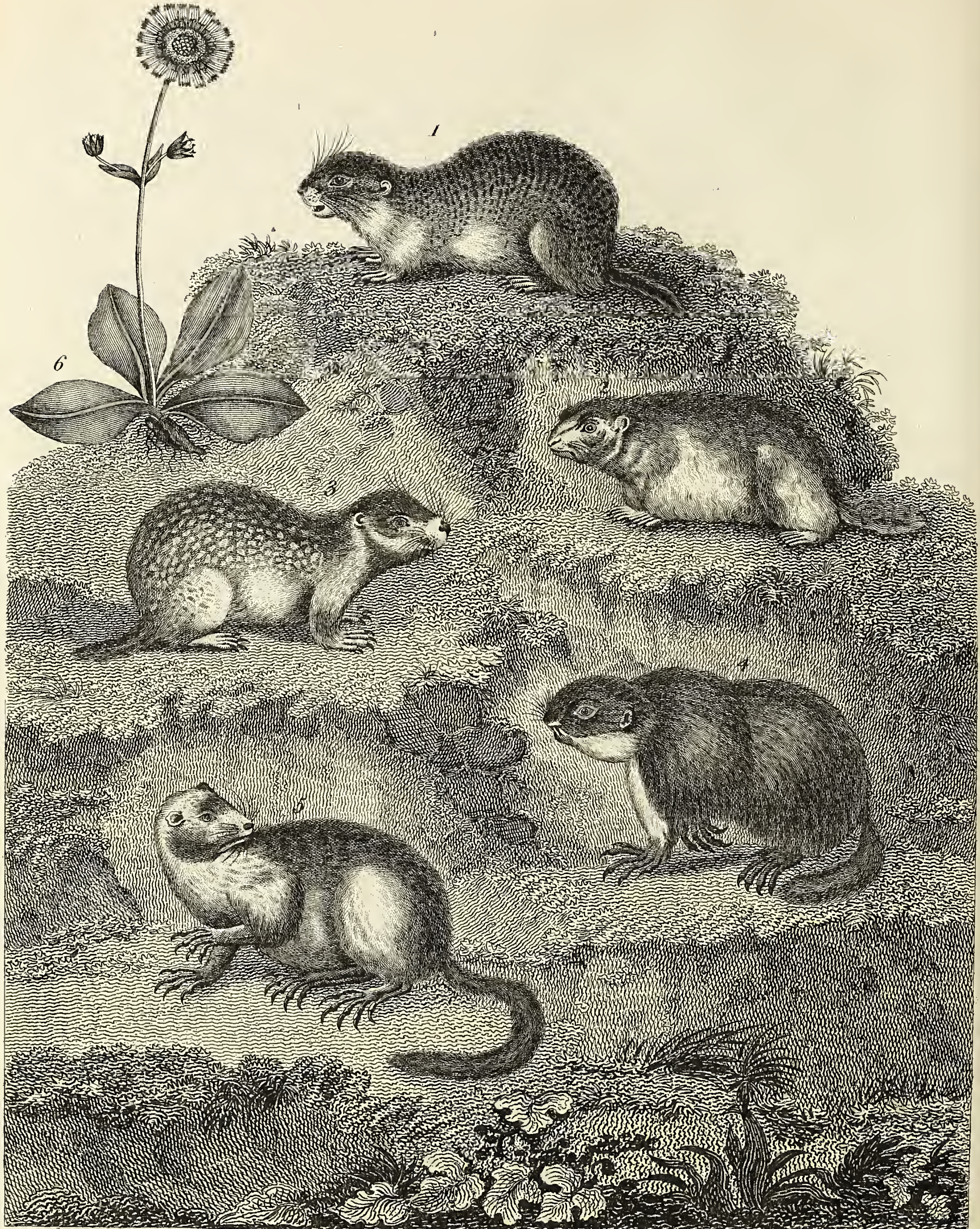
ARC'TIC, *ſ.* [from αρκτος, the northern conſtellation.] Northern; lying under the Arctos, or bear:

Ever-during ſnows, perpetual ſhades
Of darkneſs, would congeal their livid blood,
Did not the *arctic* tract ſpontaneous yield
A cheering purple berry big with wine. *Philips.*

ARCTIC CIRCLE, is a leſſer circle of the ſphere, parallel to the equator, and paſſing through the north pole of the elliptic, or diſtant from the north or arctic pole, by a quantity equal to the obliquity of the ecliptic, which was

formerly

ARCTOMYS AND ARNICA.



J. Paſs, sc.

1. The Alpine Marmot. 2. The Chinese. 3. The Casan. 4 The Canadian.
and, 5. The Maryland Marmots. 6. The Mountain Arnica.

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formerly eſtimated at 23° 30′, but its mean quantity is now 23° 28′ nearly. This, and its oppoſite, the antarctic circle, are alſo called the polar circles, where the longeſt day and the longeſt night are twenty-four hours; and within all the ſpace of theſe circles, at one time of the year, the ſun never ſets, and at the oppoſite ſeaſon he never riſes, for ſome days, more or leſs according as the place is nearer the pole.

Arctic Pole, the north pole of the world, and ſo called from αρκτος, *urſa*, the bear, from its proximity to the conſtellation of that name.

ARC'TIUM, *ſ.* [αρκτος, a bear.] The plant Burdock; in botany, a genus of the claſs ſyngeneſia, order polygamia æqualis, ranking in the natural order of compoſitæ capitatæ. The generic characters are—Calyx: common globular, imbricate; ſcales lanceolate, ending in long ſubulate prickles, reflex and hooked at the end. Corolla: compound tubular, uniform; corollules hermaphrodite equal; proper monopetalous, tubular; tube ſlender, long; limb ovate, quinquefid; diviſions linear, equal. Stamina: filaments five, capillary, ſhort; antheræ cylindric, tubular, length of the corolla, five-toothed. Piſtillum: germ oblong, with a villoſe top; ſtyle filiform, longer than the ſtamens; ſtigmas bifid, reflex. Pericarpium: none; calyx converging. Seeds: ſolitary, vertically pyramidal, the two oppoſite angles obliterated, gibbous on the outſide; down ſimple, ſhorter than the ſeed. Receptaculum: chaffy, flat; chaffs ſetaceous.—*Eſſential Character.* Calyx, globular; ſcales furniſhed at the end with inflected hooks.

Species. 1. Arctium lappa, or common burdock, burr, or clot-burr: leaves cordate, unarmed, petioled. Burdock is very common by road ſides, on rubbiſh and on ditch banks throughout Europe, flowering in July and Auguſt. A decoction of the roots is eſteemed by ſome very eminent phyſicians, as equal to that of ſarſaparilla. Two ounces of the dried root are boiled in three pints of water, till one pint is waſted, and a pint or more of the ſtrained liquor taken warm every day. The herb being burnt green, between the time of flowering and feeding, in a hole made in the ground, without ſuffering the flame to eſcape; three pounds of the aſhes produced produced ſixteen ounces of very white alkaline ſalt, as good as the beſt potaſh. There are many varieties of this common plant, differing in colour, and the ſize and ſmoothneſs or woollineſs of the heads. The moſt remarkable of theſe, is the *arctium tomentoſum*, or woolly-headed burdock, which Miller has figured in his plates, and looks upon as a diſtinct ſort.

2. Arctium perſonata, or cut-leaved burdock: leaves decurrent ciliate-ſpiny; root-leaves pinnate; ſtem-leaves oblong ovate. Native of Swiſſerland, Auſtria, Sileſia, and Siberia; flowering in July and Auguſt.

3. Arctium carduelis: leaves pinnatifid prickly. Native of the mountains in Upper Carniola, and in Sileſia.

Propagation and Culture. Theſe plants may readily be increaſed from ſeed, and are ſeldom admitted into any but botanic gardens. It is a troubleſome weed; but may be deſtroyed with leſs trouble than ſuch plants as have perennial roots; if it be cut up before it ſeeds, in two or three years it will entirely diſappear.

ARCTO'MYS, *ſ.* in zoology, the Marmot; a genus belonging to the order of glires, the characters of which are:—Fore-teeth wedged, two in each jaw: grinders upper five each ſide, lower four: clavicles perfect. The head is gibbous and rounded; ears ſhort; body thick; tail ſhort, hairy; fore-feet four-toed, with a ſhort thumb, hind-feet five-toed; cæcum large. The animals of this genus become torpid in the winter, feed on grain and roots, and burrow in the ground. There are eleven ſpecies now known, viz.

1. Arctomys marmota, the Alpine marmot: ears ſhort, round; body brown, beneath reddiſh. Inhabits dry open places on the ſummits of the Alps and the Pyrenean mountains; feeds on roots, herbs, inſects, and when tamed whatever is offered; drinks little, baſks in the ſun; lives among ſmall tribes, with a centinel placed to give notice of danger, which is done by a hiſs; forms a burrow with many chambers and entrances for the ſummer, another lined with ſoft graſs in which it remains torpid during winter; eats with its fore-paws; walks on its heels, often erect; is eaſily caught when out of its burrow; it can hardly be kept awake in winter even in warm chambers; it is gravid ſeven weeks, and brings from two to four young. The fleſh is tender; and the fat and ſkin are uſed by the mountaineers for various remedies.

2. Arctomys monax, the Maryland marmot: ears ſhort, round; ſnout blueiſh; tail long and hairy; body grey. Inhabits the warm parts of North America, in holes of rocks, wintering under hollow trees; ſize of a rabbit or hare; and the fleſh good.

3. Arctomys bobac, the Chineſe marmot; ears ſmall; tail hairy; fore-thumb clawed; body grey, beneath yellowiſh. Inhabits the dry and ſunny mountains of Aſia and China, in deep burrows; lives in families of twenty or twenty-four; goes abroad morning and mid-day, leaving a centinel at the entrance of its burrow; feeds on vegetables; defends itſelf with its fore-paws; is eaſily tamed; eats with its fore-feet; in ſummer voracious; ſleeps in winter; the fleſh is good; and the fat is uſed for dreſſing leather and furs.

4. Arctomys empetra, the Canadian marmot: ears ſhort; tail hairy; body above mixed grey, beneath orange. Inhabits North America.

5. Arctomys pruinoſa, the hoary marmot: ears ſhort; tail and feet black; hair of the back, ſides, and belly, long, harſh, hoary. Inhabits North America; and reſembles the monax: is about the ſize of a rabbit.

6. Arctomys ſuſlica, the Caſan marmot: ears very ſhort; tail hairy and ſhort; body above yellowiſh brown, with many ſmall white ſpots. Inhabits Caſan and Auſtria, in holes on the declivities of mountains; burrows deep and winding, with ſeveral entrances and many apartments, in which are ſtored pulſe and corn; ſize of a ferret.

7. Arctomys citillus, the earleſs marmot: tail very ſhort; body cinereous; beautifully ſpotted with white on the ſides; a ſtreak of white from the ears to the whiſkers; noſe blunt, and black. Inhabits Hungary, Auſtria, and Poland; about a foot long.

8. Arctomys zemni, the Podolian marmot: ears ſhort; body mouſe-grey; feet five-toed; eyes minute, and almoſt concealed. Inhabits Ruſſia, Poland, Perſia, and China; is ſtrong and miſchievous. It varies in colour and ſize, ſometimes ſpotted with white; tail ſometimes longiſh, with the hair ſhed like a ſquirrel.

9. Arctomys gundi, the Barbary marmot: ears wide, open, and truncate; body flame colour. Inhabits Barbary, near Mount Atlas; ſize of a rabbit; and burrows in long deep caves.

10. Arctomys Hudſonius, the tailleſs marmot: ears ſhort; body brown-aſh; and only the rudiment of a tail. Inhabits Hudſon's Bay.

11. Arctomys maulinus, the Chileſe marmot: ears ſharp; feet five-toed; body reddiſh-brown. Inhabits the woods of Chili; two feet and a half long.

ARCTO'PHYLAX, *ſ.* [from αρκτος, bear, and φυλαττω, I guard.] In aſtronomy, the conſtellation called Bootes.

ARC'TOPUS, *ſ.* [αρκτου πους, bear's foot.] In botany, a genus of the claſs polygamia, order dioecia, ranking in the natural order of umbellatæ or umbelliferæ. The generic characters are—I. Male. Calyx: umbel univerſal long, unequal; partial ſhorter, more abundant; involucre univerſal five-leaved, ſhort; partial five-leaved, the length of the umbellule; perianthium five-parted, very ſmall. Corolla: univerſal, uniform; proper petals five, entire, oblong. Stamina: filaments five, ſetaceous, longer than the corolla; antheræ ſimple. Piſtillum: germ none; ſtyles two, ſetaceous, longer than the ſtamens; ſtigmas ſimple. Pericarpium: abortive.—II. Female (or androgynous) on a diſtinct plant. Calyx: umbel partial with ſeſſile floſcules; involucre partial one-leafed, four-parted, ſpreading, ſpiny at the edge, many-flowered, very large. Corolla: proper of the diſk male, ſeveral, as in the male; of the ray female, four, pentapetalous. Stamina: to the males of the diſk, as in the male. Piſtillum: to the females, germ ſubulate hiſpid, under the receptacle of the floſcule; ſtyles two, reflex, permanent; ſtigmas ſimple. Pericarpium: none; involucre converging with ſpines. Seeds: to the females ſolitary, cordate, acuminate, bent outward, hiſpid above, bilocular, the ſize of the involucre. —*Eſſential Character.* Male: umbel compound; involucre five-leaved; corolla five-petalled; ſtamina five; piſtillum two, abortive. Androgynous: umbel ſimple; involucre four-parted, ſpiny, very large, containing very many male floſcules in the diſk, and four female ones in the ray. Male: petals five; ſtamina five. Female: petals five; ſtyles two; ſeed one, bilocular, inferior.

There is only one ſpecies, called Arctopus echinatus, or prickly-leaved arctopus. It is a handſome plant, from the Cape of Good Hope. The leaves are crowded, ſinuate, and ciliate, with ſpines on the upper ſurface diſpoſed ſtarwiſe at the ſinuſes; flowers terminating, among the leaves.

ARCTOSTA'PHYLOS, *ſ.* See VACCINIUM.

ARCTOTHE'CA, *ſ.* See GORTERIA and ARCTOTIS.

ARCTO'TIS, *ſ.* [from αρκτος, a bear, on account of its ſhaggineſs.] In botany, a genus of the claſs ſyngeneſia, order polygamia neceſſaria, ranking in the natural order of compound flowers. The generic characters are— Calyx: common roundiſh, imbricate; lower ſcales more lax, ſubulate; middle ovate; inmoſt oblong; ſcarioſe, rounded at the end. Corolla: compound radiate; corollules hermaphrodite, very many, in the diſk; females ligulate, near twenty, longer than the diameter of the diſk; proper of the hermaphrodites funnel-ſhaped; border quinquefid; ends reflex, equal; of the females ligulate, lanceolate, very finely three-toothed; tube ſhort. Stamina; of the hermaphrodites, filaments five, capillary, ſhort; antheræ cylindric, tubular, five-toothed, length of the corolla. Piſtillum: of the hermaphrodites, germ ſcarcely viſible; ſtyle cylindric, a little longer than the corolla; ſtigma ſimple: of the females, germ ovate-four-cornered, villoſe, crowned with its proper calycle; ſtyle filiform; ſtigmas ovate, oblong, thickiſh, erect. Pericarpium: none; calyx unchanged. Seeds: in the hermaphrodites none; in the females ſolitary, roundiſh, villoſe, crowned with a calycle uſually of five leaves; leaflets ovate, ſpreading. Receptaculum: villoſe or chaffy; flattiſh.—*Eſſential Character.* Receptaculum villoſe or chaffy; down with a five-leaved crown. Calyx imbricate, with ſcales ſcarioſe at the end.

Species. I. Receptacle villoſe. 1. Arctotis calendulacea, or marygold-flowered arctotis: radiant florets barren; leaves runcinate, rather tomentoſe. There are ſeveral varieties of this ſpecies, viz. α. Arctotis calendula: radiant florets twelve-fold, nearly entire. β. Arctotis hypochondriaca: radiant florets trifid, the middle inflected. γ. Arctotis triſtis: radiant florets four-parted. δ. Arctotis coruſcans: radiant florets three-parted; the exterior one trifid. ψ. Arctotis ſuperba: radiant florets five-parted. All the varieties of this ſpecies are annual; are natives of the Cape of Good Hope, as are alſo the other ſpecies.

2. Arctotis ſerrata: radiant florets barren; leaves lanceolate, undivided, tooth-ſerrate.

3. Arctotis tenuifolia: radiant florets barren; leaves linear, undivided, naked. Perennial.

4. Arctotis grandiflora, or great-flowered arctotis: radiant florets fertile; leaves pinnatifid, three-nerved. Biennial. It flowers from March to May.

5. Arctotis plantaginea, or plantain-leaved arctotis: radiant florets fertile; leaves lanceolate-ovate, nerved, ſtem claſping. Perennial. Flowers from June to Auguſt.

6. Arctotis argentea, or ſilvery arctotis: radiant florets fertile; leaves lanceolate-linear, quite entire, tomentoſe. Flowers yellow, blowing in Auguſt. Biennial.

7. Arctotis anguſtifolia: radiant florets fertile, ſtems creeping, leaves lyrate with two teeth on each ſide. A variety: Arctotis ſpontanea; leaves oblong, toothed. The variety is white, very branching, and varies with leaves ſcarcely broader than thoſe of lavender.

8. Arctotis aſpera, or rough arctotis: radiant florets fertile; leaves pinnate-ſinuate, villoſe, diviſions oblong, toothed. Two varieties: α. Anemonoſpermos africana, or broad-leaved rough arctotis. β. Anemonoſpermos, &c. flore aurantio pulcherrimo, or narrow-leaved rough arctotis: has large, handſome, orange-coloured, flowers; diſplaying themſelves from July to September.

II. Receptacle chaffy. 9. Arctotis paradoxa, or chamomile-leaved arctotis: radiant florets barren; chaffs coloured, longer than the diſk; leaves bipinnate, linear, flowers in Auguſt. On account of this difference in the down, Gærtner has placed this ſpecies, with the twelfth and thirteenth, in a new genus, which he has entitled *urſinia.*

10. Arctotis ſcarioſa, or ſouthernwood-leaved arctotis; radiant florets barren; chaffs equalling the florets of the diſk; leaves decompound. Flowers from April to Auguſt.

11. Arctotis paleacea, or chaffy arctotis: radiant florets barren, chaffs equalling the florets of the diſk; leaves pinnate, linear. It flowers from April to Auguſt.

12. Arctotis dentata, or fine-leaved arctotis: radiant florets barren; leaves pinnate, pinnas pinnatifid-indented. It is annual; and flowers in July.

13. Arctotis anthemoides: chaffs ſhorter than the florets; leaves linear.

14. Arctotis tenuifolia: radiant florets barren; leaves linear, undivided, ſmooth.

15. Arctotis acaulis, or dwarf arctotis: peduncles radical, leaves lyrate. This is a low plant, the flower-ſtem rarely exceeding ſix inches in height; but the flowers, which are yellow, are large and fine. They come out in April, and continue to July.

Propagation and Culture. The annual ſorts may be raiſed from ſeeds ſown in the ſpring, either in a warm border of light earth, about the middle of April, or in a moderate hot-bed, towards the end of March. They may alſo be propagated by cuttings or ſlips from the roots. The ſhrubby ſorts are propagated by planting cuttings in a bed of light freſh earth, in any of the ſummer months, obſerving to ſhade them from the heat of the ſun until they have taken root, as alſo to refreſh them often with water; and, in ſix weeks after planting, they will be rooted ſufficiently, at which time they ſhould be tranſplanted into pots filled with freſh earth. Several of theſe grow to the height of four or five feet; and, as they ſend forth many branches, they require to be frequently pruned, to keep them in order. They are ſeldom deſtitute of flowers, unleſs the winter be ſevere; on which account they are very valuable. In that ſeaſon they make a fine variety in the greenhouſe or cape-ſtove; and when ſet abroad in ſummer, they produce flowers in great abundance. See GORTERIA.

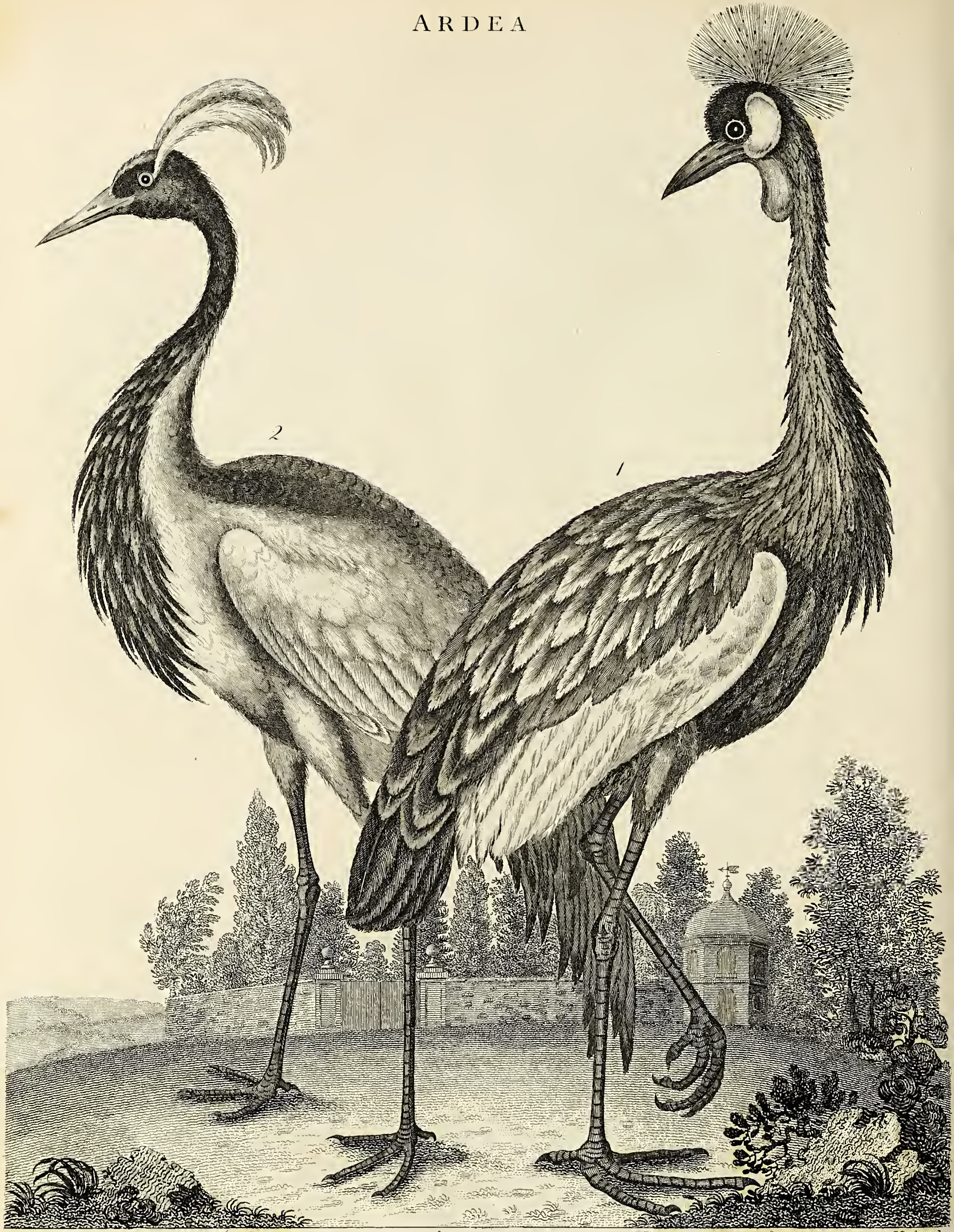
ARCTU'RA, *ſ.* Inflammation, &c. of the finger, from a curvature of the nail.

ARCTU'RUS, *ſ.* a fixed ſtar of the firſt magnitude, between the thighs of the conſtellation Bootes. So called from αρκτος, bear, and ουρα, tail; as being near the bear's tail. This ſtar is mentioned in Job, ix. 9, and xxxviii. 32, by the name *Aiſh*; and by many of the poets under its Greek name *Arcturus*. Dr. Hornſby, the Savilian Profeſſor of Aſtronomy, concludes, that Arcturus is the neareſt ſtar to our ſyſtem viſible in the northern hemiſphere; becauſe the variation of its place, in conſequence of a proper motion of its own, is more remarkable than that of any other of the ſtars; and, by comparing a variety of obſervations reſpecting the quantity and direction of the motion of this ſtar, he infers, that the obliquity of the ecliptic decreaſes at the rate of 58′ in 100 years; a quantity which nearly correſponds to the mean of the computations framed by Euler and De la Lande, upon the principles of attraction. Philoſophical Tranſactions, v. 63.

ARCTURUS, *ſ.* in botany. See CELSIA.

ARC'TUS, a name given by the Greeks to two conſtellations

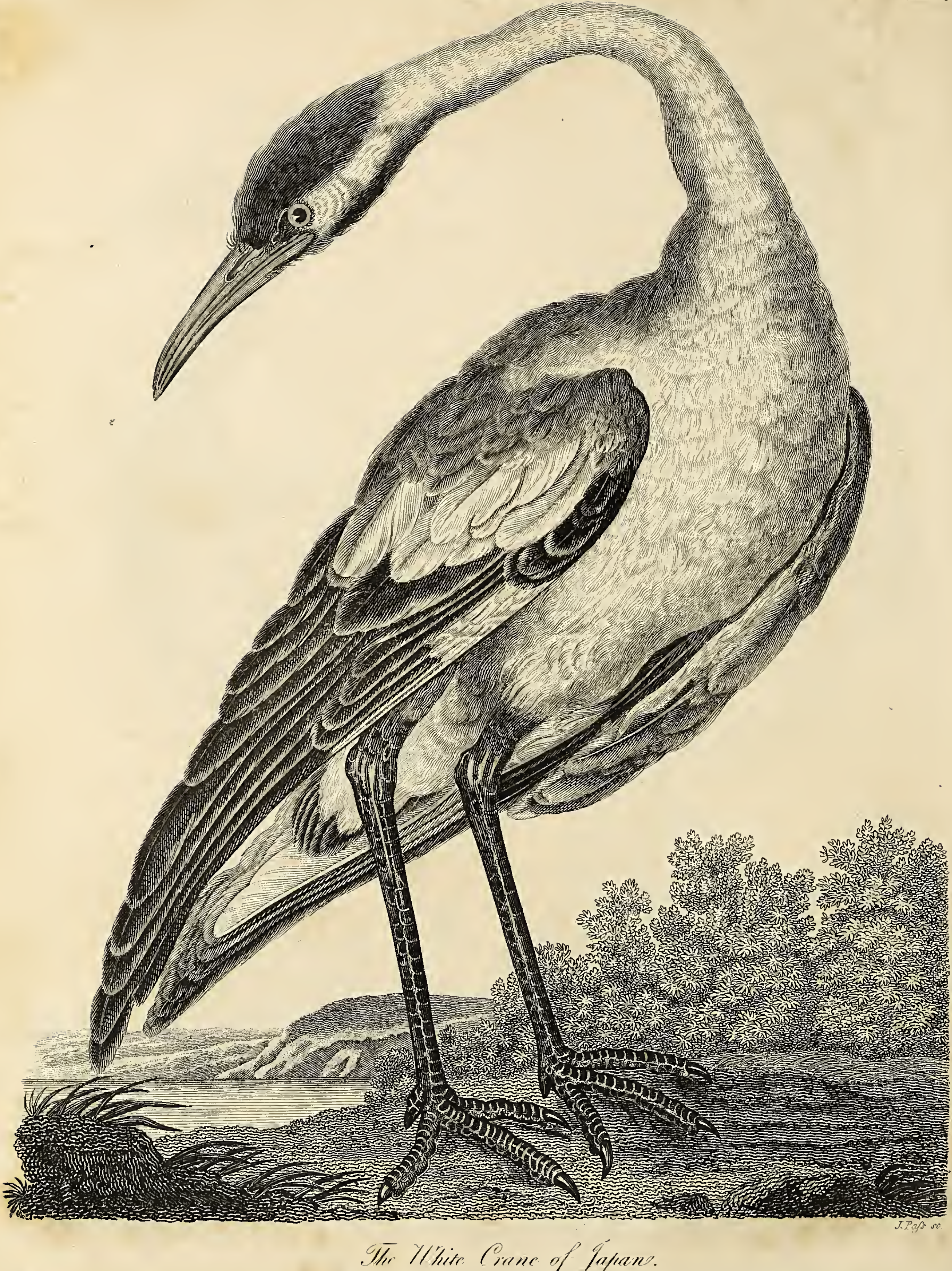
ARDEA



J.Pass sculp.

1. The Balearic Crane _ 2. The Numidian Crane.

London Published the Act directs, Jan. 1, 1798, by J.Wilkes.



J. Paſs sc.

The White Crane of Japan.

London, Publish'd as the Act directs, July, 23-1808, by J. Wilkes. —

ſtellations of the northern hemiſphere; by the Latins called *urſa major* and *minor*, and by us the *greater* and *leſſer bear*.

AR'CUATE, *adj.* [*arcuatus*, Lat.] Bent in the form of an arch.—The cauſe of the confuſion in ſounds, and the inconfuſion of ſpecies viſible, is, for that the ſight worketh in right lines; but ſounds, that move in oblique and *arcuate* lines, muſt needs encounter and diſturb the one the other. *Bacon.*—In the gullet, where it perforateth the midriff, the carneous fibres are inflected and *arcuate*. *Ray.*

ARCU'ATILE, *adj.* Bent; inflected.

ARCUA'TION, *ſ.* The act of bending any thing; incurvation. The ſtate of being bent; curvity, or crookedneſs. In gardening, the method of raiſing by layers ſuch trees as cannot be raiſed from ſeed, or that bear no ſeed, as the elm, lime, alder, willow; and is ſo called from bending down to the ground the branches which ſpring from the offsets or ſtools after they are planted. See LAYERS and LAYING.

ARCU'ATURE, *ſ.* [*arcuatura*, low Lat.] The bending or curvature of an arch.

ARCUA'TUS, *ſ.* [from *arcus*, Lat. a bow.] A ſpecific name of the jaundice, either becauſe the colour of the eyes is like a rainbow, or becauſe of the rainbow-like arch which is under the eye-lid in this diſeaſe.

ARCUBA'LISTER, *ſ.* [from *arcus*, a bow, and *baliſta*, Lat. an engine.] A croſs-bow man.

ARCUC'CIO, or ARCU'TIO, *ſ.* a machine made of a board, covered with pieces of hoops, like the tilt of a waggon; uſed in Italy to prevent children from being over-laid and ſmothered by nurſes or others. Every nurſe in Florence is obliged to lay her child in an *arcutio*, under pain of excommunication.

AR'CULA, *ſ.* [dim. of *arca*, Lat. a cheſt.] The cavern in which the eye is lodged; the ſocket of the eye.

AR'CULUS, in heathen mythology, the patron of honeſty.

ARCY'RIA, *ſ.* in botany, a genus of fungi, according to the claſſification of Albertini and Schweiniz. The ſpecies are: 1. Arcyria leucocephala. 2. Arcyria flava. 3. Arcyria cinerea. 4. Arcyria incarnata. 5. Arcyria punicea.

A'RD, [Sax.] Signifies natural diſpoſition; as, *Goddard*, is a divine temper; *Reinard*, a ſincere temper; *Giffard*, a bountiful and liberal diſpoſition; *Bernard*, filial affection.

ARD, [Heb. a commander.] A man's name.

ARDA'LIDES, a ſurname of the Muſes, taken from Ardalus, ſon of Vulcan, whom they held in great honour.

AR'DALUS, a ſon of Vulcan, ſaid to have been the firſt who invented the pipe, and that he gave it to the Muſes.

AR'DAMON, or ARDAMA, *ſ.* in antiquity, a veſſel of water placed at the door of a perſon deceaſed, till the time of burial, as a token that the family was in mourning, and to ſerve to ſprinkle and purify perſons as they came out of the houſe.

AR'DAS, *ſ.* [*αρδας*, from *αρδευω*, to defile.] Filth; excrement.

ARDAS'SES, *ſ.* in commerce, the coarſeſt of all the ſilks of Perſia. In this ſenſe, they ſay, the *legis*, the *houſets*, the *chouſs*, and the *payas ardaſſes*, to ſignify the worſt of thoſe four ſorts of Perſian ſilks.

ARDASSI'NES, *ſ.* in commerce, called in France *ablaques*; a very fine ſort of Perſian ſilk, little inferior in fineneſs to the ſourbaſtis. It is but little uſed in the ſilk manufactures of Lyons and Tours, becauſe it will not bear hot water in the winding.

ARDE'A, *ſ.* [Blanchard deduces this word from *arduus*, Lat. becauſe it flies high; Minſhew from *ardo*, to burn, becauſe of the hot quality of its dung; others from the city of *Ardea*, from whoſe ſcattered embers this bird, according to Ovid, is generated; or from *αηρ*, the air, and *δυω*, Gr. to penetrate.] In ornithology, a genus of birds of the order of grallæ. The general characters of this genus are theſe—The bill is ſtraight, ſharp, long, and ſomewhat compreſſed, with a furrow that runs from the noſtrils towards the point; the noſtrils are linear; the tongue ſharpened; and the feet have four toes. This extenſive genus contains the herons, the ſtorks, the cranes, the egrets, and the bitterns, amounting in all to ninety-ſix ſpecies, ranged in five diviſions.

I. Creſted: *bill hardly longer than the head.*

1. Ardea pavonia, the crowned or Balearic crane: creſt briſtly, erect; temples with two naked wattles. Bill browniſh; irids grey; crown covered with ſhort ſilky feathers; creſt circular, yellowiſh tipt with black, temples and wattles red; body blueiſh-aſh; wing-coverts white, the greater ones reddiſh, thoſe next the body blackiſh; tail and greater quill-feathers black, the ſecondary bay; legs duſky. Inhabits Africa and Guinea; two feet nine inches long; is eaſily tamed, and feeds on worms and vegetables; runs well, and continues long on the wing; ſleeps on one leg; fleſh tough.

2. Ardea virgo, the Numidian crane: behind each eye a tuft of long, white, pendent feathers. Bill yellowiſh, the baſe greeniſh, tip red; irids red; head and tips of the primary quill-feathers black; feathers of the breaſt long, pendulous; creſt over the eyes turned back and pendulous; body blueiſh-aſh; crown cinereous; head, neck, throat, breaſt, and legs, black. Inhabits Africa and Aſia: three feet three inches long.—Theſe two beautiful birds are correctly figured in Plate I.

II. Cranes. *Head bald.*

3. Ardea grus, the common crane: hind-head naked papillous; cap and quill-feathers black; body cinereous; innermoſt tail-feathers jagged. Bill greeniſh-black; front covered with black down; hind-head red, with a few ſcattered hairs, and beneath a cinereous area; temples and upper neck white; legs black.—There is alſo a beautiful variety, with the cap white; lower part of the neck and quill-feathers black; as delineated in the annexed engraving, Plate II. Theſe inhabit Europe and Aſia; but the white variety is found chiefly in Japan; they migrate in autumn towards the ſouth; are above five feet long: feed on all ſorts of vermin and green corn; fly in vaſt flocks, at a great height, and reſt on one leg.

4. Ardea Canadenſis, the brown crane: fore-head naked, papillous; body cinereous; wings teſtaceous on the outſide. Bill duſky, the lower mandible tipt with pale fleſh-colour; head on the naked part red; back, wings, and ſcapulars, reddiſh; greater quill-feathers dark brown; legs black. Inhabits North America; three feet three inches long; feeds on corn and various inſects, and migrates; fleſh good.

5. Ardea Americana, the whooping crane: crown, nape, and naked temples, papillous; front, nape, and primary quill-feathers, black; body white. Bill yellowiſh, ſerrate at the tip; crown red, covered with black hair; head beneath, as far as the lower jaw, red; legs black. Inhabits North America; four feet ſix inches long; makes a great clamour, and feeds on worms and marſh inſects.

6. Ardea antigone, the Indian crane: naked head and papillous collar red; body cinereous; primary quill-feathers black. Bill greeniſh-yellow with a duſky tip; crown and ſpot behind the eyes white; legs red; claws black. Inhabits Africa and India; five feet high.

This is the argil, or hurgil, mentioned by Mr. Ives, in his journey through India; and of which he gives the following deſcription: "It is a very large ſpecies; from tip to tip of the wings meaſuring fourteen feet ten inches; and from the tip of the bill to the claws ſeven feet and a half. The bill is ſixteen inches round at the baſe, and nearly of a triangular ſhape; the feathers of the back and wing are very ſtrong, and of an iron colour; thoſe of the breaſt long: over the belly a great deal of down, of a dirty white: the legs and half the thighs are naked. This monſter (as Ives terms it) inhabits Bengal, and is alſo found at Calcutta. It majeſtically ſtalks along before one, and appears at firſt like a naked Indian. The common opinion is, that the ſouls of the Bramins poſſeſs theſe birds. On opening one of them, a terapin, or land-tortoiſe, ten inches long, was found in its craw, and a large male black cat was found entire in its ſtomach." The ſame ſpecies ſeems to have been remarked by Mr. Smeathman in Africa, while reſident there; an adult of one of which will often meaſure ſeven feet when ſtanding erect. He deſcribes the plumage much the ſame as Mr. Ives's bird; adding, "that the gape is monſtrouſly wide: the head is covered with white down, thinly diſperſed, appearing not unlike a grey-headed man: on the middle of the neck before, a long conic membrane, like a bladder, ſprinkled very thinly with ſhort down, riſing or falling as the animal moves the beak, and always appearing inflated. Theſe birds are met with in companies. A young bird, about five feet in height, was brought up tame, and preſented to the chief of the Bananas, where Mr. Smeathman lived; and, being accuſtomed to be fed in the great hall, ſoon became familiar, duly attending that place at dinner-time, and placing itſelf behind its maſter's chair, frequently before any of the gueſts entered. The ſervants were obliged to watch it narrowly, and to defend the proviſions with ſwitches in their hands; but, notwithſtanding this, it would frequently ſnatch off ſomewhat or other, and it once ſeized a whole boiled fowl, which it ſwallowed in an inſtant. Its courage is not equal to its voracity; for a child of eight or ten years old ſoon puts it to flight with a ſwitch, though at firſt it ſeems to ſtand upon its defence, by threatning with its enormous bill widely extended, and crying out with a loud hoarſe voice like a bear or tiger. It is an enemy to ſmall quadrupeds, as well as birds and reptiles, and deſtroys fowls and chickens, though it dare not attack a hen with her young openly: it preys alſo on rats, young kittens, and the like; and has been known to ſwallow a cat whole: a bone of a ſhin of beef, being broken aſunder, ſerves it but for two morſels. The individual above-mentioned uſed to fly about the iſland, and rooſt very high among the ſilk-cotton trees; from whence, at two or three miles diſtance, it could ſpy the dinner carrying acroſs the yard; when, darting from its ſtation, it would enter promiſcuouſly with the women who carried in the diſhes. When ſitting, it was obſerved to reſt itſelf on the whole length of the hind part of the leg. It ſometimes ſtood near, for half an hour after dinner, with the head turning alternately, as if liſtening to the converſation." It is certainly the moſt extraordinary bird of this numerous genus.

7. Ardea gigantea, the Siberian crane: white; temples and front naked, red, wrinkled; ten firſt quill-feathers ſhining black; bill and legs red. Bill ſerrate; irids pale white; tail with twelve ſubequal feathers; the year-old bird is tawnyiſh, beneath white; face and legs greeniſh-brown. Inhabits the vaſt marſhy flats of Siberia; feeds on reptiles, worms, and ſmall fiſh; ſtands four feet and a half high.

III. Storks. *Orbits naked.*

8. Ardea ciconia, the white ſtork: white; orbits and quill-feathers black; bill, legs, and ſkin, red. Inhabits Europe, Aſia, and Africa; three feet three inches long; feeds on fiſh and reptiles, and is in ſome countries held ſacred for its uſe in deſtroying ſerpents; ſleeps on one leg; in autumn migrates in vaſt and orderly flocks to the fens of Egypt and Barbary; greater wing-coverts black.

9. Ardea maguari, American ſtork: white; orbits and legs red; bill cinereous; upper tail and greater wing-coverts, quill-feathers and ſcapulars, black. Bill nine inches long, the baſe yellowiſh-green; irids ſilvery; feathers of the throat long, lax; claws broad, flat. Inhabits the warmer parts of America; three and a half feet long.

10. Ardea nigra, the black ſtork: brown; breaſt and belly white. Bill greeniſh-grey tipt with whitiſh; feathers of the hind-head and under the neck long; neck and ſides of the head ſhining azure; legs red. Inhabits Europe and Aſia: two feet nine inches long; is timid, and retires into thick woods and inacceſſible fens; feeds on fiſh and reptiles. See Plate III.

IV. Herons and Bitterns. *Middle claw ſerrate inwardly.*

11. Ardea dubia, the gigantic heron: glaucous, beneath dirty-white; bill a little triangular. Bill of many colours, ſixteen inches round at the baſe; gape of the mouth very large; head and neck nakediſh; in the middle of the neck is a long membranous conic bag, thinly covered with down; quill-feathers brown; legs black. Inhabits India and Africa: ſeven feet high when ſtanding; is docile, eaſily tamed, and very voracious; feeds on fiſh, birds, and reptiles.

12. Ardea torquata, the wreathed heron: hind-head black, creſted; back brown; neck and belly dirty-white; breaſt black with yellowiſh lunules. Inhabits South America.

13. Ardea nicticorax, the night heron: creſt on the hind-head white, horizontal, of three feathers; back black; belly yellowiſh, (male.) Head ſmooth, brown; belly browniſh, beneath white; firſt quill-feathers with a white ſpot at the tip, (female.) Bill black, yellowiſh at the baſe; lores and orbits green. Male; a white band on the front; head as far as the middle of the neck black; quill and tail-feathers cinereous; legs yellowiſh-green. Female; crown brown; creſt none; body grey-brown; neck beneath with a ruſty line; eighteen firſt quill-feathers with a white ſpot at the tip; tail-feathers edged with white; lores white; legs brown. Inhabits Europe, Aſia, and America: twenty inches long, builds in trees or among rocks; feeds on fiſh; migrates, and frequents the mouths of rivers and ſtagnant marſhes.

14. Ardea Jamaicenſis, the Jamaica night heron: brown, beneath white; head ſubcreſted; breaſt and belly with browniſh ſtreaks. Bill duſky; lores and orbits greeniſh; chin and vent white; primary quill-feathers tipt with black; legs brown. Inhabits the woods of Jamaica; one foot eleven inches long.

15. Ardea Caledonica, the Caledonian night heron: ferruginous, beneath white; creſt on the hind-head of three feathers; frontlet black; eyebrows white. Bill black; area of the eyes green; legs yellow. Inhabits New South Wales: twenty-two inches long.

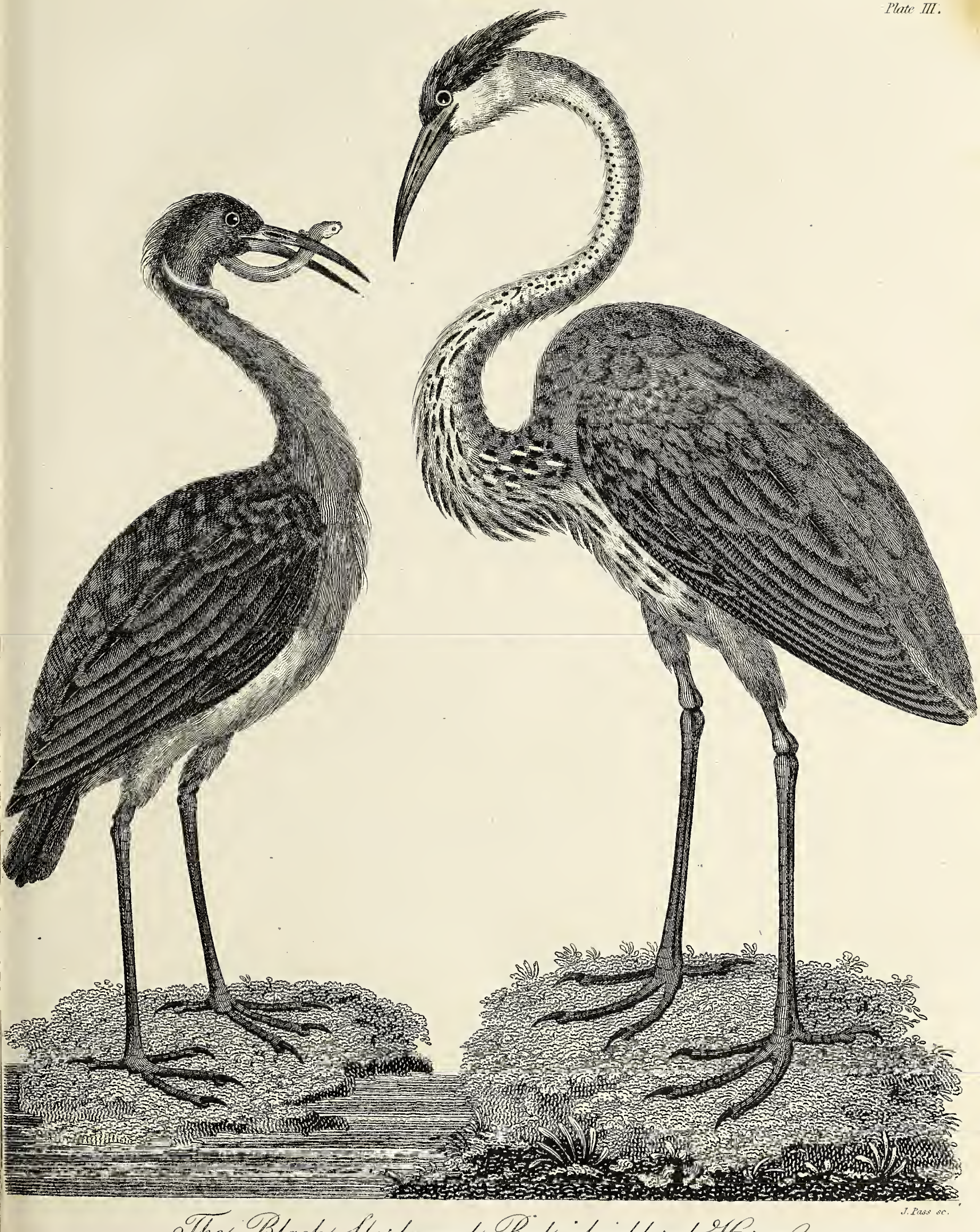
16. Ardea obſcura, the duſky heron: creſt on the hind-head of one feather; body above greeniſh, beneath cheſnut, longitudinally ſtriped with white and ferruginous; quill-feathers with a white ſpot at the tip. Bill recurved, greeniſh-black; feathers of the creſt white; front, crown, and nape, duſky-cheſnut; back and wing-coverts duſky-cheſnut and gold-green; legs ſhort, greeniſh. Inhabits Sclavonia; ſize of Ardea ſtellaris.

17. Ardea Cayanenſis, the Cayenne night heron: cinereous; head black, crown white; creſt unequal, of ſix feathers, half white, half black. Bill black; lores pale green; a white line from the noſtrils beneath the eyes to the hind head; body blueiſh-aſh; quill-feathers black; legs yellowiſh. Inhabits Cayenne; twenty-one inches long.

18. Ardea purpurea, the creſted purple heron: hind-head black; creſt pendent, of two long feathers; body olive, beneath purpliſh. Bill brown tipt with duſky, beneath yellowiſh; creſt black; orbits naked yellowiſh; from the angle of the mouth to the hind head a black ſtreak; chin white; upper half of the neck rufous, with three longitudinal black lines, the reſt olive behind, rufous at the ſides, and reddiſh on the fore-part; the feathers long, narrow, each with a black ſpot; a black band from the middle of the breaſt to the vent; lower tail-coverts white, mixed with rufous and tipt with black; angles of the wings rufous; quill-feathers duſky; legs greeniſh. Inhabits Aſia; two feet ten inches long.

19. Ardea Caſpica, the African heron: creſted; body cinereous; chin white; neck with three black lines. Bill and legs yellow; creſt of three long feathers; feathers of the breaſt and rump mixed with ferruginous; from the nape to the back a broad black line, and another on each of the ſides. Inhabits Africa, Aſia, and is very rarely found in England; ſize of Ardea cinerea.

20. Ardea major, the common heron: hind-head with a long



J. Pass sc.

The Black Stork, and Red-shouldered Heron.

London. Published as the Act directs, Oct.r 3. 1807, by J. Wilkes.

a long pendent creſt; body cinereous; line on the neck beneath the pectoral bar black, (male.) Hind-head ſmooth, black; back blueiſh, beneath whitiſh; breaſt with oblong, black ſpots, (female.) Bill duſky, the baſe beneath yellowiſh; area of the eyes naked, greeniſh; irids yellow; temples black; front, crown, and neck above, white; ſpurious wings and greater quill-feathers black; ſcapulars and feathers of the throat long, lax, narrow; body beneath white; legs dirty green. Female; creſt hardly any; head grey; feathers above the breaſt ſhort. Inhabits almoſt every where in fenny places; is very voracious, and preys on fiſh and reptiles, and even vegetables; is a great depredator on fiſh-ponds; flies very high with its head between its ſhoulders and its legs pendulous; builds frequently in trees, and lays four or five greeniſh-blue eggs; three feet three inches long.

21. Ardea garzetta, the little egret: hind-head creſted; body white; bill black; lores and legs greeniſh. Irids yellowiſh; creſt conſiſting of ſome ſhort and two long feathers; face naked, green; claws black. Inhabits marſhy places in temperate regions; a foot long.

22. Ardea leucogaſter, the demi-egret: blueiſh-black, beneath white; creſt on the hind-head of two feathers; bill, naked face, and legs, yellow. Lower part of the back, with ſome long, pendulous, rufous feathers. Inhabits Cayenne; hardly two feet long.

23. Ardea rufeſcens, the reddiſh egret: blackiſh-grey; lores and orbits green; feathers of the head and neck, and longer narrow ones of the back, ruſty-rufous. Bill yellowiſh, duſky at the tip; legs black. Inhabits Louiſiana; near two feet long.

24. Ardea egretta, the great egret: ſubcreſted, white; legs black; feathers of the back and breaſt lax, narrow and very long. Creſt hardly viſible; bill black or dirty-yellow, duſky on the back and at the tip. Inhabits South America: about two feet long; is ſolitary, ſhy, lies hid among the tall reeds, and feeds by night.

25. Ardea agami, the agami heron: black-blue, beneath rufous; hind-head creſted; orbits and chin white. Bill duſky; cap and ſix-feathered long creſt blue; nape and jagged ſcapulars pale blue; lower part of the neck and back with long pendulous feathers. Inhabits Cayenne; thirty-one inches long.

26. Ardea cocoi, the cocoi heron: hind-head, pendent creſt, and back, cinereous; neck beneath ſpotted with black; ſides of the head black. Bill greeniſh-yellow; irids golden; body cinereous; creſt five inches and a half long; cheeks, chin, and crown, white; neck and back with very long, pendulous feathers. Inhabits Braſil and Cayenne; above three feet long.

27. Ardea Johannæ, the Johanna heron: above cinereous, beneath white; pendent creſt and quill feathers black; feathers of the throat long, lax, and ſpotted with black. Bill yellowiſh; face naked, yellowiſh-green; legs brown.

28. Ardea fuſca, the brown heron: creſt blackiſh; body blackiſh-brown, beneath white; breaſt with long brown ſpots. Inhabits Cayenne; two feet and a half long. Bill brown; legs yellow.

29. Ardea hoactli, the dry heron: creſted head and body above black, beneath white; face naked, yellowiſh; front between the eyes white; wings and tail cinereous. Bill black, yellow at the ſides; irids and legs yellow. Female above brown mixed with whitiſh, beneath white tinged with brown. Inhabits the lakes of New Spain; three feet three inches long.

30. Ardea houhou, the houhou heron: head purple, creſted; body cinereous; angles of the wings white; front varied black and white; wing-coverts blue and cinereous. Bill black; legs variegated with brown, black, and yellowiſh; creſt conſiſts of ſeven purple feathers. Inhabits the fens of Mexico: a rare bird.

31. Ardea Indica, the Lohaujung heron: varied with brown and green; ſecondary quill-feathers green; tail black; wing-coverts, primary quill feathers, and body beneath, white. Bill black; legs fleſh colour; crown, neck, and hind-part of the back, with green ſpots; ſometimes the back is white. Inhabits India; three feet long.

32. Ardea flavicollis, the yellow necked heron: creſt on the hind-head and body black; neck yellowiſh at the ſides, the fore-part cheſnut, the feathers edged with black and white. Inhabits India; two feet long.

33. Ardea Novæ Hollandiæ, the white-fronted heron: ſubcreſted; lead-cinereous, beneath ruſty-rufous; face, beyond the eyes, chin, and throat, white. Bill black, the baſe underneath yellowiſh; lores and orbits naked, greeniſh; legs yellow-brown; feathers of the crown long, black; cheeks, chin, front and fore-part of the neck as far as the middle, white; feathers of the cheſt long. Inhabits New Holland; twenty-eight inches long.

34. Ardea Herodias, the great heron: hind-head creſted; body brown; thighs rufous; breaſt with oblong black ſpots. Bill brown; face yellowiſh; creſt and quill-feathers black; neck and breaſt rufous. Inhabits the lakes and rivers of Virginia; feeds on lizards, frogs and fiſh; above five feet long.

35. Ardea Ludoviciana, the Louiſiana heron: head and neck rufous; front white, ſpotted with rufous; crown creſted; wing-coverts and tail green; back cinereous, with a purple tinge; breaſt rufous-brown. Bill duſky; lores yellowiſh; quill feathers blackiſh, many of them tipt with white; wing-coverts edged with tawny; legs yellow. Inhabits Louiſiana; ſixteen inches long.

36. Ardea violacea, the yellow-crowned heron: hind-head pale yellow; creſt white; body ſtreaked black and white, beneath blueiſh; legs pale yellow. Bill black; irids red; face naked, green; creſt four or ſix inches long; head violet; from the angle of the mouth each ſide to the hind-head a white ſtreak; quill-feathers blueiſh-brown; tail blue. Inhabits Carolina: fifteen inches and a half long.

37. Ardea cœrulea, the blue heron: hind-head creſted; body blue. Bill and lores blue; legs green. Female; head and neck duſky-purple; chin and middle of the throat white; back lead-colour. Inhabits America: eighteen inches long.

38. Ardea cœruleſcens, the bluiſh heron: creſted; body duſky-blue; head and neck rufous-brown; hind-head with two long feathers. Bill pale yellow; lores red; legs brown. Inhabits Cayenne: nineteen inches long.

39. Ardea rubiginoſa, the ruſty-crowned heron: ferruginous, beneath whitiſh ſtriate with black; head ſubcreſted; chin white; back with a few black ſpots. Bill ſlender; irids and legs yellow; front and quill-feathers duſky; throat with four black ſtreaks; feathers of the breaſt long, looſe; from the breaſt to the upper part of the neck a black line; tail ſhort, lead-colour. Inhabits North America: ſize of Ardea ſtellaris.

40. Ardea Hudſonia, the red-ſhouldered heron: creſted crown black; body browniſh, beneath whitiſh; neck beneath ſpotted with reddiſh black. Bill above black, beneath tawny; face greeniſh-yellow; temples, lower part of the head and breaſt white, the latter with oblong black ſpots; neck beneath brown, with deeper bars; legs duſky. Inhabits North America: perhaps the female of the laſt.

41. Ardea comata, the ſquacco heron: ferruginous, beneath white; hind-head with a long, white, pendent creſt, edged with black. Bill livid red, tipt with brown; lores greeniſh; irids yellow; rump, wings, and tail, white; legs greeniſh yellow.

42. Ardea erythrocephala, the red-creſted heron: hind-head with a red pendent creſt; body white. Inhabits Chili.

43. Ardea Thula, the Chilian heron: hind-head creſted and with the reſt of the body white. Inhabits Chili.

44. Ardea cyanocephala, the blue-headed heron: crown creſted, and with the back blue; wings black, edged with white. Bill black; belly yellow-green; tail green; legs yellow. Inhabits Chili.

45. Ardea candidiſſima, the ſnowy heron: ſnow-white; bill and legs blackiſh; eyes and toes yellow; creſt very long, ſhading the hind-head, neck, breaſt, and back. Inhabits near Carthagena in America; leſs than Ardea ſtellaris.

46. Ardea caſtanea, the caſtaneous heron: cheſnut, beneath white; face and eyebrows green; pouched chin and rump white; head creſted. Bill livid at the baſe, brown at the tip; irids ſaffron; ſides of the head yellowiſh; neck yellow-bay, beneath varied yellow and whitiſh; quill and tail-feathers ſnowy; wing-coverts ochre. Inhabits near the Tanais: twenty-two inches long; builds in trees.

47. Ardea Squajotta, the Bologna heron: bay; creſt on the head black, the middle feathers white; ſcapulars long, narrow, white at the baſe. Bill yellow, tipt with black; face naked, yellow; creſt with thirty feathers; legs green. Inhabits Italy; eighteen inches long.

48 Ardea galeata, the galeated heron: hind-head ſubcreſted; body milk-white; bill pale yellow; legs ſcarlet. Inhabits Chili: two feet ſeven inches high; bill four inches long.

49. Ardea ferruginea, the ferruginous heron: head ſubcreſted; body blackiſh, the feathers ferruginous at the tips; beneath varied with ferruginous, whitiſh, brown, and cinereous. Bill above brown, beneath reddiſh-green; face naked, green; irids ſaffron; chin pale ochre; quill-feathers black-brown tipt with white; legs greeniſh. Inhabits Europe and Aſia; twenty-one inches long; migrates; feeds on fiſh and inſects, and builds on the top branches of trees.

50. Ardea erythropus, the red legged heron: head creſted; body cheſnut-ſaffron, beneath deeper; bill blue; legs red. There is a variety with the neck ſpotted at the ſides; legs pale yellowiſh. Bill tipt with black; head varied with yellow and black. Inhabits Italy: ſize of Ardea vireſcens.

51. Ardea ſtriata, the ſtriated heron: hind-head ſubcreſted; back hoary, ſtreaked; neck beneath ferruginous; ſecondary quill-feathers tipt with white. Crown black; quill-feathers brown. Inhabits Guiana and Surinam; ſize of Ardea cinerea.

52. Ardea nævia, the ſpotted heron: brown; hind-head black, ſubcreſted; long quill-feathers blackiſh, tipt with white; ſhoulders ſtreaked with white. Bill and legs deep brown; behind each eye a ſmall, oblong, black patch; cheeks and ſides of the neck pale ruſty; throat and fore-part of the neck white, thickly ſpotted with black; body beneath pale brown; thighs with minute, longitudinal, black ſpots; long quill-feathers with a white ſpot at the tip; tail black. Inhabits South America. Cim. Phyſ. 70. tab. 36.

53. Ardea vireſcens, the green heron: hind-head ſubcreſted; back ſhining green; breaſt reddiſh; lores pale yellow; tail feathers gold-green, (male.) Brown gold-green, beneath whitiſh; neck reddiſh, ſtreaked with white; wing coverts and quill-feathers ſpotted with white, (female.) Bill greeniſh-brown; legs yellowiſh; crown deep green. Male; quill-feathers gold-green, ſecondary edged with ruſty. Female; creſt hardly any; wing-coverts with triangular rufous-white ſpots at the tip. Inhabits South America; eighteen inches long; ſits on trees.

54. Ardea Bononienſis, the collared heron: black; collar white; legs and two ſpots on the yellow bill black. Inhabits about Bononia; ſize of a curlew.

55. Ardea alba, the great white heron: head ſmooth; body white; bill tawny; legs black. Bill ſix inches long; irids yellowiſh; lores green. Inhabits Europe, Aſia, and America; three feet ſix inches long.

56. Ardea pileata, the black-creſted heron: hind-head creſted; body white; crown black. Bill brown; legs pale yellow; lores grey-green. Inhabits Guiana: about the ſize of the laſt.

57. Ardea nivea, the ſnowy heron: head ſmooth; bill and legs black; body ſnowy; feathers of the neck and back flowing. Face yellowiſh-blue; toes ſaffron. Inhabits the ſhores of the Caſpian Sea: above two feet long.

58. Ardea helias, the barred heron: head ſmooth: body above black, waved with tranſverſe ferruginous lines: beneath whitiſh: quill and tail-feathers with ferruginous bars. Bill blackiſh; tongue very narrow, grooved; pupil red; head and beginning of the neck black with white ſtreaks; rump with tranſverſe white lines; ſeven of the tail-coverts with a large white ſpot at the tip; tail blackiſh, ſtreaked with white and two ferruginous bands. Inhabits South America: ſixteen inches long; feeds on ſmall fiſh and inſects, and expands the tail like a peacock.

59. Ardea ſacra, the ſacred heron: head ſmooth: body white: inner wing-coverts and tail-feathers with black lines: dorſal feathers jagged, white. There is a variety with the crown white: body variegated white and black: dorſal feathers jagged, black: legs black. Middle of the crown with a few black ſtreaks; bill brown; legs yellow; greater quill-feathers duſky at the tips. Inhabits Otaheite: two feet and a quarter long; is held ſacred by the natives.

60. Ardea atra, the black heron: entirely black: face naked: head ſmooth. Inhabits Sileſia: ſize of Ardea major. Wings blueiſh.

61. Ardea purpurata, the purple heron: head ſmooth; crown and neck blackiſh-aſh: body above purple bay, beneath cinereous: face naked, yellowiſh. Upper mandible yellowiſh-green, lower yellowiſh; neck above with blackiſh lines; throat with yellowiſh ſpots; quill-feathers blackiſh-brown; legs brown. Inhabits the banks of the Danube: ſize of Ardea major.

62. Ardea ſpadicea, the Mexican heron: purple-bay, wings, tail, and ſmooth head, bay; crown black. Inhabits New Spain: a foot long.

63. Ardea Æquinoctialis, the little white heron: head ſmooth: body white: two firſt quill-feathers brown on the outer edge. β. Crown and breaſt ſaffron: lores and legs yellow-ſaffron. γ. Lores pale yellow: bill purple: legs pale purple. Bill and lores red; irids yellow; legs green. Inhabits America, β. Bononia; eighteen inches long.

64. Ardea cracra, the Martinico heron: head ſmooth; body variegated with reddiſh, above blueiſh-aſh, beneath cinereous; neck beneath and breaſt white. Bill black, beneath yellowiſh-brown; irids golden; orbits naked, yellowiſh; hind-head and neck above brown mixed with a yellow dead-leaf colour; leſſer wing-coverts green, edged with rufous, the greater and quill-feathers edged with white; tail greeniſh-black; legs yellow. Inhabits South America, near the banks of rivers.

65. Ardea leucocephala, the violet heron: black-velvet; crown ſmooth, black; reſt of the head, neck, and vent, white. Bill and legs brown; lower part of the neck blueiſh-black; lower tail-coverts white. Inhabits Coromandel; thirty-three inches long.

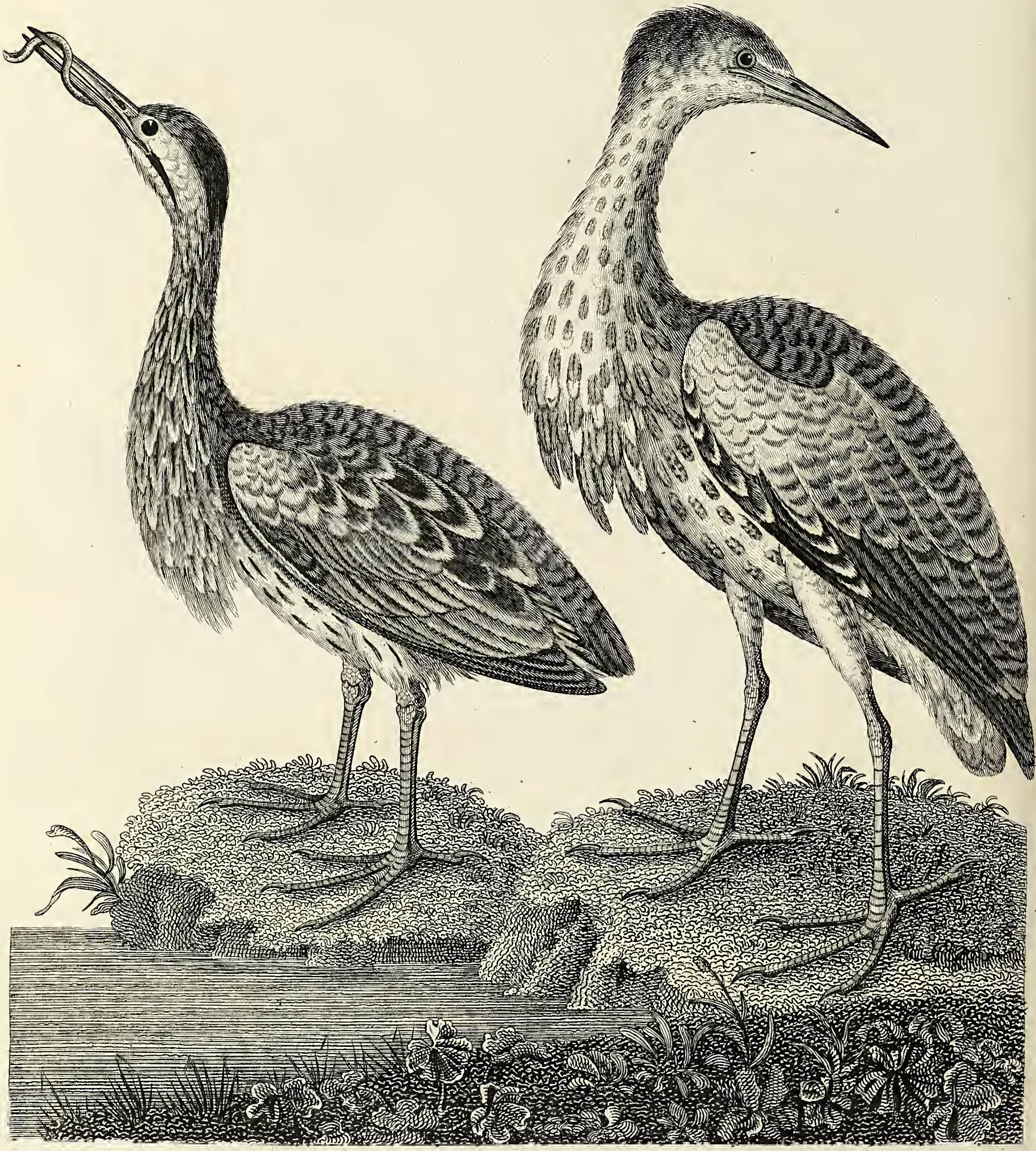
66. Ardea rufa, the rufous heron: black; head ſmooth; temples ferruginous; breaſt rufous; lower part of the neck whitiſh, with longitudinal browniſh ſpots; upper part, back, and wings, brown-aſh. From each eye to the hind-head a black ſtreak; legs brown. Inhabits Auſtria; ſize of Ardea major.

67. Ardea Sinenſis, the Chineſe heron: brown with pale bars; head ſmooth; wings and tail black. Inhabits China; ſmall. Bill yellowiſh; legs green.

68. Ardea variegata, the variegated heron: ferruginous ſpotted with brown, beneath paler; front black; chin white; thighs rufous; legs brown.

ARDEA.

Plate IV.



J. Pass sc.

The stellated Bittern; and the little Bittern.

69. Ardea virgata, the ſtreaked heron: blackiſh-brown; neck beneath white; throat ſtreaked with black; wing-coverts ſtreaked with yellowiſh. Inhabits North-America; ſeventeen inches long. Legs greeniſh.

70. Ardea cana, the aſh-coloured heron: cinereous; neck brown-aſh; belly, cheeks, and chin, white. Bill black; feathers of the flanks long, broad; legs yellowiſh. Inhabits North America; twenty-five inches long.

71. Ardea carunculata, the wattled heron: back, wings, legs, and crown, black-blue; ſmooth head and neck white; body beneath black; bill and chin carunculate. Bill black, with a red baſe; orbits naked, red; irids reddiſh; two wattles hanging from the chin covered with white feathers. Inhabits Africa; five feet long.

72. Ardea Malaccenſis, the Malacca heron: brown; beneath, wings and tail white; ſmooth head and neck ſtreaked with brown and white; face naked, cinereous. Bill black, the baſe yellow at the ſides; feathers of the head and neck long, narrow, looſe; legs yellow. Inhabits Malacca; nineteen inches long.

73. Ardea cinnamomea, the cinnamon heron: cinnamon; head ſmooth; chin and vent white; throat ſtreaked with brown; a white ſtripe on each ſide of the chin. Inhabits China; eighteen inches long. Bill and legs yellow.

74. Ardea pumila, the dwarf heron: ſmooth head and neck varied with yellowiſh, cheſnut and white; body above cheſnut, beneath whitiſh; tail ſnowy. Upper mandible black, with a yellowiſh edge, lower pale ochre, with a yellowiſh baſe; face ochre; irids yellow; chin and band reaching as far as the breaſt white; rump ſnowy; legs dirty-aſh. Inhabits the Caſpian Sea; nineteen inches long.

75. Ardea badia, the cheſnut heron: cheſnut, beneath whitiſh, with a longitudinal ſnowy ſtripe down the middle; quill-feathers black; wing-coverts bluiſh. Bill brown; irids yellowiſh; tail cheſnut; legs red. Inhabits Sileſia; ſize of a crow; builds in trees.

76. Ardea Philippenſis, the Philippine heron: beneath white; ſmooth crown and neck above reddiſh-brown; back with tranſverſe rufous and brown lines; wings and tail black; throat reddiſh dirty-white. Bill greeniſh-yellow; face naked, green; wings edged with reddiſh-white; legs yellow. Inhabits the Philippine Iſlands: eleven inches long.

77. Ardea Novæ Guineæ, the New Guinea heron: black; head ſmooth; face naked, greeniſh. Inhabits New Guinea; ten inches long. Bill brown.

78. Ardea cyanopus, the cinereous heron: cinereous, beneath white; head ſmooth; face blue; quill-feathers partly white, partly black. Bill blue, tipt with black; wing-coverts cinereous mixed with black; legs bluiſh. Inhabits America; a little larger than a crow.

79. Ardea maculata, the ſpotted heron: brown; neck above and upper part of the back ſpotted with white; head ſmooth; lores naked, greeniſh. Bill brown, beneath greeniſh-yellow; quill-feathers with a black ſpot at the tip; legs greeniſh-brown. Inhabits the fens of Europe; eighteen inches and a quarter long.

80. Ardea Gardeni, the Gardenian heron: brown; head ſmooth; back blackiſh; throat and breaſt whitiſh, ſpotted with brown. Inhabits Cayenne and Carolina; eighteen or twenty-two inches long.

81. Ardea ſtellaris, the ſtellated bittern, head ſmoothiſh; body above teſtaceous, with tranſverſe ſpots, beneath paler, with oblong brown ſpots. Bill brown, beneath greeniſh; legs and lores green. Inhabits the temperate parts of Europe, Aſia, and America; three feet two inches long; migrates northernly in ſummer; feeds on fiſh and reptiles; about ſun-ſet riſes in the air to a vaſt height in a ſpiral direction, making a prodigious noiſe; builds among reeds; eggs four or five, greeniſh-aſh.

82. Ardea minuta, the little bittern: head ſmooth; body brown, beneath reddiſh; tail-feathers greeniſh-black; lores yellowiſh, (male.) Body brown; edges of the feathers reddiſh, beneath reddiſh; crown, back, wings and tail black, (female.) Bill yellow green; naked part of the face yellow; irids ſaffron; legs green brown. Inhabits Europe and Aſia, very rare in England; fifteen inches long. This and the preceding are ſhewn in Plate IV.

83. Ardea botaurus, the greater bittern: head ſmooth, black; body above cinereous-brown, beneath rufous; lores and naked orbits yellow; throat white, ſtreaked with black and reddiſh. Bill yellowiſh; irids yellow; feathers of the head and breaſt long, flowing; feathers of the ſides of the neck ſtreaked with black. Inhabits Italy; three feet nine inches long.

84. Ardea ſolonnienſis, the Italian bittern: crown black; ſmooth head and neck ferruginous; body above blackiſh, beneath reddiſh. Bill blackiſh, beneath cerneous; irids yellow; wing-coverts varied with ferruginous and white; greater quill-feathers blackiſh, leſſer ferruginous; legs brown. Inhabits Italy; larger than the next.

85. Ardea Marſigli, the Swabian bittern: rufous ſtreaked with brown; head ſmooth; throat white; quill-feathers browniſh with duſky bars; tail whitiſh. Face naked, yellow; irids whitiſh; legs yellowiſh. Inhabits the banks of the Danube; leſs than Ardea ſtellaris.

86. Ardea Danubialis, the rayed bittern: brown, with black and reddiſh lines; head ſmooth; lores naked, yellow; throat and breaſt whitiſh. Bill brown, beneath yellowiſh; legs and claws grey. Inhabits the banks of the Danube; ſize of the laſt.

87. Ardea undulata, the zigzag bittern: reddiſh-grey; cap black; body above with black waves, beneath with angular ſtreaks. Bill brown; lores bluiſh; neck tumid; legs yellow. Inhabits Cayenne; thirteen inches long.

88. Ardea Braſilienſis, the Braſilian bittern: head ſmooth; body blackiſh, dotted with yellow; quill and tail-feathers, bill and legs, blackiſh. Irids yellow; head and neck brown, with a few black ſpots; throat white, black and brown longitudinal ſpots. Inhabits Braſil; two feet eight inches long.

89. Ardea tigrina, the tiger bittern: head ſmooth; crown and tail black, with white bands; body black, ſpotted above with rufous, beneath with pale ochre; chin and vent white. Bill greeniſh; irids yellowiſh; chin and ſides of the neck reddiſh, with black ſpots; tail with four bands; legs green. Inhabits South America; two feet and a half long.

90. Ardea lineata, the lineated bittern: head ſmooth; bill and lores blue; wings and tail black; body above waved with rufous, yellowiſh, and brown, lines, beneath dirty-white. Head and neck rufous, with numerous brown lines croſſing each other; fore-part of the neck with a white line, each ſide edged with black ſpots; legs yellow. Inhabits Cayenne; two feet and a half long.

91. Ardea flava, the yellow bittern: ſtreaked; above brown, beneath white; head and neck reddiſh; tail-feathers with tranſverſe white ſtreaks. Bill near the tip ferrate, brown, greeniſh at the baſe; irids golden; feathers of the belly edged with yellow; tail with white lines; legs duſky-grey. Inhabits Braſil; two feet three inches long.

92. Ardea Senegalenſis, the Senegal bittern: rufous, beneath white; head ſmooth; feathers of the throat with a black longitudinal ſtreak down the middle; wings white, reddiſh in the middle. Bill reddiſh-brown, beneath yellow; feathers of the neck lax, rufous; legs yellow. Inhabits Senegal; twelve inches long.

93. Ardea exilis, the minute bittern: ſmooth head and body above reddiſh-bay, beneath white; ſides of the neck rufous; wings and tail black. Bill greeniſh; irids ſtraw-colour; lateral and lower feathers of the neck long, looſe; breaſt browniſh black; middle wing-coverts ferruginous; ſome of the quill-feathers tipt with cheſnut; legs green. Inhabits Jamaica; eleven inches and a half long.

V. *Bill gaping in the middle.*

94. Ardea Pondiceriana, the Pondicherry heron: grey-aſh; quill-feathers long, black; middle claw not ſerrate. Bill yellow, thick at the baſe, pointed at the tip, and a little bent in, gaping in the middle; ſpace between the bill and eyes feathered; legs yellow. Inhabits India; fourteen inches and a half long.

95. Ardea Coromandeliana, the Coromandel heron: white; back, wings, and tail black; upper mandible ſerrate from the middle to the tip. Bill like the laſt, and with the legs reddiſh-yellow; upper part of the head with black lines; lores and chin naked, black; irids red; toes connected at the baſe. Inhabits Coromandel: feeds on fiſh and reptiles.

96. Ardea ſcolopacea, the ſcolopaceous heron: brown; throat and breaſt ſtreaked with white; chin and legs white; wings and tail copper-colour. Bill brown-red, blueiſh at the tip, and a little bent in; noſtrils a mere ſlit in the furrow of the bill; orbits naked, tawny; middle-toe connected at the baſe and pectinate on the inner edge; legs whitiſh. Inhabits Cayenne; twenty-five inches long; an intermediate ſpecies between the Ardea and Scolopax genus.

ARDE'A, anciently a town of Latium, the royal reſidence of Turnus king of the Rutuli; ſo called either from the augury of the heron, or from the exceſſive heat of the country. It was a marſhy, ſickly, ſituation. It was built by Danaë, the mother of Perſeus, about five miles diſtant from the ſea, and twenty from Rome; now a hamlet. It was a Roman colony; the inhabitants called *Ardeates*. *Livy*. Lat. 41. 30. lon. 17. 49. E.

AR'DEBIL, or Ar'devil, a city of Perſia, in the province of Aderbijan. It was taken and burnt by Jenghiz Khan in 1222, and has been ſince rebuilt; and is ranked for dignity among the beſt cities of the kingdom, on account of its having been the reſidence and burying-place of ſome of the Perſian kings; particularly the ſepulchre of Sheik Sefi, to which the people reſort in pilgrimage. He founded a charity ſufficient to maintain a thouſand poor people, and to feed them three times a-day. Some of the principal ſtreets are planted on each ſide with elms and linden trees, to keep off the exceſſive heat of the ſun. The meidan, or great ſquare, is 300 paces long and 150 broad, with ſhops all round; which, when this place was in a flouriſhing ſtate, were ſtored with all manner of valuable commodities. The city is without walls, and is ſeated in the midſt of a large plain encompaſſed with mountains, the higheſt of which lies weſtward, and is always covered with ſnow. Theſe render the air ſometimes extremely hot, and at others intolerably cold, which occaſions epidemical diſtempers, that carry off great numbers of people. The ſoil produces little fruit, but is good both for corn and paſture. The ſheep are ſo numerous, that 100,000 have paſſed over the city bridge in one day. Here are ſeveral ſorts of mineral waters, which ſerve both for common bathing and for the cure of various diſeaſes; one of theſe is a ſulphureous ſpring, whoſe exhalations render the circumambient air extremely diſagreeable. Here are alſo three ſprings, which produce water boiling hot. About half a league from the city is a pool of ſtanding water, which is covered all over with ſalt like ice. Lat. 37. 55 N. lon. 47. 30. E.

ARDECAN', a town of Perſia, in the province of Irak, forty-three leagues eaſt of Iſpahan.

ARDE'CHE, one of the new departments of France. It takes its name from the river Ardeche, which falls into the Rhone.

ARDE'E, or A'therdee, a town of Ireland, in the county of Louth, thirty-four miles north-weſt of Dublin. Lat. 53. 54. N. lon. 6. 40. W. Here is a mount called Caſtle-guard, nearly ninety feet high, apparently a work of art; the depth of the main trench is between thirty and forty feet, the circumference at the top is not leſs than one hundred and forty, and round the foundation it is upwards of ſix hundred. Some conclude it to have been a ſepulchral monument, and burying-place of ſome of the Iriſh kings; others, that it was a place of aſſembly, for the people to debate on public affairs.

AR'DEL, *ſ.* [from the Brit.] A voucher to clear a perſon accuſed of felony. *Obſolete.*

ARDEL'ICA or Ariolica, now *Peſchiera*, in Italy, at the conflux of the lake Benacus with the river Mincius, where Attila had an interview with Leo the Great, and the deliverance of Italy was purchaſed by the ranſom of the princeſs Honoria.

AR'DEN, or Ardon, a county of Swiſſerland, and one of the bailiwicks of the Valais.

AR'DEN, *ſ.* the common name of foreſts among the Celtæ, from the wildly-extenſive one, which ranged for 500 miles acroſs the country of Gaul, or covered more than half the county of Warwick in England, the ſcites of which ſtill retain the appellation of *Arden*, to the much ſmaller one of the ancient *Mancenion*, that covered and ſurrounded the ſcite of the preſent Mancheſter. Written *Arduen* by Cæſar and Tacitus, in ſpeaking of the foreſt in Gaul, and *Ardven* by Oſſian, in mentioning the woods of Caledonia; it cannot (ſays Mr. Whitaker) be compounded of *ar*, the prepoſitive article in Celtic, and the ſubſtantive *den*, as Baxter and Camden aſſert it to be; but is formed of *ard*, an adjective, and *ven*, the ſame as *den*. The meaning of the name therefore is not, as Mr. Baxter renders it, ſimply *the hills*, or even, as the ingenious tranſlator of Oſſian interprets it, the *high hill*. *Ard* ſignifies either *high* or *great*, and *ven* or *den* either a *hill* or *wood*. *Arduen*, *Ardven*, or *Arden*, then, means a conſiderable wood.

AR'DENBURG, a town of the Netherlands, in Dutch Flanders; formerly the moſt conſiderable in that country. Lat. 51. 16. N. lon. 3. 30. E.

AR'DENCY, *ſ.* Ardour; eargerneſs; warmth of affection.—Accepted our prayers ſhall be, if qualified with humility, and *ardency*, and perſeverance. *Hammond.*

ARDENEL'LA, a town of Hindooſtan, in the country Coimbetore, forty miles ſouth of Seringapatam.

ARDEN'NES, a foreſt of France, which anciently extended from Rheims to Tournay, and in the north-eaſt to Sedan. From this foreſt one of the departments of France derives its name; bounded on the north by the departments of Sambre and Meuſe, and of Jemappe; on the eaſt, by thoſe of Sambre and Meuſe, of the Foreſts, and of the Meuſe; on the ſouth, by thoſe of the Meuſe, the Marne, and the Aiſne; and on the weſt, by thoſe of the Aiſne and of the Jemappes. Its chief town is Mezieres.

AR'DENS, *adj.* [from *ardeo*, Lat. to burn.] Hot, burning. It is commonly applied to fevers of the inflammatory kind.

ARDENSAN', a town of Aſia, in the province of Aladulia, thirty-eight miles north-weſt of Arzingan.

AR'DENT, *adj.* [*ardens*, Lat. burning.] Hot; burning; fiery.—Chymiſts obſerve, that vegetables, as lavender, rue, marjoram, &c. diſtilled before fermentation, yield oils without any burning ſpirits; but, after fermentation, yield *ardent* ſpirits without oils; which ſhews, that their oil is, by fermentation, converted into ſpirit. *Newton.* —Fierce; vehement. Paſſionate; affectionate; uſed generally of deſire:

Another nymph with fatal pow'r may riſe,
To damp the ſinking beams of Celia's eyes;
With haughty pride may hear her charms confeſt,
And ſcorn the *ardent* vows that I have bleſt. *Prior.*

ARDEN'TES, *ſ.* in middle-age writers, an appellation given to thoſe afflicted with the *ignis ſacer*, or eryſipelas. They were thus called, as ſeeming to be ſcorched or burned with the diſeaſe.

AR'DENTLY, *adv.* Eagerly; affectionately.—With true zeal may our hearts be moſt *ardently* inflamed to our religion. *Spratt.*

ARDE'RO, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra, ſeven miles ſouth of Gierace.

AR'DES, a peninſula, in the county of Down, in Ulſter, being nearly ſurrounded by the Iriſh channel and the bays of Strangford and Carrickfergus. This barony was anciently a county of itſelf, as it appears, by a patent roll of 1 Henry I. (A. D. 1400) in Bermingham's tower, Dublin-caſtle, that the ſaid king granted to Robert Fitzjordan Savage, the office of ſheriff of the Ardes, in Ulſter.

ARD'FERT, a town of Ireland, the ancient capital of Kerry, with an univerſity, which was held in high eſteem. It is a biſhop's ſee, and borough by preſcription, and has been held *in commendam* with the biſhopric of Limeric ever ſince the reſtoration. The ruins here are very extenſive. Near the cathedral was an anchoret tower, the loftieſt and fineſt in Ireland, being 120 feet high; it fell in 1771.

ARD'GLASS, now a decayed, but once a principal, town of Down, in Ulſter. Here is a long range of building, in the caſtle ſtyle, called by the inhabitants the new works, though they have no tradition of its deſign or uſe. It extends 250 feet in length, in breadth only 24; the thickneſs of the walls three feet: it has three towers in front joined to it, one at each end, and one in the centre, which ſhews the deſign uniform and elegant. It has been divided into eighteen apartments below, and the ſame number above, with a ſtaircaſe in the centre; each apartment on the ground-floor had a ſmall Gothic door, and a large ſquare window, which ſeems to denote, that they were ſhops or ware-rooms, occupied at ſome very early period by merchants who came from ſea. Within ten feet of the ſouth tower of this building, ſtands a ſquare caſtle, called Horn-caſtle, from the great quantities of ox, deer, and cow, horns being found about it; it is forty feet by thirty, conſiſts of two ſtories, and from the fire-places and other marks, appears to have been the kitchen and dining hall belonging to the merchants. Here are the remains of ſeveral other caſtles, towers, and gates; and within the N. E. point of Ardglaſs harbour, there is a very curious natural cave, with a large entrance on the ſhore. The duties of this port were let to farm, ſo lately as the beginning of the reign of Charles I. It lies ſeven miles N. E. of Downpatrick.

ARDI'SIA, *ſ.* in botany, a genus of the pentandria monogynia claſs. The generic characters are—Calyx: perianthium one-leafed, five-cleft; clefts ſubulate, upright, coloured, permanent. Corolla: one-petalled; tube ſhort, length of the calyx; border five-parted; parts lanceolate, acute, ſpreading, at length reflex. Stamina: filaments five, ſubulate, upright; antheræ acute, upright, bifid at the baſe, converging at top round the ſtyle. Piſtillum: germ ſuperior, ovate, very ſmall; ſtyle ſubulate, longer than the ſtamens, upright, at length aſcending; ſtigma ſimple, acute, permanent. Pericarpium: berry roundiſh, large. Seed: ſingle, roundiſh, covered with a hard brittle bark, like a nut.—*Eſſential Character.* Calyx five-cleft; corolla one-petalled, five-parted, reflex; ſtigma ſimple; berry roundiſh, one-ſeeded.

Species. 1. Ardiſia excelſa, or laurel-leaved ardiſia, or aderno: racemes axillary, ſimple, leaves obovate cartilaginous-ſerrate at the edge. 2. Ardiſia zeylanica: flowers terminating panicled, leaves ovate ſubpetioled quite entire, ſtem arboreous. 3. Ardiſia tinifolia: flowers panicled, leaves elliptic entire nerved, ſtem arboreous. 4. Ardiſia coriacea: flowers panicled, leaves oblong entire veinleſs coriaceous. 5. Ardiſia ſerrulata: flowers panicled, leaves ovate-lanceolate acuminate wrinkled, ſtem ſhrubby, pubeſcent. 6. Ardiſia lateriflora: racemes lateral or axillary compound, flowers umbelled, leaves oblong acuminate quite entire, ſtem ſhrubby. 7. Ardiſia paraſitica: racemes axillary ſimple, leaves ſeſſile lanceolate-ovate marked with lines, ſtem ſhrubby. The ardiſias are trees or ſhrubs, natives of hot climates, chiefly the Weſt Indies.

ARD'MILLAN SPA, a chalybeate water of Caſtlereagh, on the lake Strangford.

ARD'MORE-HEAD, a noted promontory on the ſouth coaſt of Ireland, in the county of Waterford, which forms the eaſt ſide of Youghall harbour.

AR'DOUR, *ſ.* [*ardor*, Lat.] Heat.—Joy, like a ray of the ſun, reflects with a greater *ardour* and quickneſs, when it rebounds upon a man from the breaſt of his friend. *South.* Heat of affection; as, love, deſire, courage:

Unmov'd the mind of Ithacus remain'd,
And the vain *ardours* of our love reſtrain'd. *Pope.*

The perſon ardent or bright. This is only uſed by Milton:

Nor delay'd the winged ſaint,
After his charge receiv'd; but from among
Thouſand celeſtial *ardours*, where he ſtood
Veil'd with his gorgeous wings, up-ſpringing light,
Flew through the midſt of heaven. *Paradiſe Loſt.*

ARD'RAH, a ſmall territory of Africa, in Guinea. It lies at the bottom of the gulph of St. Thomas, and has a town called Ardres, ſuppoſed to be the capital. The inhabitants are very courageous; and their king was abſolute till lately, that the king of Dahomy made war upon this and the neighbouring territories, brought them under ſubjection, and burnt the towns, particularly Ardres. The air is very unwholeſome to Europeans; yet the natives live to a great age; but the ſmall-pox makes great deſtruction amongſt them. This country is fertile in Indian corn, palm-wine, plants, and fruits, which laſt all the year; and they make a great deal of ſalt.

AR'DRES, a ſmall town of France, in the department of the Straits of Calais. Francis I. and Henry VIII. of England had an interview here, in 1520, when the two kings and their attendants diſplayed their wealth and finery with ſuch emulation, that the plain where they met was named *the field of the cloth of gold.* Ardres is ſeated in a moraſs, 8 miles S. of Calais. Lat. 50. 50. N. lon. 1. 59. E.

AR'DUBA, an ancient city of the Panonians. It was taken by Germanicus, about the ſeventh year of the Chriſtian era; but its reduction was more owing to the diſagreement that reigned among the inhabitants than to the valour of the Romans. The greater part of the citizens were for ſubmitting; but the women, more fond of their ancient laws and liberties than the men, joined ſome Roman deſerters, and, falling upon their huſbands, killed a great number of them: but being at laſt overcome by the men, who then ſubmitted to the Romans, the women either threw themſelves headlong from the tops of the walls, or, ſetting fire to their houſes, burnt themſelves and their children to death.

ARDUI'NA, *ſ.* [ſo named in honour of Pietro Arduini, curator of the œconomical garden at Padua.] In botany, a genus of the pentandria monogynia claſs, ranking in the natural order of contortæ. The generic characters are—Calyx: perianthium five-parted, erect, acute, ſmall, permanent. Corolla: one-petalled, funnel-ſhaped; tube cylindrical, a little curved inwards at top; border five-parted, acute, ſpreading. Stamina: filaments five, ſimple, ſhorter than the tube, and inſerted into the lower part of it; antheræ oblong, within the throat of the corolla. Piſtillum: germ ſuperior, ovate; ſtyle filiform, the length of the tube; ſtigma bifid, thickiſh. Pericarpium: berry globular-oval, two-celled. Seeds: ſolitary, oblong, hard.—*Eſſential Character.* Corolla, one-petalled; ſtigma, bifid; berry, two-celled; ſeeds, ſolitary.

There is only one ſpecies, called arduina biſpinoſa, or two-ſpined arduina. It is a low ſhrubby plant, ſeldom riſing above four or five feet high. It ſends out ſpreading branches in pairs from top to bottom; they are covered with a dark-green bark, and are armed with ſhort ſtrong thorns, which come out by pairs, and ſometimes there are double pairs upon the ſame footſtalks; theſe are ſituated juſt below the leaves, and, where there are four, two point upwards, and the other two downwards. The leaves are heart-ſhaped, not much larger than thoſe of the box-tree, (about an inch long, and three-quarters of an inch broad at their baſe,) of the ſame conſiſtence and colour, terminating in acute points; they are placed oppoſite in pairs pretty cloſe together, and continue green all the year. The flowers come out in cluſters at the end of the branches, upon ſhort ſlender peduncles, each ſupporting five or ſix ſmall white flowers, having an agreeable odour. They commonly appear in July and Auguſt; but are ſeldom ſucceeded by ſeeds in England. The berries do not ripen till the ſpring following, and are then of a deep-red colour. It is a native of the Cape of Good Hope, whence the ſeeds were brought to Holland, and firſt raiſed in the gardens there.

It may be increaſed by cuttings, planted in July, and ſhaded from the ſun; when they have taken root, they ſhould be removed into ſmall pots, and placed in the ſhade till they have taken root again: they may then be removed to a ſheltered ſituation till autumn, when they muſt be put into a green-houſe, or under a hot-bed frame; this plant being too tender to live in the open air.

ARDU'ITY, *ſ.* Height; difficulty.

AR'DUOUS, *adj.* [*arduus*, Lat.] Lofty; hard to climb. Difficult.—It was a means to bring him up in the ſchool of arts and policy, and ſo to fit him for that great and *arduous* employment that God deſigned him to. *South.*

AR'DUOUSNESS, *ſ.* Height; difficulty.

A'RE, The third perſon plural of the preſent tenſe of the verb *to be*; as, Young men *are* raſh, old *are* cautious.

ARE', or ALAMIRE', *ſ.* The loweſt note but one in Guido's ſcale of muſic:

Gamut I am, the ground of all accord,
Are to plead Hortenſio's paſſion;
B mi Bianca take him for thy lord,
C faut, that loves with all affection. *Shakeſpeare.*

A'REA, *ſ.* [Lat.] The ſurface contained between any lines or boundaries. Any open ſurface, as, the floor of a room; the open part of a church; the vacant part or ſtage of an amphitheatre. An incloſed place, as liſts, or a bowling-green, or graſs-plot. Alſo that kind of baldneſs where the crown of the head is left naked like the tonſure of a monk.—The Alban lake is of an oval figure, and, by reaſon of the high mountains that encompaſs it, looks like the *area* of ſome vaſt amphitheatre. *Addiſon.*

In *areas* vary'd with Moſaic art,
Some whirl the diſk, and ſome the jav'lin dart. *Pope.*

AREA, in geometry, denotes the ſuperficial content of any figure. Thus, if a figure, e. g. a field, be in form of a ſquare, and its ſide be forty feet long, its area is ſaid to be 1600 ſquare feet; or it contains 1600 little ſquares, each a foot every way.

To ARE'AD, or ARE'ED, *v. a.* [*aredan*, Sax. to counſel.] To adviſe; to direct:

But mark what I *aread* thee now: avaunt,
Fly thither whence thou fled'ſt! If from this hour
Within theſe hallow'd limits thou appear,
Back to th' infernal pit I drag thee chain'd. *Milton.*

AREALU', *ſ.* in botany. See FICUS RELIGIOSA.

A'REB, *ſ.* a kind of imaginary money uſed in the dominions of the Great Mogul. Four arebs are equal to one crou or 100 lacs; one lac to 100,000 rupees.

AREBO', or AREBON', a town on the ſlave-coaſt of Guinea, in Africa, ſeated at the mouth of the river Formoſo. The Engliſh had once a factory there, as the Dutch have ſtill. It is a large place, well peopled, and furniſhed with houſes built of reeds and leaves. Lat. 5. 0. N. lon. 5. 5. E.

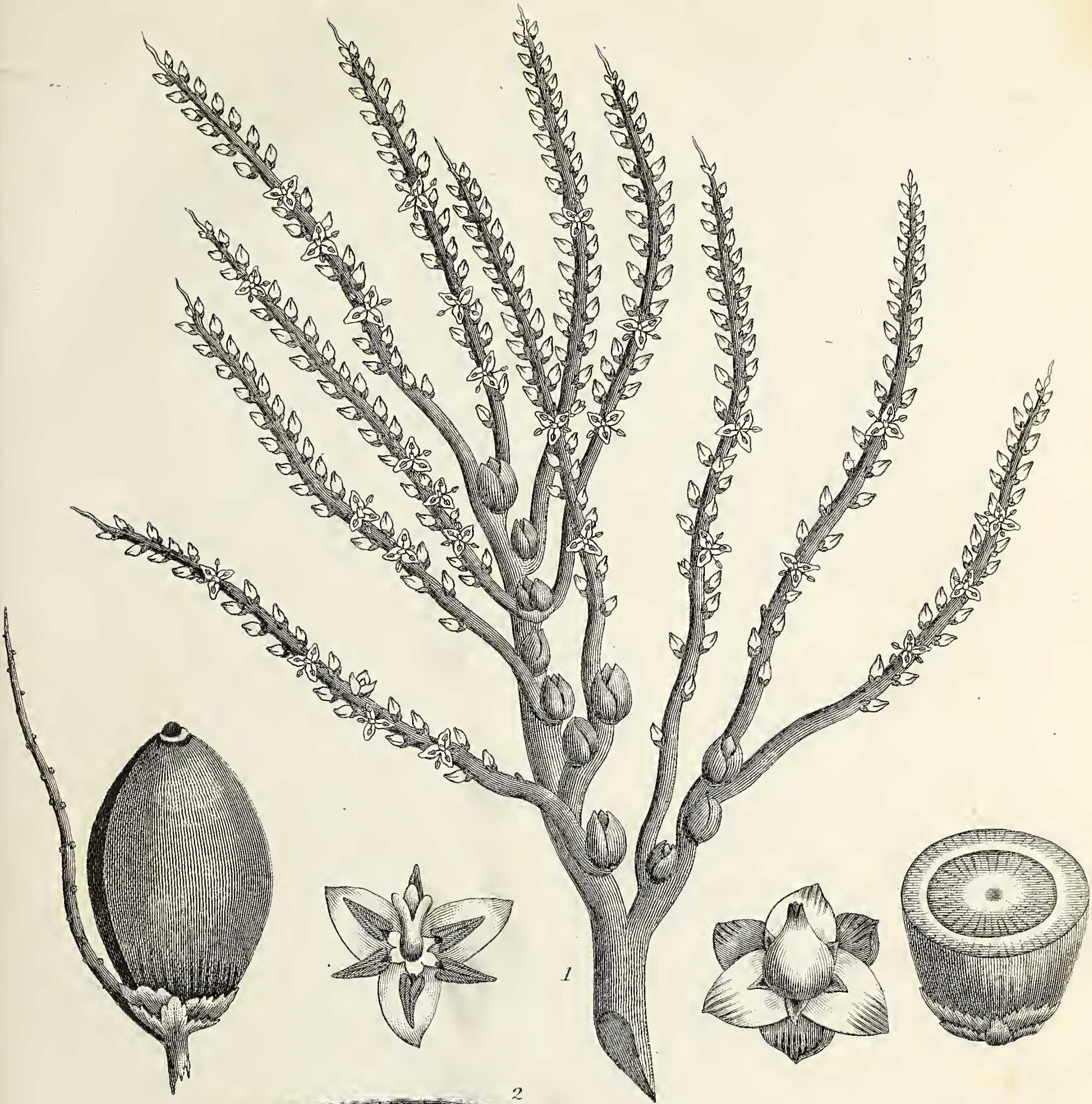
ARE'CA, *ſ.* in botany, a genus of the monoecia enneandria claſs, ranking in the natural order of palmæ or palms. The generic characters are—I. Male flowers. Calyx: ſpathe bivalve; ſpadix branched; proper perianthium three-leaved. Corolla: petals tree, acuminate, rigid. Stamina: filaments nine, the three outer longer than the reſt. II. Female flowers, in the ſame ſpadix. Calyx: ſpathe common with the males; proper perianthium three-leaved. Corolla: petals three, acuminate, rigid. Pericarpium: berry ſubovote, fibroſe, ſurrounded at the baſe with the imbricate calyx. Seed: ovate.—*Eſſential Character.* Corolla, three-petalled. Male, nine ſtamens. Female, a drupe, with an imbricate calyx.

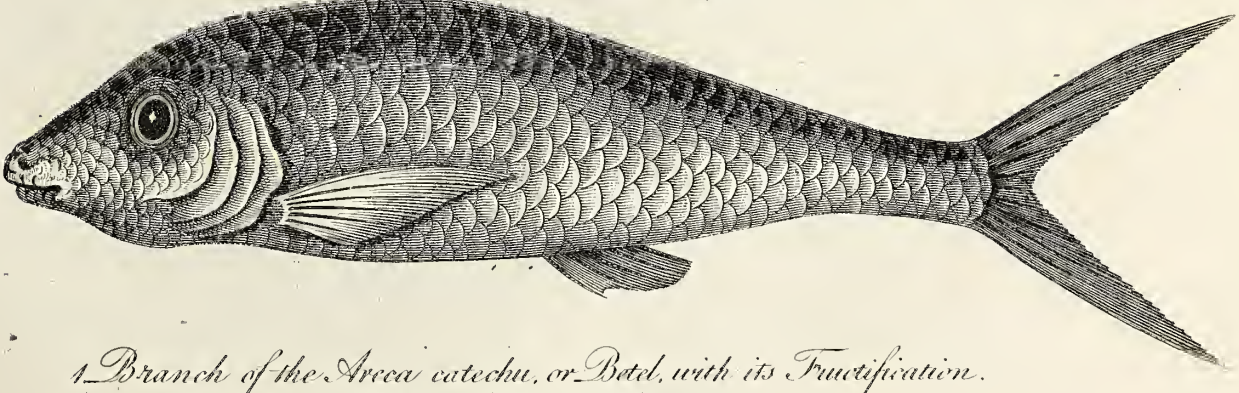
Species. 1. Areca catechu: fronds pinnate; leaflets folded back, oppoſite, end-bitten. The areca is a palm, growing to the height of forty or fifty feet; the trunk is ſix or eight inches in diameter, very ſtrait, round, covered with a ſmooth aſh-coloured bark, and marked with parallel rings. The flowers are white, very ſmall, and triangular; ſmelling ſweet, but faintly, morning and evening. The fruit, according to Gertner, is a berried drupe, or, to ſpeak more properly, a berry: it does not fall off, even when ripe. The Indians call it *chotool*, and preſent it to their gueſts in all viſits, green when they can procure it ſo, and ſtripped of the outer rind; but, if not, dry: they cut it in ſlices, and give it wrapped in the aromatic leaves of betel, which they cover with a thin layer of ſhell-lime to preſerve the flavour longer in the mouth: they are continually chewing it, ſwallowing their ſaliva tinctured with the juice, and ſpitting out the reſt: the inſide of their mouths appears as red as blood, and their teeth contract a dark colour; it preſerves them however, and is eſteemed for ſweetening the breath, as being good againſt the ſcurvy in the gums, and as ſtrengthening the ſtomach and appetite. A decoction of the nuts is alſo uſed in dying, and is ſuppoſed both to ſet and enliven the colours. For theſe purpoſes ſeveral veſſels are ſent yearly from Cochin-china to China and India. They are alſo uſed medicinally in conſtipations of the bowels, in worm caſes, &c. This palm is a native of the Eaſt Indies. It is cultivated every where in Cochin-china, not only on the coaſt, but in the mountains. In the ſouthern provinces of China it is rare, but in thoſe of the north it is never ſeen.

2. Areca oryzæformis: fronds pinnate, leaflets ſmooth, three-nerved. This is a very ſlender palm, the trunk being only an inch and a half in diameter, or at moſt ſcarcely the thickneſs of a man's leg; about ten feet in height, and very ſtraight. Native of Cochin-china, Amboyna, &c. In the former the fruit is larger than in the latter. It is uſed for chewing with the betel-leaf, as well as the foregoing ſpecies.

3. Areca oleracea, or cabbage-tree: leaflets quite entire. The cabbage-tree is the higheſt of the American palms, and is very diſtinct from the Eaſt-Indian areca. The ſheaths of the leaves are very cloſe, and form the green top of the trunk, a foot and a half in length. The fruits are oblong obtuſe berries, ſlightly bent, of a purple colour, ſucculent, ſcarcely fibroſe, the ſize of a middling olive: the pulp dries away, and becomes a brittle wrinkled bark. The nut or ſtone is oblong, ſmoothiſh, rather acute at the baſe, membranaceous, brittle, thin, whitiſh-brown frequently with a ſhade of red. The kernel is oblong, cartilaginous, very hard, and has a cavity in the middle of a ſmall fiſſure. The inhabitants cut off the green top of the trunk, take out the white heart of two or three inches in diameter, conſiſting of the leaves cloſely folded together, and expoſe it to ſale in the herb-market. It is eaten either raw with pepper and ſalt, or fried with butter, and has then ſomewhat the taſte of artichoke. The Jamaica cabbage-tree, ſays Dr. Patrick Browne, is frequent in moſt of the ſugar-iſlands, and grows commonly to a moderate ſize. The body of the tree is generally pretty tall, upright, and even; and throws out its flowers immediately under the column formed by the ſheathed bottoms of the ribs: theſe, in the ſize and diſpoſition, as well as in the form of both their bunches and covers, are very like thoſe of the Barbadoes palm; and its foliage, as in that plant, affords a delicate wholeſome green, which is commonly called mountain-cabbage; and for which it is generally cut down. The outward part of the tree is uſed for lathing, and boards for out-houſes; the ſeeds ſerve to feed the wild hogs in the ſeaſon, and the ſpathes are frequently made into mats by the negroes. The beſt cabbage is obtained when the tree is young, and not above fifteen or ſixteen feet high. The fruit is devoured by birds, who mute the ſtones, by which means there is a continual nurſery of theſe trees, which otherwiſe would ſoon be extirpated. The external coat of the trunk is impenetrable to

ARECA, AND ARGENTINA.





1. Branch of the Areca catechu, or Betel, with its Fructification.
2. The Carolina Argentine.

J. Pass sc.

London, Published as the Act directs Nov. 27. 1808. by J. Wilkes.

a muſket-ball, though it is ſcarcely an inch thick; and within this is a pithy farinaceous ſubſtance ſimilar to ſome others of the palm-kind. The Barbadoes cabbage-tree, ſays Browne, is the moſt beautiful tree I have ever ſeen, and may be very lawfully eſteemed the queen of the woods; it grows to a very conſiderable ſize; riſes by a ſmall ſtraight trunk, which bilges moderately at ſome diſtance above the root; and ſhoots by a round tapering body to the top, where it ſpreads into a large and beautiful foliage, not unlike that of the cocoa-nut tree. The lower part of each rib is pretty broad, and formed into a ſheath, which embraces all thoſe that grow between it and the centre; ſo that they continue the form of the trunk for ſome ſpace above the real ſummit of the ſtem, whence it throws out, on oppoſite ſides, two large branched bunches, well beſet with mixed flowers: but theſe continue covered by a ſimple ſpathe, until all the parts are ready for generation. Both the bunch and ſheath reſemble thoſe of the cocoa-nut palm very much; but the ſpathe of this is more ſoft and delicate, and the bunch more fertile and ſpreading; tho' the fruit is very ſmall, and ſeldom exceeds the ſize of a pea. The ſeeds of this beautiful tree were firſt carried to Jamaica by his excellency admiral Knowles, then governor of the iſland; and it has ſince been cultivated there with great care. It is chiefly planted for its beauty, and ſeldom or never cut down for the cabbage, or for any other uſe. Ligon and other travellers ſpeak of cabbage-trees from 100 to 200, 250, and even 300, feet in height, with a trunk no bigger than a man's thigh. More modern travellers are not willing to allow them a greater height than from thirty to 100 feet. The Weſt-Indian cabbage-tree was introduced into the royal garden at Kew in 1787, by Hinton Eaſt, Eſq.

Many other ſpecies of palms are mentioned by Rumphius, ſome of which are undoubtedly of this genus; but, being imperfectly known, they are not ſet down here. There is alſo a ſort named *areca ſapida* by Solander, which grows ſpontaneouſly in New Zealand, and thence to Charlotte Sound, and abounds in Norfolk Iſland: but we are not acquainted with the fructification of it.

Propagation and Culture. See Palms.

AREFAC'TION, *ſ.* [*arefacio*, Lat. to dry.] The ſtate of growing dry; the act of drying.

To A'REFY, *v. a.* [*arefacio*, Lat. to dry.] To dry; to exhauſt of moiſture.—Heat drieth bodies that do eaſily expire, as parchment, leaves, roots, clay, &c. and ſo doth time or age *arefy*, as in the ſame bodies, &c. *Bacon.*

ARE'GON, *ſ.* [*αϱηγον*, from *αϱηγω*, to help.] A reſolvent ointment: ſo called from its valuable qualities.

AREI'RA, *ſ.* in botany. See Schinus.

AREKE'A, a ſea-port town on the coaſt of Africa, in the Red Sea, fifty-five miles from Suaken.

A'RELATE, or Arela'tum, anciently a town of Gallia Narbonenſis, ſituated on the Rhone, denoting a town on, or beyond, a marſh, according to the particular ſituation of the ſpeaker; called *Arelate Sextanorum*, becauſe it had a colony of the ſixth legion. Writers of the lower age call it *Arélas, atis.* There was a double Arelas, one on each ſide of the river and joined by a bridge; that on the left ſide is thought to have been built by Conſtantine. Tiberius's father was ſent by Julius Cæſar at the head of the colony, and hence the appellation *Julia Paterna*, as appears from an ancient inſcription. It was the favourite place of the Romans, and greatly ornamented; and hence called *Gallula Roma*. It is now called *Arles*. Lat. 43. 40. N. lon. 5. 5. E.

ARE'LI, *ſ.* in botany. See Nerium.

A'REMBERG, a town of Germany, in the circle of the Lower Rhine, and capital of a duchy to which it gives name, ſituated on the Ahr, in the Eiffel. It was erected into a principality by Maximilian II. in favour of John de Ligne, lord of Brabançon, who took the name of Aremberg; fixteen miles ſouth-ſouth-weſt of Bon, fifty-two eaſt-ſouth-eaſt of Liege, and twenty-ſix ſouth of Cologne. Lat. 50. 32. N. lon. 24. 20. E. from Ferro.

AREMO'RICA, or Armo'rica, a part of Gaul between the Sequana and Ligeris; denoting a country on, or beyond, the ſea, *ar moer*, or *aremoer*, Celtic. Pliny indeed ſays, that *Aquitania* was formerly called *Aremorica*; but in this he ſtands alone. In the lower age, the term *Aremorica* was confined to Bretagne in France.

ARE'NA, a river of Sicily, which runs into the ſea, near the town of Mazara.

Arena, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra, ſixteen miles eaſt of Nicotera.

Arena, *ſ.* [from הרר Heb. *harar*, to dry up.] Sand; gravel.

Arena, *ſ.* in Roman antiquity, a place where the gladiators fought; ſo called from its being always ſtrewed with ſand, to conceal from the view of the people the blood ſpilt in the combat. Nero is ſaid to have ſtrewed the arena with gold-duſt.

ARENA'CEOUS, *adj.* [*arena*, Lat. ſand.] Sandy; having the qualities of ſand.

ARENA'CUM, or Arena'cus, one of the four towns or larger villages in the iſland of the Batavi. *Tacitus.* Now *Arnheim*, in Guelderland. Lat. 52. 2. N. lon. 5. 20. E.

ARENA'MEN, *ſ.* [*arena*, Lat. ſand.] Bole ammoniac: ſo called becauſe it is procured from ſandy places.

ARENA'RIA, *ſ.* [from its native ſoil, *arena*, or ſand.] Sandwort, in botany, a genus of the decandria trigynia claſs, ranking in the natural order of caryophyllei. The generic characters are—Calyx: perianthium five-leaved; leaflets oblong, acuminate, ſpreading, permanent. Corolla: petals five, ovate, entire. Stamina: filaments ten, ſubulate, (five alternately interior;) antheræ roundiſh. Piſtillum: germ ovate; ſtyles from erect, reflex; ſtigmas thickiſh. Pericarpium: capſule ovate, covered, one-celled, three or ſix valved. Seeds: very many, kidney-ſhaped.—*Eſſential Character.* Calyx five-leaved, expanding; petals five, entire; capſule one-celled, many-ſeeded.

Species. 1. Arenaria peploides, or ſea-ſandwort or chickweed: leaves ovate-acute, fleſhy. Root perennial; leaves ſmooth, reſembling thoſe of purſlain, coming out in pairs and decuſſated, growing ſo cloſe together at the tops of the ſtalks as to make them appear quadrangular. Frequent on the ſandy ſea-coaſts in the north of Europe. With us near Sheerneſs in Kent, Yarmouth in Norfolk, Southwold in Suffolk; in Scotland near Leith, &c. It flowers in June and July.

2. Arenaria tetraquetra, or ſquare ſandwort: leaves ovate keeled, recurved, imbricate four ways. Stems almoſt upright, ſo abundant in alternate branches as to form a tuft. Allione deſcribes the root as oblong, and perennial; the ſtem with many upright branches; the leaves connate, firm, recurved, acute, furniſhed with a nerve, near the root longer than the internodes, but ſhorter on the branches. Flowers five or ſix, heaped into a head. D'Aſſo ſays, that the plant which he ſaw was ſcarcely an inch high; in the gardens it grows to near a foot. The flowers are white. It is a native of the Pyrenean mountains, Arragon, the mountain of Tende, &c. flowering in July or Auguſt.

3. Arenaria biflora, or two-flowered ſandwort: leaves obovate, obtuſe; ſtems procumbent; peduncles two-flowered, lateral. Leaves like thoſe of wild thyme. It is a native of the high Alps of Savoy and Switzerland, near the melting ſnow.

4. Arenaria lateriflora, or ſide flowering ſandwort: leaves ovate, obtuſe; peduncles lateral, two-flowered. Diſcovered in Siberia, by Gmelin.

5. Arenaria trinervia, or plantain-leaved chickweed or ſandwort: leaves ovate acute, petiole nerved. Root annual. Haller obſerves, that this ſpecies has the appearance of common chickweed; but that the ſtem is harder, rough, branching, a foot high. Mr. Curtis has given the diſtinctions very accurately. The ſtalk is uniformly covered with very ſhort hairs, ſcarcely diſcernible: it grows erect: the leaves have three ſtrong veins or ribs: the petals are entire: and the ſeeds are black, perfectly ſmooth, and ſhining. Whereas common chickweed has a row of

hairs running down each ſide of the ſtalk, which is procumbent; the leaves are not diſtinguiſhed by any ribs, the petals are bifid, and the ſeeds brown and rough. This ſpecies alſo grows only in and about woods, not very common, and does not flower till May and June; whereas the other flowers in March and April; indeed almoſt always in mild weather, and ſheltered ſituations.

6. Arenaria ciliata, or ciliate ſandwort: leaves ovate, nerved, ciliate, acute. According to Linnæus, it is a native of mount Abraham, in the Rhætian Alps. It is alſo found on mount Cenis, on the high mountains of Dauphiné, &c. in the turf. According to the Kew catalogue, it is a native of Iceland, whence it was introduced in 1773, by Sir Joſeph Banks, Bart. It flowers from March to Auguſt, and is biennial. Other authors mark it as perennial.

7. Arenaria balearica, or Majorca ſandwort: leaves ovate, ſhining, rather fleſhy; ſtem creeping; peduncles one-flowered. This is a perennial plant, growing in tufts. Native of Majorca and Minorca. Introduced into France by Ant. Richard, the king's gardener; into England by M. Cels, in 1787. In the open air it flowers from June to Auguſt; but early in the ſpring if it be kept in the green-houſe.

8. Arenaria multicaulis, or many-ſtalked ſandwort: leaves ovate, nerveleſs, ſeſſile, acute; corollas larger than the calyx. Native of the Swiſs and Pyrenean mountains.

9. Arenaria ſerpyllifolia, or leaſt chickweed or thyme-leaved ſandwort: leaves ſubovate acute ſeſſile, corollas ſhorter than the calyx. This is an annual plant; which, ſays Mr. Curtis, is ſufficiently diſtinguiſhed from its congeners, by the ſtiffneſs of its ſtalk, and the thyme-like form of its leaves. It is common on walls among rubbiſh, and on dry barren places, flowering from May to Auguſt; not only in Europe, but in Japan.

10. Arenaria triflora, or three-flowered ſandwort: leaves lance-ſubulate ciliate, branches moſtly three-flowered, petals marked with lines, obtuſe. Perennial. Native of the ſouth of Europe, on rocks.

11. Arenaria montana, or mountain ſandwort: leaves linear-lanceolate rugged, barren ſtems very long, procumbent. The leaves form a tuft about the root, and are almoſt imbricate, briſtle-ſhaped, ſtiffiſh, ſpreading, of a ſhining green; thoſe on the ſtem are ſhorter than the internodes; all of them are ſtem-claſping. Native of the ſouth of France, Spain, and the Col de Tende.

12. Arenaria rubra, or purple ſpurrey or ſandwort: leaves filiform, ſtipules membranous ſheathing. Variety, arenaria marina, or ſea ſpurrey or ſandwort: leaves linear, the length of the internodes. Purple ſpurrey is an annual plant. The flowers open at nine o'clock, and cloſe between two and three, according to Linnæus; but Pollich has obſerved them to be open at three o'clock. Linnæus makes ſea ſpurrey a variety only of the former; and certainly much greater variations are occaſioned by ſituation and ſoil. Gouan, Allioni, and ſome other modern botaniſts, are however of opinion, that they are diſtinct ſpecies. Ray tells us, that he was induced to impute the difference between land and ſea ſpurrey wholly to the place of growth; but, obſerving the ſeed of the latter to be compreſſed and flat, he changed his opinion. Mr. Woodward remarks, that the ſtipules are broader and blunter in this. The firſt grows in ſandy paſtures and fields; the ſecond in ſalt-marſhes, where, the leaves being ſucculent, it is gathered, pickled, and ſold for ſamphire. They both produce their pretty purple flowers in June and July, and they continue frequently to September.

13. Arenaria media, or middle or downy ſandwort: leaves linear fleſhy, ſtipules membranous, ſtems pubeſcent. This is very like ſea ſpurrey, but the whole plant is viſcid, and it is leſs branching, with the ſtem aſcending more and pubeſcent. The flowers open at noon. Linnæus ſays, that it is a vernal plant, and a ſpurious daughter of ſea ſpurrey; nay little more than a variety, the difference conſiſting chiefly in the ſcarioſe-membranaceous ſtipules. Authors differ as to the colour of the petals. Villars ſays they are *d'un blanc de roſe purpurin*. Pollich and Kroeker agree with Linnæus, that they are white. The former is ſingular in attributing five ſtyles to the flower; and affirms, that he has numbered more than twenty ſeeds in a capſule, black, compreſſed, with a white pellucid rim. Hudſon takes this to be only a variety of the foregoing ſpecies. Dillenius ſays, that it differs in the ſlenderneſs of the root, and the ſmallneſs of the whole plant, eſpecially the flower and ſeed, which laſt has uſually no rim, and, when it has, it is much narrower than in the ſea ſpurrey; the internodes are alſo longer in this. It flowers as that does in June and July, and is found plentifully on the ſhell-coaſt of the iſle of Shepey. It is alſo a native of Germany and France. Pollich and Stokes differ widely as to its time of flowering: the former affirming that it flowers early in the ſpring, and ripens its ſeeds in May; the latter, that he has found it in flower in September. Willdenow aſſigns April and May for the time of flowering.

14. Arenaria Bavarica, or Bavarian ſandwort: leaves ſemicylindric, fleſhy, obtuſe; petals lanceolate; peduncles terminal, moſtly binate. Bavarian ſandwort is perennial. Native of Bavaria, monte Baldo, and little St. Bernard.

15. Arenaria gypſophiloides: leaves linear, radical ones briſtly; panicle ſubpubeſcent; petals lanceolate. This is perennial, and of the ſame ſtature with the ſpecies next following. Native of the Levant.

16. Arenaria ſaxatilis, or rock ſandwort: leave ſubulate, ſtems panicled, leaflets of the calyx ovate obtuſe. This is perennial; and the roots put forth an incredible number of ſtems, forming a very thick tuft, from four inches to a ſpan in height, branching much, and very full of flowers. The whole plant is ſmooth. Native of France, Germany, Switzerland, Carniola, and Siberia.

17. Arenaria verna, or vernal mountain ſandwort or chickweed: leaves ſubulate, ſtems panicled, calyxes pointed ſtriated. This differs from the foregoing, in having ſtems not more than three or four inches high, ſet with few hairs; the peduncles hairy, and the calyxes ſharp. Native of Dauphiné, Savoy, Auſtria, and Britain, on mountains; as in Cornwall, near the Land's-end; about Settle, Kendal, Matlock, and other places, in the northern counties; Arthur's-ſeat, near Edinburgh; in Wales, near Holywell, between that and St. Aſaph, Llanberys, &c. It flowers from May to Auguſt.

18. Arenaria hiſpida, or hiſpid ſandwort: leaves ſubulate, hiſpid underneath. Native of Montpellier.

19. Arenaria juniperina, or juniper ſandwort: leaves ſubulate thorny, ſtems erect, calyxes ſtriated, capſules oblong. Root perennial. Stems very many, half a foot high, round, pale, very ſlightly pubeſcent, almoſt naked at top. Leaves ſpreading, connate at the baſe, three-nerved, almoſt triangular, mucronate and pungent, very ſlightly pubeſcent; root-leaves very ſhort, blunt, without prickly points, preſſed cloſe to the ſtalk, ſmooth. Seeds numerous, ſmall, roundiſh, black. Native place unknown.

20. Arenaria tenuifolia, or fine-leaved chickweed or ſandwort: leaves ſubulate, ſtem panicled, capſules erect, petals ſhorter than the calyx and lanceolate. Root perennial. Stems frequently purple and much branched. Seeds ſmall, roundiſh, brown. Native of Spain, France, Germany, Switzerland, Italy, England, and Denmark. With us it is found on Gogmagog-hills and the borders of Triplow-heath in Cambridgeſhire; near Bury in Suffolk; near Cley in Norfolk; Cornbury-quarry, near Charlbury, Oxon; Malvern-hill in Worceſterſhire; near London, at Batterſea and Deptford, &c. flowering in June and July.

21. Arenaria laricifolia, or larch-leaved ſandwort: leaves briſtly, ſtem nakediſh above, calyxes rather ſhaggy. Root perennial. Native of France, Switzerland, Savoy, Piedmont, and Weſtmoreland. It flowers in July and Auguſt.

22. Arenaria ſtriata, or ſtriated ſandwort: leaves linear erect, preſſed to the ſtem; calyxes oblong, ſtriated. Villars makes this and the foregoing (if his plants be the ſame which Linnæus intended under the ſame names) to be varieties only of the ſame ſpecies. They are both perennial;

nial; their leaves are narrow, briſtle-ſhaped, in bundles, aſh-coloured or dark green; their ſtems almoſt naked. Allioni has deſcribed and figured a much ſmaller ſpecies, differing from all the others. The leaves are rude, ſtriated, but capillary; the leaflets of the calyx are ſtriated, but oval and pointed; the petals are much ſmaller. A native of Switzerland, and was introduced in 1768, by profeſſor de Sauſſure. It flowers from June to Auguſt.

23. Arenaria faſciculata, or cluſter-flowering ſandwort: leaves ſubulate, ſtem erect ſtiff, flowers faſcicled, petals very ſhort. Root annual. Stem four inches high, pubeſcent. Leaves linear, acuminate, erect, ſubciliate. Flowers in bunches, dichotomous, on very ſhort pedicels. Native of the ſouth of France, the Alps of Piedmont, Auſtria, &c. It flowers in Auguſt.

24. Arenaria grandiflora, or great-flowered ſandwort: leaves ſubulate, flat, ſtiff, (the radical ones crowded;) ſtems one-flowered. Root perennial. Stem branching, leafy, with one or two flowers on each branch. Leaves furrowed, awned, with the edge and nerve a little hairy. Native of Switzerland, the ſouth of France, near Geneva, Mont Cenis, the Vaudois, Carniola, &c.

25. Arenaria Auſtriaca, or Auſtrian ſandwort: ſtems underſhrubby proſtrate, then herbaceous and erect; leaves ſubulate, flowers twin, petals emarginate. Perennial. Native of the mountains of Auſtria, Switzerland, and Piedmont.

26. Arenaria liniflora, or flax-flowered ſandwort: ſtems erect, branching below, and underſhrubby; leaves ſubulate, flowers twin. Perennial. A native of the ſouthern countries of Europe.

27. Arenaria recurva: radical leaves heaped, recurved, ſubulate; ſtem ſimple, bearing about three flowers. Root biennial, conſiſting of many long, round, yellowiſh, tough, fibres, collected into one head, and producing a tuft of ſtems, a finger's length, with bundles of leaves in form of a roſe at their baſe. Gerard deſcribes his plant as perennial; ſtems many, three inches high, ſimple, ſtraight, having very ſmall ſcattered hairs towards the top. Native of Provence, and the high Alps of the Vaudois in Piedmont, in rocky paſtures. Alſo of St. Gothard, St. Bernard, Enzeindaz, and other very high mountains of Switzerland.

28. Arenaria obtuſa: leaves linear flat obtuſe, calyxes viſcid. Perennial. Stems ſeveral, procumbent, branched. Leaves connate, ſoft, green. Native of the high Alps of Switzerland, St. Bernard near the Hoſpice, Feneſtrelles, &c.

29. Arenaria lanceolata: leaves lanceolate three-nerved acute, calyxes lanceolate three-nerved. Root perennial, dark-coloured, tough, with very few fibres, creeping. Stems filiform, in a tuft, branching, creeping, very finely hairy. There is a great confuſion of ſpecies and ſynonyms in this genus.

30. Arenaria dianthoides: leaves linear ſcabrous at the edge, flowers capitated, bractes ventricoſe, longer than the peduncles. 31. Arenaria cucubaloides: leaves linear, ſcabrous at the edge; panicles dichotomous, pubeſcent; petals obovate. Perennial. Found in Armenia by Tournfort.

Propagation and Culture. The greater part of theſe plants are natives of Europe, and moſt of them affect mountainous ſituations. They have neither ſize nor brilliancy enough to be generally cultivated in gardens; many of them however are neat elegant plants. The perennial ſorts may eaſily be increaſed by ſlips, or parting the roots. Both theſe and the annual ſorts may be propagated from ſeeds. They require no other care but what is neceſſary for all hardy vegetables.

ARENA'RII, *ſ.* in antiquity, gladiators who combated with beaſts in the arena, or amphitheatre. The arenarii were ſlaves of the loweſt rank: ſo that, though manumitted, they were not capable of being Roman citizens. They were the ſame with what were otherwiſe called *beſtiarii.* See Gladiator.

ARENA'RIUM, *ſ.* in eccleſiaſtical writers, denotes a cemetery or burying-ground. The arenaria were properly a kind of pits, or holes under ground, wherein the ancient Chriſtians not only buried their dead, but held their religious aſſemblies in times of perſecution.

ARENA'TION, *ſ.* [from *arena*, Lat. ſand.] It is uſed by ſome phyſicians for a ſort of dry bath, when the patient ſits with his feet upon hot ſand.

A'RENDONCK, a town of Brabant, two leagues eaſt of Turnhout.

ARENDSE'E, a town of Germany, in the circle of Upper Saxony, and old mark of Brandenburg, ten miles weſt of Seehauſen.

ARENO'SE, *adj.* [*arena*, Lat.] Sandy; full of ſand.

A'RENS, or Arenshar'de, a diſtrict of Selſwic in Denmark, through which the famous Danneuaſke, that is, the great wall or rampart, which the Daniſh king Gotric about the beginning of the ninth century built acroſs the country from Hollinſted as far as the Sley, a length of forty-ſix Engliſh miles, as a defence againſt the incurſions of the Saxons and Sclavi. The people of this diſtrict were the firſt in the country who profeſſed Chriſtianity, and their church-houſe, built in 826, was often demoliſhed by thoſe who turned again to idolatry.

A'RENSBERG, a town of Germany, in the duchy of Weſtphalia, with a caſtle, the capital of a county, incorporated with the electorate of Cologne. It is ſituated on the Roer, and is divided into the old and new town: forty-eight miles north-eaſt of Cologne, and forty ſouth-ſouth-eaſt of Munſter. Lat. 51. 23. N. lon. 25. 27. E. Ferro.

Arensberg, a town of Germany, in the circle of Weſtphalia, and county of Schauenbeg, ſix miles N. of Rintelin.

Arensberg, a ſea-port town of Ruſſia, ſituated on the iſland of Ezel, in the Baltic, ninety-ſix miles S.W. of Revel.

A'RENSWALDE, a town of Germany, in the circle of Upper Saxony, and new mark of Brandenburg, ninety-four miles north-eaſt of Berlin, and fifty north-north-eaſt of Kuſtrin. Lat. 53. 10. N. lon. 33. 14. E. Ferro.

AREN'TES, *ſ.* a ſort of cupping-glaſſes uſed by the ancients.

ARENTIM', in Entre-Duoro-e-Minho, Portugal.

AREN'ULOUS, *adj.* [from *arenula*, Lat. ſand.] Full of ſmall ſand; gravelly.

ARENU'SA, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra, ſixteen miles weſt of St. Severina.

ARE'OLA, *ſ.* called alſo *halo*, is the circle which ſurrounds the nipple on the breaſts. In virgins it is little and red; in pregnant women it is larger and more brown.

AREO'METER, *ſ.* [of αηρ, the air, and μετρεω, to meaſure.] An inſtrument wherewith to meaſure the denſity or gravity of fluids. The areometer, or water-poiſe, is uſually made of glaſs; conſiſting of a round hollow ball, which terminates in a long ſlender neck hermetically ſealed at top: there being at firſt as much quickſilver put into it as will ſerve to balance or keep it ſwimming in an erect poſition. The ſtem is divided into degrees as repreſented in *fig.* 1, of the following figure; and by the depth of its deſcent into any liquor, the lightneſs of that liquor is concluded; for that fluid in which it ſinks leaſt muſt be heavieſt, and that in which it ſinks loweſt lighteſt.

Fig. 1.

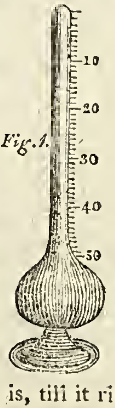
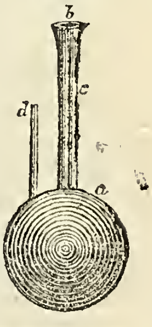


Fig. 2.



M. Homberg has invented a new areometer, deſcribed in Phil. Tranſact. No. cclxii. thus: *a* (*fig.* 2) is a glaſs-bottle, with ſo ſlender a neck that a drop of water takes up in it five or ſix lines, or half an inch. Near the neck is a ſmall capillary tube *d*, about ſix inches long, and parallel to the neck. To fill the veſſel, the liquor is poured in at the mouth *b* (which is widened to receive a tunnel), till it run out at *d*, that is, till it riſe in the neck to the mark *c*, by which means you have always the ſame bulk or quantity of liquor; and conſequently, by means of the balance, can eaſily tell, when different liquors fill it, which weigh the moſt. Some regard, however, is to be had in theſe trials to the degree of heat and cold in the weather; becauſe ſome liquors rarefy with heat and condenſe with cold more than others, and accordingly take up more or leſs room. By means of this inſtrument, the ingenious author has made a table to ſhew the different weights of the ſame bulk of the moſt conſiderable chemical liquors, both in ſummer and winter, as follows:

	Weighed in ſummer.			In winter.		
The areometer full of	*oz.*	*dr.*	*gr.*	*oz.*	*dr.*	*gr.*
Quickſilver,	11	0	6	11	0	32
Oil of tartar,	1	3	8	1	3	31
Spirit of urine,	1	0	32	1	0	43
Oil of vitriol,	1	3	58	1	4	3
Spirit of nitre,	1	1	40	1	1	70
Spirit of ſalt,	1	0	39	1	0	47
Aquafortis,	1	1	38	1	1	55
Vinegar,	0	7	55	0	7	60
Spirit of wine,	0	6	47	0	6	61
River water,	0	7	53	0	7	57
Diſtilled water,	0	7	50	0	7	54

The inſtrument itſelf weighed, when empty, one dram twenty-eight grains. See HYDROMETER.

AREO'METRY, or AEROMETRY, *ſ.* the art of meaſuring the air, its powers and properties. Areometry includes the laws of the motion, gravitation, &c. of the atmoſpherical fluid; but the word is now ſeldom uſed, as this branch of philoſophy is commonly called PNEUMATICS. C. Wolfius having reduced many of the affections of this fluid to geometrical demonſtration, firſt publiſhed Elements of Areometry at Leipſic in 1709 in High Dutch, and afterwards more largely in Latin: and thus the doctrine of air is incorporated into the mathematical ſciences.

AREO'PAGUS, *ſ.* [αρειοπαγος, of αρης, Mars, and παγος, a hill.] A ſovereign tribunal at Athens, famous for the juſtice and impartiality of its decrees, to which the gods themſelves are ſaid to have ſubmitted their differences. It was on a rock or hill, oppoſite to the citadel. The word ſignifies ſtrictly, *rock of Mars*. In effect, the denomination might either ariſe hence, that the areopagus was built in a place where had been a temple of Mars; or, becauſe the firſt cauſe pleaded there was that of this god, who was accuſed of killing Halirrhotius the ſon of Neptune, and tried here before twelve gods, and acquitted by a majority of voices; or, finally, becauſe the Amazons, whom the poets feign to have been the daughters of Mars, when they beſieged Athens, pitched their tents and offered ſacrifices to the god of war in this place.

This tribunal was in great reputation among the Greeks; and the Romans themſelves had ſo high an opinion of it, that they truſted many of their difficult cauſes to its deciſion. Authors are not agreed about the number of the judges who compoſed this auguſt court. Some reckon thirty-one, others fifty-one, and others five hundred; in effect, their number ſeems not to have been fixed, but to have been more or leſs in different years. By an inſcription quoted by Volaterranus it appears, they were then three hundred. However, at firſt this tribunal only conſiſted of nine perſons, who had all diſcharged the office of archons, had acquitted themſelves with honour in that truſt, and had likewiſe given an account of their adminiſtration before the *logiſtæ*, and undergone a very rigorous examination. See ARCHON. Their ſalaries were equal, and paid out of the treaſury of the republic: they had three *oboli* for each cauſe.

The *areopagites* were judges for life They never ſat in judgment but in the open air, and that in the night-time; to the intent that their minds might be more preſent and attentive; and that no object, either of pity or averſion, might make any impreſſion upon them. However, ſome maintain, that the building in which the areopagites aſſembled was not wholly uncovered; and they obſerve, that among the ruins large ſtones have been found, whoſe joints are in the ſame angle with the pediment that muſt have been uſed for a covering. All pleadings before them were to be in the ſimpleſt and moſt naked terms; without exordium, epilogue, or appeal to the paſſions. At firſt they only took cognizance of criminal cauſes; but in courſe of time their juriſdiction became of greater extent. Mr. Spon, who examined the antiquities of that illuſtrious city, found ſome remains of the areopagus ſtill exiſting in the middle of the temple of Theſeus, which was heretofore in the middle of the city, but is now without the walls. The foundation of the areopagus is a ſemicircle, with an eſplanade of 140 paces round it, which properly made the hall of the areopagus. There is a tribunal cut in the middle of a rock, with ſeats on each ſide of it, where the areopagites ſat, expoſed to the open air.

This court by ſome is ſaid to have been inſtituted by Solon; but others carry it much higher, and aſſert it to have been eſtabliſhed by Cecrops, about the time that Aaron died; viz. in the year of the world 2553; maintaining withal, that Solon only made ſome new regulations in it, increaſed its power and privileges, and made it ſuperior to the *ephetæ*, another celebrated court inſtituted by Draco. In effect, Demoſthenes himſelf, in his oration againſt Cteſiphon, owns himſelf at a loſs on this head. The edifice of the areopagus was extremely ſimple; and its roof, which was at firſt of the moſt common materials, remained in that ſtate till the time of Auguſtus. This we learn from Vitruvius. Oreſtes was the firſt who thought of embelliſhing it. He raiſed in it an altar to Minerva: he likewiſe adorned it with two ſeats of ſolid ſilver; on one of which the accuſer ſat, and the accuſed on the other.

Of all the judgments of the areopagus, the moſt famous one, excepting that of Mars, was the ſentence which they paſſed on Oreſtes. His trial, which happened under Demophon the twelfth king of Athens, in 375 of the Attic era, owed all its fame to a remarkable circumſtance, that gave riſe to a cuſtom which was obſerved ever afterwards. Oreſtes had killed his mother. He was accuſed before the areopagus, and cited to appear in that court. He would have loſt his life in conſequence of the equal diviſion of the votes, had not Minerva, moved with his misfortunes, declared herſelf for thoſe who had abſolved him, and joined her ſuffrage to theirs. Thus Oreſtes was ſaved. In veneration to this miracle, the areopagites, whenever the ſuffrages were equally divided, decided in favour of the accuſed, by granting him what they termed *the vote or ſhell of Minerva*. Cephalus and Dædalus were condemned by the areopagus long before the time of Oreſtes.

We find in ancient authors ſome deciſions of this tribunal, which bear the ſtrongeſt marks of juſtice, though their objects are not intereſting. We ſhall here quote an anecdote from Aulus Gellius, and Valerius Maximus, of a woman, who was accuſed of having poiſoned her huſband and her ſon. She was taken and brought before Dolabella, who was then proconſul of Aſia. She was no ſooner in his preſence than ſhe owned the fact; and added, that ſhe had very good reaſons for putting her huſband and her ſon to death. "I had (ſaid ſhe) by my firſt huſband a ſon whom I tenderly loved, and whoſe virtues rendered him worthy of my affection. My ſecond huſband, and the ſon whom I bare to him, murdered my favourite child. I thought it would have been unjuſt to have ſuffered thoſe two monſters of barbarity to live. If you think, ſir, that I have committed a crime, it is your province to puniſh it: I certainly ſhall never repent of it." This affair embarraſſed Dolabella. She was afterwards ſent to the areopagus; and that court, when they had examined her a long time, ordered her and her accuſer to appear before them again a hundred years after, from the firſt day of her trial. We muſt not, however, ſuppoſe that the areopagus always preſerved the purity of its early inſtitution; for ſuch is the conſtitution of human affairs, that perfection, with regard to them, is a violent, and conſequently a tranſitory, ſtate. Pericles, who lived about 100 years after Solon, to flatter the people and win them to his party, uſed his utmoſt efforts to weaken the authority of the areopagus, which was then diſliked by the multitude. He took from it the cognizance of many affairs which had before come under its juriſdiction; and, to forward his deſign of humbling it, employed the eloquence of Ephialtes, whoſe talents were formidable, and who was an avowed enemy to the great men of Athens.

The areopagus itſelf ſeemed to ſecond the endeavours of a man who projected its ruin, and by its own miſconduct haſtened its fall. The old rules of the court, by which none were admitted its members but thoſe whoſe unexceptionable conduct would ſupport its majeſty, ſeemed too ſevere. They grew leſs delicate in their choice; and, preſuming that the faults with which they diſpenſed would ſoon be reformed in the ſociety of ſo many good examples, vice, as we ſee in modern times, imperceptibly crept in among them: corruption, at firſt ſecret and timid, grew inſenſibly open and daring, and made ſuch progreſs, that the moſt ſhameful crimes were ſoon exhibited on the ſtage; and they were not copied from the low and abandoned multitude, but from thoſe ſenators, once the venerable and auſtere cenſors of idleneſs and of vice. Demetrius, the comic poet, wrote a piece which he entitled *The Areopagites*, where he ſtrips the maſk off thoſe hypocritical legiſlators, who were now equally apt to be ſeduced by wealth and beauty. Before this tribunal St. Paul was called to give an account of his doctrine; and upon this occaſion he converted Dionyſius, one of their number.

AREO'TIC, *adj.* [αϱαιοτικα.] Attenuants, applied to medicines that diſſolve viſcidities, ſo that the morbific matter may be carried off by ſweat, or inſenſible perſpiration.

AREQUI'PA, a city of Peru, in South America, ſituated in lat. 17° S. lon. 73° W. It is one of the moſt beautiful cities in Peru, delightfully ſituated in the valley of Quilca, one hundred leagues from Lima, and twenty from the ſea, with which it communicates by a fine river. The entrance into the harbour is rather ſhallow for ſhips of great burthen; but when once they are entered, they may ride ſecurely in eighteen fathoms water. This city was founded in 1539, by order of Don Franciſco Pizarro, in a place known likewiſe by the name of *Arequipa*; but its ſituation being found diſadvantageous, the inhabitants obtained leave to remove to the place where the city now ſtands. The houſes are built with ſtone, and vaulted; and they are lofty, and finely decorated on the outſide. The temperature of the air is extremely good; the cold is never exceſſive, nor the heat troubleſome, ſo that the ſurrounding fields are clothed with perpetual verdure. Theſe natural advantages, however, are conſiderably allayed by its being very ſubject to earthquakes, by which it has already been five times laid in ruins; notwithſtanding which, it is populous, and has among its inhabitants ſome of the richeſt families in America.

ARER'ISEMENT, *ſ.* Affright, ſurpriſe.

A'RES, a town of Germany, in the county of Tyrol, eleven miles ſouth-weſt of Tyrol.

ARES, *ſ.* a word adopted by Paracelſus, to expreſs that power of nature in the whole material world, by which ſpecies are divided into individuals.

ARES'CHE, a town of France, in the department of Jura, and chief place of a canton, in the diſtrict of Arbois, ſix miles eaſt of Arbois.

To ARET', *v. a.* To impute unto, to accuſe.

ARETÆ'US, of Cappadocia, a Greek phyſician of the ſect of Pneumatiſts, lived in the reign of Auguſtus, according to ſome; according to others, under Trajan, or Adrian. He wrote ſeveral treatiſes in the Ionian dialect, on acute diſeaſes, and other medicinal ſubjects, ſome of which are ſtill extant. The beſt edition of his works is that of Boerhaave, in Greek and Latin, with notes, printed in 1731; that of Wigan, printed at Oxford in 1723, in folio, is alſo much eſteemed.

ARE'TE, *ſ.* [αϱετη, virtue.] Hippocrates uſed this word to mean corporeal or mental vigour.

ARETHU'SA, in fabulous hiſtory, the daughter of Nereus and Coris, and the companion of Diana, who changed her into a fountain to deliver her from the purſuit of her lover Alpheus.

ARETHUSA, a celebrated fountain near the city of Syracuſe in Sicily, famous for the quantity of its waters, and the number of fiſhes it contained. Many fables were invented by the ancients concerning this fountain. They had alſo a notion that the river Alpheus ran under or thro' the waters of the ſea, without mixing with them, from Peloponneſus to Sicily. Mr. Brydone informs us, that it ſtill continues to ſend forth an immenſe quantity of water, riſing at once to the ſize of a river, but is entirely abandoned by the fiſhes it formerly contained in ſuch plenty. At ſome diſtance from Arethuſa is a fountain of freſh water, which boils up very ſtrongly in the ſea, inſomuch that after piercing the ſalt water, it may be taken up ſometimes very little affected by it. This fountain Mr. Brydone thinks the ancients were ignorant of, or they would not have failed to uſe it as an argument for the ſubmarine journey of Alpheus. Mr. Swinburn deſcribes this once famous fountain as a large pool of water near the quay, defended from the ſea by a wall, and almoſt hidden by houſes on every other ſide. The water is not ſalt, but brackiſh, and fit for no purpoſe but waſhing linen. "This (ſays he) is the celebrated fountain of Arethuſa, whoſe ſoft poetical name is known to every reader. The fable of the nymph and her conſtant lover Alpheus, the excellence of the ſpring, and the charms of its ſituation, are themes on which ancient and modern poets have indulged their fancy, and exerciſed their pens. Alas, how altered! rubbiſh chokes up its wholeſome ſources; the waves have found a paſſage through the rocks, which repeated earthquakes have ſplit, and not a fiſh is to be ſeen in it. Sometimes, after an earthquake, it has been left dry; and, at other times, the whole maſs of its waters have been tainted by ſubterraneous effluvia. Its fountain head probably lies among the neighbouring hills."

ARETHUSA, *ſ.* [from the name of Diana's nymph, above mentioned.] In botany, a genus of the gynandria diandria claſs, ranking in the natural order of orchideæ. The generic characters are—Calyx: ſpathe, leafy; perianthium, none. Corolla: ringent; petals, five, oblong, ſubequal, two outer, all converging into a helmet; nectary, one-leafed, tubular at the baſe, within the bottom of the corolla, two-parted; lower lip reflex, broad, wrinkled, the length of the petals, hanging down forwards; upper lip linear, very tender, faſtened to the ſtyle, lobed at the top. Stamina: filaments two, very ſhort, ſitting on the top of the piſtil; antheræ ovate, compreſſed, covered with the folding of the inner lip of the nectary. Piſtillum: germ oblong, inferior; ſtyle oblong, incurved, clothed with the inner lip of the nectary; ſtigma funnel-ſhaped. Pericarpium: capſule oblong-ovate, one-celled, three-valved, gaping at the angles. Seeds: numerous, aceroſe. —*Eſſential Character.* Nectary tubular, within the bottom of the corolla; the lower lip faſtened to the ſtyle.

Species. 1. Arethuſa bulboſa, or bulbous-rooted arethuſa: root globoſe, ſcape ſheathed, ſpathe two-leaved. 2. Arethuſa ophiogloſſoides, or adder's-tongue leaved arethuſa: root fibrous, leaf of the ſcape oval, ſpathaceous; leaflet lanceolate. 3. Arethuſa divaricata, or lily-leaved helleborine or arethuſa: root ſubpalmate, leaf of the ſcape and leaflet of the ſpathe lanceolate, the outer petals riſing. Inhabitants of watery places and bogs, in Virginia, Carolina, and Canada.

4. Arethuſa capenſis, or Cape arethuſa: bulb round, ſtem two-leaved, ſimple, one-flowered. 5. Arethuſa villoſa, or villoſe arethuſa: bulb round, leaves ovate ciliate, pubeſcent. 6. Arethuſa ciliaris, or ciliated arethuſa: root fleſhy, leaf kidney-ſhaped orbiculate, lip ciliate. From the Cape of Good Hope.

7. Arethuſa biplumata, or two-feathered arethuſa: ſcape ſheathed, ſpathe cowled, the two lower petals elongated

bearded on the upper ſide. Found at Buenos Ayres in South America, by Commerſon.

Propagation and Culture. The three firſt are hardy, and will endure the rigour of our climate. The three next muſt be kept in the conſervatory or cape-ſtove; the laſt muſt be preſerved in the bark-ſtove; but none of theſe plants have been yet introduced in England, except the firſt and ſixth. Conſidering their places of growth, in bogs or watery places, it will be no caſy matter to preſerve them long with us.

ARE'TIA, *ſ.* [from Benedictus Aretius, a clergyman of Berne, in the fifteenth century.] In botany, a genus of the pentandria monogynia claſs, ranking in the natural order of preciæ. The generic characters are—Calyx: perianthium one-leafed, bell-ſhaped, ſemiquinquifid, bluntiſh, permanent. Corolla: monopetalous, ſalver-ſhaped; tube ovate, the length of the calyx, contracted at the neck; limb five-parted; diviſions obovate. Stamina: filaments five, conic, in the middle of the tube, very ſhort; antheræ erect, ſharpiſh, within the throat of the corolla. Piſtillum: germ roundiſh; ſtyle filiform, the length of the tube; ſtigma flat-headed. Pericarpium: capſule one-celled, five-valved. Seeds: five.—*Eſſential Character.* Corolla, ſalver-ſhaped, five-cleft, tube ovate; ſtigma flat-headed; capſule one-celled, globular, with about five ſeeds.

Species. 1. Aretia helvetica, or imbricated aretia: leaves imbricate, flowers ſubſeſſile. Root perennial, producing innumerable ſtems forming thick tufts, which cover the rocks where it grows; they riſe only two or three inches, and are entirely covered with hard, dry, ſmall, very ſhort, leaves, having a pile of forked hairs on them. One flower terminates each branch: a large calyx, rough with hairs like the leaves, covers the whole: corolla white, with five bifid yellow glands and a greeniſh-yellow circle at the entrance of the tube. Fruit roundiſh with angles, incloſed in the calyx, opening at top by five valves, whence iſſue two or three blackiſh oblong ſeeds, convex on the outſide, angular on the inner ſide, plunged in a ſpungy receptacle which partly fills the capſule. The germ contains rudiments of five ſeeds, two or three of which are abortive. Native of the weſtern Alps of Switzerland, and of Dauphiné.

2. Aretia alpina, or linear-leaved aretia: leaves linear, ſpreading; flowers pedunculated. This forms a leſs hard turf than the foregoing with its tufts of leaves, which are linear, wider than the other, and drop from the baſe of the ſtems every year. Fruit frequently abortive, but ſometimes it has ten or twelve ſeeds in dry airy ſituations. Haller has three varieties of this plant. i. Harder, and the leaves almoſt ſmooth; ſtems covered with the old leaves, finiſhing at top with a roſe of leaves that are elliptic, ciliate, marked with lines, diverging, much longer; flower larger; fruit round, compreſſed, five-valved. ii. More tender, with the leaves more villoſe, not ſpreading ſo much, and ſhorter. The flowers are like the others, and iſſue from roſe-like tufts of leaves, frequently from the ſide, but from the top alſo, on peduncles two lines in length: flower roſe-coloured. iii. With the leaves and calyx covered with a cloſe white pile; the flower purple. Theſe are found on different parts of the Swiſs Alps; the ſecond on Mont St. Bernard, Simplon, &c. the third in the Griſons, and the valley of St. Nicholas. M. Villars has alſo given three varieties, which he ſuſpects may poſſibly be diſtinct ſpecies. *a.* Hoary, with the hairs of the leaves branching; the flowers white, often terminating. *b.* Hirſute, with the hairs of the leaves branching; the flowers purpliſh, axillary. *c.* Hirſute, with the hairs of the leaves ſimple; the flowers white, with a purple eye. This laſt is ſometimes found with round, dry, very cloſe, leaves, approaching to the foregoing ſpecies, but removed from it by the axillary leaves, and the ſimple hairs. The firſt reſembles it ſtill more in its terminating flowers, but theſe flowers are larger, and the leaves wider, though gathered on the ſame rock. The ſecond forms very fine tufts of red flowers on Mont St. Bernard, 400 toiſes perpendicular to the eaſt of the *hoſpice*, which is 1260 toiſes above the level of the ſea; and thus carries vegetation there to the height of near 1700 toiſes, not a great deal leſs than two miles. This ſpecies occurs alſo in Auſtria.

3. Aretia vitaliana, or graſs-leaved aretia: leaves linear, recurved; flowers ſubſeſſile. This is a very ſmall plant, always lying on the ground. The root, which is perennial, puts up many diſtant tufts, forming roſes of hardiſh, narrow, pointed, leaves, which are a little aſh-coloured; fruit round, ſmall; with five kidney-ſhaped ſeeds. According to Allioni, the fruit is deeply divided into five parts, and contains only three ſeeds, two of which only ripen; they are black, large, triangular, with the outer ſide arched. Columna obſerved long ſince, that there are only two ſeeds in a capſule. Villars remarks, that there are the rudiments of five ſeeds in the germ, but that two always, and very often three, are abortive: he adds, that the receptacle is very large and ſpungy; and that the hairs on this plant are branched, as in the other aretias. Native of the Pyrenees, the high Alps between the Valais and Italy, and in Dauphiné.

Propagation and Culture. Theſe little alpine plants are not preſerved in gardens without ſome difficulty. They require a ſhady ſituation; and, if the ſeeds can be procured, they ſhould be ſown as ſoon as poſſible. They may alſo be propagated from offſets or ſlips, and by parting the roots.

A'RETIN (Guido), who became famous for his improvements in muſic, lived in the thirteenth century. He was a native of Arezzo, in Tuſcany; and, having been taught the practice of muſic in his youth, and retained as a choriſter in that city, he became a monk of the order of St. Benedict. In this retirement he devoted himſelf to the ſtudy of muſic, particularly the ſyſtem of the ancients, and, above all, to reform their method of notation. The difficulties that attended the inſtruction of youth in the church-offices were ſo great, that, as he himſelf ſays, ten years were generally conſumed barely in acquiring the knowledge of the plain ſong; and this conſideration induced him to labour after ſome amendment, that might facilitate inſtruction, and enable thoſe employed in the choral office to perform the duties of it in a correct and decent manner. Being at veſpers in the chapel of his monaſtery, it happened that one of the offices appointed for that day was the hymn to St. John, compoſed by Paul, a deacon of the church of Aquileia, about the year 770.

UT queant laxis *REſonare fibris*
MIra geſtorum *FAmuli tuorum*
SOLve pollutis *LAbiis reatum,*
Sancte Joannes

During the performance of the hymn, he remarked the iteration of the words, and the frequent returns of UT, RE, MI, FA, SOL, LA: he obſerved likewiſe a diſſimilarity between the cloſeneſs of the ſyllable MI and the broad open ſound of FA, which he thought could not fail to impreſs upon the mind a laſting idea of their congruity; and immediately conceived a thought of applying theſe ſix ſyllables to perfect an improvement either then actually made by him, or under conſideration, viz. that of converting the ancient tetrachords into hexachords. Struck with the diſcovery, he retired to his ſtudy; and, having perfected his ſyſtem, he began to introduce it into practice: he tried the efficacy of it on the boys who were training up for the choral ſervice, and it exceeded the moſt ſanguine expectation. "To the admiration of all, (ſays cardinal Baronius,) a boy thereby learnt, in a few months, what no man, though of great ingenuity, could before that attain in ſeveral years."

The fame of Guido's invention ſoon ſpread abroad, and excited in the pope, John XX. a deſire to ſee and converſe with him. The pope ſent three meſſengers to invite him to Rome; where he was preſented to the holy father, and received with great kindneſs. The pope had ſeveral converſations with him; and, upon ſight of an antiphonary, which Guido had brought with him, marked with the ſyllables agreeable to his new invention, the pope looked on it as a kind of prodigy; and, ruminating on its principles, would not ſtir from his ſeat till he had learned perfectly to ſing off a verſe: upon which he declared, that he could not have believed the efficacy of the method, if he had not been convinced by the experiment he had himſelf made of it. The pope would have detained him at Rome, but this Guido declined; and, on his return home, he made a viſit to the abbot of Pompoſa, a town of Ferrara, and he ſettled in the monaſtery of that place. Here it was that he compoſed a tract on muſic, intitled *Micrologus*, i.e. "a ſhort diſcourſe;" which he dedicated to Theodald biſhop of Arezzo. Moſt of the authors who mention Guido, ſpeak of the Micrologus as containing the ſum of his doctrine: but it is in a ſmall tract, intitled *Argumentum novi Cantus inveniendi*, that his declaration of his uſe of the ſyllables, with their ſeveral mutations, and in ſhort his whole doctrine of ſolmiſation, is to be found. This tract makes part of an epiſtle to a very intimate friend, whom he addreſſes thus: "*Beatiſſimo atque dulciſſimo fratri Michaeli*;" at whoſe requeſt the tract itſelf ſeems to have been compoſed.

Whether Guido was the author of any other tracts, is not eaſy to determine. It no where appears that any of his works were ever printed, except that Baronius, in his *Annales Eccleſiaſtici*, tom. xi. p. 73, has given at length the epiſtle from him to his friend Michael of Pompoſa, and that to Theodald biſhop of Arezzo; and yet the writers on muſic ſpeak of the Micrologus as of a book in the hands of every one. Martini cites ſeveral manuſcripts of Guido; namely, two in the Ambroſian library at Milan; another among the archives of the chapter of Piſtoja, in Tuſcany; and a third in the Mediceo-Laurenziano library at Florence. Of the ſeveral tracts above-mentioned, a manuſcript is extant in the library of Baliol-college in Oxford. Several fragments are alſo among the Harleian manuſcripts now in the Britiſh Muſeum, No. 3199; but ſo much mutilated, that they afford little ſatisfaction to curious enquirers.

Aretin (Leonard), one of the moſt learned men of the fifteenth century, was ſecretary to the republic of Florence, and tranſlated from the Greek into Latin ſome of the lives of Plutarch, and Ariſtotle's Ethics: he alſo compoſed three books of the Punic war, that may ſerve as a ſupplement to thoſe wanting in Livy; the hiſtory of the tranſactions in Italy during his time; that of ancient Greece; that of the Goths; that of the republic of Florence; and many other books. He died in 1443, aged ſeventy-four.

Aretin (Francis), a man of great reading, and well acquainted with the Greek language. He tranſlated into Latin the Commentaries of St. Chryſoſtom upon St. John, and about twenty homilies of the ſame father: he alſo tranſlated the letters of Phalaris into Latin, and wrote a treatiſe *De balneis Puteolanus*. He ſtudied at Sienna, about the year 1443; and afterwards taught law there with ſuch reputation, that they called him the *Prince of Subtleties*, and his wit became a proverb. He diſplayed his talents chiefly in diſputes, in which no perſon could withſtand him. He gave his opinions in law with ſo much confidence, as to aſſure thoſe who conſulted him that they ſhould carry their cauſe: nor did experience contradict him; for, it was a common ſaying at the bar, that ſuch a cauſe had been condemned by Aretin, and muſt therefore be loſt. He taught alſo in the univerſity of Piſa, and in that of Ferrara. When old age would not permit him to go through the duties of his office, they diſpenſed with his reading of lectures, and his ſalary was continued. He was honoured with the title of *knight*, and ſpent all his life in celibacy; and his way of living was ſo parſimonious, that he was thereby enabled to amaſs a great deal of wealth, which he deſigned for the maintenance of a college; but he altered his reſolution, and left it to his relations.

Aretin (Peter), a native of Arezzo, who lived in the ſixteenth century. He was famous for his ſatirical writings, which he even directed againſt ſovereign powers, and from thence obtained the title of the *Scourge of Princes*. Francis I. the emperor Charles V. moſt of the princes of Italy, ſeveral cardinals, and many noblemen, courted his friendſhip by preſents, either becauſe they admired his compoſitions, or perhaps from an apprehenſion of falling under the laſh of his ſatire. Aretin became thereupon ſo inſolent, that he is ſaid to have got a medal ſtruck, on which he gave himſelf the title of *Divine*, ſignifying thereby that he performed the functions of a god upon earth, by the thunder-bolts with which he ſtruck the heads of the higheſt perſonages. He uſed to boaſt, that his lampoons did more ſervice to the world than ſermons; and it was ſaid of him, that he had ſubjected more princes by his pen, than the greateſt generals had ever done by their arms. Aretin wrote many irreligious and obſcene pieces; ſuch are his dialogues, which were called *Ragionamenti*. There is likewiſe imputed to him another very obſcene performance, *De omnibus Veneris ſchematibus*. "It was about the year 1525, (ſays Mr. Chevillier,) that Julio Romano, the moſt famous painter of Italy, inſtigated by the enemy of the ſalvation of mankind, invented drawings to engrave twenty plates: the ſubjects are ſo immodeſt, that I dare only name them. Peter Aretin compoſed ſonnets for each figure. George Vaſari, who relates this in his Lives of the Painters, ſays, he does not know which would be the greateſt impurity, to caſt one's eyes upon the drawings of Julio, or to dip into the verſes of Aretin." Some ſay that Aretin changed his libertine principles; but, however this may be, it is certain that he compoſed ſeveral religious pieces. He wrote a Paraphraſe on the penitential Pſalms, and another on Geneſis; he wrote alſo the Life of the Virgin Mary, and that of St. Catharine of Sienna, and of St. Thomas Aquinas. He died in the year 1556, about ſixty-five years old.

ARETO'LOGY, *ſ.* [from αρετη, virtue, and λεγω, to diſcourſe.] That part of moral philoſophy which treats of virtue, its nature, and the means of arriving at it.

ARE'TOS, *ſ.* [from αρετη, virtue.] A ſpecies of moth-mullein; ſo called from its good qualities.

AREVALIL'LO, a river of Spain, which runs into the Adaja, a little above Arevalos.

AREVA'LOS, a town of Spain, in Old Caſtile, on the confines of Leon, between the rivers Adaja and Arevalillo; ſix leagues ſouth-eaſt from Medina del Campo.

AREZI'BO, a town in the iſland of Porto Rico; three leagues from St. John.

AREZ'ZO, a town of Italy, in the duchy of Tuſcany, the ſee of a biſhop, ſuffragan of the archbiſhop of Florence, but exempt from his juriſdiction. In the time of the Romans, it was a place of conſiderable trade; and, when Scipio paſſed into Africa, this town ſupplied his army with 120,000 buſhels of wheat. It is thirty-four miles ſouth-eaſt of Florence, and twenty-five eaſt-north-eaſt of Sienna. Lat. 43. 28. N. lon. 29. 36. E. Ferro.

AR'FEUILLE, a town of France, in the department of the Allier, and chief place of a canton, in the diſtrict of Cuſſet; four leagues leagues eaſt of Cuſſet, and four ſouth of Donjon.

AR'GA, a river of Spain, which waters Navarre, and falls into the Ebro.

ARGÆ'US, the ſon of Licymnius, was carried away by Hercules, who promiſed his father to bring him back: but, the young man dying in the journey, Hercules burnt his body and reduced it to aſhes, which he brought back to his father. It is ſaid this is the firſt inſtance of burning dead bodies.

AR'GAL, *ſ.* Hard lees ſticking to the ſides of wine-veſſels, more commonly called tartar.

AR'GAN, *ſ.* in botany. See Sideroxylon.

ARGA'NA, a town of Aſia, in Armenia, forty miles weſt-north-weſt of Diarbek.

AR'GANCY, a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Metz; three leagues ſouth of Thionville, and one and three-quarters north of Metz.

AR'GASCH, a town of Ruſſia, in the department of Simbirſk, ſixty-four miles weſt-ſouth-weſt of Simbirſk. Lat. 55. 0. N. lon. 64. 30. E. Ferro.

ARGASYL'LIS, *ſ.* [from αργας, a ſerpent, which it is ſaid to reſemble.] The plant which is ſuppoſed to produce gum ammoniac.

AR'GE, a town of Aſia, in the Arabian Irak, on the Tigris, 170 miles north-weſt of Baſſora.

Arge, a river of Lithuanian Pruſſia, which runs into the Nemonin, four miles north-weſt of Wipe.

ARGE'A, or Ar'geli, *ſ.* in Roman antiquity, thirty human figures, made of ruſhes, thrown annually by the prieſts or veſtals into the Tiber, on the day of the ides of May. Plutarch, in his Roman Queſtions, enquires why they were called *Argea*. There are two reaſons aſſigned: the firſt, that the barbarous nations who firſt inhabited theſe parts, caſt all the Greeks they could meet with into the Tiber; for Argians was a common name for all Grecians: but that Hercules perſuaded them to quit ſo inhuman a practice, and to purge themſelves of the crime by inſtituting this ſolemnity. The ſecond, that Evander, an Arcadian, and a ſworn enemy of the Argians, to perpetuate that enmity to his poſterity, ordered the figures of Argians to be thus caſt into the river.

ARGE'IA, or Ar'golis, a diſtrict of Peloponneſus, ſituated between Arcadia to the weſt the Egean ſea to the eaſt, Laconica and the Sinus Argolicus to the ſouth, and to the north the territory of Corinth and the Sinus Saronicus; ſo called from Argos, the capital: now Romania di Morea. By the Greeks the people were called *Argeii*, from *Argi*, or *Argos*; by the Romans, *Argivi*, Argives. They were a colony who migrated, it is ſaid, from Egypt, under the command of Inachus. Polemon and Ptolemy Mendeſius, ancient Greek writers, inform us, that Inachus was contemporary with Amoſis, who demoliſhed Avaris, and expelled the ſhepherds out of Egypt. If, with ſome learned chronologers, we ſuppoſe Inachus to have begun to reform the Argives B. C. 1856, and to have died B. C. 1808, he muſt have been coeval with Amoſis, who reigned in Upper Egypt fifteen years before the expulſion of the ſhepherds, and ten years after that event, which happened B. C. 1806. Inachus was ſtyled the *Son of the Ocean*, becauſe his origin was not known, or becauſe he had come by ſea into Greece. Before his arrival the inhabitants were rude and barbarous. Theſe he united and civilized, and inſtructed in various arts. His ſon Phoroneus inſtituted the laws of government; and, on that account, has been called the *firſt king in Argos*, the *firſt of men*, and the *father of mortals*. The family of Inachus, after having kept poſſeſſion of the throne 347 years, were expelled by Danaus, who arrived B. C. 1509, with a colony from Canaan. Acriſius, the laſt king of Argos, died B. C. 1313: and was ſucceeded by Perſeus, his grandſon, who transferred the ſeat of government to Mycenæ, 544 years from the firſt year of Inachus, in the reign of Cecrops II. king of Athens, and about the time when Pelops the ſon of Tantalus king of Phrygia, having been compelled by Ilus to leave his native country, came into Greece with great wealth, and acquired ſupreme power in the region afterwards called by his name. In the thirty-ſeventh year of Euryſtheus, grandſon of Perſeus, the Argonautic expedition happened; i. e. B. C. 1224. This unjuſt and tyrannical prince had aſſigned to Hercules his taſks; and, after the death of that hero, he baniſhed all his children. Theſe were the Heraclidæ, who fled to Athens for protection, and who returned to Peloponneſus forty years after the deſtruction of Troy. In the reign of Agamemnon, the Trojan war commenced, and it was carried on with vigour during the ſpace of ten years. In the year B. C. 1184, Troy was taken, and the war was concluded. Scarcely had the Grecians ſettled in their own country after their return from this dangerous expedition, when the poſterity of Hercules invaded Peloponneſus, took poſſeſſion of it, and divided it among themſelves. Here the kingdom of Mycenæ ended, and that of Sparta was eſtabliſhed on its ruins. See Sparta.

AR'GELES, a town of France, in the department of the Eaſtern Pyrenees, and chief place of a canton, in the diſtrict of Ceret, near the Mediterranean Sea, twelve miles ſouth of Perpignon.

ARGELLE'Z, a town of France, and principal place of a diſtrict, in the department of the Higher Pyrenees, ſeven leagues ſouth-ſouth-eaſt of Pau. Lat. 43. 0. N. lon. 17. 33. E. Ferro.

ARGE'MA, or Arge'mon, *ſ.* [from αργος, white.] A little ulcer of the eye in the circle called iris, having its ſeat in a part of the black of the eye.

AR'GEMONE, *ſ.* [from αργεμα, a diſorder of the eye, which this plant is ſaid to cure.] In botany, a genus of the polyandria monogynia claſs, ranking in the natural order of rhoeadeæ. The generic characters are—Calyx: perianthium three-leaved, roundiſh; leaflets roundiſh with a point, concave, caducous. Corolla: petals ſix, roundiſh, from erect ſpreading, larger than the calyx. Stamina: filaments numerous, filiform, the length of the calyx; antheræ oblong, erect. Piſtillum: germ ovate, five-angled; ſtyle none; ſtigma thickiſh, obtuſe, reflex, quinquefid, permanent. Pericarpium: capſule ovate, five-angled, one-celled, half-valved. Seeds: numerous, very ſmall; receptacles linear, faſtened to the angles of the pericarpium, not gaping.—*Eſſential Character*. Corolla, ſix-petalled; calyx, three-leaved; capſule, half-valved.

Species. 1. Argemone mexicana, or prickly argemone or poppy: capſules ſix-valved, leaves ſpiny. This is an annual plant, riſing to the height of two or three feet, with ſtems armed with prickles. Leaves ſinuate or jagged, ſoft, ſhining, ſtem-claſping, the points of the jags ending in ſharp yellow ſpines; on the upper ſide are milky veins, as in our lady's thiſtle, on the under are ſmall prickles along the midrib and veins. Seeds very numerous, round, black, rough, with a compreſſed ſcar on one ſide. It is common in Mexico, and all the iſlands of the Weſt Indies, where it is a troubleſome weed in their cultivated lands. The Spaniards firſt brought it into Europe, under the title of *figo del inferno*, or devil's fig, which name it obtained from the form of the fruit, armed, as Parkinſon expreſſes it, with cruel ſharp prickles or thorns. It is now found in a wild ſtate in ſome of the ſouthern countries of Europe; and was cultivated by Gerard in 1597. It flowers in July and Auguſt. The whole plant abounds with a milky glutinous juice, which turns in the air to a fine bright yellow, and when reduced to conſiſtence is not diſtinguiſhable from gamboge. In very ſmall doſes it is probably of equal efficacy given in dropſies, jaundice, and cutaneous eruptions. It is eſteemed very deterſive, and generally uſed in diſeaſes of the eyes: but the infuſion is looked upon as a ſudorific and reſolutive, which may be uſed, with ſucceſs, on many occaſions. The ſeeds are ſaid to be a much ſtronger narcotic than opium. They are thought to be an excellent remedy, and are frequently adminiſtered by the inhabitants in the ſugar colonies in diarrhœas and bloody fluxes: they have a pungent warm taſte, but it does not manifeſt itſelf for ſome time upon the palate. They work both by ſtool and vomit, and have been frequently adminiſtered in the dry belly-ach; but we have much ſafer and better medicines for both theſe diſorders; though this may be given with ſucceſs, when the parts are relaxed or weakly, or the diſorder proceeds from indigeſtion, which is frequently the caſe in hot climates. It is called the yellow thiſtle in the Weſt Indies.

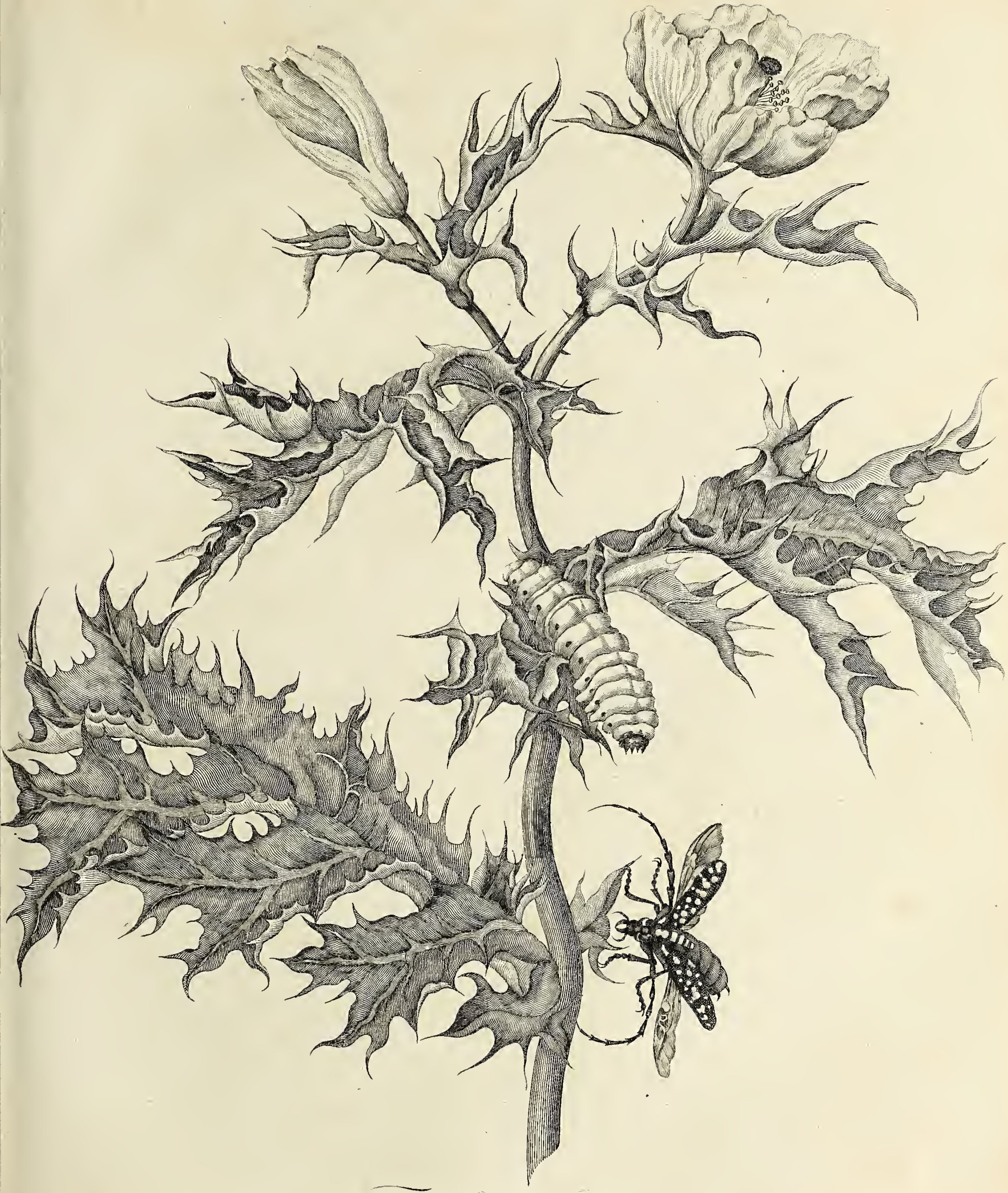
2. Argemone armeniaca: capſules three-valved. This was diſcovered in Armenia by the celebrated Tournefort.

3. Argemone pyrenaica: capſules four-valved, ſtem naked. This is a native of the Pyrenees.

Propagation and Culture. The ſeeds of the firſt muſt be ſown on a bed of light earth in the ſpring, where they are to remain: if they come up too thick, the plants muſt be thinned to four inches diſtance; and, when once they have ſhed their ſeeds, a ſupply of plants will not be wanting for ſeveral years after. The two other ſorts have not yet been introduced into cultivation. See Papaver.

ARGEN'CES, a town of France, in the department of Calvados, and in the late province of Normandy, ſitu-

ARGEMONE.



The Prickly Poppy.

Ihle del.t Published as the Act directs January 22, 1796 by J. Wilkes. J. Paſs sculp.

ate on the river Meauce, ten miles eaſt of Caen. Lat. 49. 12. N. lon. 0. 2 W.

AR'GENFELS, a town and caſtle of Germany, in the circle of the Lower Rhine, ſeventeen miles north-north-weſt of Coblentz.

AR'GENT, *adj.* [from *argentum*, Lat. ſilver.] The white colour uſed in the coats of gentlemen, knights, and baronets, ſuppoſed to be the repreſentation of that metal. Silver; bright like ſilver:

Thoſe *argent* fields more likely habitants,
Tranſlated ſaints, or middle ſpirits, hold,
Betwixt th' angelical and human kind. *Milton.*

Argent', a town of France, in the department of the Cher, and chief place of a canton, in the diſtrict of Aubigny, four leagues weſt of Chatillon-ſur-Loire, and one and a half north of Aubigny.

ARGEN'TA, a river of European Turkey, which runs into the Adriatic, ſix miles north of Durazzo.

ARGENTAC', a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Tulle, four leagues ſouth-eaſt of Tulle.

ARGENTAN', a town of France, and principal place of a diſtrict, in the department of the Orne, four leagues ſouth of Falaiſe, and ſix and a half north of Alençon. Lat. 48. 44. N. lon. 17. 38. E. Ferro.

ARGENTAN'GINA, *ſ.* The ſilver quinſey; when a pleader at the bar, being bribed, feigns himſelf ſick.

ARGENTA'RIA, a town of ancient Gaul, thought to have ſtood where the city Colmar is now ſituated. It is remarkable for a great victory gained by the emperor Gratian over the Lentienſes, in the month of May, A. D. 378. The Romans, being but few in number, were at firſt overpowered, and obliged to give ground; but, returning to the charge, they gained in the end a complete victory. Thirty thouſand of the barbarians, and among the reſt their king Triarius, were killed on the ſpot; and the reſidue, except 5000, were made priſoners.

Argentaria Creta, *ſ.* Pure white earth, found in Pruſſia, and much eſteemed for cleaning plate.

ARGENTA'RIUS, *ſ.* is frequently uſed in Roman writers for a money-changer or banker. The argentarii were monied people, who made a profit either by the changing or lending of money at intereſt. Theſe had their *tabernæ*, or offices, in the *forum Romanum*, built as early as the reign of L. Tarquinius Priſcus. The argentarii and fœneratores were much hated on account of their covetouſneſs and extortion.

ARGENTA'RO (Monte), a cape and promontory on the coaſt of Tuſcany, about twelve miles ſouth of Orbitello; it juts out into the ſea, in the form of a peninſula, and is a ſerviceable land-mark.

ARGENTA'TI MI'LITES, in antiquity. Livy, lib. vi. ſpeaks of *argentati milites*, as diſtinguiſhed from *aurati*. Aquinas ſuppoſes theſe to have been ſimilar to the argyraſpides and chryſaſpides; but the deſcriptions do not quadrate. Livy only repreſents the argentati as clothed in white linen coats.

ARGENTA'TION, *ſ.* [from *argentum*, Lat. ſilver.] An overlaying with ſilver.

ARGENTEAU', a town of the Netherlands, in the duchy of Limburg, two leagues weſt of Dalem.

ARGENTEUIL', a town of the iſle of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of St. Germain. It is ſeated on the river Seine, eight miles north-weſt of Paris, and is a beautiful place, with fine vineyards. In the environs are quarries of plaſter of Paris. Lat. 48. 52. N. lon. 2. 28. E.

AR'GENTHAL, a town of Germany, in the circle of the Upper Rhine, and duchy of Simmeren, forty miles eaſt of Treves, and four ſouth-eaſt of Simmeren.

ARGENTIE'RA, an iſland in the Grecian Archipelago, near Milo. It is about eighteen miles in compaſs, and is full of barren mountains, producing nothing but barley, cotton, and a few grapes. Lat. 36. 50. N. lon. 23. 10. E.

ARGENTIE'RE, a town of France, in the department of Ardeche, five miles ſouth-weſt of Aubenas, and ſeventeen weſt of Viviers. Lat. 44. 30. N. lon. 4. 22. E.

Argentiere (L'), a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Briançon, on the Durance, nine miles north of Mont Dauphin.

ARGENTI'NA, *ſ.* in ichthyology, a genus of fiſhes belonging to the order of abdominales. There are two ſpecies: the one peculiar to the American ſeas, termed by Linnæus the *argentina Carolina*, and the other found in the European, and ſometimes in the Britiſh, ſeas. The European argentine is moſt frequently ſeen in the Mediterranean. Willoughby, who examined one at Rome, ſays, that the outſide of the air-bladder conſiſts of a foliaceous ſilvery ſkin, which was made uſe of in the manufacture of artificial pearl. The ſnout of this ſmall fiſh is ſharp and prominent; the body round and tapering, ſeldom exceeding two inches in length. The back and ſides, as far as the lateral lines, are of a pale aſh-colour, mixed with green. The belly, and parts below theſe lines, are exactly coloured as if covered with ſilver leaf. The mouth is ſmall, without teeth, excepting ſome aſperities reſembling them upon the roof of the mouth, and tip of the tongue. The eyes are large; the irides ſilvery; and on the forehead is a patch of dark purple. The dorſal fin is placed near the equilibrium of the fiſh, and ſupported with ten ſoft rays. There are two pectoral, two ventral, and an anal fin, near to the tail, which is bifurcated.

Argentina, *ſ.* in botany. See Potentilla.

AR'GENTINE, *adj.* [*argentin*, Fr.] Sounding like ſilver.

Argenti'ne, a town of France, in the department of Mont Blanc.

ARGENTI'NUS, a deity worſhipped by the ancients, as the god of ſilver coin; as Æſculanus, whom they made his father, was the god of braſs money, which was in uſe before ſilver.

ARGENTON', a town of France, and principal place of a diſtrict, in the department of the Indre, divided into two by the river Creuſe. It is five leaves ſouth-ſouth-weſt of Chateauroux, and ſix and a quarter weſt of la Chartre. Lat. 46. 35. N. lon. 19. 11. E. Ferro.

Argenton-le-Chateau, a town of France, in the department of the Two Sevres, and chief place of a canton, in the diſtrict of Thouars, ſeven leagues north of Partenay, and three weſt of Thouars. Lat. 46. 59. N. lon. 17. 13. E. Ferro.

Argenton-les-Egliſes, a town of France, in the department of the Two Sevres, four miles north of Thouars, and eight miles north-eaſt of Argenton-le-Chateau.

ARGENTO'RA, or Argenti'na, a city of the Tribocci; one of the fifty forts built by Druſus on the Rhine. *Florus.* An appellation formed by the Romans from the German, *argen ſtraſſen* or *ſtraten*, "unſafe roads for travellers," from the marauding-parties of the garriſons that infeſted the roads. Now *Straſburg*, in the Lower Alſace, on the rivulet Ill, near the Rhine. Lat. 48. 38. N. lon. 7. 35. E.

ARGEN'TRE-SUR-LAVAL, a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Laval, four miles eaſt of Laval.

Argentre-ſous-Vitre', a town of France, in the department of Ille and Villaine, and chief place of a canton, in the diſtrict of Vitré, ſeven miles north-north-eaſt of la Guerche.

ARGEN'TUM. See Silver.

Argentum Album, in our old cuſtoms, ſilver coin, or pieces of bullion that anciently paſſed for money. By Doomſday tenure, ſome rents to the king were paid in *argento albo*, common ſilver pieces of money: other rents in *libris urſis et penſatis*, in metal of full weight and purity: in the next age, that rent which was paid in money was called *blanch fearm*, and afterwards *white rent*; and what was paid in proviſions, was termed *black mail*.

Argentum Dei, God's ſilver; money anciently given in earneſt upon the making of any bargain. In ſeveral manors, the acknowledgement paid to the lord on the admitting of a tenant, is called the God's penny.

Argentum Musivum, is a maſs conſiſting of ſilver-like flakes, uſed for the colouring of plaſter figures, and for other purpoſes, as pigment. It conſiſts of an amalgam of equal parts of tin, biſmuth, and mercury. It is to be mixed with white of eggs, or ſpirit varniſh, and then applied to the intended work, which is afterwards to be burniſhed.

Argentum Vivum, *Mercury* or *Quickſilver*. See Chemistry.

ARGES'TES, *ſ.* is uſed by Vitruvius for the wind which blows from that quarter of the horizon, which is 75° from the ſouth and weſtward. Ricciolus uſes the term to denote the wind which blows at 22° 30′ from the weſt towards the north, coinciding with that which is otherwiſe called *weſt-north-weſt*.

AR'GIA, a town of Arabia Deſerta, 200 miles ſouth-ſouth-eaſt of Ana.

Argia, in fabulous hiſtory, the daughter of Adraſtus, and wife of Polynices, whoſe body ſhe went to ſeek with Antigone to pay her laſt duty: this irritated Creon ſo much that he killed them both, and Argia was metamorphoſed into a fountain of that name.

AR'GIL, *ſ.* [*argilla*, Lat.] Potters clay; a fat ſoft kind of earth of which veſſels are made.

ARGIL'A, *ſ.* in natural hiſtory, Clay.

ARGILLA'CEOUS, *adj.* Clayey; partaking of the nature of argil; conſiſting of argil, or potters clay.

ARGIL'LOUS, *adj.* Conſiſting of clay; clayiſh; containing clay.—Albuquerque derives this redneſs from the ſand and *argillous* earth at the bottom. *Brown.*

ARGIL'LY, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the diſtrict of Beaune, fifteen miles ſouth of Dijon.

AGI'RO CASTRO, a town of European Turkey, in the province of Livadia, twenty-ſix miles north-weſt of Lepanto.

AR'GISCH, a town of Wallachia, on the frontiers of Tranſylvania, eight miles north of Helmanſtat, and eight ſouth of Tergowitz.

ARGI'VI, or Arge'ii, the people of Argei or Argolis. See Argeia.

AR'GLAS, a town of Ireland, on the eaſt coaſt of the county of Down, ſix miles ſouth-eaſt of Downpatrick.

AR'GO, in antiquity, a ſhip or veſſel celebrated among the poets; being that wherein the Argonauts, of whom Jaſon was the chief, made their expedition in queſt of the golden fleece. Jaſon, having happily accompliſhed his enterpriſe, conſecrated the ſhip Argo to Neptune; or, as others ſay, to Minerva, in the iſthmus of Corinth; where, they add, it did not remain long before it was tranſlated into heaven, and made a conſtellation. The generality of authors repreſent the ſhip Argo as of a long make, reſembling the modern galleys; and furniſhed with thirty benches of rowers. It could not, however, be of any great bulk, ſince the Argonauts were able to carry it on their backs from the Danube to the Adriatic ſea. It is ſaid to be the firſt veſſel that ever ſailed upon the ſea. It was called Argo from *Argus*, a famous architect, who built it of the oaks of Dodona's foreſt.

Argo Navis, the *Ship Argo*, in aſtronomy, is a conſtellation in the ſouthern hemiſphere, whoſe ſtars, in Ptolemy's catalogue, are forty-five; in Tycho's, eleven; in the Britannic catalogue, and Sharp's appendix, ſixty-four.

AR'GOB, an ancient canton, lying beyond Jordan, in the half-tribe of Manaſſeh, and in the country of Baſhan, one of the moſt fruitful on the other ſide of Jordan. In the region of Argob there were ſixty cities, called *Baſhan-havoth jair*, which had very high walls and ſtrong gates, without reckoning many villages and hamlets which were not incloſed, Deut. iii. 4, 14, and 1 Kings, iv. 13. But Argob was more particularly the name of the capital city of the region of Argob, which Euſebius ſays was fifteen miles weſt from Geraſa.

AR'GOL, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Chateaulin, two leagues north-weſt of Chateaulin, and five and a half north of Quimper.

AR'GOLIS, a province of Peloponneſus, between Arcadia and the Ægean ſea, whoſe chief city was called Argos.

AR'GON, the ſon of Alcæus, and one of the Heraclides, who reigned in Lydia 505 years before Gyges.

ARGONAU'TA, *ſ.* a genus of ſhell-fiſh, for which ſee Nautilus.

ARGONAU'TIC, *adj.* Something belonging to the Argonauts. The argonautic expedition is one of the greateſt epochas or periods of hiſtory which Sir Iſaac Newton endeavours to ſettle, and from thence to rectify the ancient chronology. This he ſhews, by ſeveral authorities, to have been one generation or about thirty years earlier than the taking of Troy, and forty-three years later than the death of Solomon. Dr. Bryant, however, rejects the hiſtory of the argonautic expedition as a Grecian fable, founded indeed on a tradition derived from Egypt, and ultimately referring to Noah's preſervation, &c. in the ark. But, although we are not to believe all the romantic ſtories which poets, and even ſome grave hiſtorians, have told us of thoſe famous adventurers, yet it ſeems unreaſonable to diſcredit entirely the Argonautic expedition.

ARGONAU'TICA, *ſ.* in literary hiſtory, denotes poems on the ſubject and expeditions of the Argonauts. We have the *Argonautics* of Orpheus in epic verſe, publiſhed by H. Stephanus; the *Argonauticon* of Valerius Flaccus, in eight books of Latin heroics, in imitation of Apollonius, with reſpect to which Burman obſerves that the imitator has often ſurpaſſed the original; the *Argonautics* of Apollonius Rhodius, an heroic poem, conſiſting of four books; *opus*, as Quintilian calls it, *non contemnendum*.

AR'GONAUTS, in antiquity, a company of illuſtrious Greeks, who embarked with Jaſon, in the ſhip Argo, with a deſign to obtain the golden fleece. The occaſion of this expedition is thus repreſented by Greek writers: Phryxus, flying with his ſiſter Helle from the rage of their ſtepmother Ino, the daughter of Cadmus, went on-board a ſhip, whoſe enſign was a golden ram, and ſailed to Colchis, (now Mingrelia, part of Georgia.) Helle was drowned by the way, in that ſea which from her was called the *Helleſpont*, now the *Dardanelles*. This, according to ſome, was the ground of the poetical fable, that a ram with a golden fleece ſwam away with them to Colchis; and that the Argonauts undertook their famed expedition, in order to find that fleece. But Strabo and Arrian inform us, that it was a practice of the Colchians to collect gold on mount Caucaſus by extending fleeces acroſs the beds of the torrents; and, as the water paſſed, the metallic particles remained entangled in the wool: hence, according to thoſe hiſtorians, the adventure was named the *expedition of the golden fleece*. Sir Iſaac Newton thinks that this expedition was really an embaſſy ſent by the Greeks, during the inteſtine diviſions of Egypt in the reign of Amenophis, to perſuade the nations upon the coaſts of the Euxine and Mediterranean ſeas, to take that opportunity of ſhaking off the yoke of Egypt, which Seſoſtris had laid upon them; and that fetching the golden fleece was only a pretence to cover their true deſign.

But the moſt judicious and ſatisfactory account of the Argonautic expedition, ſeems to be that given by Dr. Gillies in his Hiſtory of Greece. "The northern diſtricts of Theſſaly being peculiarly expoſed to the dangerous fury of invaders, the petty princes of that province entered into a confederacy for their mutual defence. They aſſembled in ſpring and autumn at Thermopylæ, a place afterwards ſo illuſtrious, and then governed by Amphictyon, a deſcendant of Deucalion, whoſe name is immortalized in the Amphictyonic council. The advantages which the confederates derived from this meaſure, were ſoon perceived by their neighbours. The central ſtates gradually acceded to their alliance; and, about the middle of the fourteenth century before Chriſt, Acriſius king of Argos, and other princes of the Peloponneſus, were allowed to ſhare the benefits and ſecurity of this uſeful aſſociation.

"After this event, the Amphictyons appear to have long confined themſelves to the original purpoſe of their inſtitution. The ſtates, whoſe meaſures were directed by this aſſembly, found ſufficient occupation in defending their own territories; and near a century elapſed, before they undertook, by common conſent, any diſtant expedition. But it was not to be expected that their reſtleſs activity could be always exhauſted in defenſive war. The eſtabliſhment of the Amphictyons brought together the chiefs moſt diſtinguiſhed by birth and bravery. Glory and emulation prompted them to arms, and revenge directed thoſe arms againſt the barbarians. Jaſon, Admetus, and other chieftains of Theſſaly, having equipped, in the harbour of Ioleus, the ſhip Argo, of ſuperior ſize and conſtruction to any before known, were animated with a deſire to viſit foreign lands, to plant colonies in thoſe parts of them that appeared moſt delightful, and to retort on their inhabitants the injuries which Greece had ſuffered from ſtrangers. The princes of the north having proclaimed this ſpirited deſign over the central and ſouthern provinces, the ſtandard of enterpriſe and glory was ſpeedily ſurrounded by the flower of the Grecian youth, who eagerly embraced this honourable opportunity to ſignalize their valour. Peleus, Tydeus, Telamon, and in general the fathers of thoſe heroic chiefs who in the ſucceeding age ſhone with diſtinguiſhed luſtre in the plains of Troy, are numbered among the leaders of the Argonauts. They were accompanied by the choſen warriors, and by the venerable prophets, of their reſpective tribes; by an Æſculapius, the admired father of the healing art: and by the divine Orpheus, whoſe ſublime genius was worthy to celebrate the amazing ſeries of their adventures.

"Theſe adventures, however, have been too much adorned by the graces of poetry, to be the proper ſubjects of hiſtorical compoſition. The deſigns of the Argonauts are veiled under the allegorical, or at leaſt doubtful, phraſe, of *carrying off the golden fleece*; which, though eaſily explained, if we admit the report that the inhabitants of the eaſtern banks of the Euxine extended fleeces of wool, in order to collect the golden particles which were carried down by the torrent from mount Caucaſus, is yet deſcribed in ſuch various language by ancient writers, that almoſt every modern who examines the ſubject thinks himſelf entitled to offer, by way of explanation, ſome new conjecture of his own. But in oppoſition to the moſt approved of theſe conjectures, we may venture to affirm, that the voyage to Colchis was not undertaken with a view to eſtabliſh extenſive plans of commerce, or to ſearch for mines of gold, far leſs to learn the imaginary art of converting other ſubſtances into that precious metal; all ſuch motives ſuppoſing a degree of ſpeculation and refinement unknown in that age to the gallant but uninſtructed youth of Theſſaly. The real object of the expedition may be diſcovered by its conſequences. The Argonauts fought, conquered, and plundered; they ſettled a colony on the ſhores of the Euxine; and carried into Greece a daughter of the king of Colchis, the celebrated Medea, a princeſs of Egyptian extraction, whoſe crimes and enchantments are condemned to eternal infamy in the immortal lines of Euripides."

Hence then the object of the Argonauts was to open the commerce of the Euxine ſea, and to eſtabliſh colonies in adjacent country of Colchis. The ſhip Argo, which was the admiral of the fleet, is the only one particularly taken notice of; though we learn from Homer, and other ancient writers, that ſeveral were employed in this expedition. The fleet of the Argonauts was, from the ignorance of thoſe who conducted it, long toſſed about on different coaſts. The rocks, at ſome diſtance from the mouth of the Euxine ſea, occaſioned great labour: they ſent forward a light veſſel, which paſſed through, but returned with the loſs of her rudder. This is expreſſed in the fabulous language of antiquity, by their ſending out a bird which returned with the loſs of its tail, and may give us an idea of the allegorical obſcurity in which the other events of this expedition are involved. The fleet at length arrived at Æon, the capital of Colchis, after performing a voyage, which, conſidering the condition of the naval art during this age, was not leſs important than the circumnavigation of the world by our modern diſcoverers. From this expedition to that againſt Troy, which was undertaken to recover the fair Helena, who had been carried off by Paris, ſon of the Trojan king, the Greeks muſt have made a wonderful progreſs in arts, in power, and in opulence; ſince no leſs than twelve hundred veſſels were employed in that voyage.

Argonauts of St. Nicholas, was the name of a military order inſtituted by Charles III. king of Naples, in 1382, for the advancement of navigation, or, as ſome ſay, merely for preſerving amity among the nobles. They wore a collar of ſhells, incloſed in a ſilver creſcent, whence hung a ſhip with this motto, *Non credo tempori*, "I do not truſt time." Hence theſe Argonaut knights came to be called *knights of the ſhell*. They received the order of St. Baſil, archbiſhop of Naples; and held their aſſemblies in the church of St. Nicholas, their patron.

ARGOPHYL'LUM, *ſ.* [αργος and φυλλον, white-leaf; the leaves being of a ſilky whiteneſs beneath.] In botany, a genus of the pentandria monogynia claſs, in the natural order of ericæ. The generic characters are—Calyx: perianthium ſhort, quinquefid; diviſions ſharp. Corolla: petals five, lanceolate-ſpreading, three times larger than the calyx; nectary five-angled, pyramidal, open at the top, conſiſting of many converging papillas, connate at the baſe. Stamina: filaments five, ſubulate, inſerted into the receptacle, and ſhorter than the nectary; antheræ ovate. Piſtillum: germ turbinate, faſtened at the bottom to the calyx, flat above; ſtyle filiform, the length of the nectary; ſtigma globular. Pericarpium: capſule hemiſpherical, flat above, growing to the calyx, three-celled, opening into three parts. Seeds: very many, globular, porous.—*Eſſential Character.* Capſule, three-celled; nectary, pyramidal, five-angled, the length of the corolla.

We have but one ſpecies, known by the name of argophyllum nitidum. It is perennial; and is found in New Caledonia.

AR'GOS, an ancient name of Peloponneſus; from Argos one of the kings. *Strabo.*

Argos, the capital, and an inland town, of Argolis, or Argeia. It had different ſurnames; as *Achaicum* from the country, or an ancient people, (*Homer*;) *Hippium*, from its breed of horſes; and *Inachium*, from the river Inachus, which runs by, or from Inachus the founder of the kingdom, whoſe name was alſo given to the river.

Ancient Argos ſtood chiefly on a flat. The ſprings were near the ſurface; and it abounded in wells, which were ſaid to have been invented by the daughters of Danaüs. This early perſonage lived in the acropolis or citadel, which was named *Lariſſa*, and accounted moderately ſtrong. On the aſcent was a temple of Apollo, which in the ſecond century continued the ſeat of an oracle. On the top was a temple of Jupiter, without a roof. In the temple of Minerva, among other curious articles, was a wooden Jupiter, with an eye more than common, having one in the forehead. This ſtatue, it was ſaid, was once placed in a court of the palace of Priam, who fled as a ſuppliant to the altar before it, when Troy was ſacked. In this city was alſo the brazen tower in which Danaë, being confined by her father, was deflowered by Jupiter. Argos retains its original name and ſituation, ſtanding near the mountains which are the boundary of the plain, with Napoli and the ſea in view before it. The ſhining houſes are whitened with lime or plaſter. Churches, mud-built cottages and walls, with gardens and open areas, are interſperſed, and the town is of conſiderable extent. Above the other buildings is ſeen a very handſome moſque, ſhaded with ſolemn cypreſſes; and behind is a lofty hill, brown and naked, of a conical form, the ſummit crowned with a neglected caſtle. The devaſtations of time and war have effaced the old city. We now look in vain for veſtiges of its numerous edifices, the theatre, the gymnaſium, the temples, and monuments, which it once boaſted, contending even with Athens in antiquity, and in favours conferred by the gods.

Argos Amphilochicum, a city of Acarnania; its territory Amphilochia, ſituated on the eaſt ſide of the Sinus Ambraicus, diſtant 180 ſtadia to the ſouth-eaſt of Ambracia. *Polybius.* Alſo called *Argia Amphilochis*; *Amphiloci* and *Amphilochici*, the people. The name is from Amphilochus, ſon of Amphiaraus; and from Argos, the name of his country, in Peloponneſus. *Thucydides.*

Argos Hippium, the ancient name of Arpi; but Lampe is a ſtill more ancient; afterwards called *Argyrippa*, and *Argippa*; built by, and the reſidence of, Diomedes, on the Cerbalus, afterwards a large and populous city. *Livy.* A town of Apulia; now in ruins, and the place called *Arpi.*

Argos Pelasgicum, an appellation denoting Theſſaly; ſo called from the Pelaſgi. *Homer.*

Argos Portus, a port of Tuſcany; now *Porto Ferraro*, in the north of the iſland Elba. Lat. 42. 35. N. lon. 11. 30. E.

ARGOS'TOLI, a ſea-port in the iſland of Cephaloni, and the beſt in the iſland, the reſidence of a proveditor; the port is large, but the anchorage not firm. It is eight miles weſt-ſouth-weſt of Cephaloni.

AR'GOSY, *ſ.* [derived by Pope from *Argo*, the name of Jaſon's ſhip; ſuppoſed by others to be a veſſel of *Raguſa* or *Ragoſa*, a *Ragozine*, corrupted.] A large veſſel for merchandiſe; a carrack:

Your mind is toſſing on the ocean;
There where your *argoſies*, with portly ſail,
Like ſigniors and rich burghers on the flood,
Do overpeer the petty traffickers. *Shakeſpeare.*

ARGOU'GES, a town of France, in the department of the Channel, four leagues ſouth of Avranches.

ARGOW' or Argau', a country of Swiſſerland, ſituated on the river Aar, including a conſiderable part of the canton of Berne, and confiſcated to that ſtate by the excommunication of Frederic duke of Auſtria, and ſince confirmed by his ſucceſſors.

AR'GU, a town of Syria, five miles ſouth-eaſt of Damaſcus.

To AR'GUE, *v. n.* [*arguo*, Lat.] To reaſon; to offer reaſons.—An idea of motion, not paſſing on, would perplex any one, who ſhould *argue* from ſuch an idea. *Locke.* —To perſuade by argument.—It is a ſort of poetical logic which I would make uſe of, to *argue* you into a protection of this play. *Congreve.*—To diſpute; with the particles *with* or *againſt* before the opponent, and *againſt* before the thing oppoſed.—He that by often *arguing againſt* his own ſenſe impoſes falſehoods on others, is not far from believing himſelf. *Locke.*—I do not ſee how they can *argue with* any one, without ſetting down ſtrict boundaries. *Locke.*

To Argue, *v. a.* To prove any thing by argument. To debate any queſtion; as, To *argue* a cauſe. To prove, as an argument.—It *argues* diſtemper of the mind as well as of the body, when a man is continually toſſing from one ſide to the other. *South.*—To charge with, as a crime: with *of*.—I have pleaded guilty to all thoughts and expreſſions of mine, which can be truly *argued of* obſcenity, profaneneſs, or immorality, and retract them. *Dryden.*

ARGUE'DAS, a town of Spain, in Navarre, two leagues and a half from Tudella.

ARGU'EIL, a town of France, in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Gournay, ſix leagues north-eaſt of Rouen, and three weſt-north-weſt of Gournay.

AR'GUER, *ſ.* A reaſoner; a diſputer; a controvertiſt. —Men are aſhamed to be proſelytes to a weak *arguer*, as thinking they muſt part with their reputation as well as their ſin.—Neither good Chriſtians nor good *arguers*. *Atterbury.*

AR'GUIN, an iſland on the coaſt of Negroland, in Africa, about ſixteen miles diſtant from cape Blanco, ſituated in lat. 20. 30. N. lon. 17. 20. W. It is ſcarcely two miles in length; notwithſtanding, it was a bone of contention for eighty-ſeven years between the Portugueſe, Dutch, Engliſh, and French. It was firſt diſcovered by the Portugueſe in 1444, in conſequence of which a fort was erected on the iſland, and the Portugueſe enjoyed the peaceable poſſeſſion of it till 1638. At this time the Dutch reſolved to attack it; and accordingly landed without moleſtation from the garriſon, which was too weak to oppoſe them. The Dutch immediately ſet about repairing the fortifications, and ſecuring it in the beſt manner they could: however, in 1665, the fort was reduced almoſt to a heap of rubbiſh by an Engliſh ſquadron; but, as the fortifications were totally deſtroyed, and only a ſmall garriſon left there, it was retaken by the Dutch the next year. They now redoubled their diligence in ſtrengthening the iſland, entering into alliance with Mooriſh chiefs, procuring a number of families to ſettle under the protection of the fort, and giving extravagant prices for gums, with a view to monopolize the gum-trade. By this means the gum-trade of the French Senegal company was almoſt ruined; upon which they fitted out a ſquadron, diſpoſſeſſed the Dutch, and had the iſland finally ceded to them by the treaty of Nimeguen. Though the Dutch ſeemed now to be finally expelled, they yet reſolved not to part with ſuch a valuable ſettlement. Under pretence of being ſubjects of the elector of Brandenburg, they rebuilt one of the forts which had been demoliſhed, and there maintained themſelves in ſpite of the utmoſt endeavours of the French company to diſpoſſeſs them. In 1717, however, the French company fitted out a new ſquadron; but this armament did not arrive at Arguin before Feb. 26, 1721. The Dutch defended themſelves with ſuch intrepidity and conduct as had almoſt baffled the utmoſt efforts of the French; but the latter having found means to draw off a Mooriſh chief from his allegiance, the Dutch were obliged to evacuate Arguin, and retire to Portendic, where they fortified themſelves, determining to watch a favourable opportunity for recovering the ſettlement. This very ſoon happened, by means of the weakneſs of the garriſon, and the imprudence of Duval, the French director; who, having quarrelled with the Moors, was ſurpriſed, defeated, and killed, by them; in conſequence of which, the ſettlement fell again into the hands of the Dutch, on the 11th of January, 1722. In 1723, the Dutch were attacked by another French ſquadron, under the command of the ſieur Riguadiere. This gentleman boaſted that the fort could not hold out one day; but he was ſhamefully repulſed, and forced to raiſe the ſiege with precipitation. The Dutch, however, did not long remain in peace; for, in 1725, their fort was entirely demoliſhed by the French under Du Caſſe. The Dutch, however, are ſtill the poſſeſſors of it.

AR'GUMENT, *ſ.* [*argumentum*, Lat.] A reaſon alleged for or againſt any thing.—We ſometimes ſee, on our theatres, vice rewarded, at leaſt unpuniſhed; yet it ought not to be an *argument* againſt the art. *Dryden.*—The ſubject of any diſcourſe or writing:

To the height of this great *argument*
I may aſſert eternal providence,
And juſtify the ways of God to man. *Milton.*

The contents of any work ſummed up by way of abſtract. —The *argument* of the work, that is, its principal action, the economy and diſpoſition of it, are the things which diſtinguiſh copies from originals. *Dryden.*—A controverſy. —If the idea be not agreed on betwixt the ſpeaker and hearer, the *argument* is not about things, but names. *Locke.* —It has ſometimes the particle *to* before the thing to be proved, but generally *for*.—The beſt moral *argument to* patience, in my opinion, is the advantage of patience itſelf. *Tillotſon.*—This, before that revelation had enlightened the world, was the very beſt *argument for* a future ſtate. *Atterbury.*—In aſtronomy, an arch by which we ſeek another unknown arch, proportional to the firſt.

Argument of Inclination, in aſtronomy, is the arch of the orb of a planet, which is comprehended between the aſcending node, and the place of that planet with reſpect to the ſun.

Argument of the Moon's Latitude, is her diſtance from the Dragon's Head or Tail, which are her two nodes.

ARGUMEN'TAL, *adj.* Belonging to argument; reaſoning:

Afflicted ſenſe thou kindly doſt ſet free,
Oppreſs'd with *argumental* tyranny,
And routed reaſon finds a ſafe retreat in thee. *Pope.*

ARGUMENTA'TION, *ſ.* Reaſoning; the act of reaſoning.—*Argumentation* is that operation of the mind, whereby we infer one propoſition from two or more propoſitions premiſed. Or it is the drawing a concluſion, which before was unknown, or doubtful, from ſome propoſitions more known and evident; ſo when we have judged that matter cannot think, and that the mind of man doth think, we conclude, that therefore the mind of man is not matter. *Watts.*—I ſuppoſe it is no ill topic of *argumentation*, to ſhew the prevalence of contempt, by the contrary influences of reſpect. *South.*

ARGUMEN'TATIVE, *adj.* Conſiſting of argument; containing argument. Sometimes with *of*, but rarely.—Another thing *argumentative of* Providence, is that pappous plumage growing upon the tops of ſome ſeeds, whereby they are wafted with the wind, and diſſeminated far and wide. *Ray.*—Applied to perſons, diſputations; diſpoſed to controverſy.

AR'GUN, a town of Eaſt Tartary, on the frontiers of China, ſituated on a river of the ſame name, which riſes from a lake in Chineſe Tartary, called *Coulon Nor*, or *Dalai*, and which divides the Chineſe and Ruſſian empires, each from the other. There are mines of ſilver and lead near the town, and a pearl-fiſhery in the river. Lat. 42. 30. N. lon. 103. 56. E.

ARGUN'SKOI, a town of Siberia, ſituated on the Argun, on the confines of China, 130 miles eaſt of Nertſchinſk. Lat. 50. 50. N. lon. 138. 0. E. Ferro.

AR'GUS, in fabulous hiſtory, was the ſon of Ariſtor, and had 100 eyes, fifty of which were always open. Juno made choice of him to guard Io, whom Jupiter had transformed into a white heifer; but Jupiter, pitying Io for being ſo cloſely confined, ſent Mercury, who, with his flute, charmed Argus to ſleep, ſealed up his eyes with his caduceus, and then cut off his head; when Juno, to reward his fidelity, turned him into a peacock, and placed his eyes in his tail.—A ſon of Jupiter, by Niobe, daughter of Phoroneus king of the Argives. He reigned at Argos, and firſt tilled the lands of Greece. He is ſuppoſed to have paſſed into Egypt with a colony of Greeks, where he civilized the Egyptians, taught them agriculture, and was their king under the name of Oſiris; and that after death he became their god Apis.—A famous architect, ſon of Danaüs, who invented and built the ſhip Argo.

Argus-shell, a ſpecies of porcelain-ſhell, beautifully variegated with ſpots, reſembling in ſome meaſure thoſe in a peacock's tail.

AR'GUTE, *adj.* [*arguto*, Ital. *argutus*, Lat.] Subtle; witty; ſharp. Shrill.

ARGU'TIÆ, *ſ.* Witty and acute ſayings, which commonly ſignify ſomething further than what their mere words at firſt ſight ſeem to import. Writers on rhetoric ſpeak of divers ſpecies of argutiæ, viz. Argutiæ *ab alieno*, when ſomething is ſaid which ſeems repugnant either to the nature and property of a thing, or to common cuſtom, the laws, &c. which yet in reality is conſiſtent therewith; or when ſomething is given as a reaſon of another, which yet is not the reaſon of it. For inſtance, *Si Caius nihil didiciſſet, erraſſet minus:* again, *Aureum hoc ſæculum eſt, quia plurimus jam auro honos venit.* Argutiæ *ab alluſione*, thoſe wherein alluſion is made to ſome hiſtory, fable, ſentence, proverb, or the like; e. gr. *Multi umbram captant & carnem amittunt.* Argutiæ *a comparatis*, when two things are compared together, which yet at firſt ſight appear very different from each other, but ſo as to make a pretty kind of ſimile or diſſimile; e. gr. *Par eſt pauper nil cupiens principi omnia habenti.* Argutiæ *a repugnantibus*, when two things meet in a ſubject, which yet regularly cannot be therein; or when two things are oppoſed to each other, yet the epithet of the one is attributed to the other; e. gr. *Dum tacent clamant.*

ARGU'ZIA, *ſ.* in botany. See Messerschmidia.

AR'GY, a town of France, in the department of the Indre, and chief place of a canton, in the diſtrict of Chatillon-ſur-Indre, three leagues and a half eaſt of Chatillon.

ARGY'LE, a town of Nova Scotia, on the ſouth-weſt coaſt, twenty-two miles weſt of Sherburn.

Argyle, (dukes of.) See Campbell.

ARGY'LESHIRE, or Arga'thia, in Scotland, which, together with Perthſhire and the Weſtern Iſlands, is ſaid to have conſtituted the ancient kingdom of the Scots, while the reſt of Caledonia was ſubject to the Picts and Romans, comprehends Kintyre, Knapdale, Argyle Proper, Cowal, and Lorn. It is bounded on the ſouth by the Iriſh ſea and the frith of Clyde; on the eaſt, by Perthſhire; on the north-eaſt, by Lochaber; and, on the north-weſt by ſeveral iſlands. The extent of it, from ſouth to north, is about 114 miles; and the breadth in ſome places, including the iſles, to ſeventy. This country, like all other parts of the Highlands, affords a very wild and horrid proſpect of hills, rocks, and huge mountains, piled upon each other in a ſtupendous and dreadful diſorder; bare, bleak, and barren, to the view; or at beſt covered with ſhagged heath, which appears black and diſmal to the eye, except in the ſummer, when it is variegated with an agreeable bloom of a purple colour. The coaſt of Argyle is rocky; yet indented with bays and inlets, that afford good harbours for ſhipping. The country is well watered by rivers, brooks, and lakes, abounding with fiſh; the vales and flat parts of it are cultivated for corn; the mountains feed an innumerable quantity of black cattle, which run wild among the hills in winter as well as ſummer; the heath and woods, of which there are a conſiderable number, afford ſhelter to deer, roebucks, and all ſorts of game, in great plenty: the circumambient ſea, with its lochs, bays, and harbours, pours forth myriads of fiſh; but the innate wealth of the country is dug from the bowels of the mountains, in iron, copper, lead, and other metals and minerals. Argyle is the ſeat of a provincial ſynod, and gives the titles of *duke* and *earl* to the noble family of Campbell, the moſt powerful of all the Scottiſh nobility.

Argyle Proper is bounded by Knapdale and Cowal on the ſouth; Lochaber on the north; Lennox and the Grampian hills on the eaſt; and Lorne on the weſt. It lies between Lochfyn and Lochlow; which laſt is a freſh-water lake, about a mile broad, but extending twenty-four in length, including twelve iſlands, on two of which there are the caſtles of Enconel and Glenurquhart. This lake, which gives the title of *viſcount* to the duke of Argyle, iſſues in the river Aw, which, after a courſe of ſix or ſeven miles, enters Loch Ettiff, and this falls into the weſt ſea, oppoſite to the iſle of Mull: all theſe abound with excellent trout and ſalmon. Argyleſhire ſends one member to parliament.

ARGY'RA, in fabulous hiſtory, a nymph of Theſſaly, who was very fond of the ſhepherd Selimnus, and was no leſs beloved by him. This laſt being almoſt withered away with grief, Venus changed him into a river, and the nymph into a fountain, which, like Alpheus and Arethuſa, mingled their waters: however, at length Selimnus forgot Argyra, and from that time had the virtue of curing thoſe in love, when they either drank or bathed in his waters.

ARGYRAS'PIDES, or Argyroaspides, *ſ.* [*αργυρος*, ſilver, and *ασπις*, buckler.] In antiquity, perſons armed with ſilver bucklers, or bucklers ſilvered. According to Quintus Curtius, they made the ſecond corps of Alexander's army; the firſt was the phalanx. According to Juſtin's account, lib. xii. cap. 7, Alexander having penetrated into India, and extended his empire as far as the ocean, for a monument of his glory, ordered the armour of his ſoldiers, and the houſings of his horſes, to be adorned with ſilver; and hence commanded them to be called *argyraſpides.* By this author it ſhould ſeem, that Alexander's whole army were called argyraſpides.

ARGYRI'TIS, *ſ.* [from αργυρος, ſilver.] Litharge, or the ſpume of ſilver. A kind of earth ſo named which is taken from ſilver-mines, and is beſpangled with many particles of ſilver.

ARGYROCO'ME, *ſ.* in botany. See BACCHARIS, GNAPHALIUM, and XERANTHEMUM.

ARGYROD'AMAS, *ſ.* [of αργυριον, ſilver, and αδαμας, a diamond.] A precious ſtone of a ſilver colour.

ARGYRODEN'DROS, *ſ.* in botany. See PROTEA.

ARGYROPOE'IA, *ſ.* [from αργυρος, ſilver, and ποιεω, to make.] The art of making ſilver from more imperfect metals.

ARGYRO'PYLUS (Johannes), one of the firſt of thoſe learned perſons, who fled into Italy upon the taking of Conſtantinople by Mahomet II. in 1453, and contributed to the revival of the Greek learning in the weſt. Coſmo de Medicis, duke of Tuſcany, made him profeſſor of Greek at Florence, and appointed him preceptor to his ſon Peter, and to his grandſon Laurence. He had ſeveral illuſtrious pupils at Florence, to whom he read lectures in the Greek language and philoſophy; and among the reſt Angelus Politianus. In 1456, he went into France, to implore the aſſiſtance of Charles VII. in behalf of ſome friends and relations, whom he wanted to redeem from Turkiſh ſlavery. He continued many years in his profeſſorſhip at Florence; but, the plague at length obliging him to quit it, he went to Rome, where he publicly read lectures upon the Greek text of Ariſtotle. He was carried off by an autumnal fever, which he got by an intemperate eating of melons, in the 70th year of his age, and about the year 1480.

ARGYROTROPHE'MA, *ſ.* [from αργος, white, and τροφημα, food.] A white cooling food made with milk.

ARGYRUN'TUM, a maritime town of Illyria. *Pliny.* Now *Novigrad*, a town of Dalmatia. Lat. 44. 30. lon. 17. 30. E.

ARGYTHAM'NIA, *ſ.* [αργος, white, and θαμνιον, a little ſhrub.] In botany, a genus of the monoecia tetrandria claſs, in the natural order of tricoccæ. The generic characters are—I. Male flowers. Calyx: perianthium four-leaved; leaflets lanceolate, erect. Corolla: petals four, lanceolate-ovate, ciliate on the margin, ſhorter than the calyx; nectary, four glands between the petals, roundiſh, depreſſed. Stamina: filaments four, longer than the petals, approximated at the baſe, dilated; antheræ ſimple. Piſtillum: rudiment of a ſtyle. II. Female flowers in the ſame raceme under the male ones. Calyx: perianthium five-leaved; leaflets lanceolate. Corolla: none. Piſtillum: germ ovate, ſomewhat three-cornered; ſtyles three, ſpreading, half-two-cleft, each of the clefts bifid; ſtigmas lacerate. Pericarpium: capſule tricoccous, three-celled, ſix-valved. Seeds: ſolitary, roundiſh.—*Eſſential Character.* Male: calyx four-leaved; corolla four-petalled. Female: calyx five-leaved; ſtyles dichotomous; capſule tricoccous, with ſolitary ſeeds.

Only one ſpecies, Argythamnia candicans. This ſhrub ſeldom riſes above five feet in height; and the trunk and branches are covered with a whitiſh bark. The branches are four or five feet long, ſometimes riſing upright, and at other times lying along the ſurface of the earth. The twigs have leaves at their ends, ſtanding round them, about an inch and one-third in length, and an inch in breadth; they are oval, ſerrate, and of a very dark green colour, ſomething like germander. Flowers axillary, on very ſhort peduncles. Calyx five-leaved. Stamens ſix, greeniſh. Seed-veſſel tricoccous, green, ſmooth, and of a pale purple colour. The leaves when bruiſed are very odoriferous. This ſhrub is a native of Jamaica, where it is pretty frequent in the lower hills, on a dry gravelly ſoil.

ARHU'SEN. See AARHUUS.

A'RI, a town of Italy, in the kingdom of Naples, and province of Abruzzo Citra, five miles ſouth-eaſt of Civita di Chieti.

A'RIA, one of the ancient names of Thrace; that is, *martial*, from the character of the people, whoſe country Euripides calls the reſidence of Mars, and Sophocles his place of nativity.

ARIA, and ARIANA, whether the ſame or diſtinct countries, authors are not agreed. Strabo mentions both, and gives more extenſive bounds to Ariana than to Aria, without particularly defining them; only in general he ſays, that Ariana begins from India, and is bounded by the Indus on the eaſt; on the ſouth by the great ſea; by Paropamiſus on the north, and by the mountains, quite to Portæ Caſpiæ; on the weſt by the ſame boundaries by which Parthia is ſeparated from Media, Carmania from Parætacene and Perſia. Aria has its limits thus deſcribed by Ptolemy: on the north, ſome parts of Margiana and Bactriana; on the eaſt, the Paropamiſidæ; on the ſouth, the Drangiana; and Strabo ſays, the Arii adjoin to the Paropamiſidæ on the weſt.

ARIA, called *Ariapolis*; now Herat, in Choraſan, ſet down in an ancient map as ſituated on the river Arias, which probably gave name to the country Aria. Arrian calls the river *Areios*; Pliny, *Arius*; Ammian, *Arias*; now Heri, which runs by Alexandria, alſo called *Alexandria Arion* or *Ariorum*.

ARIA, *ſ.* [Ital.] In muſic, an air, ſong, or tune.

ARIA-BEPOU, *ſ.* in botany. See MELIA.

ARIA THEOPHRASTI. See CRATÆGUS.

ARIA-VEELA. See CLEOME.

ARIADNÆ'A, *ſ.* in Grecian antiquity, two feſtivals at Naxos, in honour of two women named *Ariadne.* One of them being the daughter of king Minos, they had, in the ſolemnity dedicated to her, a ſhow of ſorrow and mourning; and, in memory of her being left by Theſeus near the time of child-birth, it was uſual for a young man to lie down and counterfeit all the agonies of a woman in labour. This feſtival is ſaid to be firſt inſtituted by Theſeus, to atone for his ingratitude to that princeſs.—The other Ariadne was thought to be of a gay and ſprightly temper; and therefore her feſtival was obſerved with muſic and other expreſſiions of mirth and joy.

ARIAD'NE, daughter of Minos, king of Crete, by Paſiphae. She was ſo ſtruck with the charms of Theſeus, who was going to be devoured by the Minotaur, that ſhe gave him a ball of thread, by which means he got out of the labyrinth after he had vanquiſhed that monſter. She ran away with him, and he married her according to his promiſe; but he abandoned her, and left her on a rock in the iſle of Naxos, where, after bewailing her misfortune for ſome time, ſhe became the prieſteſs of Bacchus. According to ſome writers, Bacchus loved her after Theſeus had forſaken her, and gave her a crown with ſeven ſtars, which after her death was made a conſtellation in heaven.

ARIA'NA, an extenſive country, compriſing Paropamiſus, Arachoſia, Drangiana, and Gedroſia, if we ſuppoſe it to reach to the ſea. See ARIA.

ARIAN'NA, a ſmall village, ſix miles north-eaſt from the city of Tunis. Here is a beautiful range of the ancient Carthaginian aqueduct, ſeventy-four feet high, ſupported by columns ſixteen feet ſquare, which ſtill increaſed in grandeur the nearer it approached to Carthage. The ſtones are all diamond-cut. Near this ſpot ſeveral ancient mattamones, or ſubterraneous magazines for corn, have been diſcovered within theſe few years, capable of containing 100 buſhels, ſtrongly arched with large ſquare ſtones.

ARIA'NO, a town of Italy, in the kingdom of Naples, in the ulterior principality, with a biſhop's ſee. Mr. Swinburne deſcribes it as a poor place, built upon the uneven ſummit of a mountain, with an extenſive look-out on all ſides, but expoſed to every blaſt that blows. It is without trade or manufactures; having declined ever ſince the deſolation cauſed by an earthquake in 1456. Below the town is a convent of Dominicans, whoſe houſe, within in theſe laſt hundred years, has been thrice rebuilt, having been as often thrown to the ground by earthquakes. In order to ſecure a retreat in caſe of future accidents, theſe fathers have conſtructed a ſmall building of wood, the parts of which being joined together with ſtrong iron chains, are contrived ſo as to have a proper play, and by yielding to the oſcillatory motion of the earth, return eaſily to their equilibrium. Lat. 41. 8. N. lon. 15. 19. E.

A'RIANS, the followers of Arius, a preſbyter of the church of Alexandria, about the year 315; who maintained, that the Son of God was totally and eſſentially diſtinct from the Father; that he was the firſt and nobleſt of thoſe beings whom God had created, the inſtrument by whoſe ſubordinate operation he formed the univerſe; and therefore inferior to the Father both in nature and dignity: alſo, that the Holy Ghoſt was not God, but created by the power of the Son. They owned that the Son was the word, but denied that word to have been eternal. They held, that Chriſt had nothing of man in him but the fleſh, to which the λογος or word was joined, which was the ſame as the ſoul in us. See *Lardner's Credibility*, Vol. IX. b. i. c. 69.

The Arians were firſt condemned and anathematized by a council at Alexandria, in 320; and afterwards by 380 fathers in the general council of Nice, aſſembled by Conſtantine in the year 325. But, notwithſtanding that, it was not extinguiſhed: on the contrary, it became the reigning religion, eſpecially in the eaſt, where it obtained much more than in the weſt. Arius was recalled from baniſhment by the emperor Conſtantine in two or three years after the council of Nice, and the laws that had been enacted againſt him were repealed. In the year 335, Athanaſius, his zealous opponent, was depoſed and baniſhed into Gaul, and Arius and his followers were reinſtated in their privileges, and received into the communion of the church. In little more than a year after this, he fell a victim to the reſentment of his enemies, and died a tragical death, occaſioned by poiſon, or ſome other violence. The Arian party found a protector in Conſtantius, who ſucceeded his father in the empire of the eaſt; and the zeal with which he abetted them produced many animoſities and tumults to the time of his death in the year 362. They underwent various revolutions, perſecuting and oppreſſed, under ſucceeding emperors, according to the degree of intereſt they had in the civil power, till at length Theodoſius the Great exerted every poſſible effort to ſuppreſs and diſperſe them.

The Arians were divided into various ſects, of which ancient writers give an account under the names of *Semi-Arians*, *Euſebeans*, *Aetians*, *Eunomians*, *Acacians*, *Pſathyrians*, and others. But they have been commonly diſtributed into three claſſes, viz. the *Genuine Arians*, *Semi-Arians*, and *Eunomians*. Arianiſm was triumphant in many parts of Aſia, Africa, and Europe; but ſunk when the Vandals were driven out of Africa, and the Goths out of Italy, by the arms of Juſtinian. However, it revived again in Italy under the protection of the Lombards, in the ſeventh century. The appellation *Arian* has been indiſcriminately applied, in more modern times, to all thoſe who conſider Jeſus Chriſt as inferior and ſubordinate to the Father; and whoſe ſentiments cannot be ſuppoſed to coincide exactly with thoſe of the ancient Arians.

A'RIAS MON'TANUS, a learned Spaniſh divine, employed by Philip II. of Spain to publiſh another edition of the Bible, after that of cardinal Ximenes; which he finiſhed with applauſe, and died at Seville in 1598.

ARI'CA, a ſea-port town of South America, in the province of Peru, with a good harbour, open to the Pacific ocean. This place was almoſt deſtroyed by an earthquake in 1605, and here the ſilver from the mines of Potoſi is ſhipped for Europe. In the beginning of the year 1578, Sir Francis Drake entered the bay, and made a prize of upwards of forty bars of ſilver, each weighing twenty pounds. It ſcarcely ever rains here; and many farms are employed in the cultivation of Guinea pepper, in which they have a great trade to Lima, from which it is 550 miles ſouth-eaſt. Near it is a mountain of rock-ſalt, great quantities of which are dug and ſent to all parts of the coaſt. Lat. 18. 26. S. lon. 71. 8. W. from Greenwich.

ARI'CIA, a princeſs of the blood royal at Athens, and the only remains of the unhappy family of the Pallatides, whoſe kingdom Theſeus had uſurped. A ſmall town of Latium was called after her name, and was built by her huſband Hippolytus in the Appian Way, ten miles from Rome.

ARICI'NA, in mythology, a ſurname of Diana; under which appellation ſhe was honoured in the foreſt Aricine, ſo called from Aricia, a princeſs of the blood-royal of Athens. Hippolytus, to whom this princeſs was married, is ſaid to have erected a temple to Diana in this foreſt, where he was concealed after his reſurrection by Æſculapius, and to have eſtabliſhed a prieſt and feſtivals.

ARICO'NIUM, a town of the Silurus; now Hereford. *Camden*. Lat. 52. 6. lon. 2. 42. W.

ARICY'MON, *ſ.* [from *αρι*, and *κυω*, to be quickly impregnated.] A woman who conceives quickly and often.

A'RID, *adj.* [*aridus*, Lat. dry.] Dry; parched up.—My complexion is become aduſt, and my body *arid*, by viſiting lands. *Arbuthnot*.

ARIDA'NA, a town of Arabia, ten miles ſouth-weſt of Mecca.

A'RIDAS, *ſ.* a kind of taffety, manufactured in the Eaſt Indies, from a ſhining thread which is made from certain herbs, whence they are ſtyled *aridas of herbs*.

ARID'ITY, *ſ.* Dryneſs; ſiccity.—Salt taken in great quantities will reduce an animal body to the great extremity of *aridity*, or dryneſs. *Arbuthnot*.—In the theological ſenſe, a kind of inſenſibility in devotion, contrary to unction or tenderneſs.—Strike my ſoul with lively apprehenſions of thy excellencies, to bear up my ſpirit under the greateſt *aridities* and dejections, with the delightful proſpect of thy glories. *Norris*.

ARIDSONG', a town of Aſia, in the country of Thibet, 152 miles north of Catmandu. Lat. 30. 40. N. lon. 84. 45. E. Greenwich.

ARIDUL'LAM, *ſ.* in natural hiſtory, a kind of zarnich found in the Eaſt Indies. See ZARNICH.

ARIDU'RA, *ſ.* [from *aridus*, Lat. dry.] A waſting; a withering of any member.

A'RIEN, a ſmall iſland in the Adriatic, near the coaſt of Italy, three leagues north of Venice.

ARIEN'ZO, a town of Italy, in the kingdom of Naples, and country of Lavora, fourteen miles N. E. of Naples.

A'RIER BAN, *ſ.* The *ban* or proclamation of the king, for the arraying of his tenants, or their entering into the army.

A'RIES, *ſ.* in zoology. See OVIS.

ARIES, the battering-ram. See BATTERING-RAM.

ARIES, or the *Ram*, in aſtronomy, the firſt of the twelve ſigns of zodiac; from which alſo a twelfth part of the ecliptic takes its denomination. The ſtars in the conſtellation Aries, in Ptolemy's catalogue, are eighteen; in Tycho's, twenty-one; in Hevelius's, twenty-ſeven; in the Britannic catalogue, ſixty-ſix. The ſun enters Aries in March, and is commonly expreſſed by this character, ♈.

The poets feign that this ram carried Pyrrhus and Helle through the ſea. It was alſo immortal, and was given to them by their mother Mephele. It had a golden fleece, as Heſiod and Pherecydes write. But, when it carried them over that narrow ſea, the ram threw her into the ſea, and loſt his horn. But Helle was ſaved by Neptune, who on her begat a ſon called Pæon, and Phryxus, eſcaping to the Euxine ſea, came to Æetes, to whom he gave the golden fleece in the temple of Jupiter, that the memory of it might be preſerved. But he aſcended up among the ſtars, and is beheld but obſcurely.

To ARI'ETATE, *v. n.* [*arieto*, Lat.] To butt like a ram. To ſtrike in imitation of the blows which rams give with their heads.

ARIETA'TION, *ſ.* The act of butting like a ram. The act of battering with an engine called a ram.—The ſtrength of the percuſſion, wherein ordnance do exceed all *arietations* and ancient inventions. *Bacon.* The act of ſtriking or conflicting in general.—Now thoſe heterogeneous atoms, by themſelves, hit ſo exactly into their proper reſidence, in the midſt of ſuch tumultuary motions, and *arietations* of other particles. *Glanville.*

ARIET'TA, *ſ.* [Italian.] In muſic, a ſhort air, ſong, or tune.

ARIE'TUM LEVA'TIO, *ſ.* A ſportive exerciſe; a ſort of tilting, or running at the quintain.

ARI'GHT, *adv.* [from *a* and *right.*] Rightly; without mental error:

These were thy thoughts, and thou could'ſt judge *aright*,
Till intereſt made a jaundice in thy ſight. *Dryden.*

Rightly; without crime.—A generation that ſet not their heart *aright. Pſalms.* Rightly; without failing of the end deſigned:

Guardian of groves, and goddeſs of the night,
Fair queen, he ſaid, direct my dart *aright.* *Dryden.*

ARI'GNANO, a town of Italy, in the duchy of Tuſcany, on the river Arno, between Florence and Arezzo.

ARI'GNAY, a town of France, in the department of Upper Garonne, and chief place of a canton, in the diſtrict of St. Gaudens, five leagues weſt of Rieux, and three north-north-eaſt of St. Gaudens.

ARIL'LA, *ſ.* [of *arum*, Lat. a grape.] A grape-ſtone.

ARIL'LUS. See BOTANY.

ARI'MA, a town of Japan, in a country of the ſame name. Lat. 31. 45. N. lon. 147. 10. E. Ferro.

ARIMA'NIUS, the evil god of the ancient Perſians. The Perſian Magi held two principles; a good dæmon or god, and an evil one: the firſt the author of all good, and the other of all evil: the former they ſuppoſed to be repreſented by light, and the latter by darkneſs, as their trueſt ſymbols. The good principle they named *Yezad* or *Yezdan*, and *Ormozd* or *Hormizda*, which the Greeks wrote *Oromaſdes*; and the evil dæmon they called *Abriman*, and the Greeks *Arimanius*. Some of the Magians held both theſe principles to have been from all eternity; but this ſect was reputed heterodox: the original doctrine being, that the good principle only was eternal, and the other created. Plutarch (*De Iſide et Oſiride*, p. 369.) gives the following account of the Magian traditions in relation to theſe gods, and the introduction of evil into the world, viz. The Oromazes conſiſted of more pure light, and Arimanius of darkneſs; and that they were at war with each other: that Oromazes created ſix gods; the firſt, the author of benevolence; the ſecond, of truth; the third, of juſtice, riches, and the pleaſure which attends good actions; and that Arimanius made as many, who were the authors of the oppoſite evils or vices: that then Oromazes, triplicating himſelf, removed as far from the ſun as the ſun is from the earth, and adorned the heaven with ſtars, appointing the dog-ſtar for their guardian and leader: that he alſo created twenty-four other gods, and incloſed them in an egg; but, Arimanius having alſo made an equal number, theſe laſt perforated the egg, by which means evil and good became mixed together. However, the fatal time will come, when Arimanius, the introducer of plagues and famine, muſt be of neceſſity utterly deſtroyed by the former, and annihilated; then, the earth being made plain and even, mankind ſhall live in a happy ſtate, in the ſame manner, in the ſame political ſociety, and uſing one and the ſame language. Theopompus writes, that, according to the Magians, the ſaid two gods, during the ſpace of 3000 years, alternately conquer, and are conquered; that, for other 3000 years, they will wage mutual war, fight, and deſtroy the works of each other, till at laſt *Hades* (or the evil ſpirit) ſhall periſh, and men become perfectly happy, their bodies needing no food, nor caſting any ſhadow, i. e. being perfectly tranſparent.

ARIMA'SPI, a people of Sarmatia Europea, to the ſouth of the Montes Riphæi, ſaid by Mela to have but one eye; a fable broached by Ariſteas Proconneſius, according to Herodotus.

ARIMATHE'A, a town of Judea, thought to be the ſame with Ramatha, 1 Sam. i. This place is now called Ramla, and is in a very ruinous ſtate. The aga of Gaza reſides and governs here. He maintains about one hundred horſemen, and as many Barbary ſoldiers, who (ſays Mr. Volney) are lodged in an old Chriſtian church, the nave of which is uſed as a ſtable, and in an ancient khan, which is diſputed with them by the ſcorpions. The adjacent country is planted with lofty olive trees, diſpoſed in quincunxes; but they are daily periſhing through the ravages of contending factions, and even from ſecret miſchief; for, in theſe countries, when a peaſant would revenge himſelf of his enemy, he comes by night, and ſaws or cuts his trees cloſe to the ground, and the wound, which he takes care to cover, draining off the ſap like an iſſue, the olive tree languiſhes and dies. Amid theſe plantations, we meet, at every ſtep, with dry wells, ciſterns fallen in, and vaſt vaulted reſervoirs, which prove that, in ancient times, this town muſt have been upwards of a league and a half in circumference. The only remarkable antiquity at Ramla is the minoret of a ruined moſque, on the road to Yafa, which is very lofty; and by an Arabic inſcription appears to have been built by the ſultan Saladin.

ARIMI'NUM, a town of Umbria, or Romagna, at the mouth of the Ariminus, on the Gulph of Venice. The ſeizing on it by Cæſar gave riſe to the civil war. Now called *Rimini*. Lat. 44. 8. lon. 13. 30. E.

ARIN'THOS, a town of France, in the department of Jura, and chief place of a canton, in the diſtrict of Orgelet, two leagues and a half ſouth of Orgelet.

ARIOLA'TION, or HARIOLA'TION, *ſ.* [*hariolus*, Lat. a ſoothſayer.] Soothſaying; vaticination.—The prieſts of elder time deluded their apprehenſions with *ariolation*, ſoothſaying, and ſuch oblique idolatries. *Brown.*

ARI'OLI, *ſ.* in antiquity, a kind of prophets, or religious conjurers, who by abominable prayers, and horrible ſacrifices at the altars of idols, procured anſwers to their queſtions concerning future events. *Iſid. Orig.* lib. viii. c. 9. The *arioli* were diſtinguiſhed by a ſlovenly dreſs, diſorderly and matted beards, hair, &c.

A'RION, an excellent muſician and poet, inventor of dithyrambics. Periander entertained him at his court, where getting an eſtate, and returning to Corinth, the ſailors, for lucre of his money, threw him into the ſea; when, according to the poets, a dolphin, charmed with his muſic, took him on her back and carried him ſafe to ſhore.

ARION, *ſ.* an admirable horſe, much more famous in poetic hiſtory than Bucephalus in that of Alexander. Authors ſpeak variouſly of his origin, though they agree in giving him a divine one. His production is moſt commonly aſcribed to Neptune. This god, according to ſome, raiſed him out of the ground by the ſtroke of his trident: according to others, he begot him upon the body of the fury Erynnys; according to others, upon that of Ceres, whom he raviſhed in the form of a horſe, ſhe having previouſly aſſumed the form of a mare to elude his purſuit. This horſe was nurſed by the Nereids; and, being ſometimes yoked with the ſea-horſes of Neptune to the chariot of this god, he drew him with incredible ſwiftneſs through the ſea. He had this ſingularity in him, that his right feet reſembled thoſe of a man. Neptune gave him to Capreus king of Haliartus. Capreus made a preſent of him to Hercules; who mounted him when he took the city of Elis, gained the prize with him in the race againſt Cygnus the ſon of Mars near Træcena, and at laſt made a preſent of him to Adraſtus. It is under this laſt maſter that Arion has ſignalized himſelf the moſt: he won the prize for racing at the Nemæan games, which the princes who went to beſiege Thebes inſtituted in honour of Archemorus; and was the cauſe that Adraſtus did not periſh in this famous expedition, as all the other chiefs did.

ARJO'NA, a town of Spain, in the province of Andaluſia, on the Rio Frio, two leagues ſouth of Andujar.

ARIO'SO, *ſ.* [Italian.] In muſic, the movement of a common air, ſong, or tune.

ARIOS'TO (Lodovico, or Lewis), a celebrated Italian poet, was born at the caſtle of Reggio, in Lombardy, in 1474. He ſoon gave marks of his great genius; for, when very young, he compoſed ſeveral excellent poetical pieces, one of the moſt remarkable of which is the ſtory of Pyramus and Thiſbe, which he formed into a play, and had it acted by his brothers and ſiſters. This performance gained him great applauſe, all who ſaw it preſaging he would prove one of the greateſt poets of the age. His father, however, being a man of no taſte for learning, regarded more what ſtudy would be moſt profitable for his ſon to follow, than what ſuited his genius and inclination: he obliged him, therefore, to apply to the law, which he did for ſome years, though with great reluctance; but, upon his father's death, he returned to the more agreeable purſuits of poetry. When Arioſto was about thirty years of age, he was introduced to Hippolito, cardinal of Eſte, a great patron of learned men, who entertained him in a very honourable manner. The ſucceſs which he had hitherto had in the little poetical pieces he had publiſhed, inſpired him with the ambition of diſtinguiſhing himſelf by ſome nobler work. He read Homer and Virgil with vaſt carefulneſs; and, having in his eye thoſe great originals, he began a poem on the loves of Orlando, taking the ſubject from Borjado's "Orlando Inamorato," upon whoſe model he proceeded. It is the moſt celebrated of all his works, though there have been many different opinions concerning it. But his attachment to poetry did not hinder him from engaging in public affairs, for he was employed in embaſſies and negotiations in different parts of Italy.

Upon the death of Hippolito, he engaged in the ſervice of Alphonſo, duke of Ferrara, who treated him with great eſteem and affection, and appointed him governor of Graffignana, which office he diſcharged with great honour and ſucceſs. After his return home, he dedicated the reſt of his life to retirement, proſecuting his ſtudies in a houſe which he built for himſelf at Ferrara. He tranſlated ſeveral pieces out of French and Spaniſh into Italian; and wrote alſo ſeveral ſatires, which, according to Mr. Menage, are eſteemed by the beſt judges. There are likewiſe five comedies of his extant, which the duke of Ferrara was ſo pleaſed with, that he erected a magnificent ſtage in the hall of Ferrara for the repreſentation of them, and made the author ſeveral conſiderable preſents. At his deſire Arioſto tranſlated the Mænechmi of Plautus into Italian, which was exhibited with great ſucceſs.

Arioſto was of an amorous diſpoſition, and left two natural ſons. He was affable, eaſy, and condeſcending in his temper. He enjoyed the friendſhip of the moſt eminent ſcholars of his time, moſt of whom he mentions with great reſpect in the laſt canto of his Orlando Furioſo. His conſtitution was but weakly, ſo that he was obliged to have recourſe to phyſicians the greateſt part of his life. He died at Ferrara, the 8th of July, 1533, aged fifty-nine.

ARI'PO, a town of Aſia, on the weſtern coaſt of the iſland of Ceylon, at the mouth of the river Sarunda. It belongs to the Dutch: and to the eaſt of it is a pearl-fiſhery. Lat. 8. 42. N. lon. 80. 25. E.

ARIS', a town of Poliſh Pruſſia, ſeventy-four miles ſouth-ſouth-eaſt of Koniſberg.

ARI'SARUM. See AMBROSINIA, and ARUM.

ARIS'BA, anciently a town of the iſland of Leſbos. Another of Troas, on the continent, in the territory and to the ſouth-eaſt of Abydos, the rendezvous of Alexander's army after the paſſage of the Helleſpont; a colony of Mitylenians, taken and plundered by Achilles. *Virgil.* The reſidence of Axylus, celebrated by Homer for his hoſpitality, which gained him the character of *friend to mankind.*

To ARI'SE, *v. n.* pret. *aroſe*, particip. *ariſen:* [from *a* and *riſe.*] To mount upward as the ſun:

He roſe, and, looking up, beheld the ſkies
With purple bluſhing, and the day *ariſe.* *Dryden.*

To get up as from ſleep, or from reſt.—How long wilt thou ſleep, O ſluggard! when wilt thou *ariſe* out of thy ſleep? *Prov.* vi. 9. To come into view, as from obſcurity.—There ſhall *ariſe* falſe Chriſts and falſe prophets, *Matt.* xxiv. To revive from death.—Thy dead men ſhall live, together with my body ſhall they *ariſe:* awake and ſing, ye that dwell in duſt. *Iſaiah*, xxvi. 19. To proceed, or have its original.—I know not what miſchief may *ariſe* hereafter, from the example of an innovation. *Dryden.* To enter upon a new ſtation, to ſucceed to power or office:

Another Mary then *aroſe*,
And did rig'rous laws impoſe. *Cowley.*

To commence hoſtility.—And when he *aroſe* againſt me, I caught him by his beard, and ſmote him. 1 *Sam.* xvii. 35 For the various ſenſes of this word, ſee RISE.

A'RISH (El), a town of Egypt, near a gulf of the Mediterranean, to which it gives name, in the road from Catieh to Gaza, 42 miles eaſt-north-eaſt of Catieh, and 115 north-eaſt of Suez.

ARISH, *ſ.* a Perſian long meaſure, containing about thirty-eight Engliſh inches.

ARI'SI, *ſ.* the Indian name for the plant which produces the rice. See ORYZA.

ARI'STA, *ſ.* [from *arco*, Lat. to dry up; or more properly from עריצ *arizah*, Arab.] The beard of corn.

ARISTÆ'US, ſon of Apollo and Cyrene, whom, for the many ſervices he had rendered to mankind by his knowledge of all profitable arts, the gods placed amongſt the ſtars; ſo that he was the Aquarius in the zodiac. The reſemblance of his hiſtory to that of Moſes, has been curiouſly diſcuſſed by Huetius.

ARISTAN'DER, a famous ſoothſayer under Alexander the Great, over whom he gained a wonderful influence by the good ſucceſs of his art. He had held the ſame employment at the court of king Philip; and it was he who explained better than his brethren the dream that this prince had after his marriage with Olympias.

ARISTAR'CHUS, a Grecian philoſopher, born in Samos, is ſaid to be the firſt who maintained the earth to turn upon its centre, and to deſcribe a circle yearly round the ſun; an opinion, revived and eſtabliſhed by Copernicus and Galileo, and now univerſally received. Vitruvius, ſpeaking of certain mathematicians who had made uſeful diſcoveries, places Ariſtarchus in the firſt rank: he mentions a kind of ſun-dial of his inventing. It is not certain when he lived; but, from the mention made of him by Archimedes, he muſt have flouriſhed before his death. None of his works remain, except a treatiſe "Upon the Greatneſs and Diſtance of the Sun and Moon." Ariſtarchus did not ſuffer perſecution and impriſonment as Galileo ſince did, for removing the ſtability of the earth; though, as we learn from a corrected paſſage in Plutarch, he was thought by ſome to be guilty of great impiety.

ARISTARCHUS, a celebrated grammarian, was born in Samothracia, and reſided at Alexandria. He was much eſteemed by Ptolemy Philometer, who committed to him the education of his ſon. He applied himſelf exceedingly to criticiſm, and was the moſt celebrated of all the emendators of Homer; on which account his very name became proverbial, as the prince of critics.

Arguet ambiguè dictum, mutanda mutabit,
Fiet Ariſtarchus. Hor.

Whatever he deemed ſpurious in Homer was rejected as ſuch by ſubſequent editors. We are not, however, to imagine that his corrections were always made on the authority of exemplars: it is more probable that he changed, or expunged, that which he himſelf deemed unworthy of Homer, in the copies that he had before him: hence Cicero ſays, *Ariſtarchus Homeri verſum negat, quem non probat.* In his manners he was rigid and auſtere; and finally, becoming dropſical, and not being able to find a remedy, is ſaid to have ſtarved himſelf to death at the age of 72.

ARISTA'TUS, *ſ.* [from *ariſta.*] Bearded, or having the ariſta.

ARISTE'A, *ſ.* In botany, a genus of the triandria monogynia claſs, ranking in the natural order of enſatæ. The generic characters are—Calyx: ſpathes bivalve. Corolla: petals ſix, oblong, ſpreading, nearly equal. Stamina: filaments three, filiform, ſhorter than the petals; antheræ oblong, erect-incumbent. Piſtillum: germ inferior, three-cornered; ſtyle filiform, longer than the filaments, declinate; ſtigma funnel-form, gaping, fimbriated on the margin, ſomewhat three-cornered. Pericarpium: capſule oblong, three-cornered, three-celled, three-valved. Seeds: very many.—*Eſſential Character.* Petals ſix; ſtyle declinate; ſtigma funnel-form, gaping; capſule inferior, with many ſeeds.

There is only one ſpecies, called ariſtea cyanea, or graſs-leaved ariſtea. It is a low plant, which rarely riſes more than three or four inches high. The leaves are narrow and veined. The flowers are ſmall, growing in a downy head on the top of the ſtalk, but they make little appearance. It grows naturally at the Cape of Good Hope. In the catalogue of the royal botanic garden at Kew, it is ſaid to have been introduced by Mr. Francis Maſſon; and to flower from April to June.

ARISTEL'LA, *ſ.* in botany. See STIPA.

ARIS'THENES, a goatherd, who lived on mount Titthion, near Epidaurus. One day, as he was counting his goats, he miſſed one, together with his dog; and going to ſeek them, he found the goat employed in ſuckling a child. He was going to carry it away, but, as ſoon as he drew near, it was ſurrounded with light, from which he imagined there was ſomething ſupernatural in the caſe. It happened to be Æſculapius, whom Coronis had been delivered of in this place.

ARISTI'DA, *ſ.* [*ariſta*, an awn, or beard.] In botany, a genus of the triandria digynia claſs, ranking in the natural order of gramina or graſſes. The generic characters are—Calyx: glume one-flowered, bivalve; valves linear-ſubulate, membranaceous, unequal. Corolla: glume bivalve, thicker than the calyx; outer valve linear, converging longitudinally, hirſute at the baſe, terminated by three awns, ſubequal petalous; inner valve lanceolate, ſharp, very ſhort, wrapped within the outer valve; nectary two-leaved; leaflets lanceolate, obtuſe. Stamina: filaments capillary; antheræ oblong. Piſtillum: germ turbinate; ſtyles capillary; ſtigmas villoſe. Pericarpium: none; glume converging, involving, gaping. Seed: one, filiform, the length of the corolla, naked.—*Eſſential Character.* Calyx, two-valved; corolla, one-valved; with three terminal awns.

Species. 1. Ariſtida adſcenſionis: panicle branching, ſpikes ſcattered, corollas one-valved. Culms in tufts, from one to two feet high. Native of Jamaica, in dry ſands. Browne calls it the *bearded graſs.*

2. Ariſtida Americana: panicle ſimple, corollas two-valved, one with dorſal, the other with terminating, awns. Culm half a foot high, riſing, jointed, ſubdivided. Native of Jamaica with the foregoing. This being leſs than that, Dr. Browne calls it the *ſmaller bearded graſs.*

3. Ariſtida plumoſa: panicled, the middle awn longeſt and woolly, culms villoſe. By the reference to Tournefort's corollary, we may preſume this to be a native of the Eaſt; and Linnæus ſays, that it was found in America by Schreber.

4. Ariſtida arundinacea: panicled, corollas two-valved, middle awn longer, ſmooth. Culms four feet high. Found in the Eaſt Indies, by Koenig.

5. Ariſtida gigantea: panicle elongated, looſe, one-ranked; calyxes one-flowered; awns of the corolla ſubequal ſtraight. This is a very lofty graſs, branching, and very ſmooth. Found on the iſland of Teneriffe by Maſſon.

6. Ariſtida hyſtrix: panicle divaricated, very ſpreading; flowers quite ſimple, ſmooth, awns ſtraight, divaricated. This is a creeping very ſmooth graſs. Obſerved in Malabar by Koenig. It varies with downy ſheaths to the root-leaves.

ARISTI'DES, ſurnamed the *Juſt*, flouriſhed at Athens at the ſame time with Themiſtocles, who triumphed over him by his boiſterous eloquence, and got him baniſhed, 483 years before Chriſt. See OSTRACISM. But Ariſtides, being recalled a ſhort time after, would never join with the enemies of Themiſtocles to get him baniſhed; for nothing could make him deviate from the ſtricteſt rules of moderation and juſtice. Ariſtides brought the Greeks to unite againſt the Perſians; diſtinguiſhed himſelf at the famous battle of Marathon, and that of Salamine and Platea; and eſtabliſhed an annual income of 460 talents for a fund to ſupply the expences of war. This great man died ſo poor, though he had the management of the revenues of Greece, that the ſtate was obliged to pay his funeral expences, to give fortunes to his daughters in marriage, and a maintenance to his ſon Lyſimachus.

ARISTIDES, of Miletus, a famous Greek author, often cited by the ancients.

ARISTIDES, a very eloquent Athenian orator, who became a convert to the Chriſtian religion, and about the year 124 preſented to the emperor Adrian an apology for the Chriſtians.

ARISTIDES (Ælius), a celebrated orator, born in Myſia, about 129 years before the Chriſtian era. The beſt edition of his works is that of Oxford, printed in Greek and Latin, in two volumes quarto.

ARISTIDES, a painter cotemporary with Apelles, flouriſhed at Thebes about the 122d Olympiad. He was the firſt, according to Pliny, who expreſſed character and paſſion, the human mind, and its ſeveral emotions; but he was not remarkable for ſoftneſs of colouring. "His moſt celebrated picture was of an infant (on the taking of a town) at the mother's breaſt, who is wounded and expiring. The ſenſations of the mother were clearly marked, and her fear leſt the child, upon failure of the milk, ſhould ſuck her blood." "Alexander the Great (continues the ſame author) took this picture with him to Pella." Junius (in his treatiſe *de Picturâ Veterum*) conjectures that the following beautiful epigram of Æmilianus was written on this exquiſite picture:

Ελκε, ταλαν, παρα μητρος ου ουκ ετι μαζον αμελξεις.
  Ελκυσον υστατιον ναμα κατα φθιμενης.
Η δη γαρ ξιφιεσσι λιποπνοος αλλα πα μητρος
  Φιλτρα και ειν αιδη παιδοκομειν εμαθον.

Suck, little wretch, while yet thy mother lives,
Suck the laſt drop her fainting boſom gives.
She dies! her tenderneſs ſurvives her breath,
And her fond love is provident in death.

ARISTIP'PUS, the founder of the Cyrenaic ſect of philoſophy, was the ſon of Aretades, and born at Cyrene in Libya. He flouriſhed about the 96th Olympiad. The great reputation of Socrates induced him to leave his own country, and remove to Athens, that he might have the ſatisfaction of hearing his diſcourſes. He was chiefly delighted with thoſe that related to pleaſure; which he aſſerted to be the ultimate end of all happineſs. His manner of life was agreeable to his opinion; for he indulged in all the luxuries of dreſs, wine, and women. Though he had a plentiful eſtate, yet he was the only one of the diſciples of Socrates who took money for teaching. Upon leaving Socrates, he went to Ægina, where he lived with more freedom and luxury than before. Here he became acquainted with Lais, the famous courtezan of Corinth; for whoſe ſake he took a voyage to that city. He continued at Ægina till the death of Socrates, as appears from Plato's *Phædo*, and the epiſtle which he wrote upon that occaſion. He returned at laſt into his own country, Cyrene, where he profeſſed philoſophy, and inſtituted his ſect, which was called *Cyrenaic*, from the place, and by ſome the *Hedonic*, or voluptuous, from its doctrines. During the height of the grandeur of Dionyſius the tyrant, a great many philoſophers reſorted to him; and among the reſt Ariſtippus, who was tempted thither by the magnificence of his court. Dionyſius aſking him the reaſon of his coming, he replied, "That it was to give what he had, and to receive what he had not;" or, as others repreſent it, "That when he wanted wiſdom, he went to Socrates; but now he wanted money, he was come to him." He very ſoon inſinuated himſelf into the favour of Dionyſius; for, being a man of a pliant temper, he conformed himſelf exactly to every place, time, and perſon, and was a complete maſter of the art of complaiſance.

We have ſeveral remarkable paſſages concerning him during his reſidence at that court. Dionyſius, at a feaſt, commanded that all ſhould put on women's purple habits, and dance in them. But Plato refuſed, repeating theſe lines:

> I cannot in this gay effeminate dreſs
> Diſgrace my manhood, or my ſex betray.

But Ariſtippus readily ſubmitted to the command, and made this reply immediately:

> —— At feaſts, where mirth is free,
> A ſober mind can never be corrupted.

At another time, interceding with Dionyſius in behalf of a friend, but not prevailing, he caſt himſelf at his feet. Being reproved by one for that exceſs of humility, he replied, "That it was not he who was the cauſe of that ſubmiſſion, but Dionyſius, whoſe ears were in his feet." From this circumſtance, however, he was ſtigmatized with the name of the *court-ſpaniel.* Dionyſius ſhewed him three beautiful courtezans, and ordered him to take his choice. Upon which he took them all three, alleging that Paris was puniſhed for preferring one to the other two: but, when he had brought them to his door, he diſmiſſed them, in order to ſhew that he could either enjoy or reject with the ſame indifference. Having aſked money of Dionyſius, the latter ſaid, he had before aſſured him a wiſe man wanted nothing. "Give me but what I aſk, (ſaid Ariſtippus,) and we will talk of that afterwards." When Dionyſius had given it him, "Now (ſays he) you ſee I do not want." By this pleaſantry he gained ſo much on Dionyſius, that he had a greater regard for him than for all the reſt of the philoſophers, though he ſometimes ſpoke with ſuch freedom that he incurred his diſpleaſure. When Dionyſius aſked, Why philoſophers haunted the gates of rich men, but not rich men thoſe of philoſophers? he replied, "Becauſe the latter know what they want, and the others not." Suidas obſerves, that Ariſtippus ſurpaſſed all the philoſophers in the acuteneſs of his apophthegms. Being once railed at, he left the room; and the perſon who abuſed him, following, aſked why he went away? he anſwered, "Becauſe it is in your power to rail, but it is not in my power not to hear you." A perſon obſerving, that the philoſophers frequented the houſes of rich men; "Why (ſays he) the phyſicians frequent the chambers of the ſick, yet that is no reaſon why a man ſhould rather chooſe to lie ſick than be cured." To one who boaſted of his great reading, he ſaid, "That as they who feed and exerciſe moſt are not always more healthy than they who only eat and exerciſe to ſatiſfy nature; ſo neither they who read much, but they who read no more than is uſeful, are truly learned." Among other inſtructions which he gave to his daughter Arete, he adviſed her particularly to deſpiſe ſuperfluity. To one who aſked him what his ſon would be the better for being a ſcholar? "If for nothing elſe, (ſaid he,) yet for this alone, that, when he comes into the theatre, one ſtone will not ſit upon another." When a certain perſon recommended his ſon to him, he demanded 500 drachmas; and, upon the father's replying, that he could buy a ſlave for that ſum; "Do ſo, (ſaid he,) and then you will be maſter of a couple." Being reproached, becauſe, having a ſuit of law depending, he fee'd a lawyer to plead for him, "Juſt ſo, (ſaid he,) when I have a great ſupper to make, I always hire a cook." Being aſked what was the difference between a wiſe man and a fool, he replied, "Send both away naked to thoſe who are acquainted with neither of them, and then you'll know." Being reproved by a certain perſon for his coſtly and voluptuous feaſt, "I warrant, (ſaid he,) that you would not have beſtowed three farthings upon ſuch a dinner;" which the other confeſſing, "Why, then, (ſaid he,) I find myſelf leſs indulgent to my palate than you are to your covetous humour;" or, as it is otherwiſe repreſented, "I find, that I love my belly, and you love your money." When Simus, treaſurer to Dionyſius, ſhewed him his houſe magnificently furniſhed, and paved with coſtly marble, (for he was a Phrygian, and conſequently profuſe;) Ariſtippus ſpit in his face: upon which the other growing angry, "Why, truly, (ſaid he,) I could not find a fitter place." His ſervant carrying after him a great weight of money, and being ready to ſink upon the road under his burden, he bade him throw away all that was too much for him to carry. Being aſked, what things were moſt proper for children to be inſtructed in? he anſwered, "Thoſe which might prove of the greateſt advantage to them when they come to be men." Being reproached for going from Socrates to Dionyſius, he replied, "That he went to Socrates when he wanted ſerious inſtruction, and to Dionyſius for diverſion." Having received money of Dionyſius at the ſame time that Plato accepted a book only, and being reproached for it, "The reaſon is plain, (ſays he;) I want money, and Plato wants books." Having loſt a conſiderable farm, he ſaid to one who ſeemed exceſſively to compaſſionate his loſs, "You have but one field; I have three left: why ſhould not I rather grieve for you?" Plutarch, who relates this, obſerves upon it, that it is very abſurd to lament for what is loſt, and not to rejoice for what is left. When a perſon told him, that the land for his ſake was loſt; he replied, "That it was better ſo, than that he ſhould be loſt for the land." Being caſt by ſhipwreck aſhore on the iſland of Rhodes, and perceiving mathematical ſchemes and diagrams drawn upon the ground, he ſaid, "Courage, friends; for I ſee the footſteps of men."

After he had lived a long time with Dionyſius, his daughter Arete ſent to him, to deſire his preſence at Cyrene; but he fell ſick on his return home, and died at Lipara, one of the Æolian iſlands. With regard to his principal opinions, like Socrates, he rejected the ſciences as they were then taught, and pretended that logic alone was ſufficient to teach truth and fix its bounds. He aſſerted, that pleaſure and pain were the criterions by which we were to be determined; that theſe alone made up all our paſſions; that the firſt produced all the ſoft emotions, and the latter all the violent ones. The aſſemblage of all pleaſure, he aſſerted, made true happineſs; and that the beſt way to attain this was to enjoy the preſent moments. He wrote a great many books: particularly, the Hiſtory of Libya, dedicated to Dionyſius; ſeveral Dialogues; and four books of the Luxury of the Ancients. There are alſo four epiſtles of his extant in the Socratic Collection publiſhed by Leo Allatius.

Beſides Arete his daughter, whom he educated in philoſophy, Ariſtippus had a ſon, whom he diſinherited for his ſtupidity. Arete had a ſon, who was named *Ariſtippus,* from his grandfather, and had the ſurname of Μητροδιδακτος, from his mother's inſtructing him in philoſophy. Among his auditors, beſides his daughter Arete, we have an account of Æthiops of Ptolemais, and Antipater of Cyrene. Arete communicated the philoſophy which ſhe received from her father to her ſon Ariſtippus, who tranſmitted it to Theodorus the Atheiſt, who inſtituted the ſect called *Theodorean.* Antipater communicated the philoſophy of Ariſtippus to Epitimedes his diſciple; Epitimedes to Paræbates; Paræbates to Hegeſias and Anniceris; and theſe two laſt, improving it by ſome additions of their own, obtained each the honour of giving a name to the *Hegeſiac* and *Annicerian* ſect. Laertius mentions two other perſons of the name of Ariſtippus; one, who wrote the Hiſtory of Arcadia; the other, a philoſopher of the New Academy.

ARIS'TO, a Stoic philoſopher, the diſciple of Zeno, the chief of the Stoics, flouriſhed about 290 years before the Chriſtian era. He differed but little from his maſter Zeno. He rejected logic as of no uſe, and natural philoſophy as being above the reach of the human underſtanding. It is ſaid, that, being bald, the ſun burnt his head; and that this cauſed his death. There is a ſaying of his recorded, which might render the doctrine of Ariſtippus leſs odious than it ordinarily appears. He uſed to ſay, "That a philoſopher might do thoſe of his hearers a prejudice who put a wrong interpretation upon good meanings; as for example, that the ſchool of Ariſtippus might ſend out debauchees, and that of Zeno, cynics:" which ſeems to imply, that the doctrine of this philoſopher never produced this effect but when it was miſunderſtood. He ſhould alſo have added, that every teacher is therefore obliged to forbear laying down ambiguous maxims, or to prevent falſe gloſſes being put upon them.

ARISTO (Titus), a Roman lawyer, perfect maſter of the public and civil law, and of hiſtory and antiquity. The Pandects mention ſome books of his, as does Aulus Gellius. He was cotemporary with Pliny the younger, who gives him a noble character, and had a great friendſhip for him. See *Plinii Epiſt.* lib. i. ep. 22.

ARISTOB'ULUS, [Αριϛοβȣλος, of αριϛος, and βȣλη, counſel; i.e. beſt counſel.] Names of two kings of Judea.

ARISTO'CRACY, *ſ.* [αριϛος, greateſt, and κρατεω, to govern.] That form of government which places the ſupreme power in the nobles, without a king, and excluſively of the people.—The *ariſtocracy* of Venice hath admitted ſo many abuſes through the degeneracy of the nobles, that the period of its duration ſeems to approach. *Swift.* Ariſtocracy ſeems to coincide with oligarchy; which, however, is more ordinarily uſed to ſignify a corruption of an ariſtrocratical ſtate, where the adminiſtration is in the hands of too few, or where ſome one or two uſurp the whole power. Ariſtocracy has been painted as a middle-aged woman, richly clothed, ſitting with majeſty on a throne, in her right hand a bundle of rods, and in her left a helmet. At her feet heaps of gold, ſilver, coins, jewels, &c. and near them an axe. By all which are repreſented her dignity, ſtability, and power, in rewarding the good, or puniſhing offenders.

ARISTOCRA'TICAL, or ARISTOCRA'TIC, *adj.* Relating to ariſtocracy; including a form of government by the nobles.—Ockham diſtinguiſhes, that the papacy, or eccleſiaſtical monarchy, may be changed in an extraordinary manner, for ſome time, into an *ariſtocratical* form of government. *Ayliffe.*

ARISTOCRA'TICALNESS, *ſ.* An ariſtocratical ſtate.

ARISTO'GITON, a famous Athenian, who, with Armodius, killed Hipparchus the tyrant of Athens, about 513 years before the Chriſtian era. The Athenians erected a ſtatue to him.

ARISTOLO'CHIA, *ſ.* [αριϛος, and λοχια or λοχεια, becauſe it was ſuppoſed to be of uſe in diſorders incident to child-birth.] In botany, a genus of the gynandria hexandria claſs, of the natural order of ſarmentaceæ. The generic characters are—Calyx: none. Corolla: monopetalous, tubulous, irregular; baſe ſwelling, ſubglobular, toruloſe; tube oblong hexagon-cylindric; limb dilated, extended below into a long tongue. Stamina: filaments none; antheræ ſix, faſtened at bottom to the ſtigmas, fourcelled. Piſtillum: germ oblong, inferior, angular; ſtyle ſcarcely any; ſtigma ſubglobular, ſix-parted, concave. Pericarpium: capſule large, ſix-angled, ſix-celled. Seeds: ſeveral, depreſſed, incumbent.—*Eſſential Character.* Stigmas ſix; corolla monopetalous, tongue-ſhaped, entire; capſule ſix-celled, inferior.

Species. 1. Ariſtolochia bilobata, or two-lobed birthwort: leaves two-lobed, ſtem twining. Native of Dominica and Hiſpaniola, covering the trees and ſhrubs, and flowering from November to January.

2. Ariſtolochia trilobata, or three-lobed birthwort: leaves three-lobed, ſtem twining, flowers very large, bagged at the baſe, tongue linear, very long. The roots of this have a ſtrong ſmell, and are looked upon as warm attenuants, and active diaphoretics and ſtomachics: they are adminiſtered in infuſions, and greatly uſed among the ſlaves in Jamaica, where they grow naturally. This ſpecies is moſt common on the north ſide of the iſland, and is therefore called there *contrayerva of the north ſide.* It is a native not only of the iſlands, but alſo of the continent, of South America. It flowers in June and July.

3. Ariſtolochia pentandra, or five-ſtamened birthwort: leaves cordate, haſtate-ſubtrilobate, ſtem twining, bracte cordate, embracing. The flowers of this are ſmaller. It is a native of America.

4. Ariſtolochia peltata, or peltated birthwort: leaves kidney-ſhaped, ſubpeltate, ſtem twining. Root woody, corky, perennial. Native of St. Domingo, in very dry coppices, flowering there in February and March; alſo of the continent of South America.

5. Ariſtolochia maxima, or greateſt birthwort: leaves oblong, acuminate, ſtem twining, peduncles many-flowered. Stem corky next the root; flowers curved; fruit like a purſe, very large, ſix-valved, cohering at the top, opening at the baſe even in the peduncle; it is all interwoven with tranſverſe threads. It has ſtrong climbing ſtalks, by which it mounts up to the top of the talleſt trees; the leaves are four inches long and two broad, of an oval ſhape, rounded at their ends, and nearly as thick as thoſe of the common laurel; the flowers come out in looſe cluſters at the ends of the ſhoots, each ſtanding on a very long peduncle; the ſeed-veſſels are four inches long, and as much in circumference, with ſix longitudinal ribs, which are very prominent: ſeeds heart-ſhaped. This ſort was diſcovered and ſent to England by Mr. Robert Millar, from Carthagena in New Spain. It has been found alſo ſince by profeſſor Jacquin, who has given an elegant figure of it.

6. Ariſtolochia bilabiata, or two-lipped birthwort: leaves cordate-tongue-ſhaped obtuſe, ſtem twining, corollas two-lipped. Native of Hiſpaniola, in hedges, on a calcareous ſoil; alſo of South America: flowering in ſpring.

7. Ariſtolochia erecta, or upright birthwort: leaves lanceolate, ſeſſile, ſubhirſute; ſtem erect, peduncles ſolitary, one-flowered, flowers very long. This riſes with an upright ſtalk to the height of three feet. Leaves long, narrow, hairy, growing cloſe to the branches, having ſcarcely any foot-ſtalk. The flowers come out ſingly from the axils, are near four inches long, of a dark purple colour, and grow erect; theſe are ſucceeded by ſlender veſſels, about one inch long, filled with flat heart-ſhaped ſeeds. It was diſcovered at La Vera Cruz in New Spain, by the late Dr. Houſtoun, who ſent the ſeeds to Europe; and was cultivated by Mr. Miller before 1733, in which year the doctor died.

8. Ariſtolochia arboreſcens, or tree birthwort: leaves cordate-lanceolate, ſtem erect, ſhrubby. This riſes about two feet high. The branches are not very woody, but are ſtrong enough to ſupport themſelves. The flowers come out ſingly at the axils. Grows naturally in North America.

9. Ariſtolochia caudata, or tailed birthwort: leaves cordate obtuſe, emarginate at the tip, lobes incumbent, lip tailed. The lobes of the leaves lap over each other at the baſe. Native of America.

10. Ariſtolochia odoratiſſima, or ſweet-ſcented birthwort: leaves cordate, ſtem twining, ſhrubby, peduncles ſolitary, lip of the corolla very large. This has a long, round, geniculated root, as thick as a finger; whence riſes a round, green, climbing, ſtem, taking hold of any tree or ſhrub it comes near, to the height of ſix or eight feet, covering them with its numerous branches, and putting forth leaves at every two or three inches. The whole plant ſmells very ſtrongly, and very gratefully. This is a native of Jamaica, where it is called *contrayerva of the ſouth ſide,* to diſtinguiſh it from the ſecond ſpecies. It has the ſame qualities with that, and is uſed for the ſame purpoſes.

11. Ariſtolochia ſipho, or broad-leaved birthwort: leaves cordate, petioled; flowers ſolitary, border trifid, equal, bracte ovate; ſtem twining, ſhrubby. This is a tall twining ſhrub. Root woody, ſparingly branched, fragrant, having the ſmell of camphor. This ſpecies is diſtinguiſhed by the form of its flower, bent like a ſiphon, or ſome to-

bacco-pipes; by the trifid flat border; by the very large bracte placed on the middle of the peduncle; by the diſpoſition of the ſeeds, and the aril common to all the ſeeds of each cell. Native of North America. It flowers in June and July. Monſ. L'Heritier ſays, that it flowers in the ſpring, and ripens its ſeed in autumn, but rarely.

12. Ariſtolochia anguicida, or ſnake-killing birthwort: leaves cordate, acuminate, ſtem twining, ſhrubby, peduncles ſolitary, ſtipules cordate. Root long, thick, pale-coloured. If the juice of the root, mixed with the ſaliva, be put into the mouth of a ſerpent, it may be handled with ſafety; but will return to itſelf after ſome hours. Several of the other ſpecies have the reputation of being fatal to ſerpents. Native of Mexico and the Weſt Indies.

13. Ariſtolochia maurorum, or mooriſh birthwort: leaves haſtate, quite entire; ſtem weak, ſimple; flowers ſolitary, recurved. Stems ſeveral, ſlender, filiform, whitiſh, from the upper part of which come ſeven or eight leaves on each ſide, aſh-coloured. The plant has an unpleaſant ſmell; and the root, which runs deep into the ground, appears to be of the ſame quality with ſeveral other ſorts of birthwort. Rauwolff obſerved it about Aleppo, in olive-grounds.

14. Ariſtolochia indica, or Indian birthwort: leaves cordate, rather acute, ſtem twining, peduncles many-flowered. Stems ſhrubby, round, ſlender, ſtriated, branched, long, interwoven. Leaves quite entire, ſmooth, frequently retuſe or emarginate, never acuminate, on petioles two or three lines in length; on the twigs they are blunt, almoſt tranſverſe at the baſe. Native of the Eaſt Indies and Cochinchina. The whole plant is bitter, without much ſmell. The root is thought to be attenuant and deobſtruent.

15. Ariſtolochia bœtica, or Spaniſh birthwort: leaves cordate, rather acute, ſtem twining, peduncles about three, longer than the petiole. Root very long, pale-coloured, ſomewhat aſtringent with manifeſt acrimony. The whole plant is odorous. Stems ſlender and ſtriated, creeping over hedges and buſhes. Leaves acuminate, the upper ſurface ſmooth and green, the lower whitiſh purple, on long petioles. Flower crooked, oblong, very dark purple, pubeſcent within, on very long peduncles. Found by Cluſius about Seville, and in ſeveral other places of Andaluſia. Evergreen, and flowering in January and February. Cultivated by Gerard, in 1597, and called by him and Ray *climbing birthwort.*

16. Ariſtolochia ſempervirens, or evergreen birthwort: leaves cordate-oblong, acuminate, waved; ſtem weak, flowers ſolitary. Roots many, ſlender, odorous. Stems many, trailing, ſlender, a foot or eighteen inches in length, angular, ſtriated, branched, tough, and pliable, dark green, ſpreading on the ground. Leaves nerved, very dark coloured, evergreen, on long petioles. Flowers axillary, crooked, longer than the leaves, of a dark purple colour on the outſide, but yellowiſh within. Fruits like thoſe of long-rooted birthwort, but ſmaller. Native of the iſland of Crete or Candia. It flowers in May and June.

17. Ariſtolochia ſerpentaria, or Virginia birthwort or ſnake-root: leaves cordate-oblong, flat; ſtems weak, flexuoſe, round; flowers ſolitary. Root a congeries of ſmall fibres, of a yellow colour, and aromatic ſmell and taſte. One or two ſtems riſe from it, ſmooth or very little hairy, the joints very knotty, generally erect. Leaves, one at each knot, ſlender, long, acuminate, ſomewhat hairy above, rough with protuberant nerves underneath, rather glutinous. One or two flowers grow cloſe to the ground; theſe differ in form from the other ſpecies, terminating in a broad round heel, ſupporting the lip, the centre of which opens into the hollow of the flower, and is of a dark purple; the reſt of the flower is of a muddy colour. Capſule pear-ſhaped, near an inch in diameter. After the ſeeds are ripe, the ſtems decay. It flowers in May, and perfects its ſeeds in Auguſt. The root is a warm diaphoretic and diuretic. It is reckoned one of the principal medicines of the alexipharmic kind; and as ſuch is in general uſe in low malignant fevers and epidemic diſeaſes. It is given in ſubſtance from a few grains to a ſcruple or half a dram; in decoction or infuſion, to a dram and upwards. A tincture of it is prepared by digeſting three ounces in a quart of ſpirit of wine eight days; and a ſpirituous alexeterial water mixed with one-ſixth its quantity of diſtilled water. It is alſo an ingredient in the compound tincture of bark, and the *cataplaſma cumini.* Native of Virginia and Carolina.

18. Ariſtolochia piſtolochia: leaves cordate, crenulate, netted underneath, petioled; flowers ſolitary. Roots round, numerous. Stems angular, branching, ſeldom riſing to a foot in height, and ſcarcely able to ſupport themſelves. The flower is ſmall, the lip is bent inwards; the tube and beginning of the petal are yellow, the broader end is blood-coloured. Native of the ſouth of France, Switzerland, and Spain. Cultivated by Gerard in 1596.

19. Ariſtolochia rotunda, or round-rooted birthwort: leaves cordate, ſubſeſſile, obtuſe; ſtem weak; flowers ſolitary. Roots roundiſh, growing to the ſize of ſmall turnips. They ſend out three or four weak trailing branches, which lie on the ground where they are not ſupported, and extend to the length of two feet. The leaves are rounded at the end. The flowers come out ſingly, cloſe to the petioles, towards the upper part of the ſtalk; they are of a purpliſh black colour. There is a variety named by Caſpar Bauhin *ariſtolochia rotunda, flore ex albo purpuraſcente,* which differs from the other, not only in the colour of the flower, but in the leaves and fruit. It is ſaid alſo to be hardier, and to flower earlier. Round-rooted birthwort is a native of the ſouth of Europe, and flowers from June through the autumn.

20. Ariſtolochia longa, or long-rooted birthwort: leaves cordate, petioled, obtuſe; ſtem weak, flowers ſolitary, fruits ovate. This has longer foot-ſtalks than the foregoing; the flowers are not ſo long, and are of a pale purple colour. The ſtalks of both decay in autumn, and new ones are produced in the ſpring. Native of the ſouth of Europe and Japan.

21. Ariſtolochia hirſuta, or rough birthwort: leaves cordate, rather obtuſe, ſhaggy; flowers ſolitary, pendulous, recurved, ſubtruncate. This has ſome reſemblance to the foregoing, but the leaves are hairy, and not ſo deeply eared at the bottom; the flowers alſo are much larger. It is thus deſcribed by Tournefort, who firſt obſerved it. The root is a foot and a half or two feet in length, and two inches in thickneſs, hard, woody, yellowiſh marbled with rays of white and ruſſet, covered with a rough bark of a purpliſh colour; it has only few fibres, and is inſupportably bitter. Stems two feet high, firm, ſolid, two lines in thickneſs, pale green, channelled, purpliſh at the baſe, lying on the ground. At each knot is a ſingle leaf, three inches long, and two wide at the baſe, which is rounded into two ears, above theſe it becomes ſenſibly narrower; the upper ſurface is browniſh-green, ſhining, and veined in trapeziums. From their axils ſpring a flower, bent in the ſhape of an S, three inches and a half long, on a peduncle from one to two inches in length; the baſe is eight or nine lines wide, pale-green mixed with purple, and angular; the tube is half an inch over, terminated by a throat eighteen or twenty lines in diameter, and almoſt oval; the hollow of it is beſet with white hairs, a line and a half in length; the bottom is purple, black, and livid, with ſome ſtreaks of a paler colour, inclining to yellow, and it has a large ſwelling where the throat begins to contract; the inſide of the tube is blackiſh-purple, and covered with hairs, as is alſo the baſe, which is of a paler colour. This flower has no ſmell. The whole of the plant is bitter. Native of the iſland of Scio or Chios.

22. Ariſtolochia clematitis, or common birthwort: leaves cordate, ſtem erect, flowers axillary, crowded. Common birthwort has an erect ſtem, from two to three feet high. Leaves obtuſely heart-ſhaped, above bright, beneath pale green, ſmooth, veiny, on footſtalks nearly as long as the leaves. Flowers axillary, ſometimes ſix or more, on peduncles erect or hanging down, yellowiſh green, ſtriated, the lip often tinged with purple. It dyes wool of a good yellow; and is in flower from June to September. Native

of France, Spain, Italy, Auſtria, Carniola, Germany, Hungary, and Tartary. Haller thinks it hardly a native of Switzerland. Mr. Miller will not allow that it grows wild in England; it is however found, though rarely remote from gardens, in hedges and woods; as in a wood two miles from Thorndon in Eſſex; near Maidſtone, and other places in Kent. Mr. Woodward obſerved it near Stuſton in Suffolk; and profeſſor John Martyn, in the hedges at Whittlesford in Cambridgeſhire, before the year 1732. All the birthworth roots have an aromatic ſmell, and a warm bitteriſh taſte. Boerhaave ſays they are the hotteſt of the aromatic plants: he probably ſpeaks of the freſh roots, for thoſe which are uſually met with in the ſhops have no great pungency. The long and round ſorts, on firſt chewing, ſcarcely diſcover any taſte, but in a little time prove nauſeouſly bitteriſh; the round ſomewhat the moſt ſo. The other two inſtantly fill the mouth with a kind of aromatic bitterneſs, not very ungrateful. They are celebrated as warm attenuants and deobſtruents, particularly in ſuppreſſions of the uterine purgations: the doſe is from a ſcruple to a dram and upwards. They have been likewiſe recommended, particularly the 21ſt, as alterants in the gout: Boerhaave obſerves, that the pituitous gout, as he calls it, is often relieved by an infuſion of theſe roots in ſpirit of juniper-berries, ſweetened with ſugar, and taken to the quantity of a ſpoonful at a time; but that in other kinds of the gout, and in ſubjects of a tender conſtitution, this medicine occaſions a loſs of appetite, a weakneſs of the ſtomach, and a languidneſs, leſs ſupportable than the gout itſelf: a powder compoſed of this and other ſimilar materials, which was preſcribed by the ancients as an antiarthritic, and has come again into eſteem, has alſo produced complaints of the ſame kind. Externally theſe roots have been uſed as diſcutients, detergents, and antiſeptics. Simon Paulli relates, that the long birthwort roots, applied as an epithem or in fomentation, were found remarkably ſerviceable in ſtubborn ulcers of the legs.

New Species. 23. Ariſtolochia ſcandens: leaves cordate, on very long petioles; ſtem climbing, flowers terminal, on very long peduncles. This ſends out climbing ſtalks, which ſupport themſelves by faſtening to the neighbouring trees, and thereby riſe to a very great height: the leaves are very broad, and have ſeveral longitudinal veins; the flowers grow in looſe bunches at the extremities of the branches; each has a long peduncle. It grows naturally about Tolu in New Spain, where it was diſcovered by Mr. Robert Millar, who ſent the ſeeds to England.

24. Ariſtolochia conferta: leaves cordate, petioled; ſtem climbing; flowers axillary, crowded. This ſeldom climbs above three or four feet high: the leaves are ſhort, in ſome meaſure like thoſe of the 19th ſort. The flowers come out in ſmall cluſters from the axils, and are of a dark purple colour. It was diſcovered by Mr. Robert Millar, at Campeachy in New Spain, whence he ſent the ſeeds. Theſe two ſpecies are not noticed by Linnæus, or any other author. The three following ſpecies are alſo new ones.

25. Ariſtolochia bracteata: leaves cordate obtuſe, ſtem weak, flowers ſolitary, bractes cordate petioled. Found by Koenig at Madras. It is uſed in medicine by the Indians.

26. Ariſtolochia obtuſata: leaves cordate, rounded at the tip, three-nerved, beneath netted and tomentoſe; ſtem twining; peduncles ſolitary. Native of the Caribbee iſlands.

27. Ariſtolochia grandiflora: leaves broad-cordate, ſtem twining ſubherbaceous, peduncles ſolitary, lip of the corolla very large, with a very long tail. This bears very large flowers, which are ſeldom under five or ſix inches round the margin; but the *rima*, or opening of the flower, continues glewed up, longitudinally, for a conſiderable time; and terminates in a long ſlender appendix, at the lower extremity. Native of Jamaica, where it is very common in St. Ann's.

Propagation and Culture. All theſe ſorts, which are natives of hot climates, (as No. 1 to 7, 9, 10, 12, 14, 23 to 27,) are too tender to thrive in the open air in this country, therefore require a ſtove to preſerve them. They are propagated by ſeeds, which muſt be procured from the countries where they grow naturally, for they do not produce any here. As the ſeeds are a conſiderable time in their paſſage, they ſhould be brought over in their pods; for, many of the ſorts have very thin light ſeeds, which are ſoon dried in a hot country, when they are out of their covers, which will prevent their growing. So ſoon as the ſeeds arrive, they ſhould be ſown in ſmall pots filled with light earth; and, if this happens in the autumn or winter, the pots ſhould be plunged into the tan in the bark-ſtove, between ſome of the pots with large plants, which will ſcreen them from the ſun; for, as theſe plants delight in ſhade, ſo, by thus placing the pots, the earth will not dry very faſt, which will be of great advantage to the ſeeds, which ſhould not be too often watered. Here the pots may remain till March, at which time they ſhould be removed, and plunged into a hot-bed, under frames, where, if the ſeeds are good, the plants will appear in May: but, if the ſeeds arrive in ſpring or ſummer, they muſt be immediately ſown in ſmall pots, and plunged into a moderate hot-bed, obſerving to ſhade them conſtantly in the heat of the day; but the ſeeds ſown at this ſeaſon ſeldom grow the ſame year; therefore, if the plants do not appear, the pots ſhould be plunged in the tan-bed of the ſtove in autumn, and in the ſpring following treated as before directed, which will bring up the plants. When theſe are ſtrong enough to tranſplant, they ſhould be each put into a ſeparate ſmall pot, and plunged into the tan-bed in the ſtove, and treated as other tender plants from the ſame countries. Tree birthwort will live abroad in a warm border, with a little protection in hard froſts. It is generally kept in a pot, and ſheltered in winter, but will thrive much better when planted in the full ground. 13, 15, 16, 18, are propagated by parting the roots. They are too tender to thrive in the open air in hard winters: they are preſerved therefore in pots, and put under a common frame, where they may have as much free air as poſſible in mild weather, but may be ſcreened from ſevere froſt; ſome plants at leaſt ſhould be ſheltered, to preſerve the ſpecies. 17, 19, 20, 21, are propagated by ſeeds, which ſhould be ſown in the autumn, in pots filled with light earth, and placed under a frame, to be ſcreened from the froſt; but the glaſſes ſhould be taken off at all times when the weather is mild. If theſe pots are put into a gentle hot-bed in March, it will bring up the plants much ſooner than they otherwiſe would riſe. As the ſeaſon advances, the plants ſhould be inured by degrees to bear the open air: when the pots are taken out of the bed, they muſt be placed where they may enjoy the morning ſun, but ſcreened from it in the heat of the day. Gentle refreſhings of water muſt be in dry weather given to the plants during the ſummer; but in the autumn, when their ſtalks begin to decay, they muſt have little wet. In the winter the pots muſt be ſheltered as before; and in March, before the roots begin to ſhoot, they ſhould be tranſplanted into ſeparate ſmall pots filled with light earth, and ſet under the frame, where they ſhould remain till ſpring; then they may be removed into the open air, and treated in the ſame manner as in the former ſummer, and ſheltered alſo the following winter. The next ſpring they may be turned out of the pots, and planted in a warm border, where, during the ſummer, they will require no other care but to keep them clean from weeds; and, in the autumn, when their ſtalks are decayed, if the border is covered with old tanners bark to keep out the froſt, the roots will be ſecured; but, where this care is not taken, the roots are frequently killed by the froſt. With this management the roots will thrive much better than thoſe which are kept in pots, and continue longer; and, when they are three years old, they will flower and produce plenty of ſeeds, whereas thoſe in pots ſeldom perfect their ſeeds in England. When the ſeeds of theſe plants are ſown in the ſpring, the plants will not appear till the ſpring following; ſo that a whole ſeaſon is loſt, and many times they fail, therefore they ſhould always be ſown in the autumn.

ARISTO'MENES, a general of the Meſſenians, renowned for his valour and virtue. See MESSENIA.

ARIS'TON, *ſ.* [from *αριϛαω*, to dine.] Dinner; alſo a remedy againſt a phthiſis.

ARISTO'PHANES, a celebrated comic poet of Athens, He was cotemporary with Plato, Socrates, and Euripides; and moſt of his plays were written during the Peloponneſian war. His imagination was warm and lively, and his genius particularly turned to raillery. He had alſo great ſpirit and reſolution; and was a declared enemy to ſlavery, and to all thoſe who endeavoured to oppreſs their country. The Athenians ſuffered themſelves in his time to be governed by men who had no other views than to make themſelves maſters of the commonwealth. Ariſtophanes expoſed the deſigns of theſe men, with great wit and ſeverity, upon the ſtage. Cleo was the firſt whom he attacked, in his comedy of the *Equites*; and, as there was not one of the comedians who would venture to perſonate a man of his great authority, Ariſtophanes played the character himſelf, and with ſo much ſucceſs, that the Athenians obliged Cleo to pay a fine of five talents, which were given to the poet. He deſcribed the affairs of the Athenians in ſo exact a manner, that his comedies are a faithful hiſtory of that people. For this reaſon, when Dionyſius deſired to learn the ſtate and language of Athens, Plato ſent him the comedies of Ariſtophanes, telling him theſe were the beſt repreſentation thereof. He wrote above fifty comedies; but there are only eleven extant which are perfect: theſe are, Plutus, the Clouds, the Frogs, Equites, the Acharnenſes, the Waſps, Peace, the Birds, the Eccleſiazuſæ or Female Orators, the Theſmophoſiazuſæ or Prieſteſſes of Ceres, and Lyſiſtrata. The Clouds, which he wrote in ridicule of Socrates, is the moſt celebrated of all his comedies. Madame Dacier tells us, ſhe was ſo much charmed with this performance, that after ſhe had tranſlated it, and read it over 200 times, it did not become the leaſt tedious to her, which ſhe could not ſay of any other piece; and that the pleaſure which ſhe received from it was ſo exquiſite, that ſhe forgot all the contempt and indignation which Ariſtophanes deſerved for employing his wit to ruin a man who was wiſdom himſelf, and the greateſt ornament of the city of Athens. Ariſtophanes, having conceived ſome averſion to the poet Euripides, ſatirizes him in ſeveral of his plays, particularly in his Frogs, and his Theſmophoſiazuſæ. He wrote his Peace in the tenth year of the Peloponneſian war, when a treaty for fifty years was concluded between the Athenians and the Lacedæmonians, though it continued but ſeven years. The Acharnenſes was written after the death of Pericles, and the loſs of the battle in Sicily, in order to diſſuade the people from intruſting the ſafety of the commonwealth to ſuch imprudent generals as Lamachus. Soon after, he repreſented his Aves or Birds; by which he admoniſhed the Athenians to fortify Decelæa, which he calls by a fictitious name *Nephelococcygia*. The Veſpæ, or Waſps, was written after another loſs in Sicily, which the Athenians ſuffered from the miſconduct of Chares. He wrote the Lyſiſtrata when all Greece was involved in a war; in which comedy the women are introduced debating upon the affairs of the commonwealth, when they come to a reſolution not to go to bed with their huſbands till a peace ſhould be concluded.

Ariſtophanes was greatly admired among the ancients, eſpecially for the true Attic elegance of his ſtyle. The time of his death is unknown; but it is certain he was living after the expulſion of the tyrants by Thraſybulus, whom he mentions in his Plutus and other comedies. There have been ſeveral editions and tranſlations of this poet; the moſt elegant of which is that publiſhed by Ludolphus Kuſter, at Amſterdam, in folio, in 1710, dedicated to Charles Montague earl of Halifax.

ARISTOTE'LIA, *ſ.* [from the ancient philoſopher and naturaliſt *Ariſtotle.*] In botany, a genus of the dodecandria monogynia claſs. The generic characters are—Calyx: perianthium one-leafed, five-parted; diviſions lanceolate, concave, acute, upright. Corolla: petals five, wedge-ſhaped, concave, erect, lying over each other at the ſides, ſcarcely longer than the calyx. Stamina: filaments fifteen, (to each petal three, one of which is interior, oppoſed to the petal,) very ſhort; antheræ linear, ſhorter than the germ. Piſtillum: germ ſuperior, roundiſh, rather three-cornered; ſtyle filiform, longer than the corolla; ſtigmas three, recurved. Pericarpium: berry ſubglobular, obtuſely three-cornered, three-celled. Seeds: two, or ſolitary in each cell, angular.—*Eſſential Character.* Calyx, five-leaved; corolla, five-petalled; berry, three-celled; ſeeds, two in each cell.

There is but one ſpecies, Ariſtotelia macqui, or ſhining-leaved ariſtotelia. It is a ſmall ſhrub, native of Chili, whence it was firſt ſent to Europe by Dombey, and there it is known by the name of *macqui*. The root is woody, branching, very full of fibres, and of a browniſh colour. Stem upright, and round. Branches and twigs round, green or red, with wart-like glands. Leaves oppoſite, ſpreading or hanging down a little, oblong-ovate, ſmooth, dry, green, flat, three inches long, and from fifteen to eighteen lines broad; the younger leaves are ſhining, bright green, and a little viſcid. It flowers in April and May; and was introduced here, about 1773, by Meſſrs. Kennedy and Lee. The berries are ſlightly acid, and eatable. The inhabitants of Chili make a wine from them, which they give in malignant fevers. Dombey uſed this remedy with ſucceſs in Chili, againſt the plague, in 1782. It is hardy enough to bear the open air in general. Severe winters will probably kill it, unleſs it has the protection of a greenhouſe.

ARISTOTELIA, in antiquity, annual feaſts celebrated by the citizens of Stagyris, in honour of Ariſtotle, who was born there; and in gratitude for his having procured from Alexander the rebuilding and repeopling of that city, which had been demoliſhed by king Philip.

ARISTOTE'LIAN, *adj.* Something that relates to the philoſophy of Ariſtotle.

ARISTOTELIAN PHILOSOPHY, the philoſophy taught by Ariſtotle, and maintained by his followers. The Ariſtotelian is otherwiſe called the *Peripatetic Philoſophy*, which ſee.

ARISTOTE'LIANS, a ſect of philoſophers, otherwiſe called the *Peripatetics*. The Ariſtotelians and their dogmata prevailed for a long while in the ſchools and univerſities; even in ſpite of all the efforts of the Carteſians, Newtonians, and other corpuſcularians. But the ſyſtems of the latter at length gained the pre-eminence; and the Newtonian philoſophy in particular became generally received. The principles of Ariſtotle's philoſophy, the learned agree, are chiefly laid down in four books *de Cœlo*; the eight books of *Phyſical Auſcultation*, *φυσικης ακροασεως*, belonging rather to logics or metaphyſics than to phyſics. Inſtead of the more ancient ſyſtems, he introduced matter, form, and privation, as the principles of all things; but he does not ſeem to have derived much benefit from them in natural philoſophy. His doctrines are, for the moſt part, ſo obſcurely expreſſed, that it has not yet been ſatisfactorily aſcertained what were his ſentiments on ſome of the moſt important ſubjects. The reader will find a diſtinct account of the logical part of his philoſophy, by Dr. Reid, profeſſor of moral philoſophy in the univerſity of Glaſgow, in the ſecond volume of Lord Kames's Sketches of the Hiſtory of Man; and Mr. Harris has publiſhed a ſenſible commentary on his Categories, under the title of *Philoſophical Arrangements.*

A'RISTOTLE, [ſo called of *Αριϛον τελος*, *ſummum bonum*, the chief good, of which he wrote a book.] The chief of the Peripatetic philoſophers, born at Stagyra, a ſmall city in Macedon, in the 99th Olympiad, about 384 years before the birth of Chriſt. He was the ſon of Nicomachus, phyſician to Amyntas the grandfather of Alexander the Great. He loſt his parents in his infancy; and Proxenus, a friend of his father's, who had the care of his education, taking but little notice of him, he quitted his ſtudies, and gave himſelf up to the follies of youth. After he had ſpent moſt of his patrimony, he entered into the army:

but, not ſucceeding in this profeſſion, he went to Delphos to conſult the oracle what courſe of life he ſhould follow; when he was adviſed to go to Athens and ſtudy philoſophy. He accordingly went thither about eighteen years of age, and ſtudied under Plato till he was thirty-ſeven. By this time he had ſpent his whole fortune; and we are told that he got his living by ſelling powders, and ſome receipts in pharmacy. He followed his ſtudies with moſt extraordinary diligence, ſo that he ſoon ſurpaſſed all in Plato's ſchool. He ate little, and ſlept leſs; and, that he might not over-ſleep himſelf, Diogenes Laertius tells us, that he lay always with one hand out of the bed, having a ball of braſs in it, which, by its falling into a baſon of the ſame metal, awaked him. We are told, that Ariſtotle had ſeveral conferences with a learned Jew at Athens, and that by this means he inſtructed himſelf in the ſciences and religion of the Egyptians, and thereby ſaved himſelf the trouble of travelling into Egypt. When he had ſtudied about fifteen years under Plato, he began to form different tenets from thoſe of his maſter, who became highly piqued at his behaviour. Upon the death of Plato, he quittted Athens; and retired to Atarnya, a city of Myſia, where his friend Hermias reigned. Here he married Pythias, the ſiſter of this prince, whom he is ſaid to have loved ſo paſſionately, that he offered ſacrifice to her. Some time after, Hermias having been taken priſoner by Meranon the king of Perſia's general, Ariſtotle went to Mitylene the capital of Leſbos, where he remained till Philip king of Macedon, having heard of his great reputation, ſent for him to be tutor to his ſon Alexander, then about fourteen years of age: Ariſtotle accepted the offer; and in eight years taught him rhetoric, natural philoſophy, ethics, politics, and a certain ſort of philoſophy, according to Plutarch, which he taught nobody elſe. Philip erected ſtatues in honour of Ariſtotle; and for his ſake rebuilt Stagyra, which had been almoſt ruined by the wars.

The laſt fourteen years of his life he ſpent moſtly at Athens, ſurrounded with every aſſiſtance which men and books could afford him for proſecuting his philoſophical enquiries. The magiſtrates gave him the Lycæum for his ſchool, ſo famous afterwards for the number of his diſciples; and here he compoſed many of his principal works. The glory of Alexander's name, which then filled the world, inſured tranquillity and reſpect to the man whom he diſtinguiſhed as his friend: but, after the premature death of that illuſtrious protector, the invidious jealouſy of prieſts and ſophiſts inflamed the malignant and ſuperſtitious fury of the Athenian populace, and the ſame odious paſſions which proved fatal to the offenſive virtue of Socrates fiercely aſſailed the fame and merit of Ariſtotle. To avoid the cruelty of perſecution, he ſecretly withdrew to Chalcis in Eubœa. This meaſure was ſufficiently juſtified by a prudent regard to his perſonal ſafety; but, leſt his conduct ſhould appear unmanly, when contraſted with the firmneſs of Socrates in a ſimilar ſituation, he condeſcended to apologize for his flight, by ſaying, that he was unwilling to afford the Athenians a ſecond opportunity "to ſin againſt philoſophy." He ſeems to have ſurvived his retreat from Athens only a few months; vexation and regret probably ended his days. It is ſaid, that he threw himſelf into the ſea, becauſe he was not able to account for the ebbing and flowing thereof.

Beſides his treatiſes on philoſophy, he wrote alſo on poetry, rhetoric, law, &c. to the number of 400 treatiſes, according to Diogenes Laertius; or more, according to Fra. Patricius of Venice. An account of ſuch as are extant, and of thoſe ſaid to be loſt, may be ſeen in Fabricius's *Bibliotheca Græca*. He left his writings with Theophraſtus, his diſciple and ſucceſſor in the Lycæum; and forbade that they ſhould ever be publiſhed. Theophraſtus, at his death, truſted them to Neleus his friend and diſciple; whoſe heirs buried them in the ground at Scepſis, a town of Troas, to ſecure them from the king of Pergamus, who made great ſearch every where for books to adorn his library. Here they lay concealed 160 years, until, being almoſt ſpoiled, they were ſold to one Apellicon, a rich citizen of Athens. Sylla found them at this man's houſe, and ordered them to be carried to Rome. They were ſome time after purchaſed by Tyrannion, the grammarian: and Andronicus of Rhodes, having bought them of his heirs, was in a manner the firſt reſtorer of the works of this great philoſopher: for he not only repaired what had been decayed by time and ill-keeping, but alſo put them in a better order, and got them copied. There were many who followed the doctrine of Ariſtotle in the reigns of the twelve Cæſars, and their numbers increaſed under Adrian and Antoninus: Alexander Aphrodinus was the firſt profeſſor of the Peripatetic philoſophy at Rome, being appointed by the emperors Marcus Aurelius and Lucius Verus; and in ſucceeding ages the doctrine of Ariſtotle has prevailed among almoſt all men of letters, and many commentaries were written upon his works.

The firſt doctors of the church diſapproved of the doctrine of Ariſtotle, as allowing too much to reaſon and ſenſe; but Anatolius biſhop of Laodicea, Didymus of Alexandria, St. Jerome, St. Auguſtin, and ſeveral others, at length wrote and ſpoke in favour of it. In the ſixth age, Boethius made him known in the weſt, and tranſlated ſome of his pieces into Latin. But, from the time of Boethius to the eighth age, Johannes Damaſcenus was the only man who made an abridgement of his philoſophy, or wrote any thing concerning him. The Grecians, who took great pains to reſtore learning in the eleventh and following ages, applied much to the works of this philoſopher, and many learned men wrote commentaries on his writings: amongſt theſe were Alfarabius, Algazel, Avicenna, and Averroes. They taught his doctrine in Africa, and afterwards at Cordova in Spain. The Spaniards introduced his doctrine into France, with the commentaries of Averroes and Avicenna; and it was taught in the univerſity of Paris, until Amauri, having ſupported ſome particular tenets on the principles of this philoſopher, was condemned of hereſy, in a council held there in 1210, when all the works of Ariſtotle that could be found were burnt, and the reading of them forbidden under pain of excommunication. This prohibition was confirmed, as to phyſics and metaphyſics, in 1215, by the pope's legate; though at the ſame time he gave leave for his logic to be read, inſtead of St. Auguſtin's uſed at that time in the univerſity. In the year 1265, Simon, cardinal of St. Cecil, and legate from the holy ſee, prohibited the reading of the phyſics and metaphyſics of Ariſtotle. All theſe prohibitions, however, were taken off in 1366; for the cardinals of St. Mark and St. Martin, who were deputed by pope Urban V. to reform the univerſity of Paris, permitted the reading of thoſe books which had been prohibited; and, in the year 1448, pope Stephen approved of all his works, and took care to have a new tranſlation of them into Latin.

Of the celebrated Poetic of Ariſtotle, a correct and ſuperb edition was given in 1795, from the Clarendon preſs, edited by the learned and ingenious Mr. Tyrwhitt; who, however, did not live to ſee its entire completion. The intereſting nature of this celebrated work, as containing an illuſtration of the principles of the fineſt compoſitions of the Grecian muſe, cannot paſs unnoticed by the man of taſte, as affording him the moſt accurate principles by which he may judge and diſcriminate; but above all we would recommend it to our modern play-wrights. Ariſtotle ſays, *Αρχε μεν και οιον ψυχη ο μυθος της τραγωδιας*, and *μεγιϛον δε—η των πραγματων συϛασις*. "The fable is the very life and ſoul of the drama," and "its proper conſtruction the principal and moſt important point." How little it is ſo conſidered by the preſent race of dramatiſts, their looſely-planned ſtories and improbable plots yield a a lamentable proof. Extravagant character, meagre fable, and ill-connected incident, ſeem to be the prevailing features of theſe crude compoſitions. We wiſh, therefore, to recall their attention to this golden rule of the Stagyrite, that it may operate to the reform of this vicious taſte, and, together with his other genuine precepts, may bring back our pieces to a regular conſtruction and unity of fable, and to a chaſteneſs of manners and character,—to the abolition of the broad caricature and unnatural peripetia which diſgrace the modern ſtage.

ARISTOX'ENUS, the moſt ancient muſical writer of whoſe works any traces are come down to us. He was born at Tarentum, a city of Calabria. He was the ſon of a muſician, whom ſome call *Mneſias*, others *Spintharus*. He had his firſt education at Mantinæa, a city of Arcadia, under his father; and Lampyrus of Erythræ; he next ſtudied under Xenophilus, the Pythagoræan; and laſtly under Ariſtotle, in company with Theophraſtus. Suidas, from whom theſe particulars are tranſcribed, adds, that Ariſtoxenus, enraged at Ariſtotle's having bequeathed his ſchool to Theophraſtus, traduced him ever after. But Ariſtocles the Peripatetic in Euſebius, exculpates Ariſtoxenus in this particular. From the preceding account it appears that Ariſtoxenus lived under Alexander the Great and his firſt ſucceſſors. His *Harmonics* in three books, all that are come down to us, together with Ptolemy's Harmonics, were firſt publiſhed by Gogavinus, at Venice, 1562, in 4to, with a Latin verſion. John Meurſis next tranſlated the three books of Ariſtoxenus into Latin, from the MS. of Joſ. Scaliger. With theſe he printed at Leyden, 1616, 4to, Nichomachus and Alypius, two other Greek writers on muſic. After this, Meibomius collected theſe muſical writers together; to which he added Euclid, Bacchius ſenior, Ariſtides Quintilianus; and publiſhed the whole, with a Latin verſion and notes from the elegant preſs of Elzevir, Amſt. 1652. Ariſtoxenus is ſaid by Suidas to have written 452 different works, among which thoſe on muſic are the moſt eſteemed.

ARITH'MANCY, *ſ.* [from αριθμος, number, and μαντεια, divination.] A foretelling future events by numbers.

ARITH'METIC, *ſ.* [αριθμος, number, and μετρεω, to meaſure.] The art and ſcience of numbers; or, that part of mathematics which conſiders their powers and properties, and teaches how to compute or calculate truly, and with eaſe and expedition. It is by ſome authors alſo defined the ſcience of diſcrete quantity. Arithmetic conſiſts chiefly in the four principal rules or operations of *Addition, Subtraction, Multiplication,* and *Diviſion*; to which may perhaps be added *Involution* and *Evolution*, or raiſing of powers and extraction of roots. But beſides theſe, for the facilitating and expediting of computations, mercantile, aſtronomical, &c. many other uſeful rules have been contrived, which are applications of the former, ſuch as, the rules of *Proportion, Progreſſion, Alligation, Fellowſhip, Intereſt, Barter, Equation of Payments, Reduction, Tare & Tret,* &c. Beſides the doctrine of the curious and abſtract properties of numbers.

Very little is known of the origin and invention of arithmetic. In fact it muſt have commenced with mankind, or as ſoon as they began to hold any ſort of commerce together; and muſt have undergone continual improvements, as occaſion was given by the extenſion of commerce, and by the diſcovery and cultivation of other ſciences. It is therefore very probable that the art has been greatly indebted to the Phœnicians or Tyrians; and indeed Proclus, in his Commentary on the firſt book of Euclid, ſays, that the Phœnicians, by reaſon of their traffic and commerce, were accounted the firſt inventors of arithmetic. From Aſia the art paſſed into Egypt, whither it was carried by Abraham, according to the opinion of Joſephus. Here it was greatly cultivated and improved; inſomuch that a conſiderable part of the Egyptian philoſophy and theology ſeems to have turned altogether upon numbers. Hence thoſe wonders related by them about unity, trinity, with the numbers 4, 7, 9, &c. In effect, Kircher, in his Oedip. Ægypt. ſhews, that the Egyptians explained every thing by numbers; Pythagoras himſelf affirming, that the nature of numbers pervades the whole univerſe; and that the knowledge of numbers is the knowledge of the deity. From Egypt arithmetic was tranſmitted to the Greeks, by means of Pythagoras and other travellers; amongſt whom it was greatly cultivated and improved, as appears by the writings of Euclid, Archimedes, and others: with theſe improvements it paſſed to the Romans, and from them it has deſcended to us.

The nature of the arithmetic however that is now in uſe, is very different from that above alluded to; this art having undergone a total alteration by the introduction of the Arabic notation, about 800 years ſince, into Europe: ſo that nothing now remains of uſe from the Greeks, but the theory and abſtract properties of numbers, which have no dependence on the peculiar nature of any particular ſcale or mode of notation. That uſed by the Hebrews, Greeks, and Romans, was chiefly by means of the letters of their alphabets. The twenty-four letters, taken according to their order, at firſt denoted the numbers 1, 2, 3, 4, 5, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 100, 200, 300, 400, 500, 600, 700, and 800; to which they added the three following, ϛ, ϟ, ϡ), to repreſent 6, 90, and 900. The Romans, beſides the characters for each rank of claſſes, introduced others for five, fifty, and five hundred. Their method is ſtill uſed for diſtinguiſhing the chapters, dates, &c. of books, and for ſome other purpoſes. Their numeral letters and values are the following:

I	V	X	L	C	D	M
One,	five,	ten,	fifty,	one hundred,	five hundred,	one thouſand.

Any number may be repreſented by repeating and combining theſe according to the following rules: 1. When the ſame letter is repeated twice, or oftener, its value is repreſented as often; thus, II ſignifies two, XXX thirty, CC two hundred. 2. When a numeral letter is placed after one of greater value, their values are added; thus, XI ſignifies eleven, LXV ſixty-five, MDCCLXXXVIII one thouſand ſeven hundred and eighty-eight. 3. When a numeral letter is placed before one of greater value, the value of the leſs is taken from that of the greater; thus, IV ſignifies four, XL forty, XC ninety, CD four hundred. Sometimes IƆ is uſed inſtead of D for 500, and the value is increaſed ten times by annexing Ɔ to the right hand;

Thus IƆ ſignifies	500.	Alſo	CIƆ is uſed for	1000
IƆƆ	5000		CCIƆƆ	10000
IƆƆƆ	50000		CCCIƆƆƆ	100000

Sometimes thouſands are repreſented by drawing a line over the top of the numeral, $\overline{\text{V}}$ being uſed for five thouſand, $\overline{\text{L}}$ for fifty thouſand, $\overline{\text{CC}}$ two hundred thouſand.

Archimedes invented a peculiar ſcale and notation of his own, which he employed in his Arenarius, to compute the number of the ſands. In the 2d century of Chriſtianity lived Cl. Ptolemy, who, it is ſuppoſed, invented the ſexageſimal diviſion of numbers, with its peculiar notation and operations: a mode of computation ſtill uſed in aſtronomy, &c. for the ſubdiviſions of the degrees of circles. Thoſe notations however were ill adapted to the practical operations of arithmetic: and hence it is that the art advanced but very little in this part; for, ſetting aſide Euclid, who has given many plain and uſeful properties of numbers in his Elements, and Archimedes, in his Arenarius, they moſtly conſiſt in dry and tedious diſtinctions and diviſions of numbers; as appears from the treatiſes of Nichomachus, ſuppoſed to be written in the 3d century of Rome, and publiſhed at Paris in 1538; as alſo that of Boethius, written at Rome in the 6th century of Chriſt. A compendium of the ancient arithmetic, written in Greek, by Pſellus, in the 9th century, was publiſhed in Latin by Xylander, in 1556. A ſimilar work was written ſoon after in Greek by Jodocus Willichius; and a more ample work of the ſame kind was written by Jordanus, in the year 1200, and publiſhed with a comment by Faber Stapulenſis in 1480.

Since the introduction of the Indian notation into Europe, about the 10th century, arithmetic has greatly changed its form, the whole algorithm, or practical operations with numbers, being quite altered, as the notation required; and the authors of arithmetic have gradually become more and more numerous. This method was brought into

Spain by the Arabs or Saracens; whither the learned men from all parts of Europe repaired, to learn the arts and ſciences of them. This, Dr. Wallis proves, began about the year 1000; particularly that Gilbert, a monk, afterwards pope Sylveſter II. who died in the year 1003, brought this art from Spain into France, long before the date of his death: and that it was known in Britain before the year 1150, where it was brought into common uſe before 1250, as appears by the treatiſe of arithmetic of Johannes de Sacro Boſco, or Halifax, who died about 1256. Since that time, the principal writers on this art have been, Barlaam, Lucas de Burgo, Tonſtall, Aventinus, Purbach, Cardan, Scheubelius, Tartalia, Faber, Stifelius, Recorde, Ramus, Maurolychus, Hemiſchius, Peletarius, Stevinus, Xylander, Kerſey, Snellius, Tacquet, Clavius, Metius, Gemma Friſius, Buteo, Urſinus, Romanus, Napier, Ceulen, Wingate, Kepler, Briggs, Ulacq, Oughtred, Cruger, Van Schooten, Wallis, Dee, Newton, Morland, Moore, Jeake, Ward, Hatton, Malcolm, &c. &c. The ſeveral ſpecies or kinds of arithmetic are included under theſe heads, viz. *theoretical, practical, inſtrumental, logarithmical, numerous, ſpecious, univerſal, common or decadal, fractional, radical or of ſurds, decimal, duodecimal, ſexageſimal, dynamical or binary, tetractycal, political, &c.*

Theoretical Arithmetic, is the ſcience of the properties, relations, &c. of numbers, abſtractly conſidered; with the reaſons and demonſtrations of the ſeveral rules. Such is that contained in the 7th, 8th, and 9th, books of Euclid's Elements; the Logiſtics of Barlaam the monk, publiſhed in Latin by J. Chambers, in 1600; the Summa Arithmetica of Lucas de Burgo, printed 1494, who gives the ſeveral diviſions of numbers from Nichomachus, and their properties from Euclid, with the algorithm, both in integers, fractions, extraction of roots, &c. Malcolm's New Syſtem of Arithmetic, theoretical and practical, in 1730, in which the ſubject is very completely treated, in all its branches, &c.

Practical Arithmetic, is the art or practice of numbering or computing; that is, from certain numbers given, to find others which ſhall have any propoſed relation to the former. As, having the numbers 4 and 6 given; to find their ſum, which is 10; or their difference, which is 2; or their product, 24; or their quotient, 1½; or a third proportional to them, which is 9, &c. Lucas de Burgo's works contain the whole practice of arithmetic, then uſed, as well as the theory. Tunſtall gave a neat practical treatiſe of Arithmetic in 1526; as did Stifelius, in 1544, both on the practical and other parts. Tartalea gave an entire body of practical arithmetic, which was printed at Venice in 1556, conſiſting of two parts; the former, the application of arithmetic to civil uſes; the latter, the grounds of algebra.

Binary Arithmetic, is that in which two figures or characters, viz. 1 and 0, only are uſed; the cypher multiplying every thing by 2, as in the common arithmetic by 10; thus 1 is 1, 10 is 2, 11 is 3, 100 is 4, 101 is 5, 110 is 6, 111 is 7, 1000 is 8, 1001 is 9, 1010 is 10; being founded on the ſame principles as common arithmetic. This ſort of arithmetic was invented by Leibnitz, who pretended that it is better adapted than the common arithmetic, for diſcovering certain properties of numbers, and for conſtructing tables; but he does not recommend it for ordinary uſe, on account of the great number of places of figures requiſite to expreſs all numbers, even very ſmall ones. Joſ. Pelican of Prague has more largely explained the principles and practice of the binary arithmetic, in a book entitled *Arithmeticus Perfectus, qui tria numerare neſcit*, 1712. And De Lagni propoſed a new ſyſtem of logarithms, on the plan of the binary arithmetic; which he finds ſhorter, and more eaſy and natural, than the common ones.

Common or *Vulgar Arithmetic*, is that which is concerning integers and vulgar fractions.

Decimal or *Decadal Arithmetic*, is that which is performed by a ſeries of ten characters or figures, the progreſſion being ten-fold, or from 1 to 10's, 100's, &c. which includes both integers and decimal fractions, in the common ſcale of numbers; and the characters uſed are the ten Arabic or Indian figures 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. This method of arithmetic was not known to the Greeks and Romans; but was borrowed from the Arabs while they poſſeſſed a great part of Spain. It is probable that this method took its origin from the ten fingers of the hands, which were uſed in computation before arithmetic was brought into an art. The eaſtern miſſionaries aſſure us, that to this day the Indians are very expert at computing on their fingers, without any uſe of pen and ink. And it is aſſerted, that the Peruvians, who perform all computations by the different arrangements of grains of maize, outdo any European, both for certainty and diſpatch, with all his rules.

Duodecimal Arithmetic, is that which proceeds from 12 to 12, or by a continual ſubdiviſion according to 12. This is greatly uſed by moſt artificers, in calculating the quantity of their work; as bricklayers, carpenters, painters, tilers, &c.

Fractional Arithmetic, or of *fractions*, is that which treats of fractions, both vulgar and decimal.

Harmonical Arithmetic, is ſo much of the theory and doctrine of numbers, as relates to making the compariſons and reductions of muſical intervals, which are expreſſed by numbers, for finding their mutual relations, compoſitions, and reſolutions.

Arithmetic of Infinites, is the method of ſumming up a ſeries of numbers, of which the number of terms is infinite. This method was firſt invented by Dr. Wallis, as appears by his treatiſe on that ſubject; where he ſhews its uſes in geometry, in finding the areas of ſuperfices, the contents of ſolids, &c. But the method of fluxions, which is a kind of univerſal arithmetic of infinites, performs all theſe more eaſily; as well as a great many other things, which the former will not reach.

Inſtrumental Arithmetic, is that in which the common rules are performed by inſtruments, or ſome ſort of tangible or palpable ſubſtance. Such are the methods of computing by the ten fingers and the grains of maize, by the Eaſt-Indians and Peruvians, above-mentioned; by the abacus or ſhwanpan of the Chineſe; the ſeveral ſorts of ſcales and ſliding rules; Napier's bones or rods; the arithmetical machine of Paſcal, and others; Sir Samuel Morland's inſtrument; that of Leibnitz, deſcribed in the Miſcel. Berol. that of Polenus, publiſhed in the Venetian Miſcellany, 1709; and that of Dr. Saunderſon, of Cambridge, deſcribed in the introduction to his algebra.

Integral Arithmetic, or of *integers*, is that which reſpects integers, or whole numbers.

Literal or *Algebra Arithmetic*, is that which is performed by letters; which repreſent any numbers indefinitely.

Logarithmical Arithmetic, is performed by the tables of logarithms. Theſe were invented by baron Napier; and the beſt treatiſe on the ſubject is, Briggs's Arithmetica Logarithmica, 1624.

Numerous or *Numeral Arithmetic*, is that which teaches the calculus of numbers, or of abſtract quantities; and is performed by the common numeral or Arabic characters.

Political Arithmetic, is the application of arithmetic to political ſubjects; ſuch as, the ſtrength and revenues of nations, the number of people, births, burials, &c. See POLITICAL ARITHMETIC. To this head may alſo be referred the doctrine of chances, gaming, &c.

Sexageſimal or *Sexagenary Arithmetic*, is that which proceeds by ſixties; or the doctrine of ſexageſimal fractions: a method which, it is ſuppoſed, was invented by Ptolemy, in the 2d century; at leaſt they were uſed by him. In this notation, the integral numbers from 1 to 59 were expreſſed in the common way, by the alphabetical letters: then ſixty was called a *ſexageſima prima*, and marked with a daſh to the character, thus I′; twice ſixty, or 120, thus II′; and ſo on to 59 times 60, or 3540, which is LIX′. Again, 60 times 60, or 3600, was called *ſexageſima ſecunda*, and marked with two daſhes, thus I″; twice 3600, thus II″; and ten times 3600, thus X″, &c. And in this way the notation was continued to any length. But, when a number leſs than ſixty was to be joined with any of the ſexageſimal integers, their proper expreſſion was annexed without the daſh; thus 4 times 60 and 25 is IV′XXV; the ſum of twice 60 and 10 times 3600 and 15 is X″II′XV. So near did the inventor of this method approach to the Arabic notation: inſtead of the ſexageſimal progreſſion, he had only to ſubſtitute decimal; and to make the ſigns of numbers, from 1 to 9, ſimple characters, and to introduce another character, which ſhould ſignify nothing by itſelf, but ſerving only to fill up places. The *ſexagenæ integrorum* were ſoon laid aſide, in ordinary calculations, after the introduction of the Arabic notation; but the ſexageſimal fractions continued till the invention of decimals, and indeed are ſtill uſed in the ſubdiviſions of the degrees of circular arcs and angles. Sam. Reyher has invented a kind of ſexagenal rods, in imitation of Napier's bones, by which the ſexageſimal arithmetic is eaſily performed.

Specious Arithmetic, is that which gives the calculus of quantities as deſigned by the letters of the alphabet; a method which was more generally introduced into algebra by Vieta; being the ſame as literal arithmetic or algebra. Dr. Wallis has joined the numeral with the literal calculus; by which means he has demonſtrated the rules for fractions, proportions, extraction of roots, &c. of which a compendium is given by himſelf, under the title of Elementa Arithmeticæ, in the year 1698.

Tabular Arithmetic, is that in which the operations of multiplication, diviſion, &c. are performed by means of tables calculated for that purpoſe: ſuch as thoſe of Herwart, in 1610; and Hutton's tables of powers and products, publiſhed by order of the Commiſſioners of Longitude, in 1781.

Tetratic Arithmetic, is that in which only the four characters 0, 1, 2, 3, are uſed. A treatiſe of this kind of arithmetic is extant by Erhard or Echard Weigel. But both this, and binary arithmetic, are little better than curioſities, eſpecially with regard to practice; as all numbers are much more compendiouſly and conveniently expreſſed by the common decuple ſcale.

Univerſal Arithmetic, is the name given by Newton to the ſcience of algebra; of which he left at Cambridge an excellent treatiſe, being the text-book drawn up for the uſe of his lectures, while he was profeſſor of mathematics in that univerſity.

Of NOTATION and NUMERATION.

The firſt elements of arithmetic are acquired during our infancy. The idea of one, though the ſimpleſt of any, and ſuggeſted by every ſingle object, is perhaps rather of the negative kind, and conſiſts partly in the excluſion of plurality, and is not attended to till that of number be acquired. Two is formed by placing one object near another; three, four, and every higher number, by adding one continually to the former collection. As we thus advance from lower numbers to higher, we ſoon perceive that there is no limit to this increaſing operation; and that, whatever number of objects be collected together, more may be added, at leaſt in imagination; ſo that we can never reach the higheſt poſſible number, nor approach near it. As we are led to underſtand and add numbers by collecting objects, ſo we learn to diminiſh them by removing the objects collected; and, if we remove them one by one, the number decreaſes through all the ſteps by which it advanced, till only one remain, or none at all. When a child gathers as many ſtones together as ſuits his fancy, and then throws them away, he acquires the firſt elements of the two capital operations in arithmetic. The idea of numbers, which is firſt acquired by the obſervation of ſenſible objects, is afterwards extended to meaſures of ſpace and time, affections of the mind, and other immaterial qualities. Small numbers are moſt eaſily apprehended: a child ſoon knows what two and what three is; but has not any diſtinct notion of ſeventeen. Experience removes this difficulty in ſome degree; as we become accuſtomed to larger collections, we apprehend clearly the number of a dozen or a ſcore; but perhaps could hardly advance to an hundred without the aid of claſſical arrangement, which is the art of forming ſo many units into a claſs, and ſo many of theſe claſſes into one of a higher kind, and thus advancing through as many ranks of claſſes as occaſion requires. If a boy arrange an hundred ſtones in one row, he would be tired before he could reckon them; but, if he place them in ten rows of ten ſtones each, he will reckon an hundred with eaſe; and, if he collect ten ſuch parcels, he will reckon a thouſand. In this caſe, ten is the loweſt claſs, an hundred is a claſs of the ſecond rank, and a thouſand is a claſs of the third rank.

It is proper, whatever number of units conſtitutes a claſs of the lower rank, that the ſame number of each claſs ſhould make one of the next higher. This is obſerved in our arithmetic, ten being the univerſal ſcale: but is not regarded in the various kinds of monies, weights, and the like, which do not advance by any univerſal meaſure; and much of the difficulty in the practice of arithmetic ariſes from that irregularity. As higher numbers are ſomewhat difficult to apprehend, we naturally fall on contrivances to fix them in our minds, and render them familiar: but, notwithſtanding all the expedients we can fall upon, our ideas of high numbers are ſtill imperfect, and generally far ſhort of the reality; and though we can perform any computation with exactneſs, the anſwer we obtain is often incompletely apprehended. Hence it may not be amiſs to illuſtrate, by a few examples, the extent of numbers which are frequently named, without being attended to. If a perſon employed in telling money reckon an hundred pieces in a minute, and continue at work ten hours each day, he will take ſeventeen days to reckon a million; a thouſand men would take forty-five years to reckon a billion. If we ſuppoſe the whole earth to be as well peopled as Britain, and to have been ſo from the creation, and that the whole race of mankind had conſtantly ſpent their time in telling from a heap conſiſting of a quadrillion of pieces, they would hardly have yet reckoned the thouſanth part of that quantity.

All numbers are repreſented by the ten following Arabic characters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. The nine firſt are called *ſignificant figures* or *digits*; and ſometimes repreſent units, ſometimes tens, hundreds, or higher claſſes. When placed ſingly, they denote the ſimple numbers ſubjoined to the characters. When ſeveral are placed together, the firſt or right-hand figure only is to be taken for its ſimple value: the ſecond ſignifies ſo many tens, the third ſo many hundreds, and the others ſo many higher claſſes, according to the order they ſtand in. And as it may ſometimes be required to expreſs a number conſiſting of tens, hundreds, or higher claſſes, without any units or claſſes of a lower rank annexed; and, as this can only be done by figures ſtanding in the ſecond, third, or higher, place, while there are none to fill up the lower ones; therefore an additional character or cypher (0) is neceſſary, which has no ſignification when placed by itſelf, but ſerves to ſupply the vacant places, and bring the figures to their proper ſtation. The following table ſhews the names and diviſions of the claſſes:

8.	Trillions
4	Hundred thouſand of billions
3	Ten thouſand of billions
7,	Thouſand billions
9	Hundred billions
8	Ten billions
2.	Billions
5	Hundred thouſand of millions
6	Ten thouſand of millions
4,	Thouſand millions
7	Hundred millions
3	Ten millions
8.	Millions
9	Hundred thouſands
7	Ten thouſands
2,	Thouſands
6	Hundreds
4	Tens
5	Units

The firſt ſix figures from the right hand are called the *unit period*, the next ſix the *million period*, after which the *trillion*; then follows *quadrillion, quintillion, ſextillion, ſeptillion, octillion*, and *nonillion*, in regular ſucceſſion; therefore the numbers in the above Table are read as follows: Eight trillions, four hundred and thirty-ſeven thouſand nine hundred and eighty-two billions, five hundred and ſixty-four thouſand ſeven hundred and thirty-eight millions, nine hundred and ſeventy-two thouſand, ſix hundred and forty-five. And, as the idea of numbers is acquired by obſerving ſeveral objects collected, ſo is that of fractions by obſerving an object divided into ſeveral parts. As we ſometimes meet with objects broken in two, three, or more, parts, we may conſider any or all of theſe diviſions promiſcuouſly, which is the doctrine of *vulgar fractions*; and, ſince the practice of collecting units into parcels of tens has prevailed univerſally, it has been found convenient to follow a like method in the conſideration of fractions, by dividing each unit into ten equal parts, and each of theſe into ten ſmaller parts; and ſo on. Numbers divided in this manner are called *decimal fractions*.

SIMPLE ADDITION

Is a rule by which ſeveral numbers of the ſame denomination are collected together; and the number ariſing from thoſe collections is called the *ſum*. The ſign or character of addition is +, and is called *plus*. This character is ſet between the quantities to be added, to denote their amount; thus, 3+6=9, that is, 3 plus 6 are equal to 9; and 2+4+6=12, that is, 2 plus 4 plus 6 are equal to 12.

Rule. Place the ſeveral numbers under each other, ſo that units may ſtand under units, tens under tens, hundreds under hundreds, &c. and draw a line under the whole. Begin at the place of units, add up all the figures in that row, and, if their ſum be leſs than ten, ſet down that ſum ſtraight below; if above ten or tens, ſet down the overplus, and for every ten carry an unit to the next row. Add up in like manner all the figures in the ten's place, together with the units you carried, ſet down the overplus above the even tens, as before, carry the tens to the next row, and ſo on to the laſt; and the figures below the line will be the whole ſum.

	34578
	3750
	87
Example.	328
	17
	327
Sum	39087
	4509
Proof	39087

Proof. Draw a line below the uppermoſt number, and ſuppoſe it cut off. Add all the reſt together, and ſet their ſum under the number to be proved. Add this laſt-found number and the uppermoſt line together, and, if the ſum is the ſame as that found by the firſt addition, the work is right. Or, ſubtract the numbers ſucceſſively from the ſum; if the account be right, you will exhauſt it exactly, and find no remainder.

The above rule, as well as the method of proof, is founded on the axiom, "the whole is equal to the ſum of all its parts." The method of placing the numbers and carrying for the tens are both evident from the nature of notation; for any other diſpoſition of the numbers would entirely alter their value, and carrying one for every ten, from an inferior line to a ſuperior, is manifeſtly right, ſince an unit in the latter caſe is equal in value to ten in the former. When the propoſed numbers are of different denominations, as pounds, ſhillings, and pence, or the like, the operation muſt be regulated by the value of each, as ſhewn by the following tables:

In money, l. denotes pounds, s. ſhillings, d. pence, and q. farthings. Alſo ¼ denotes a farthing, or a quarter of any thing; ½ denotes a halfpenny, or half of any thing; and ¾ denotes three farthings, or three-quarters of any thing.

4 Farthings = 1 penny; 12 pence, 1 ſhilling; 20 ſhillings, 1 pound ſterling. A groat = 4d. a teſter, 6d. half-a-crown, 2s. 6d. a crown, 5s. a noble, 6s. 8d. an angel, 10s. a mark, 13s. 4d. a guinea, 21s. a Jacobus, 23s. a Carolus, 25s. a moidore, 27s. a broad, 3l. 12s. three nobles, 1l. and two nobles, 1 mark.

The Pence Tables.

d.		s.	d.		s.	d.		s.	d.	d.		s.	d.
12	=	1	72	=	6	20	=	1	8	70	=	5	10
24	=	2	84	=	7	30	=	2	6	80	=	6	8
36	=	3	96	=	8	40	=	3	4	90	=	7	6
48	=	4	108	=	9	50	=	4	2	100	=	8	4
60	=	5	120	=	10	60	=	5	0	110	=	9	2

Troy Weight. 24 Grains (grs.) = 1 pennyweight (dwt.); 20 pennyweights, 1 ounce (oz.); 12 ounces, 1 pound (lb.) By this weight are weighed gold, ſilver, jewels, amber, bread, corn, liquors, &c. by this alſo is tried the proportion of gravity in philoſophical experiments, which any two bodies have to each other; as gold to ſilver, &c. The weight of a guinea in gold is 5 dwts. 9½ grs. nearly; and of a crown in ſilver 19 dwts. 8½ grs. very nearly. The weight of a current guinea is 5 dwts. 8 grs.

Apothecaries Weight. 20 Grains = 1 ſcruple (℈); 3 ſcruples, 1 drachm (ʒ); 8 drachms, 1 ounce (℥); 12 ounces, 1 pound (℔). By this weight apothecaries compound their medicines, though they buy and ſell their drugs by avoirdupoiſe weight. Apothecaries weight is the ſame as troy, having only ſome different diviſions.

Avoirdupoise Weight. 16 Drachms (drs.) = 1 ounce (oz.); 16 ounces, 1 pound (lb.); 14 pounds, 1 ſtone (ſt.); 2 ſtones or 28 pounds, 1 quarter of a hundred (qr.); 4 quarters, 1 hundred-weight (cwt.); 20 hundred, 1 ton; 19½ hundred, 1 fother of lead; 7½ pounds, 1 gallon of oil. By this weight are weighed all things of a coarſe or droſſy nature; ſuch as butter, cheeſe, fleſh, grocery wares, &c. all metals, except gold and ſilver. The pound troy is to the pound avoirdupoiſe as 14 to 19; but the ounce troy is to the ounce avoirdupoiſe as 56 to 51; therefore it is evident that the pound avoirdupoiſe is greater, and the ounce leſs, than thoſe of troy weight. Mr. Ward, in his Mathematician's Guide, ſays, that by a very nice experiment he found, that 1lb. avoirdupoiſe is equal to 14oz. 11 dwts. 15½ grs. troy; and 1 oz. = 18 dwts. 5½ grs. troy.

Wool Weight. 7 Pounds avoirdupoiſe = 1 clove; 2 cloves, 1 ſtone; 2 ſtones, 1 tod; 6½ tods, 1 wey; 2 weys, 1 ſack; 12 ſacks, 1 laſt; and a pack of wool is 12 ſcore lb.

Long Measure. 3 Barley corns (b.c.) = 1 inch (in.); 12 inches, 1 foot (ft.); 3 feet, 1 yard (yd.); 5 feet, 1 pace; 2 yards, 1 fathom; 5½ yards, 1 pole, rod, or perch; 4 poles, 100 links or a land-chain; 40 poles, 10 chains or a furlong; 8 furlongs, 1760 yards or a mile; 3 miles, 1 league; 60 geographical, or 69½ Engliſh, miles, 1 degree; 360 degrees, 1 circle; 30 degrees, 1 ſign; 12 ſigns or 360 degrees, 1 revolution of the zodiac. Each degree is divided into ſixty equal parts, called minutes; and each minute ſubdivided into ſixty equal parts, called ſeconds; and each ſecond divided into ſixty equal parts, called thirds; and ſo on to fourths, fifths, ſixths, &c. by an equal ſubdiviſion of ſixty.

Square Measure. 16 Square quarters of an inch, 1 ſquare inch; 144 ſquare inches, 1 ſquare foot; 9 ſquare feet, 1 ſquare yard; 30¼ ſquare yards, 1 ſquare pole; 40 ſquare poles, 1 rood of land; 4 roods, 1 acre; 640 ſquare acres, 1 ſquare mile; 7 ſquare yards, 1 ſquare rood of walling; 100 ſquare feet, 1 ſquare of framing in carpenter's work; 45 ſquare yards, 1 bay of ſlating, but, when counter meaſure is allowed, which is commonly half a yard at the eaves, then 50 yards is 1 bay.

Solid Measure. 64 Solid quarters of an inch = 1 ſolid inch; 1728 ſolid inches, 1 ſolid foot; 27 ſolid feet, 1 ſolid or cubic yard, or 1 load of earth; 40 feet of unhewn, or 50 feet of hewn, timber, 1 ton or load.

Cloth Measure. 2¼ Inches = 1 nail; 4 nails, 1 quarter; 4 quarters, 1 yard; 5 quarters, 1 ell Engliſh; 3 quarters, 1 ell Flemiſh; 4 quarters 1⅕ inch, 1 ell Scotch; 6 quarters, 1 ell French.

Corn Measure. 2 Pints = 1 quart; 2 quarts, 1 pottle;

tle; 2 pottles, 1 gallon; 2 gallons, 1 peck; 4 pecks, 1 buſhel; 5 pecks, 1 buſhel of water; 4 buſhels, 1 comb; 2 combs, 1 quarter; 4 quarters, 1 chaldron; 5 quarters, 1 tun or wey; 2 weys, 1 laſt.' A veſſel perfectly cylindrical, the internal diameter 18½ inches, and 8 inches deep, contains 2150⅖ cubic inches, which is called the Wincheſter buſhel, and 2150⅖ ÷ 8 = 262⅘ cubic inches in a gallon.

Wine Measure. 28⅞ Cubic inches = 1 pint; 8 pints, 1 gallon; 42 gallons, 1 tierce; 1½ tierce, 1 hogſhead (hhd.); 1⅓ hogſhead, 1 puncheon; 1½ puncheon, 1 pipe or butt; 2 pipes, 1 tun. A tun of 252 gallons, at 7½lb. to the gallon, weighs 1890lb. = 16 cwt. 3 qrs. 14lb. 31½ Gallons is a wine or vinegar barrel, and 236 gallons = 1 tun of ſweet oil.

Ale Measure. 35¼ Cubic inches = 1 pint; 8 pints, 1 gallon; 8 gallons, 1 firkin; 2 firkins, 1 kilderkin; 2 kilderkins, 1 barrel; 1½ barrel, 1 hogſhead.

Beer Measure. 35¼ Cubic inches = 1 pint; 8 pints, 1 gallon; 9 gallons, 1 firkin; 2 firkins, 1 kilderkin; 2 kilderkins, 1 barrel; 1½ barrel, 1 hogſhead; 2 hogſheads, 1 butt. This diſtinction, or difference, between the ale and beer meaſure, is uſed only in London; but in all other places in England, the following table of beer and ale, whether ſtrong or ſmall, is to be obſerved according to a ſtatute of exciſe made in the year 1689.

Ale and Beer Measure in the Country. 35¼ Cubic inches = 1 pint; 8 pints, 1 gallon; 8½ gallons, 1 firkin; 2 firkins, 1 kilderkin; 2 kilderkins, 1 barrel; 1½ barrel, 1 hogſhead.

Of Number. 12 Single = 1 dozen; 12 dozen, 1 groſs; 12 groſs, 1 great groſs; 5 ſcore, 1 ſhort hundred; 6 ſcore, 1 long hundred; 24 ſheets of paper, 1 quire; 20 quires, 1 ream; 5 dozen ſkins of parchment, 1 roll; 110 ſheets in a book, 1 hundred.

Bread. A peck loaf weighs, 17lb. 0oz. 1 dwt. A half peck, 8lb. 11 oz. A quartern, 4lb. 5 oz. 8 dwts.

Hay. 56 Pounds of old, or 60lb. new, hay, make a truſs; 36 truſſes = 1 load.

The Customary Weight of Goods. A firkin of butter is 56lb. A firkin of ſoap, 64lb. A barrel of pot aſhes, 200lb. A barrel of anchovies, 30lb. A barrel of candles, 120lb. A barrel of ſoap, 256lb. A barrel of butter, 224lb. A fother of lead, 19½ cwt. A ſtone of iron, 14lb. A ſtone of butcher's meat in London, 8lb. A gallon of train oil, 7½lb. A faggot of ſteel, 120lb. A ſtone of glaſs, 5lb. A ſteam of glaſs is twenty-four ſtone, or 120lb.

Of Time. 60 Seconds = 1 minute; 60 minutes, 1 hour; 24 hours, 1 day; 7 days, 1 week; 4 weeks, 1 month; 13 months 1 day and ſix hours, or 52 weeks 1 day and 6 hours, or 365 days 6 hours = 1 year, for three years together; 366 days = 1 year, for every fourth or leap year. Every 4th hundred year to contain 365 days only, according to the new ſtyle, or civil and Gregorian account of time.

COMPOUND ADDITION

Is finding the ſum of ſeveral numbers of different denominations.

Rule. Place all numbers of the ſame denomination under each other, and under them draw a line. Begin at the loweſt denomination, and add up all the figures in that row, as in ſimple addition; find how many units of the next ſuperior denomination are contained in this ſum; ſet down the remainder or overplus under the added row, and carry the units to the figures of the next ſuperior denomination, whoſe ſum you muſt find and proceed with as before: and ſo on of the reſt. In the laſt or higheſt denomination add them up as integers, whoſe ſum ſet down, which, together with the ſeveral remainders, will expreſs the ſum required. The method of Proof the ſame as in Simple Addition.

The reaſon of this rule is evident from what has been before ſaid: for, in Compound Addition, as 1 in the pence is equal to 4 in the farthings, 1 in the ſhillings to 12 in the pence, and ſo on; therefore, carrying as directed, is only providing a method of placing the money ariſing from each column properly in the ſcale of denominations; and this reaſoning will hold good in the addition of compound numbers of any denomination whatever.

Money.

Ex. 1.	l.	s.	d.
	173	13	5
	87	17	7¾
	75	18	7½
	25	17	8¼
	10	10	10½
	2	5	7
Sum	376	3	10
	202	10	5
Proof	376	3	10

Ex. 2. *Troy Weight.*

lbs.	oz.	dwt.	grs.
54	8	13	7
138	5	17	19
69	10	15	23
147	9	19	12
85	7	5	16
496	6	12	5

Ex. 3. *Apothecaries Weight.*

℔	℥	ʒ	℈	gr.
76	7	5	2	17
87	10	7	1	12
38	5	3	0	16
99	11	7	2	19
376	4	4	1	18
679	4	5	1	2

Ex. 4. Rd. *Sq. Mea.*

wa	yd.	ft.	in.	qrs.
349	6	8	135	14
84	1	3	97	5
124	5	1	139	13
76	4	7	37	7
37	2	5	126	12
673	0	0	105	3

Ex. 5. *Avoirdupoiſe Weight.*

Tons.	cwt.	qr.	lb.	oz.	drs.
761	16	1	25	13	15
49	19	3	27	9	13
967	14	0	19	11	14
89	12	2	8	12	12
376	8	3	16	15	14
2245	12	0	15	0	4

Ex. 6. *Ale&Beer Meaſure*

Hhds.	b.	k.	g.	c.in.
43	1	1	14	247
74	0½	0	11	38
9	1	1	16	134
36	1	0	8	65
82	1	1	15	184
249	0	0	15	104

SUBTRACTION

Is the taking a leſs number (called the *ſubducend)* from a greater called the *minuend)* in order to find a third number, called the *remainder* or *difference*. Its ſign or character is —, called *minus*.

Rule. Place the minuend, or greater number, uppermoſt, and the ſubducend under, ſo that units may ſtand under units, tens under tens, &c. Begin at the place of units, and take each lower figure from that which ſtands over it, ſetting the remainder under them below the line; and all theſe remainders will be the required difference.

Ex.			
	From	8903562	minuend
	Take	5831875	ſubducend
	Rem.	3071687	
	Proof	8903562	

When the lower figure is greater than that which ſtands over it, conceive ten to be borrowed or added to the uppermoſt figure, and take the lower from the ſum, ſet down the remainder, and carry one to be added to the next lower figure, with which proceed as before. To prove ſubtraction, add the remainder to the ſubducend, and, if the ſum be equal to the minuend, the work is right.

The method of borrowing ten, according to the rule, will be explained by conſidering, that, when we add this ten to the minuend, we likewiſe add one to the next place of the ſubducend, which diminiſhes the correſponding place of the minuend accordingly; and therefore this is only taking from one place and adding as much to another, ſo that the total is not altered. And the ten, which is added, is the value of an unit in the next higher place by the nature of notation. The reaſon of the proof is evident; ſince the difference of two numbers added to the leſs muſt be always equal to the greater.

Compound Subtraction, teacheth to find the difference of any two numbers of different denominations.

Rule. Place the given numbers ſo that the greater may be uppermoſt, and that thoſe of the ſame denomination may ſtand directly under each other, and draw a line under them. Begin at the loweſt denomination, and take the lower number from the upper one, and ſet down the difference or remainder underneath. Do the ſame with the next denomination, and ſo on to the laſt, which muſt be ſubtracted as whole numbers. When the lower number in any denomination happens to be the greater, add as many to the upper number as makes one of the next higher denomination; ſubtract the lower number, and ſet down the remainder; then carry one, and add it to the lower number of the next higher denomination, which will proceed as before.

Money.

	l.	s.	d.
Ex. 1.	2561	19	10¾
	876	14	7½
Difference	1685	5	3¼
Proof	2561	19	10¾

Troy Weight.

	lbs.	oz.	dwt.	gr.
Ex. 2.	354	5	12	14
	178	7	18	6
	175	9	14	8
	354	5	12	14

The reaſon of this rule and method of proof depend on the ſame principle as in Simple Subtraction, and only differ according to the value of different denominations.

MULTIPLICATION

Is the repeating a given number, or quantity, called the *multiplicand*, ſo many times or parts of a time, as there are units in another given number, called the *multiplier*; and the reſult is called the *product*. Both multiplicand and multiplier are called *factors*. Multiplication is a compendious method of addition, and is performed by the help of the following Table:

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

The uſe of this table is this: Find one figure or factor in the top column of the table, the other in the left-hand column, and the ſquare where theſe two columns meet is the product. For inſtance, ſuppoſe you would multiply 8 by 9; find 9 in the top, and 8 in the ſide, column, and in the ſquare where they meet ſtands 72; the product of 6 times 7 is 42; of 8 by 8 is 64; of 6 by 12 is 72; of 3 by 9 is 27; and 12 times 12 is 144, and ſo of any other.

The mark or character now uſed for multiplication, is either the croſs (×), or a ſingle point (.); the former being introduced by Oughtred, and the latter by Leibnitz.

Rule. Place the multiplier under the multiplicand, ſo that units may ſtand under units, &c. then draw a line. Multiply from the right hand to the left: thus, Begin with the units of the multiplier, by which multiply the units or firſt figure of the multiplicand, and ſet down the overplus above the tens, carrying the tens in your mind; then multiply the ſecond figure of the multiplicand by the ſame multiplier, adding ſo many units as you had tens to carry; ſet down the overplus, and carry the tens as before; do thus till you come to the laſt figure in the multiplicand, whoſe product ſet down entire. Then take the ſecond figure of the multiplier, and multiply by it as you did by the firſt, ſetting the firſt figure of the product under that you multiplied with; and in like manner take each figure in its order, till all the figures of the multiplicand are multiplied into all the figures of the multiplier, always obſerving to ſet the firſt figure of each product ſo many places to the left hand as the multiplying figure is diſtant from the units' place. Laſtly, add all theſe products together, and their ſum will be the product of the two numbers given.

Ex. 1. 5864824134 multiplicand.
4 multiplier.
23459296536 product.

Ex. 2. 549892994095
3019
4949036946855
549892994095
1649678982285
1660126949172805

When one or both factors end with cyphers, multiply the other figures only as before directed, and to the right of the product add as many cyphers as are on the right of both factors.

Ex. Multiply 8976437000
By 28497600
53858622
62835059
80787933
35905748
71811496
17952874
255806911051200000

When any number is to be multiplied by an unit, with cyphers to the right hand, as 10, 100, 1000, &c. annex ſo many cyphers to the right of the number as there are in the multiplier. When the multiplier is a compoſite number, multiply continually by all the factors inſtead of it.

Ex. Multiply 8756 by 504 (=7×8×9)
7
Product of 7 = 61292
8
Do. of 56 = 490336
9
Do. of 504 = 4413024

When any figure in the multiplier is a multiple of another on its right hand, it is eaſier and more conciſe to multiply the product of the leſs by its proper factor for the product of the greater.

Multiply 80708615
By 98463
242125845 = product of 3.
484251690 = do. of 3×2.
322834460 = do. of 4.
645668920 = do. of 4×2.
726377535 = do. of 3×3.
7946812358745 the whole product.

Sometimes the product of two or more figures may be obtained at once, from the product of a figure already found.

Ex. 1. 14356
648
114848
918784
9302688

Ex. 2. 3462321
96484
13849284
166191408
332382816
334058579364

In the ſecond example, we multiply firſt by 4; then, becauſe 12 times 4 is 48, we multiply the firſt line of the product by 12, inſtead of multiplying ſeparately by 8 and 4; laſtly, becauſe twice 48 is 96, we multiply the ſecond line of the product by 2, inſtead of multiplying ſeparately by 6 and 9. When we follow this method, we muſt be careful to place the right hand figure of each product under the right-hand figure of that part of the multiplier which it is derived from.

To multiply by 5, which is the half of 10, annex a cypher to the multiplicand, and divide by 2. If the multiplier be 25, which is the fourth of 100, annex two cyphers and divide by 4. To multiply by 9, which is one leſs than ten, we may annex a cypher, and ſubtract the multiplicand from the number it compoſes. And, if the multiplier be any number which is nearly equal to a certain number of tens, hundreds, thouſands, &c. multiply by the number of tens, hundreds, thouſands, &c. and then add or ſubtract for what the given multiplier is ſhort of, or exceeds, the number of tens, hundreds, thouſands, &c.

Ex. 1. Multiply 2762 by 4002.

$$\left.\begin{array}{lr} \text{Firſt } 2762\times4000= & 11048000 \\ \text{And } 2762\times2= & 5524 \end{array}\right\}\text{Add}$$

Product 11053524

Ex. 2. Multiply 87645 by 99

$$\left.\begin{array}{lr} \text{Product of } 100 = & 8764500 \\ \text{Product of } \quad 1 = & 87645 \end{array}\right\}\text{Subtract}$$

Product of 99 = 8676855

To ſquare a number is to multiply it by itſelf, and to cube a number is to multiply the ſquare of the ſaid number by the number itſelf. Thus, $4\times4=16$ the ſquare of 4; and $16\times4=64$ the cube of 4.

Multiplication may be proved by making the multiplicand the multiplier, for then, if the product is the ſame as before, the work is right. There is alſo a method of proof by diviſion; for the product being divided by either of the factors will evidently give the other.

Compound Multiplication, teacheth to find the amount of any given number of different denominations, by repeating it any propoſed number of times.

Rule. Write the multiplier under the leaſt denomination of the multiplicand. Multiply the number of the loweſt denomination by the multiplier, and find how many units of the next higher denomination are contained in the product, as in Compound Addition. Write down the exceſs, and carry the units thus found to the next ſuperior denomination, with which proceed as before. Proceed in the ſame manner with all the other denominations to the higheſt, and this product with the ſeveral remainders will be the amount required.

	l.	s.	d.
Ex. 1.	7	9	7½
			7
	52	7	4½

	Cwt.	qr.	lb.
Ex. 2.	12	2	8
			5
	62	3	12

If the multiplier be a compoſite number, multiply ſucceſſively by its component parts, the ſame as in Simple Multiplication. If the multiplier cannot be produced by the multiplication of ſimple numbers, take the neareſt number to it either greater or leſs, and multiply by its parts as before. Then multiply the multiplicand by the difference between this number and the multiplier, and add or ſubtract the product from that before found, according as it may be required.

	l.	s.	d.	
Ex.	35	17	9	by 67
			8	
	287	2	0	= 8 times
			8	
	2296	16	0	= 64 times
	107	13	3	= 3 times
	2404	9	3	= 67 times.

The method of proving the operations is the ſame as in Simple Multiplication.

DIVISION

Is a compendious method of ſubtraction, and teaches to find how often one number, called the *diviſor*, is contained in another, called the *dividend*; and the number ſought is called the *quotient*. The ſign or character of diviſion is denoted thus ÷.

Rule. Set down the dividend, and the diviſor on the left hand of it within a curved line, alſo make another curved line on the right hand for the quotient. Enquire how often the firſt figure of the diviſor is contained in the firſt figure of the dividend, or in the two firſt figures when that of the diviſor is greater, and place the anſwer in the quotient. Multiply the whole diviſor by the quotient figure, and ſet the product orderly under the dividend towards the left hand and ſubtract it therefrom. But note, if this firſt product be greater than that part of the dividend, a leſs figure muſt be placed in the quotient; and, if the remainder be greater than the diviſor, a greater figure muſt be placed in the quotient. Bring down the next figure of the dividend, annexing it to the remainder; then this number is called the *dividual.* Seek how often the diviſor can be had in the dividual, and proceed as before, till all the figures are brought down, one by one; and note, for every figure ſo brought down, a correſponding figure muſt be placed in the quotient, except when the dividual is leſs than the diviſor, and then place a cypher in the quotient. If there be a remainder after ſuch diviſion is finiſhed, annex it to the quotient with the diviſor under it a ſmall line being drawn between.

Proof. Multiply the diviſor and quotient together, and to the product add the remainder (if any); that ſum will be equal to the dividend, if the work be right.

Ex. Divide 462146141 by 17.
Dividend.
Diviſor 17) 462146141 (27185067 quotient.
34·······
122
119
31
17
144
136
86
85
114
102
121
119
2 or $\frac{2}{17}$ rem.

27185067
17
190295471
27185067
462146141 Proof

When the diviſor ends with cyphers, cut them off, and cut off as many places from the right hand of the dividend; and perform the diviſion by the remaining figures: and, when that operation is finiſhed, annex the figures cut off from the dividend to the remainder.

Ex. 504|000) 41689042|513 (82716 quotient.
4032····
1369
1008
3610
3528
824
504
3202
3024
178513 remainder.
Proof 41689043513

When the diviſor is 12, or leſs than 12, diviſion may be performed expeditiouſly, by multiplying and ſubtracting mentally, and writing down the quotient below the dividend. But, when the diviſor is a compoſite number, it is much eaſier to divide continually by thoſe numbers than by the whole diviſor at once; that is, divide the dividend by one of thoſe numbers, and that quotient by the other, and ſo proceed. If there be any remainder after ſuch diviſions, multiply the laſt remainder by the preceding diviſor, and to the product add the remainder belonging to the ſame diviſor; then multiply the ſum by the next preceding diviſor, and to the product add its correſponding remainder; and ſo proceed through all the diviſors and remainders, and the laſt ſum will be the true remainder, as if the diviſion had been performed all at once.

Ex. Divide 5468413214241246841 by $42=7\times6$.

```
   6)5468413214241246841(1 firſt remainder
    7)911402202373541140(3 ſecond remainder
      130200314634791591 19/42 quotient.
```

Then $3\times6+1=19$, the true remainder.

Compound Division, teacheth to find how often one number is contained in another, of different denominations.

Rule. Place the diviſor and dividend as in Simple Diviſion. Begin at the higheſt denomination, and divide it by the diviſor, as in Simple Diviſion, and reduce the remainder (if any) to the next inferior, adding thereto what is in the dividend of the ſame, denomination; divide this number as above, and ſo proceed till the work is finiſhed.

Ex. Divide 208lb. 10oz. 7dwts. 7grs. troy by 37.

```
          lb.  oz. dwt. gr.
    37 ) 208   10   7   7 ( 5lb.
         185
   Rem.   23
          12
     37)286(7 oz.
        259
   Rem.   27
          20
     37)547(14dwts.
        37
        177
        148
   Rem.  29
         24
     37)703(19 grs.
        37
        333
        333
          0    Anſwer, 5lb. 7oz. 14dwts. 19gr.
```

The ſame contractions, as well as method of proof, may be adopted here as in Simple Diviſion. For in dividing a number of different denominations we only divide all the parts of which that number is compoſed; and, though ſome one of the parts ſhould not be an exact multiple of the diviſor, yet that number by which it exceeds the multiple has its proper value by being placed in a lower denomination, and therefore the dividend will ſtill be reſolved into parts, and the true quotient found as before.

Dr. Wallis in his Arithmetic, publiſhed 1657, has proved the four fundamental operations by caſting out the nines, a method which depends on this principle, that any number divided by nine will leave the ſame remainder as the ſum of its digits divided by nine. To illuſtrate this, let there be any number propoſed, as 4329, which, according to the local value of each figure, becomes $4000+300+20+9$. But $4000=4\times1000=4\times\overline{999+1}=4\times999+4$. In the ſame manner, $300=3\times99+3$; and $20=2\times9+2$. Therefore, $4329=4\times\overline{999+3\times99+2\times9}+\overline{4+3+2+9}$. But the firſt part of this dividend, viz. $\overline{4\times999+3\times99+2\times9}$, is evidently diviſible by 9 *without* a remainder; and therefore the whole, or 4329, divided by 9, will leave the ſame remainder as $\overline{4+3+2+9}$, or the ſum of its digits, divided by 9. Hence, to prove Addition, add the figures of each line of numbers together ſeverally, always caſting out the nines as they ariſe, adding the overplus to the next figure, and ſetting at the end of each line what is over the nine or nines; then do the ſame with the ſum total, as alſo with the former exceſſes of nine, and the reſults will agree if the work is right.

```
Ex.     329 . . 5 ⎫
       1562 . . 5 ⎪ Exceſs of nines in each line reſpect-
      20347 . . 7 ⎬   ively.
     712048 . . 4 ⎭
     ------     -
     734286     3   Ditto in the ſum, the ſame as in 5574.
```

In Subtraction, caſt the nines out of the minuend, and alſo out of the ſum of the ſubducend and remainder; if the operation is right, the exceſs will be the ſame. In Multiplication, caſt the nines out of both the multiplicand and multiplier, and ſet down the exceſs in each; multiply theſe exceſſes together, and if the exceſs of nines in their product equal the exceſs of nines in the total product, the account may be preſumed right. To prove Diviſion, caſt the nines out of the diviſor and quotient; multiply the exceſſes, (adding the remainder, if any,) and caſt the nines out of their product; and if there is no error this laſt exceſs will agree with that obtained from the dividend. From the illuſtration given above, the reaſon of this proof will appear evident; and, though the method is ſimple and eaſy, yet it is liable to one objection. For if any two figures are tranſpoſed, or reckoned in a wrong column, the reſult ariſing from comparing the exceſſes of nines will nevertheleſs be the ſame, and conſequently the error remains undiſcovered.

REDUCTION.

In computations relating to the value, weight, meaſure, &c. of articles, the ſolution is greatly facilitated by Reduction, which is the converſion of numbers from one denomination to another of equal value; and is of two kinds, viz. *deſcending* and *aſcending*.

Reduction *deſcending*, is when numbers of a greater name are to be reduced into thoſe of a leſs, (as pounds into ſhillings, pence, and farthings,) which is thus performed. Multiply continually all the denominations, from the given one to that ſought, by ſuch a number of the leſs as makes one of the greater; adding to each product, by the way, thoſe of the ſame denomination with itſelf, if ſuch there be.

Reduction *aſcending*, is when integers of a leſs denomination are to be reduced to thoſe of a greater, (as farthings into pence, ſhillings, and pounds,) which is thus performed. Divide continually all the denominations, from the given one to that ſought, by ſuch a number of each leſs as makes one of the greater; the laſt quotient, with the ſeveral remainders, (if any,) will be the anſwer. Where note, Each remainder will always be of the ſame denomination with its reſpective dividend.

To perform Reduction, conſider how many of the leſs denomination make one of the greater, as how many pence make a ſhilling, or how many ſhillings make a pound; and multiply by that number when the reduction is deſcending, but divide by it when it is aſcending. So to reduce 23l. into pence, and converſely thoſe pence into pounds, multiply or divide by 12 and 20, as here below:

```
     23 pounds              12)5520 pence
     20                     20) 460 ſhillings
    ---                         ---
    460 ſhillings                23 pounds
     12
   ----
   5520 pence
```

The method of proof is by working the converſe of the queſtion; thus the above examples prove each other.

RULE of PROPORTION,

Teacheth, from three numbers being given, to find a fourth, which may bear the ſame proportion to the third as the ſecond does to the firſt; and, for this reaſon, it is ſometimes called the *Rule of Three*, and, from its great and extenſive uſe, it is often named the *Golden Rule*. In conſidering the nature of any queſtion, if it appears that a greater number requires a greater, or a leſs requires a leſs, it is called the Rule of Three *Direct*, or *Direct* Proportion.

Rule. Place the three given terms ſo that the firſt and third may be of one name, the third being that which aſks the queſtion, and the ſecond of the ſame name with the fourth term ſought, and let theſe be reduced to the loweſt denomination mentioned in either of them. Multiply the ſecond and third terms together, and divide their product by the firſt; ſo ſhall the quotient be the anſwer in the ſame denomination as the middle term.

Ex. If 2 yards of Iriſh cloth coſt 5 ſhillings, what will 6 yards coſt? Here it is evident that a greater number of yards will require a greater ſum of money; therefore, according to the rule,

2 yds. : 5s. :: 6 yds.
6
2)30(15 ſhillings the anſwer.

But if a greater number requires a leſs, or a leſs a greater, it is called the Rule of Three *Inverſe*, or *Reciprocal* Proportion.

Rule. State and reduce the terms as before. Then multiply the firſt and ſecond terms together, and divide their product by the third, and the quotient will be the anſwer in the ſame denomination as the middle term.

Ex. If 6 men do a piece of work in 24 days, how long would 9 men be doing the ſame? Here it is plain that more men require leſs time to do the ſame work, therefore the ſtating and operation will ſtand thus:

6 men : 24 days :: 9 men
6
9)144(16 days the anſwer.

For contracting ſome operations. When the diviſor and either of the other two terms can be divided by a common meaſure, or diviſor, divide them by ſuch common meaſure, ſetting down the quotients, together with the undivided term, directly under their firſt reſpective places. And, if the new diviſor and either of the other two terms can be again divided by any number, proceed as before, and ſo often as may be convenient; and work with the laſt three terms as you would have done with the firſt.

Ex. 1. If 16lb. of coffee coſt 4l. 5s. 4d. what will 128lb. coſt at the ſame rate?

16lb. : 4l. 5s. 4d. :: 128lb.
Or 4 : 4 5 4 :: 32 the 1ſt and 3d ÷ed by 4
Or 1 : 4 5 4 :: 8 do. do. ÷ed by 4
8
1)34 2 8(34l. 2s. 8d. the anſwer.

Ex. 2. If I lend my friend 168l. for 7 months, how long ought he to lend me 144l. to requite me?

Reciprocally. If 168l. : 7m. :: 144l.
Or 21 : 7 :: 18 1ſt & 3d ÷ed by 8
Or 7 : 7 :: 6 do. by 3
7
6)49 ($8\frac{1}{6}$ months the anſwer.

Compound Proportion, or the *Double* Rule of Three, is when five numbers are given to find a ſixth, and is commonly performed by two operations in the Single Rule of Three, either direct or inverſe, as the queſtion requires. The three firſt terms contain a ſuppoſition, and the two laſt a demand.

Rule. As in the Single Rule of Three, put that term in the middle, or ſecond place, which is of the ſame kind and denomination with the anſwer, or term ſought; and all the terms of ſuppoſition, one under another, in the firſt place; alſo the terms of demand in the ſame order, one under another, in the third place; but note, the firſt and third term of every row muſt be of the ſame denomination. Take the three terms in each row ſeparately, and ſay, If the firſt term give or require the ſecond, does the third require more or leſs? if more, mark the leſs extreme for a diviſor; if leſs, mark the greater extreme for a diviſor. Multiply all theſe diviſors together for a diviſor, and all the reſt of the terms, or numbers, together for a dividend, and their quotient will be the anſwer in the ſame denomination as the ſecond term. When the ſame numbers are found in the diviſor as in the dividend, they may be expunged. Or any number may be divided by their greateſt common diviſor, and the quotients uſed inſtead of them.

Ex. If the wages of 4 men for 3 months be 20l. what will be the wages of 6 men for the ſame time?

÷ 4 men : 20l. :: 6 men
÷ 3 months : — :: 12 months

In both ſtatements more requires more, therefore,

12 : 20 :: 72 or dividing 1ſt and 3d by 12
1 : 20 :: 6 : 6 × 20 = 120l. the anſwer.

Sometimes a queſtion may moſt eaſily be ſolved by two operations; thus, in the above example, conſidering the time to be the ſame, the ſtatement is

$$4 \text{ men} : 20\text{l.} :: 6 \text{ men} : \frac{12 \times 30}{4} = 30\text{l.}$$

And now, conſidering the number of men to be the ſame, the queſtion is reduced to this:

$$3 \text{ men} : 30\text{l.} :: 12 \text{ months} : \frac{12 \times 30}{3} = 120\text{l.}$$ the anſwer as before.

PRACTICE.

By rules of Practice are meant certain expeditious methods of caſting up accounts, or finding the value of any ſort of goods or merchandize, by taking ſome aliquot part or parts of the thing propoſed; and is evidently nothing more than a compendious method of working the Rule of Three. An aliquot part is that which is contained a preciſe number of times in another; as 4 is an aliquot part of 8, 12, 16, 20, &c.

TABLES of ALIQUOT PARTS.

Of a POUND.

s.	d.		
10	0	is a	half
6	8	a	3d
5	0	a	4
4	0	a	5
3	4	a	6
2	6	a	8
2	0	a	10
1	8	a	12
1	4	a	15
1	3	a	16
1	0	a	20
0	10	a	24
0	8	a	30
0	$7\frac{1}{2}$	a	32
0	6	a	40
0	5	a	48
0	4	a	60
0	$3\frac{3}{4}$	a	64
0	3	a	80
0	$2\frac{1}{2}$	a	96
0	2	a	120
0	$1\frac{1}{2}$	a	160
0	$1\frac{1}{4}$	a	192
0	1	a	240
0	$0\frac{3}{4}$	a	320
0	$0\frac{1}{2}$	a	480
0	$0\frac{1}{4}$	a	960

Of a SHILLING.

d.		
6	is a	half
4	a	3d
3	a	4
2	a	6
$1\frac{1}{2}$	a	8
1	a	12
$0\frac{3}{4}$	a	16
$0\frac{1}{2}$	a	24
$0\frac{1}{4}$	a	48

Of a lb. TROY.

oz.		lb.
12	is	1
9	is	$\frac{3}{4}$
8	is	$\frac{2}{3}$
6	is	$\frac{1}{2}$
4	is	$\frac{1}{3}$
3	is	$\frac{1}{4}$
2	is	$\frac{1}{6}$
$1\frac{1}{2}$	is	$\frac{1}{8}$
1	is	$\frac{1}{12}$

Of a lb. AVOIRDUPOISE.

oz.		lb.
16	is	1
12	is	$\frac{3}{4}$
8	is	$\frac{1}{2}$
4	is	$\frac{1}{4}$
2	is	$\frac{1}{8}$
1	is	$\frac{1}{16}$
$\frac{1}{2}$	is	$\frac{1}{32}$
$\frac{1}{4}$	is	$\frac{1}{64}$

Of a HUNDRED WEIGHT.

lb.		cwt.
112	is	1
56	is	$\frac{1}{2}$
28	is	$\frac{1}{4}$
16	is	$\frac{1}{7}$
14	is	$\frac{1}{8}$
8	is	$\frac{1}{14}$
7	is	$\frac{1}{16}$
4	is	$\frac{1}{28}$
$3\frac{1}{2}$	is	$\frac{1}{32}$
2	is	$\frac{1}{56}$
$1\frac{3}{4}$	is	$\frac{1}{64}$
1	is	$\frac{1}{112}$

Of a TON.

cwt.		ton.
20	is	1
10	is	$\frac{1}{2}$
5	is	$\frac{1}{4}$
4	is	$\frac{1}{5}$
$2\frac{1}{2}$	is	$\frac{1}{8}$
2	is	$\frac{1}{10}$
$1\frac{1}{4}$	is	$\frac{1}{16}$
1	is	$\frac{1}{20}$
$\frac{1}{2}$	is	$\frac{1}{40}$
$\frac{1}{4}$	is	$\frac{1}{80}$

Of TIME.

month.		year.
6	is	$\frac{1}{2}$
4	is	$\frac{1}{3}$
3	is	$\frac{1}{4}$
2	is	$\frac{1}{6}$
$1\frac{1}{2}$	is	$\frac{1}{8}$
1	is	$\frac{1}{12}$

Of a MONTH.

days.		month.
30	is	1
15	is	$\frac{1}{2}$
10	is	$\frac{1}{3}$
5	is	$\frac{1}{6}$
3	is	$\frac{1}{10}$
2	is	$\frac{1}{15}$
1	is	$\frac{1}{30}$

Rule. Firſt multiply integers by integers, in order to find their value; and for the inferior denominations take what aliquot parts you can get, and for what is wanting take parts of that part, and ſo on; then add up the whole.

Ex. What is the value of 58 cwt. 3 qrs. $17\frac{1}{2}$lb. at 9l. 11s. 4d. per cwt.

		l.	s.	d.		Cwt.	qr.	lb.		l.	s.	d.
58	× 9 =	522	0	0		58	0	0	at	9	0	0
58	÷ 2 =	29	0	0		58	0	0	at	0	10	0
29	÷ 10 =	2	18	0		58	0	0	at	0	1	0
2 18	÷ 3 =	0	19	4		58	0	0	at	0	0	4
		554	17	4	the price of	58	0	0	at	9	11	4
9 11 4	÷ 2 =	4	15	8		0	2	0				
4 15 8	÷ 2 =	2	7	10		0	1	0				
2 7 10	÷ 2 =	1	3	11		0	0	14				
1 3 11	÷ 4 =	0	5	$11\frac{3}{4}$		0	0	$3\frac{1}{2}$				
Therefore		563	10	$8\frac{3}{4}$	is price of	58	3	$17\frac{1}{2}$	at	9	11	4

When the price is an aliquot part or parts of a pound, then take ſuch aliquot parts of the quantity propoſed.

Ex. What is the value of 2537 quarters of oats at 10s. per quarter?

10s. is $\frac{1}{2}$, therefore $2537 \div 2 = 1268$l. 10s. the anſwer.

Sometimes the value may be eaſily found by reckoning the price of ſome even number above the given price; which done, take ſome aliquot part for what is above, and ſubtract it from the former.

Ex. 3987lbs. at $1\frac{3}{4}$

	l.	s.	d.	
$3987 \div 120 =$	33	4	6	at 2d.
$33\ 4\ 6 \div 8 =$	4	3	$0\frac{3}{4}$	at $0\frac{1}{4}$
Difference	29	1	$5\frac{1}{4}$	anſwer.

Tons, hundreds, and quarters, are reduced to the form of pounds, ſhillings, and pence, by only multiplying the quarters by 3; then work as before. Ex. What is the value of 56 tons, 17 cwt. 2 qrs. of hay, at 3l. 13s. 4d. per ton?

Firſt 56l. 17s. 6d. thrice the quarters.

$56\ 17\ 6 \times 3 =$	170	12	6	at	3l. 0s. 0d.	
$56\ 17\ 6 \div 3 =$	18	19	2	at	0	6 8
$56\ 17\ 6 \div 3 =$	18	19	2	at	0	6 8
Anſwer	208	10	10	at	3	13 4

TARE and TRET.

Groſs weight of any commodity is its own weight together with that of its package, whether caſk, cheſt, or whatever elſe. Tare is the weight of the package, or an allowance made inſtead thereof. What remains after the tare is taken from the groſs, may be called tare ſuttle, if there be more deductions. Tret is an allowance of 1lb. upon every 26lb. of tare ſuttle, on account of duſt or other waſte. What remains after tret is deducted may be called tret ſuttle, if there be any following deductions. Cloff is an allowance of 2lb. for every 3 cwt. and ſome ſay for every 100lb. of tret ſuttle, to make the weight hold good when ſold by retail. When all theſe deductions are made, the laſt remainder is called the net weight.

When the tare is ſo much per cent. it will be beſt to divide it into aliquot parts thereof, as in practice. The tret being 1 to 26, is found by taking a twenty-ſixth part of the tare ſuttle. In calculating oil, $7\frac{1}{2}$lb. is allowed to the gallon; therefore bring the net weight into half pounds, and divide them by 15, the quotient will be net gallons.

Ex. What is the value of 26 cwt. 3 qrs. 7lb. groſs, (tare 12lb. per cwt. tret 1lb. to 26, and cloff 1 to 50,) at 1l. 17s. 4d. per cwt.

	Cwt.	qrs.	lbs.	oz.	
14lb. is $\frac{1}{8}$	26	3	7	0	
2lb. is $\frac{1}{7}$	3	1	11	6	for 14lb.
	0	1	25	10	for 2lb.
Difference	2	3	13	12	= amount of tare, 12lb. per cwt.
The tare being deducted	23	3	21	4	= tare ſuttle

Tret being 1 to 26, we muſt divide the tare ſuttle by 26;

Therefore $\frac{1}{26}$	23	3	21	4	= tare ſuttle
	0	3	19	2	= tret
Cloff is $\frac{1}{50}$	23	0	2	2	= tret ſuttle
	0	1	23	9	= cloff
	22	2	6	9	= net value.

INTEREST.

Intereſt is a ſum reckoned for the loan or forbearance of another ſum, or principal, lent for, or due at, a certain time, according to ſome certain rate or proportion; being eſtimated uſually at ſo much per cent. or by the 100. The higheſt legal intereſt now allowed in England, is after the rate of 5 per cent. per annum, or the twentieth part of the principal for the ſpace of a year, and ſo in proportion for other times, either greater or leſs. Except in the caſe of pawnbrokers, to whom it has been lately made legal to take a higher intereſt, for one of the worſt and moſt deſtructive purpoſes that can be ſuffered in any ſtate. Intereſt is either Simple or Compound.

Simple Interest, is that which is counted and allowed upon the principal only, for the whole time of forbearance; in the calculation of which, the four following things are particularly to be regarded:

1. The money lent, called the principal; which put $=p$.
2. The rate per cent. per annum, which put $=r$.
3. The time for which the money is let, which put $=n$.
4. The amount of principal and intereſt, which put $=m$.

Alſo, put $a=1$ year, or the months, weeks, or days, in one year. Then, by the rules in Compound Proportion, we may eaſily inveſtigate all the rules appertaining to Simple Intereſt, as follows:

Ex. 1. What will 1250l. $=p$, amount to in $6\frac{3}{4}$ years, $=n$, at $4\frac{1}{2}$ per cent. $=r$?

$$\left.\begin{array}{l} \div 100 : r :: p\times \\ \div\ a\ : - :: n\times \end{array}\right\}, \text{ then } \frac{p\times r\times n}{100\times a} = \text{ the intereſt, and}$$

$\frac{prn}{100a}+p=m$, a general theorem; which expreſſed in words will exhibit the following *General Rule:* Multiply the principal by the rate per cent. and that product by the time (whether in years, months, weeks, or days) for a dividend; then multiply 100 by one year, (taking one year in the ſame denomination as the time propoſed in the queſtion,) for a diviſor; the quotient thence ariſing will be the intereſt; to which add the principal, for the amount. The preſent queſtion, thus ſolved, will ſtand thus:

	l.	s.	d.	
$\frac{1250\times4\frac{1}{2}\times6\frac{3}{4}}{100} =$	379	13	9	the intereſt
To which add $p =$	1250	0	0	the principal
Then - $m =$	1629	13	9	the amount.

If the time be in years, the diviſor will be 100; if in months, 1200; if in weeks, 5200; and, if in days, 36500.

Ex. 2. What will 784l. 17s. $8\frac{1}{2}$d. amount to in 11 months, at $2\frac{1}{2}$ per cent. per annum?

	l.	s.	d.	
Thus $\frac{784\text{l. }17\text{s. }8\frac{1}{2}\text{d. }2\frac{1}{2}\times11}{1200} =$	17	19	$8\frac{3}{4}$	the intereſt
To which add -	784	17	$8\frac{1}{2}$	the principal
Then - - $m=$	802	17	$5\frac{1}{4}$	the amount.

Ex. 3. What is the intereſt of 235l. 16s. 8d. for forty-two weeks, at 3 per cent. per annum? Thus, 235l. 16s. 8d. $\times3\times42\div5200=$ 5l. 14s. $7\frac{1}{2}$d. the intereſt.

Ex. 4. What is the intereſt of 579l. 10s. 3d. at 4 per cent. for 254 days? Thus, 579l. 10s. 3d. $\times4\times254\div36500$ $=$ 16l. 2s. $7\frac{1}{2}$d. the intereſt.

Ex. 5. What is the intereſt of 1389l. 10s. for eight years, ten months, three weeks, and ſix days, at 5 per cent per ann.

l. s.	l.	s.	d.		yr.	m.	w.	d.	
$1389\ 10\times5\times\ 8\div\ 100=$	555	16	0	Intereſt for	8	0	0	0	$=a$
$1389\ 10\times5\times10\div\ 1200=$	57	17	11		0	10	0	0	$=b$
$1389\ 10\times5\times\ 3\div\ 5200=$	4	0	$1\frac{3}{4}$		0	0	3	0	$=c$
$1389\ 10\times5\times\ 6\div36500=$	1	2	10		0	0	0	6	$=d$
$a+b+c+d =$	618	16	$10\frac{3}{4}$		8	10	3	6	

Twenty years intereſt of any ſum of money at 5 per cent. is equal to the principal; therefore, by the rule of Practice, the intereſt at 5 per cent. may be found by taking ſuch aliquot part or parts of the principal, as the time is of 20 years; and this intereſt divided by 5, will give the intereſt at 1 per cent. half of which will be at $\frac{1}{2}$ per cent. from which the intereſt at any other rate will be eaſily found, as in the following example:

What is the intereſt of 808l. 2s. 6d. for ſixteen years, nine months, and ten days, at the ſeveral rates of 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, and 5, per cent. per annum?

$p=$ 808 2 6 $=$ 20 yrs. intereſt at 5 per cent.

						y.	m.	d.
$p\div2=$	404	1	3	$=a$	for	10	0	0
$a\div2=$	202	0	7½	$=b$	for	5	0	0
$b\div5=$	40	8	1½	$=c$	for	1	0	0
$c\div3=$	13	9	4½	$=d$	for	0	4	0
$c\div3=$	13	9	4½	$=e$	for	0	4	0
$e\div3=$	4	9	9½	$=f$	for	0	1	10
$a+b+$ &c. $=$	677	18	6½	$=g$ at 5	for	16	9	10
$g\div5=$	135	11	8½	$=h$ at one per cent.				
$h\times2=$	271	3	5	$=i$ at 2 per cent.				
$h\div2=$	67	15	10¼	$=k$ at ½ per cent.				
$i+k=$	338	19	3¼	$=l$ at 2½ per cent.				
$l+k=$	406	15	1½	$=m$ at 3 do.				
$m+k=$	474	10	11¾	$=n$ at 3½ do.				
$n+k=$	542	6	10	$=o$ at 4 do.				
$o+k=$	610	2	8¼	$=p$ at 4½ do.				
$p+k=$	677	18	6½	at 5 do. as before.				

Though this ſecond rule be not preciſely accurate, yet it will be found no leſs uſeful than the firſt, which is ſo; for, in ſome caſes, it is cuſtomary to conſider the time elapſed different ways. In the courts of law, intereſt is always computed in years, quarters, and days, which indeed is the only equitable method; but in computing the intereſt on the public bonds of the South Sea and India companies, and in the bank of England, &c. the time is generally taken in calendar months and days, and, on exchequer-bills, in quarters of a year and days.

What is the intereſt of 506l. 13s. 4d. for thirteen years, ſeven months, and fifteen days, at the ſeveral rates of 3, 3½, 4, 4½, 5, 5½, and 6, per cent. per annum? Anſwer, at 3 per cent. 207l. 2s. at 3½ per cent. 241l. 12s. 4d. at 4 per cent. 276l. 2s. 8d. at 4½ per cent. 310l. 13s. at 5 per cent. 345l. 3s. 4d. at 5½ per cent. 379l. 13s. 8d. and at 6 per cent. 414l. 4s.

A gentleman lent a ſum of money (p) for ſeven years (n) at 4 per cent (r); at the end of that time he received, for intereſt thereof, 161l. (x): what was (p) the ſum lent?

$$\left.\begin{array}{l}\div\, r : 100 :: x\times \\ \times\ a : — :: n\div\end{array}\right\}\text{ then }\frac{100\times x\times a}{r\times n}=p.$$

That is, multiply one year by the given intereſt, and that product by 100 for a dividend, and the given time by the rate per cent. for a diviſor, their quotient will be the principal.

$$\text{Thus } p=\frac{100\times161\times1}{4\times7}=\frac{16100}{28}=575\text{l. the anſwer.}$$

What principal in fifteen years will produce 93l. 15s. intereſt at 5 per cent. per annum? Anſwer, 125l.

Commission, is an allowance of ſo much per cent. to a factor or correſpondent abroad, for buying and ſelling goods for his employer.

Ex. 1. What is the commiſſion of 1283l. 10s. at 3½ per cent. Thus, 1283l. 10s. × 3½ ÷ 100 = 44l. 18s. 5¼d. the anſwer.

Ex. 2. What is the commiſſion of 868l. 15s. at 3 per cent. Anſwer, 26l. 1s. 3d.

Ex. 3. My correſpondent writes me word that he has bought goods on my account, to the value of 1509l. 12s. what does his commiſſion come to at 2½ per cent. Anſwer, 37l. 14s. 9½d.

Brokerage, is an allowance of ſo much per cent. to a perſon called a broker, for aſſiſting others in buying or diſpoſing of their goods; and is generally calculated by dividing the principal by 100, and taking ſuch a part of the quotient as the rate per cent. is of a pound ſterling.

Ex. 1. What is the brokerage of 787l. 10s. at 4s. per cent.

Thus 787l. 10s. 0d. ÷ 100 = 7l. 17s. 6d. at 1l. per cent.
Then 7 17 6 ÷ 5 = 1 11 6 at 4s. do.

Ex. 2. What is the brokerage of 1350l. at 5s. per cent. Anſwer, 3l. 7s. 6d.

Ex. 3. What is the brokerage of 1220l. at ⅜ per cent. Anſwer, 4l. 11s. 6d.

Insurance, is a premium of ſo much per cent. given to certain perſons or offices, who undertake to make good the loſſes which may happen to ſhips, houſes, merchandize, &c. from ſtorms, fire, &c.

Ex. 1. What is the inſurance of 960l. 15s. 6d. at 12½ per cent? Thus, as 100 : 12½ :: 960l. 15s. 6d. : 120l. 1s. 11¼d. the anſwer.

Ex. 2. What is the inſurance of an Eaſt-India ſhip and cargo, valued at 45800l. 17s. 6d. at 16⅝ per cent. Anſwer, 7614l. 7s. 10d. $3\frac{65}{100}$qrs.

Ex. 3. What is the inſurance of goods amounting to 187l. 10s. on-board the ſhip Speedwell, at 3½ per cent. Anſwer, 6l. 11s. 3d.

Stocks, are the public funds of a nation, or the general name for the capitals of our trading companies; and the buying and ſelling certain ſums of money in thoſe funds, are the transfers to be calculated.

Ex. 1. What is the purchaſe 5891l. 13s. 4d. bank ſtock, at 112¾ per cent. Thus, as 100 : 112¾ :: 5891l. 13s. 4d. : 6642l. 17s. 1d. the anſwer.

Ex. 2. What is the purchaſe of 3200l. South Sea ſtock, at 122¾ per cent. Anſwer, 3928l.

Ex. 3. What is the purchaſe of 262l. 10s. bank annuities, at 95⅔ per cent. Anſwer, 251l. 2s. 6d.

Ex. 4. What is the purchaſe of 575l. 10s. South Sea annuities, at 131¾ per cent. Anſwer, 758l. 4s. 5d.+

In order, however, to ſave the time and trouble of calculations, and to facilitate the reckoning up of money due for intereſt, various tables of numbers are calculated and formed, to ſhew the intereſt for any number of years, months, or days, &c. one of which is the following: and by it may be readily found the intereſt of any ſum of money, from one to a million of pounds, for any number of days, and at any rate of intereſt.

Numb.	l.	s.	d.	q.	No.	l.	s.	d.	q.
1000000	2739	14	6	0·99	100	0	5	5	3·01
900000	2465	15	0	3·29	90	0	4	11	0·71
800000	2191	15	7	1·59	80	0	4	4	2·41
700000	1917	16	1	3·89	70	0	3	10	0·11
600000	1643	16	8	2·19	60	0	3	3	1·81
500000	1369	17	3	0·49	50	0	2	8	3·51
400000	1095	17	9	2·79	40	0	2	2	1·21
300000	821	18	4	1·10	30	0	1	7	2·90
200000	547	18	10	3·40	20	0	1	1	0·60
100000	273	19	5	1·70	10	0	0	6	2·30
90000	246	11	6	0·33	9	0	0	5	3·67
80000	219	3	6	2·96	8	0	0	5	1·04
70000	191	15	7	1·59	7	0	0	4	2·41
60000	164	7	8	0·22	6	0	0	3	3·78
50000	136	19	8	2·85	5	0	0	3	1·15
40000	109	11	9	1·48	4	0	0	2	2·55
30000	82	3	10	0·11	3	0	0	1	3·89
20000	54	15	10	2·74	2	0	0	1	1·26
10000	27	7	11	1·37	1	0	0	0	2·63
9000	24	13	1	3·23	0·9	0	0	0	2·37
8000	21	18	4	1·10	0·8	0	0	0	2·10
7000	19	3	6	2·96	0·7	0	0	0	1·84
6000	16	8	9	0·82	0·6	0	0	0	1·58
5000	13	13	11	2·68	0·5	0	0	0	1·32
4000	10	19	2	0·55	0·4	0	0	0	1·05
3000	8	4	4	2·41	0·3	0	0	0	0·79
2000	5	9	7	0·27	0·2	0	0	0	0·53
1000	2	14	9	2·14	0·1	0	0	0	0·26
900	2	9	3	3·12	0·09	0	0	0	0·24
800	2	3	10	0·11	0·08	0	0	0	0·21
700	1	18	4	1·10	0·07	0	0	0	0·18
600	1	12	10	2·08	0·06	0	0	0	0·16
500	1	7	4	3·07	0·05	0	0	0	0·13
400	1	1	11	0·05	0·04	0	0	0	0·11
300	0	16	5	1·04	0·03	0	0	0	0·08
200	0	10	11	2·03	0·02	0	0	0	0·05
100	0	5	5	3·01	0·01	0	0	0	0·03

The Rule for uſing the Table is this: Multiply the principal by the rate, both in pounds; multiply the product by the number of days, and divide this laſt product by 100; then take from the table the ſeveral ſums which ſtand oppoſite the ſeveral parts of the quotient, and adding them together will give the intereſt required.

Ex. What is the intereſt of 225l. 10s. for twenty-three days, at 4½ per cent. per annum?

Princ.	225·5
Rate	4·5
	1014·74
75 days	23
100)	23339·25
	233·3925

Then in the Table

		l.	s.	d.	q.
againſt	200 is	0	10	11	2·03
	30	0	1	7	2·90
	3	0	0	1	3·89
	0·3	0	0	0	0·79
	0·09	0	0	0	0·24
	Anſwer	0	12	9	1·85

true in the laſt place of decimals.

Another ingenious and general method of computing intereſt, is by the following ſmall but comprehenſive Table:

A GENERAL INTEREST TABLE,

By which the Intereſt of any Sum, at any Rate, and for any Time, may be readily found.

Days	3 per Cent.			3½ per Ct.			4 per Cent.			4½ per Ct.			5 per Cent		
	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
1			1¾			2¼			2½			3			3¼
2			3¾			4½			5¼			6			6½
3			5¾			6¾			7¾			8¾			9¾
4			7¾			9			10½			11¾		1	1
5			9¾			11½		1	1¼		1	2¾		1	4¼
6			11¾		1	1¾		1	3¾		1	5¾		1	7½
7		1	1¾		1	4		1	6¼		1	8¾		1	11
8		1	3¾		1	6¼		1	9		1	11¾		2	2¼
9		1	5¾		1	8½		1	11½		2	2½		2	5½
10		1	7½		1	11		2	2¼		2	5½		2	8¾
20		3	3¼		3	10		4	4½		4	11¼		5	5¾
30		4	11		5	9		6	6¾		7	4½		8	2½
40		6	6¾		7	8		8	9		9	10¼		10	11½
50		8	2½		9	7		10	11½		12	3¾		13	8¼
60		9	10¼		11	6		13	1¾		14	9½		16	5¼
70		11	6		13	5		15	4		17	3¼		19	2
80		13	1¾		15	4		17	6¼		19	8¾	1	1	11
90		14	9½		17	3		19	8½	1	2	2¼	1	4	7¾
100		16	5¼		19	2	1	1	11	1	4	8	1	7	4¾
200	1	12	10½	1	18	4¼	2	3	10	2	9	3¾	2	14	9½
300	2	9	3¾	2	17	6¼	3	5	9	3	13	11¾	4	2	2¼

This Table contains the intereſt of 100l. for all the ſeveral days in the firſt column, and at the ſeveral rates of 3, 3½, 4, 4½, and 5, per cent. in the other five columns.

To find the Intereſt of 100l. *for any other time:* as one year and 278 days, at 4½ per cent. Take the ſums for the ſeveral days here as below.

The Intereſt for 1 year	4	10	0
Againſt 200 days is	2	9	3¾
——— 70 days is	0	17	3¼
——— 8 days is	0	1	11
Intereſt required	7	18	6

For any other Sum than 100l. Firſt find for 100l. as above, and take it ſo many times or parts as the ſum is of 100l. Thus, to find for 355l. at 4½, for one year and 278 days;

First, three times the above ſum,

(for 300l.) is	23	15	8¼
½ (for 50l.) is	3	19	3¼
$\frac{1}{10}$ of this (for 5l.)	0	7	11
So for 355 it is	28	2	10½

When the intereſt is required for any other rate than thoſe in the Table, it may be eaſily made out from them. So one-half of five is 2½, one-half of four is 2, one-half of three is 1½, one-third of three is 1, one-ſixth of three is ½, and one-twelfth of three is ¼. And ſo, by parts, or by adding or ſubtracting, any rate may be correctly made out.

COMPOUND INTEREST,

Called alſo *Intereſt-upon-Intereſt*, is that which is counted not only upon the principal ſum lent, but alſo for its intereſt, as it becomes due, at the end of each ſtated time of payment. Although it be not lawful to lend money at Compound Intereſt, yet in purchaſing annuities, penſions, &c. and taking leaſes in reverſion, it is uſual to allow Compound Intereſt to the purchaſer for his ready money; and therefore it is very neceſſary to underſtand this ſubject.

Beſides the quantities concerned in Simple Intereſt, viz. the principal p, the rate or intereſt of 1l. for 1 year r, the amount m, and the time n, there is another quantity employed in Compound Intereſt, viz. the ratio of the rate of intereſt, which is the amount of 1l. for 1 time of payment, and which here let be denoted by R, viz. $R = 1 + r$. Then, the particular amounts for the ſeveral times may be thus computed, viz. As 1l. is to its amount for any time, ſo is any propoſed principal ſum to its amount for the ſame time, i. e.

1l. : R :: p : pR the firſt year's amount,
1l. : R :: pR : pR^2 the ſecond year's amount,
1l. : R :: pR^2 : pR^3 the third year's amount,

and ſo on. Therefore in general, $pR^n = m$ is the amount for the n year, or n time of payment. From whence the following general theorems are deduced:

1ſt. $m = pR^n$ the amount,

2d. $p = \dfrac{m}{R^n}$ the principal,

3d. $R = \sqrt[n]{\dfrac{m}{p}}$ the ratio,

4th. $n = \dfrac{\text{log. of } m - \text{log. of } p}{\text{log. of R}}$ the time.

From which any one of the quantities may be found, when the reſt are given.

For example, ſuppoſe it were required to find in how many years any principal ſum will double itſelf, at any rate of intereſt. In this caſe we muſt employ the fourth theorem, where m will be $= 2p$, and then it is

$$n = \frac{\text{l.}\, m - \text{l.}\, p}{\text{log. R}} = \frac{\text{l.}\, 2p - \text{l.}\, p}{\text{log. R}} = \frac{\text{log. } 2}{\text{log. R}}.$$

So, if the rate of intereſt be 5 per cent. per annum; then $R = 1 + \cdot05 = 1\cdot05$, and hence

$n = \dfrac{\text{log. } 2}{\text{log. } 1\cdot05} = \dfrac{\cdot3010300}{\cdot0211893} = 14\cdot2067$ nearly; that is, any ſum doubles in 14⅕ years nearly, at the rate of 5 per cent. per annum Compound Intereſt.

Hence, and from the like queſtion in Simple Intereſt, above given, are deduced the times in which any ſum doubles itſelf, at the ſeveral rates of intereſt, both ſimple and compound, viz.

At		At Simp. Int. Years.	At Comp. Int. Years.
2	per cent. per ann. Intereſt, 1l. or any other ſum will double in	50	35·0028
2½		40	28·0701
3		33⅓	23·4498
3½		$28\frac{4}{7}$	20·1488
4		25	17·6730
4½		$22\frac{2}{9}$	15·7473
5		20	14·2067
6		16⅔	11·8957
7		$14\frac{2}{7}$	10·2448
8		12½	9·0065
9		11⅑	8·0432
10		10	7·2725

The following Table will facilitate the calculation of Compound Intereſt for any ſum, and any number of years, at various rates of Intereſt.

The Amount of 1l. in any number of Years.

Yrs.	3	3½	4	4½	5	6
1	1·0300	1·0350	1·0400	1·0450	1·0500	1·0600
2	1·0609	1·0712	1·0816	1·0920	1·1025	1·1236
3	1·0927	1·1087	1·1249	1·1412	1·1576	1·1910
4	1·1255	1·1475	1·1699	1·1925	1·2155	1·2625
5	1·1593	1·1877	1·2167	1·2462	1·2763	1·3382
6	1·1941	1·2293	1·2653	1·3023	1·3401	1·4185
7	1·2299	1·2723	1·3159	1·3609	1·4071	1·5036
8	1·2668	1·3168	1·3686	1·4221	1·4775	1·5939
9	1·3048	1·3629	1·4233	1·4861	1·5513	1·6895
10	1·3439	1·4106	1·4802	1·5530	1·6289	1·7909
11	1·3842	1·4600	1·5395	1·6229	1·7103	1·8983
12	1·4258	1·5111	1·6010	1·6959	1·7959	2·0122
13	1·4685	1·5640	1·6651	1·7722	1·8856	2·1329
14	1·5126	1·6187	1·7317	1·8519	1·9799	2·2609
15	1·5580	1·6753	1·8009	1·9353	2·0789	2·3966
16	1·6047	1·7340	1·8730	2·0224	2·1829	2·5404
17	1·6528	1·7947	1·9479	2·1134	2·2920	2·6928
18	1·7024	1·8575	2·0258	2·2085	2·4066	2·8543
19	1·7535	1·9225	2·1068	2·3079	2·5270	2·0256
20	1·8061	1·9898	2·1911	2·4117	2·6533	2·2071

The uſe of this Table, which contains all the powers R^n, to the 20th power, or the amounts of 1l. is chiefly to calculate the intereſt, or the amount, of any principal ſum, for any time, not more than twenty years. For example, required to find to how much 523l. will amount in fifteen years, at the rate of 5l. per cent. per annum Compound Intereſt. In the Table, on the line 15, and column 5 per cent. is the amount of 1l. viz. 2·0789, this multiplied by the principal - 523, gives the amount - - 1087·2647, or 1087l. 5s. 3½d. and therefore the intereſt is 564l. 5s. 3½d.

See ALGEBRA, vol. i. p. 308; and ANNUITIES, vol. i. p. 737; and the article INTEREST. Alſo Smart's Tables of Intereſt, and the Philoſ. Tranſ. vol. vi. p. 508.

DISCOUNT.

This is an allowance made for the payment of any ſum of money before it becomes due, and is the difference of that ſum due ſome time hence, and its preſent worth. If the preſent worth be put out to intereſt for the time, and at the rate for which the diſcount is to be made, it would amount to the ſum or debt then due.

RULE. Multiply the time by the rate of intereſt; alſo multiply one year by 100 (taking the year in the ſame denomination as the time propoſed in the queſtion), add the two products together, and by the Rule of Three ſay, As the ſum of the two products is to the former of the two products, ſo is the ſum to be diſcounted to the diſcount; which taken from the ſum to be diſcounted will leave its preſent worth. Or thus: As the ſum of the two products is to the latter of the two products, ſo is the ſum to be diſcounted to the preſent worth, in the ſame denomination as the ſum to be diſcounted.

Ex. 1. What is the diſcount and preſent worth of 1657l. 10s. due ſix years hence, at 5 per cent. per annum?

$$\text{Thus}\left\{\begin{array}{l} 6\times\ \ 5=\ 30 \text{ firſt product} \\ 1\times 100=\underline{100} \text{ ſecond product} \end{array}\right.$$

Sum of the two products $=\underline{130}$

$$\text{As } 130:\left\{\begin{array}{lllll} 30 & :: & 1657\text{l. } 10\text{s.} & : & 382\text{l. } 10\text{s. diſcount} \\ 100 & :: & 1657 \quad 10 & : & \underline{1275 \quad\ 0} \text{ preſent worth} \end{array}\right.$$

$$\text{Proof } \underline{1657 \quad 10}$$

Ex. 2. What is the preſent worth of 463l. 10s. for nine months, or three-quarters of a year, at 4 per cent. per annum diſcount?

$$\text{Thus}\left\{\begin{array}{l} 3\times\ \ 4=\ \ 12 \text{ firſt product} \\ 4\times 100=\underline{400} \text{ ſecond product} \end{array}\right\}$$
$$412$$

As the ſum of the two products 412 : 400 :: 463l. 10s. : 450l. preſent worth.

When goods are bought and ſold, and diſcount to be made for preſent payment at any rate per cent. without any regard to time, the intereſt of the ſum as calculated for one year, is the diſcount.

Ex. Bought goods to the value of 125l. 14s. 7d. diſcount at 5 per cent. what is the diſcount and preſent worth?

Firſt 125l. 14s. 7d.×5÷100=6l. 5s. 8¾d. the diſcount.

And 125l. 14s. 7d.—6l. 5s. 8¾d.=119l. 8s. 10¼d. preſent money.

EQUATION of PAYMENTS,

A rule that teacheth, when ſeveral ſums of money are due at different periods, to find the time when the whole may be paid at once without loſs to the debtor or creditor.

RULE. Multiply every payment by the time it is to continue in the hands of the debtor, and divide the ſum of the products by the ſum of all the payments or whole debt; the quotient is the true equated time.

Ex. A owes B 336l. whereof 150l. is to be paid at two years end, 120l. at 3½ years end, and 60l. at 4½ years end; at what time may the whole be paid together without prejudice to either party?

$$\text{Thus}\left\{\begin{array}{l} 2\ \times 150=300 \\ 3\tfrac{1}{2}\times 120=420 \\ 4\tfrac{1}{2}\times\ 60=\underline{270} \end{array}\right\} \text{the products.}$$

330)990(3 years from the beginning, or one year and a half from the time of the laſt payment becoming due; therefore three years is the true equated time. As may be thus proved:

	l.	s.	d.
The amount of 150l. at 5 per cent. for 2½ years, viz. the interval between its becoming due and the laſt payment - -	168	15	0
The amount of 120l. for one year -	126	0	0
To which add the laſt payment, on which no intereſt is due - - -	60	0	0
Amount of the ſeveral ſucceſſive payments	354	15	0
The amount of the whole debt (300l.) for 1½ year, viz. the interval between the equated time and laſt payment - -	354	15	0

SINGLE FELLOWSHIP.

Fellowſhip, Company, or Partnerſhip, is a rule which determines how much gain or loſs is due to each partner concerned, by having the whole gain or loſs, and their particular ſtocks, given. Then, by the Rule of Three, As the whole ſtock is to the whole gain or loſs, ſo is each man's particular ſhare to his particular part of the gain or loſs.

Ex. 1. Four perſons enter into partnerſhip, A puts in 24l. B. 35l. C 40l. and D 37l. they gain 27l. 4s. what is each man's ſhare?

Firſt 24+35+40+37=136l. the whole ſtock.

And 27l. 4s. = 544s. the whole gain. Then

$$\begin{array}{l} \text{As } 136\text{l.} : 544\text{s.} :: \\ \text{Or as } 1 \ :\ 4 \ :: \end{array} \left\{\begin{array}{rcrcrrl} \text{l.} & & \text{s.} & & \text{l.} & \text{s.} & \\ 24 & : & 96 & = & 4 & 16 & \text{A's} \\ 35 & : & 140 & = & 7 & 0 & \text{B's} \\ 40 & : & 160 & = & 8 & 0 & \text{C's} \\ 37 & : & 148 & = & 7 & 8 & \text{D's} \end{array}\right\} \text{gain.}$$

$$\text{Proof} \qquad \underline{27 \quad 4} \text{ whole gain.}$$

Having the whole ſtock, and gain or loſs, given, and each perſon's gain or loſs, to find his ſtock. Say, as the whole gain or loſs is to the whole ſtock, ſo is each perſon's gain or loſs to his particular ſtock. This is the moſt infallible proof of the firſt rule.

Ex. 2. Four perſons traded a certain time with a joint ſtock of 136l. and gained 27l. 4s. of which A's part was 4l. 16s. B's 7l. C's 8l. and D's 7l. 8s. what was each perſon's ſtock?

$$\begin{array}{l} \text{As } 544\text{s.} : 136\text{l.} :: \\ \text{Or } \quad 4 \ :\ 1 \ :: \end{array} \left\{\begin{array}{rcrl} 96\text{s.} & : & 24 & \text{A's} \\ 140 & : & 35 & \text{B's} \\ 160 & : & 40 & \text{C's} \\ 148 & : & 37 & \text{D's} \end{array}\right\} \text{ſtock.}$$

Ex. 3. Three perſons, viz. X, Y, and Z, made a joint ſtock of 214l. of which X put in 67l. Y 92l. and Z 55l. now upon adjuſting their accounts they found that they had loſt 16l. 1s. what was each perſon's ſhare thereof?

Firſt 16l. 1s. = 321s. the whole loſs.

$$\text{As } 214\text{l.} : 321\text{s.} :: \left\{\begin{array}{rcrrcrrrl} \text{l.} & & \text{s.} & \text{d.} & & \text{l.} & \text{s.} & \text{d.} & \\ 67 & : & 100 & 6 & = & 5 & 0 & 6 & \text{X's} \\ 92 & : & 138 & 0 & = & 6 & 18 & 0 & \text{Y's} \\ 55 & : & 82 & 6 & = & 4 & 2 & 6 & \text{Z's} \end{array}\right\} \text{loſs.}$$

Proof 16 1 0

The DOUBLE RULE of FELLOWSHIP determines how much gain or loſs is due to every partner concerned; by having the whole gain or loſs, and the particular ſtocks, and their time of continuance, given.

Rule. Multiply every man's ſtock by the time it is employed; then, by the Rule of Three, ſay, As the ſum of theſe products is to the whole gain or loſs, ſo is each of theſe products to each man's gain or loſs.

Ex. 1. Three men, A, B, and C, enter into partnerſhip, A puts in 85l. for 6 months, B 72l. for 5 months, and C 45l. for 4 months; they gain 35l. what is each man's ſhare thereof?

$$\text{Thus } \left\{\begin{array}{lll} 85\text{l.} \times 6\text{m.} & = 510 & \text{product of A's ſtock and time} \\ 72 \times 5 & = 360 & \text{do. of B's do.} \\ 45 \times 4 & = 180 & \text{do. of C's do.} \end{array}\right.$$

1050 ſum of all the products.

$$\begin{array}{l} \text{As } 1050 : 35 :: \\ \text{Or } \quad 30 : 1 :: \end{array} \left\{\begin{array}{rcrl} 510 & : & 17\text{l.} & \text{A's ſhare} \\ 360 & : & 12 & \text{B's ſhare} \\ 180 & : & 6 & \text{C's ſhare} \end{array}\right.$$

Proof 35 the whole gain.

Ex. 2. Three perſons, A, B, and C, enter into partnerſhip, their common ſtock being 4663l. 15s. whereof A put in 1653l. 15s. for 4 months; B 1417l. 10s. for 7 months; and C 1592l. 10s. for 9 months; they loſe 140l. what is each perſon's ſhare thereof?

$$\left.\begin{array}{lrrl} & \text{l.} & \text{s.} & \text{Crowns} \\ \text{Firſt} & 1653 & 15 & = 6615, \text{ then } 6615 \times 4 = 26460 \\ \text{Alſo} & 1417 & 10 & = 5670, \text{ alſo } 5670 \times 7 = 39690 \\ \text{And} & 1592 & 10 & = 6370, \text{ and } 6370 \times 9 = 57330 \end{array}\right\} \begin{array}{l} \text{prod. of each} \\ \text{perſon's ſtock} \\ \text{and time.} \end{array}$$

Sum of the products 123480

$$\begin{array}{l} \text{As } 123480 : 140\text{l.} :: \\ \text{Or } \quad 882 : 1 :: \end{array} \left\{\begin{array}{rcrl} 26460 & : & 30\text{l.} & \text{A's} \\ 39690 & : & 45 & \text{B's} \\ 57330 & : & 65 & \text{C's} \end{array}\right\} \begin{array}{l} \text{ſhare of the} \\ \text{loſs.} \end{array}$$

Having the whole ſtock, each man's gain or loſs, and time, given, to find each perſon's ſtock. Multiply each man's gain or loſs, by all the other's time; then ſay, As the ſum of theſe products is to the whole ſtock, ſo is each of theſe particular products to each man's particular ſtock, viz. Three perſons, A, B, and C, enter into partnerſhip, their common ſtock being 3822l. A's money was in 3 months, and his gain was 52l. B's money was in 5 months, and his gain was 78l. and C's money was in ſeven months, and his gain was 104l. required each man's ſtock?

$$\begin{array}{lll} 52 \times 5 \times 7 = 1820 & \text{product} & \text{of A's gain by B's and C's time} \\ 78 \times 3 \times 7 = 1638 & \text{do.} & \text{of B's gain by A's and C's time} \\ 104 \times 3 \times 5 = 1560 & \text{do.} & \text{of C's gain by A's and B's time} \end{array}$$

5018 ſum of the products. Therefore,

$$\begin{array}{l} \phantom{\text{As } 5018 : } \text{l.} \\ \text{As } 5018 : 3822 :: \\ \text{Or } 2509 : 1911 :: \\ \text{Or } \quad 193 : 147 :: \end{array} \left\{\begin{array}{rcrrrl} & & \text{l.} & \text{s.} & \text{d.} & \\ 1820 & : & 1386 & 4 & 4\frac{44}{193} & \text{A's ſtock} \\ 1638 & : & 1247 & 11 & 11\frac{1}{193} & \text{B's ſtock} \\ 1560 & : & 1188 & 3 & 8\frac{148}{193} & \text{C's ſtock} \end{array}\right.$$

Proof . 3822 0 0

LOSS and GAIN,

Is a rule that diſcovers what is gained or loſt in the buying or ſelling of goods, and inſtructs the merchant or trader to raiſe or lower the price of his goods in ſuch proportion, that neither his gain may be ſo exorbitant as to injure his cuſtomer, nor his loſs ſo great as to impoveriſh himſelf. When the quantity of goods, prime coſt, and propoſed gain or loſs, are given, by the Rule of Three Direct, ſay, As the quantity of goods is to the prime coſt (the gain being added, or the loſs ſubtracted), ſo is any part of the ſaid goods to the price they muſt be ſold for. When the propoſed gain or loſs is at ſo much per cent. As 100l. is to 100l. (+ the gain, or — the loſs), ſo is the prime coſt to the ſelling price.

Ex. 1. An innkeeper bought a tun of wine which coſt him 71l. 8s. at how much per gallon muſt he ſell it to gain 21l. by the whole?

Firſt 71l. 8s. + 21 = 92l. 8s. = 1848s. the whole muſt be ſold for.

As 252 galls. : 1848s. :: 1 gall. : 7s. 4d. the anſwer.

Ex. 2. Bought 1 cwt. of hops for 4l. 12s. how much muſt I ſell them for to loſe 12 per cent.

As 100 : 88 :: 4l. 12s. : 4l. 0s. 11d. $2\frac{2}{25}$qrs. the anſwer.

BARTER,

Is the exchanging one commodity for another, ſo that neither party may ſuſtain any loſs thereby. To aſcertain this, find the value of that commodity whoſe quantity and rate is given, then find, by the Rule of Three, what quantity of the other commodity, at its propoſed rate, may be bought for the ſame money; and ſo much of the latter commodity muſt be given for the former. When one commodity is advanced above the ready-money price, find the advanced price of the other commodity in the ſame proportion; thus, by the Rule of Three Direct, ſay, As the ready-money price of the one is to its advanced price, ſo is the ready-money price of the other to its advanced price. Then the quantity of the latter commodity may be found either from the ready-money or advanced prices. When the commodities to be exchanged are of unequal value, the defect is ſupplied by money or ſome other commodity equivalent in value. In a ſimilar manner, all ſuch queſtions as do not fall under theſe directions are eaſily ſolved by a little conſideration of their nature.

Ex. 1. How many hundred-weight of hops, at 1s. 6d. per pound, may be had in barter for 116 buſhels of wheat at 7s. per buſhel?

Firſt 116 × 7 = 812s. value of the wheat = 1624 ſixpences.

Then, as 3 ſixpences : 1lb. :: 1624 ſixp. : $541\frac{1}{3}$lb. which is equal to 4 cwt. 3 qrs. $9\frac{1}{3}$lb. the anſwer.

Ex. 2. A wine-merchant, C, has port-wine worth 5s. 6d. per gallon ready money, but in barter he will have 6s. 5d. D has 572 buſhels of malt worth 4s. per buſhel ready money; how many gallons of wine muſt D receive for his malt, and how muſt he rate it per buſhel to equal the barter?

As 5s. 6d. : 6s. 5d. :: 4s. : 4s. 8d. the advanced price of one buſhel of malt.

As 1 buſhel : 4s. :: 572 buſhels : 2288s. the real value of D's malt.

Again, as 5s. 6d. : 1 gall. :: 2288s. : 416 gallons of wine D muſt receive.

Or thus by the advanced price to find the quantity of wine,

As 1 gall : 4s. 8d. :: 572 gall. : 2669s. 4d. the advanced price of D's malt.

As 6s. 5d. : 1 gall. :: 2669s. 4d. : 416 gallons of wine as above.

Ex. 3. Two merchants have various kinds of goods to barter; A has 735 yards of Indian ſilk, at 8s. 6d. per yard ready money, and in barter 10s. alſo 532 canes at 3s. a-piece ready money, and in barter 3s. 4d. alſo 16 pieces of muſlin at 4l. the piece ready money, and in barter at 4l. 10s. B has ſcarlet cloth at 1l. per yard ready money; glaſs manufacture at 1s. 8d. per lb. ready money, and a finer ſort at 2s. 4d. How many yards of cloth, and pounds of each kind of glaſs, (of each a like number, i. e. yards of cloth and pounds of each glaſs,) muſt B give to A advancing his goods proportionally alſo in barter?

	l.	s.	d.
A's Indian ſilk 735 yds. at 8s. 6d. per yd. is	312	7	6
Canes, 532 at 3s. a-piece is - -	79	16	0
Muſlin, 16 pieces at 4l. per piece -	64	0	0
The ſum is - - -	456	3	6

B's

B's ſcarlet cloth 1 yard - -	1	0	0
Glaſs manufacture - -	0	1	8
Ditto finer ſort - - -	0	2	4
Value of one of each ſort - -	1	4	0

Then as 1l. 4s. : 1 :: 456l. 3s. 6d. : $380\frac{7}{48}$ of each ſort of B's goods.

The truth of this ſolution may be proved thus,

$380\frac{7}{48}$ yds. of ſcarlet-cloth, at 1l. per yd. is	380	2	11
$380\frac{7}{48}$ lb. of glaſs manufacture at 1s. 8d.	31	13	$6\frac{11}{12}$
$380\frac{7}{48}$ lb. of finer ſort, do. at 2s. 4d.	44	7	$0\frac{1}{12}$
The amount the ſame as A's goods above	456	3	6

EXCHANGE.

Exchange properly conſiſts in giving the money of one country for that of another, by means of a written inſtrument, called a *bill of exchange*, and is ſimilar to bartering commodities. See BILL of EXCHANGE. There are five things to be defined before we come to the practice of exchange, and theſe are, 1. The real money of every country; 2. The imaginary money of it; 3. The par of exchange; 4. The courſe of exchange; and 5. The agio.

The real money of any country, is a piece of metal coined by the authority of that ſtate, and current at a certain rate; as a guinea, a crown, a ſhilling, &c. in England. The imaginary money is a denomination which has no real ſpecies or coins to anſwer it; as a pound, a mark, an angel, a penny, &c. in England. The par of exchange is when any two coins of different countries contain the ſame quantity of pure gold or ſilver, although of a different weight. Hence it has been found that the ecu or French crown is to the Engliſh crown as 9 to 10, and therefore the par or true value of the French crown is 4s. 6d. ſterling. The courſe of exchange is the value agreed upon by merchants or their factors; and is continually fluctuating above or below the par, according as the demand for bills of exchange is greater or leſs. The agio is the difference between the value of the bank money, and the current, in foreign places; for their bank money (on which the exchange is ſuppoſed to be made) is finer than their current.

When there is a neceſſity of taking currency in caſe of a defect in the bank, the merchants have an allowance of ſo much per cent. according to what the exchange, or bank money, is worth more than the current money. Bank notes, in the buſineſs, are ſuch as are obtained from foreign bankers for money lodged in their bank. Theſe are called banco, or bank money. Uſance is a certain ſpace of time allowed, by one country to another, for the payment of bills of exchange. It varies according to the cuſtom of countries, and frequently in proportion to the diſtance of places from each other. Bills are either payable at ſight, or ſo many days after ſight; at uſance, double uſance, or half uſance. The days of grace are a certain number of days allowed for the payment of bills of exchange after the expiration of the term ſpecified in ſuch bills, and are variable in different countries. In ſome countries no days of grace are allowed.

I. With IRELAND, AMERICA, and the WEST INDIES.

Accounts are kept in Ireland, America, and the Weſt Indies, in pounds, ſhillings, and pence, as in England, and exchange per cent. ſterling. 100l. Sterling = 108l. 6s. 8d. Iriſh at par, or 12l. ſterling = 13l. Iriſh; alſo 5l. ſterling is accounted worth 7l. of the currency of the Weſt Indies. See COINS and MONEY.

To reduce Iriſh Money into Engliſh at par.

RULE. From the Iriſh money at par take one-thirteenth thereof, the remainder is Engliſh.

EX. Reduce 202l. 3s. $6\frac{1}{2}$d. and 67l. 14s. $11\frac{3}{4}$d. Iriſh to Engliſh at par.

	l.	s.	d.		l.	s.	d.
Thus from	202	3	$6\frac{1}{2}$	And from	67	14	$11\frac{3}{4}$
Take $\frac{1}{13}$ =	15	11	$0\frac{1}{2}$	Take $\frac{1}{13}$ =	5	4	$3\frac{3}{4}$
Rem.	186	12	6	Engliſh	62	10	9 anſ.

To reduce Engliſh Money to Iriſh at par.

RULE. To the Engliſh add one-twelfth thereof, the ſum is Iriſh.

EX. Reduce 186l. 12s. 6d. and 62l. 10s. 9d. Engliſh into Iriſh at par.

	l.	s.	d.		l.	s.	d.
Thus to	186	12	6	And to	62	10	9
Add $\frac{1}{12}$ =	15	11	$0\frac{1}{2}$	Add $\frac{1}{12}$ =	5	4	$2\frac{3}{4}$
The ſum is	202	3	$6\frac{1}{2}$	Iriſh	67	14	$11\frac{3}{4}$ anſwer.

The following examples are above and below par:

London remits to Dublin 367l. 1s. 8d. ſterling, exchange at 7 per cent. How much will it amount to? Thus, as 100 : 107 367l 1s 8d. : 392l. 15s. 7d. the anſwer.

Dublin remits to London 367l. 1s. 8d. Iriſh, exchange at $10\frac{1}{8}$ per cent. how much ſterling does this remittance amount to?

As $110\frac{1}{8}$: 100 :: 367l. 1s. 8d.

Or 881 : 800 :: 367l. 1s. 8d. : 333l. 6s. 8d. nearly.

How much Jamaica-currency muſt be received for 608l. 6s. 8d. ſterling, exchange at 46 per cent. As 100 : 146 :: 608l. 6s. 8d. : 888l. 3s. 4d. currency, the anſwer.

How much ſterling muſt be given for 888l. 3s. 4d. Jamaica currency, exchange at 46 per cent. As 146 : 100 :: 888l. 3s. 4d. : 608l. 6s. 8d. the anſwer.

II. With HOLLAND, FLANDERS, and GERMANY.

In theſe places accounts are kept, ſometimes in pounds, ſhillings, and pence, as in England; and ſometimes in guilders, ſtivers, and pennings. The money of Holland and Flanders is diſtinguiſhed by the name of Flemiſh, and they exchange by the pound ſterling. From 33s. 6d. to 36s. 6d. Flemiſh per pound ſterling, 1l. ſterling is exchanged for 33s. 4d. = 1l. Flemiſh at par. Agio from 3 to 6 per cent. for current.

The ſubdiviſions of the Flemiſh pound are, viz.

16 Pennings = 1 ſtiver, valued at 2d. Flemiſh
20 Stivers = 1 guilder or florin = 40d.
50 Stivers = 1 rix-dollar = $2\frac{1}{2}$ guilders = 100 pence Flem.
6 Florins = 1 pound Flemiſh = 20 ſhillings.

In Germany theſe are the denominations:

12 Pennings = 1 ſhilling lubs.
16 Lubiſh ſhillings = 1 mark
8 Pennings = 1 grote or penny = $\frac{1}{2}$ ſtiver
12 Grotes or pence = 6 ſtivers = 1 ſhilling
6 Lubiſh ſhillings = 1 ſkilling Flemiſh
20 Skillings = 6 guilders = $7\frac{1}{2}$ marks lubs = 1 pound.

Given the ſum due in one country coin, and that payable in another country coin, to find the rate of exchange, the method is, As the ſum due is to that paid, or payable, ſo is an unit of the firſt to the value of an unit of the ſecond.

A merchant at Amſterdam paid 384 guilders for 34l. 8s. received by his correſpondent at London; what is the value of a guilder?

As 384 guilders : 688s. :: 1 guild. : 1s. $9\frac{1}{2}$d. the anſwer.

Received in London 846l. 12s. 6d. for 1432l. 4s. $8\frac{3}{4}$d. Flemiſh due at Rotterdam; what is the rate of exchange?

As 846l.12s.6d. : 1432l.4s.$8\frac{3}{4}$d. :: 1l. : 1l.13s.$10\frac{56}{6773}$d the anſwer.

To reduce Flemiſh pounds, ſhillings, and pence, into guilders, ſtivers, &c. firſt bring them into pence Flemiſh, then divide by 40 (becauſe 40 pence make 1 guilder), and the quotient will be guilders; and, if any thing remain, divide it by 2 (becauſe 2 pence make 1 ſtiver), and the quotient will be ſtivers.

In 821l. 14s. 8d. Flemiſh, how many guilders?

Firſt 821l. 14s. 8d. = 197216d. and 197216 ÷ 40 = 4930 guilders, 16 pence, or 8 ſtivers, the anſwer.

In 4930 guilders, 8 ſtivers, how many Flemiſh pounds?

guild. ſtivers
x = 4930 8
$x \div 6$ = 821 0 0 = a and rem. 4 guilders 8 ſtivers
4 guilders = 0 13 4 = b = $\frac{2}{3}$l.
8 ſtivers = 0 1 4 = c = $\frac{1}{10}$ of 4 guilders
$a+b+c$ = 821l. 14s. 8d. the anſwer.

To reduce Sterling into Flemiſh Money.

Rule. As 1l. ſterling is to the given rate of exchange, ſo is the given ſterling to the Flemiſh ſought.

If I pay in London 846l. 12s. 6d. ſterling, what may I draw my bill for on Amſterdam, exchange at 1l. 13s. 10d. per pound ſterling?

Firſt 846l. 12s. 6d. = 6773 half-crowns, and 1l. = 8 half-crowns. As 8 : 1l. 13s. 6d. :: 6773 : 1432l. 4s. $1\frac{3}{4}$d. Flemiſh, the anſwer. Or thus, by Practice,

	l.	s.	d		l.	s.	d.
$x=$	846	12	6	at	1	0	0
$x\div 2=$	423	6	$3=a$	at	0	10	0
$a\div 3=$	141	2	$1=b$	at	0	3	4
$b\div 20=$	21	3	$3\frac{3}{4}=c$	at	0	0	6
$x+a+b+c=$	1432	4	$1\frac{3}{4}$	= anſwer at	1	13	10

To reduce Flemiſh Money into Sterling.

Rule. As the given rate of exchange is to 1l. ſterling, ſo is the given Flemiſh to the ſterling ſought.

In 1432l. 4s. $1\frac{3}{4}$d. Flemiſh, how much ſterling; exchange at 33s. 10d. per pound ſterling? As 33s. 10d. : 1l. :: 1432l. 4s. $1\frac{3}{4}$d. : 846l. 12s. 6d. the anſwer.

In 1624l. Flemiſh, exchange at 34s. 2d. how much ſterling? Firſt 34 × 6 + 1 = 205 ſtivers or twopences, and 1624 × 6 = 9744 guilders × 20 = 194880 ſtivers or twopences. As 205 : 1l. :: 194880 : 950l. 12s. 8d. the anſwer.

To reduce Current Money into Banco.

Rule. As 100 with the agio added to it is to 100, ſo is any given ſum current to its value in banco.

Change 8162 guilders, 12 ſtivers, current money, into bank money, the agio being at $3\frac{1}{4}$ per cent. Firſt $100+3\frac{1}{4}=103\frac{1}{4}$, then $103\frac{1}{4}\times 20=2065$ ſtivers, and $8162\times 20+12=163252$ ſtivers; therefore, As 2065 : 100 florins :: 163252 : 7905 guilders, 13 ſtivers, 5 pences + banco.

In 646 florins $17\frac{1}{2}$ ſtivers, current, agio at $4\frac{7}{8}$ per cent. how many pounds ſterling, exchange at 35s. 2d. per pound ſterling? Firſt $\frac{7}{8}$ of a florin or of 20 ſtivers = $17\frac{1}{2}$ ſtivers, then 104 florins $17\frac{1}{2}$ ſtivers = $2097\frac{1}{2}$ ſtivers = 4195 pence; and 646 florins $\times 20+17\frac{1}{2}=12937\frac{1}{2}$ ſtivers = 25875 pence,

Then as 4195 pence : 100 florins :: 25875 pence :
Or 839 : 100 :: 5175 contracted by 5
100
839)517500(616 florins
676
20
839)13520(16 ſtivers = 32d.
Rem. 96

Then $616\times 40+32=24672$ pence, and 35s. 2d. = 422 pence; therefore, as 422 : 1l. :: 24672 : 58l. 9s. 3d. $1\frac{185}{211}$ qrs. ſterling the anſwer.

To reduce Banco into Current Money.

Rule. As 100 is to 100 with the agio added, ſo is any given ſum banco to its value in current.

How much current money will 4954 guilders, 9 ſtivers, 8 pennings, banco, amount to, agio at $5\frac{1}{8}$ per cent. As 100 banco : $105\frac{1}{8}$ current :: 4954 banco guilders, 9 ſtivers, 8 pennings, : 5208 guilders, 7 ſtivers $13\frac{39}{100}$ current, the anſwer.

In 572l. 8s. ſterling, how many rix-dollars current, agio at $5\frac{1}{4}$ per cent. and exchange at 36s. 3d. Flemiſh per pound ſterling.

Firſt, 572l. 8s. = 11448s. and 36s. 3d. = 435d. 1l. = 20s. As 20s. : 435d. :: 11448s. : 248994d. Flemiſh, and $248994\div 100=2489$ rix-dollars 94d. = 2489 rix-dollars, 47 ſtivers banco.

Now $2489\times 50+47=124497$ ſtivers; then, As 100 : $105\frac{1}{4}$ :: 124497 : (or 400 : 421 :: 124497 :) $131033\frac{37}{400}$ ſtivers, and $131033\frac{37}{400}$ ſtivers $\div 50=2620$ rix-dollars $33\frac{37}{400}$ ſtivers current, the anſwer.

What will 4420 guilders banco amount to in Holland currency, the agio being at $3\frac{1}{8}$ per cent Anſwer, 4558 guilders, 2 ſtivers, 8 pennings.

At what rate of exchange will 748 guilders, 12 ſtivers, 3 pennings, Flemiſh, amount to 62l. 7s. $8\frac{1}{4}$d. ſterling? Anſwer, at 1s. 8d. ſterling per guilder.

III. With France.

Accounts, almoſt all over the French dominions, are kept in livres, ſols, and deniers, but they exchange upon the crown or ecu, whoſe par is 4s. 6d. ſterling.

12 Deniers = 1 ſol or ſou
20 Sols = 1 livre
3 Livres = 60 ſols = 1 crown or ecu.

At Dunkirk and ſome of the northern parts of France, they reckon by livres, patarts, and deniers; 15 deniers = 1 patart, and 16 patarts = 1 livre of 20 ſols, as in other places. In the French exchanges we muſt alſo diſtinguiſh between exchange-money and book-money. The exchange-money is called *d'or*; the book-money is called *tournois*. If the crowns, ſols, and deniers d'or (or exchange-money), be multiplied by 3 throughout, it gives livres, ſols, and deniers tournois); on the contrary, book-money divided by 3 throughout, gives exchange-money.

To change French Money into Sterling.

Rule. As 1 crown or 3 livres is to the given rate, ſo is the French ſum given to the ſterling ſought.

To change Sterling Money into French. As the rate of exchange is to 1 crown or 3 livres, ſo is the ſterling ſum given to the French required.

Suppoſe a merchant in France ſends over goods to England to the value of 6831 livres, 7 ſols, 6 deniers, exchange at 40d. ſterling for 1 French crown; how much Engliſh money will the ſame amount to?

Firſt $6831\times 20+7=136627$ ſols $\times 12+6=1639530$ deniers, and 1 crown = 720 deniers ($=60\times 12$). As 720 : 40d. :: 1639530 : 91085d. = 379l. 10s. 5d. ſterling, the anſwer. Or thus by Practice,

livres ſols deniers
6831 7 6 tournois $=x$
crowns ſols deniers
$x\div 3=$ 2277 2 6 d'or $=a$
$a\div 6=$ 379l. 10s. 5d. ſterling, at 40d. per crown.

How much French money will 551l. 12s. $9\frac{3}{4}$d. ſterling amount to, at $31\frac{5}{8}$d. ſterling for 1 French crown?

Firſt 551l. 12s. $9\frac{3}{4}$d. = 1059150 half-farthings, and $31\times 8+5=253$ half-farthings. As 253 : 3 liv. :: 1059150 : 12559 liv. 1 ſol, 9 + deniers, the anſwer.

What will 8473 livres, 17 ſols, 6 deniers, tournois, amount to, exchange at 34d. ſterling for 1 crown tournois?

Firſt 8473 livres, 17 ſols, 6d. $\div 3=2824$ crowns, 12s. 6 deniers d'or = 677910 deniers d'or, and $20\times 12=240$ deniers d'or in 1 crown. As 240 : 34d. ſterling :: 677910 : $96037\frac{1}{4}$d. = 400l. 3s $1\frac{1}{4}$d. ſterling, the anſwer.

IV. With Spain.

Accounts are kept in Spain ſeveral ways, but at moſt of the principal places they make their entries in piaſtres, rials, and marvidies; reckoning 34 marvidies = 1 rial; 8 rials = 1 piaſtre, peſo, or piece of eight, old money, by which they exchange, whoſe par is 4s. 6d. ſterling. The piaſtre is imaginary, but the rials and marvidies are real. London exchanges with Spain in peſos, or pieces of eight, old money, of 8 rials = 272 marvidies, and, in new money, of 10 rials = 340 marvidies.

London remits to Spain 555l. 5s. 5d. at $43\frac{3}{4}$d. ſterling per peſo; how much muſt be received there? As $43\frac{3}{4}$d. : 1 peſo :: 555l. 5s. 5d. : 3046 peſos, $15\frac{19}{35}$ marvidies, the anſwer.

Cadiz remits to London 7075 peſos, 3 rials, 10 marvidies, at $52\frac{1}{4}$d. per peſo; what will the remittance amount to in London. As 1 peſo : $52\frac{1}{4}$d. :: 7075 peſos, 3 rials, 10 marvidies : 1540l. 7s. $6\frac{1}{4}$d. the anſwer.

In 344l. 18s. $9\frac{1}{2}$d. ſterling, how many piaſtres, exchange at $44\frac{3}{8}$d. ſterling per piaſtre?

First

$$\left.\begin{array}{l} \text{Firſt } 344\text{l. } 18\text{s. } 9\tfrac{1}{2}\text{d.} = 662284 \\ \text{And } 44 \times 8 + 3 = 355 \end{array}\right\}\text{half-farthings.}$$

$$\left.\begin{array}{rl} \text{As } 355 : 1 \text{ piatre} :: & 662284 \\ & \underline{1} \\ 355) & \underline{662284}(1865 \text{ piaſtres} \\ \text{Rem.} & 209 \\ \text{Mult. by} & \underline{8} \\ 355) & \underline{1672}(4 \text{ rials} \\ \text{Rem.} & 252 \\ \text{Mult. by} & \underline{34} \\ 355) & \underline{8568}(24 \text{ marvidies} \\ \text{Rem.} & \underline{48} \end{array}\right\}\text{the anſwer.}$$

A merchant at Cadiz remits to London 2547 peſos, at 56d. ſterling each; how much ſterling is the ſum. Anſwer, 594l. 6s.

V. With PORTUGAL.

Books and accounts are kept in general throughout this kingdom in milreas and reas, reckoning 1000 reas to a milrea, as its name imports; and they exchange by the milrea, whoſe par is about 6s. $8\frac{1}{2}$d. or 6s. 9d. ſterling.

A merchant at Oporto ſends over to England a cargo of wine amounting to 1463 milreas and 424 reas, exchange at 5s. $3\frac{5}{8}$d. per milrea; how much does the ſame amount to in ſterling money?

As 1000 : $63\frac{5}{8}$d. :: 1463424. Or 8000 : 509 :: 1463424 : $93110\frac{1}{4}$d. = 387l. 19s. $2\frac{1}{4}$d. + the anſwer.

To how many milreas will 199l. 15s. amount, exchange at 5s. 8d. per milrea? As 5s. 8d. : 1 milrea :: 199l. 15s. : 705 milreas, the anſwer.

In 648 milreas, 348 reas, exchange at 5s. $6\frac{7}{8}$d. per milrea, how many pounds ſterling? Anſwer, 180l. 13s. $2\frac{1}{4}$d. +

In 425l. 10s. 9d. ſterling, how many milreas, exchange at 5s. $7\frac{1}{2}$d. per milrea? Anſwer, 1513 milreas, 22 reas. +

VI. With ITALY.

At Leghorn and Genoa they keep their accounts in livres, ſols, and deniers, as in France; but they exchange by the piaſtre or dollar as in Spain, which at Genoa is accounted 5 livres, and at Leghorn 6. Alſo at Venice accounts are kept by ſome in the ſame manner, and by others in ducats and groſs. Alſo at Florence by ducatoons. A ducatoon is equal to 4s. 4d. ſterling at par. And 6 ſoldi = 1 groſs, and 24 groſs = 1 ducat.

Suppoſe there be owing by a correſpondent at Genoa 3675 livres, 15 ſols, 10 deniers, how much ſterling does it amount to, exchange at 50d. ſterling per piaſtre, dollar, or piece of eight?

Firſt 3675 liv. 15 ſols, 10 deniers, ÷ 5 = 735 dollars, 3 ſols, 2 den. Then, as 1 dol. : 50d. :: 735 dol. 3 ſols, 2 den. : 153l. 3s. $1\frac{11}{12}$d. ſterling, the anſwer.

A merchant remitted 153l. 3s. $1\frac{11}{12}$d. ſterling to Genoa, how many dollars muſt he receive there, the exchange being at 50d. ſterling per dollar?

Firſt, 153l. 3s. $1\frac{11}{12}$d. = 441095 twelfths of pence; then, as 600 : 1 :: 441095 : 725 dol. 3 ſols, 2 den. the anſwer.

Genoa draws upon London for 80504 livres, 17 ſols, 1 den. how much ſterling will ſatisfy the draught, exchange at $53\frac{3}{8}$d. ſterling per dollar. Anſwer, 3580l. 15s. $9\frac{1}{4}$d. +

At Venice ſome keep their accounts in ducats of the bank, and others in ducats current, but the republic keep them in ducats and groſs. The ducat of the bank, which is imaginary, is worth 24 groſs; and 100 ducats banco are worth 120 ducats current; ſo that 5 ducats banco are equal to 6 ducats current; and the agio conſtantly 20 per cent.

To reduce Bank Money into Current.

RULE. Divide the given ſum by 5, the quotient is the agio, which, added to the bank-money, gives the current.

Reduce 13650 ducats banco into current. Thus 13650 ÷ 5 = 2730 agio, and 13605 + 2730 = 16380 ducats current.

To reduce Current-money into Bank-money.

RULE. Divide the current-money by 6, the quotient will be the agio, which ſubtracted from the current-money will leave the bank-money.

Reduce 16380 ducats current into ducats banco. Thus 16380 ÷ 6 = 2730 agio, and 16380 — 2730 = 13650 ducats banco.

London remits to Venice 764l. the exchange at 52d. ſterling per ducat banco; how many ducats banco will the remittance come to? Firſt, 764l. = 183360d. As 52d : 1 ducat :: 183360d. : 3526 ducats, $3\frac{9}{13}$ groſs, banco, and 4231 ducats, $9\frac{3}{13}$ groſs, current.

Suppoſe a correſpondent at Venice owes 3526 ducats, $3\frac{9}{13}$ groſs, banco, the exchange at 52d. ſterling per ducat; what ſterling-money will this remittance produce at London? Anſwer, 764l. ſterling.

VII. With RUSSIA.

In the trading parts of this empire, accounts are kept in rubles, grives, and moſcoques, reckoned by 10 and 20; or in rubles and coppeaks; 100 coppeaks = 1 ruble. The courſe of exchange from Ruſſia to England is from 50 to 56d. per ruble. At par 4s. 6d. ſterling.

How much will a parcel of hemp to the value of 3475 rubles, and 70 coppeaks, amount to in England, exchange at $52\frac{5}{8}$d. ſterling, per ruble?

As 1 rub. : $52\frac{5}{8}$d. :: 3475 rub. 70 cop.

Or 8 : 421 :: 3475 rub. 70 cop.

Or 800 : 421 :: 307570 : $182908\frac{57}{80}$d. = 762l. 2s. $4\frac{57}{80}$d. the anſwer.

How much will a remittance of 762l. 2s. $4\frac{57}{80}$d. ſterling amount to in Ruſſia, exchange at $52\frac{5}{8}$d. ſterling per ruble?

Firſt 762l. 2s. $4\frac{57}{80}$d. = 14632697 eightieths of pence, and 52 × 8 + 5 × 10 = 4210 eightieths of pence. Then,

$$\begin{array}{rl} \text{As } 4210 : 1 \text{ rub.} :: & 14632697 \\ & \underline{1} \end{array}$$

$$\left.\begin{array}{rl} 4210) & \underline{14632697}(3475 \text{ rubles} \\ \text{Rem.} & 2947 \\ \text{Mult. by} & \underline{100} \\ 4120) & 294700(70 \text{ coppeaks} \end{array}\right\}\text{anſwer.}$$

$$\begin{array}{r} \underline{294700} \\ *\ * \end{array}$$

VIII. With DENMARK and NORWAY.

In theſe countries accounts are kept in marks and ſchillings, reckoning 76 ſchillings to a mark; or in rix-dollars, marks, and ſchillings, reckoned by 6 and 16. They exchange by the rix-dollar = 6 marks, the par of it is 4s. 6d. and England gives pence and parts for it, from 45 to 56 in the courſe of exchange.

How much ſterling will 6843 rix-dollars, 5 marks, 12 ſchillings, amount to, exchange at 55d. per rix-dollar?

Firſt, 6843 × 6 + 5 = 41063 marks, × 16 + 12 = 657020 ſchillings, and 16 × 6 = 96s. = 1 rix-dollar. As 96 : 55d. :: 657020 : 1568l. 8s. $1\frac{1}{2}$d. + the anſwer.

If 188l. 2s. 6d. ſterling be remitted to Norway; how much will it amount to, exchange at 48d. per rix-dollar?

$$\left.\begin{array}{l} \text{Firſt } 188\text{l. } 2\text{s. } 6\text{d.} = 7525 \\ \text{And } 48 \div 6 = 8 \end{array}\right\}\text{teſters.}$$

$$\begin{array}{rl} \text{As } 8 : 1 \text{ rix-dollar} :: & 7525 \\ & \underline{1} \end{array}$$

$$\left.\begin{array}{rl} 8) & \underline{7525}(940 \text{ rix-dollars} \\ \text{Rem.} & 5 \\ \text{Mult. by} & \underline{6} \\ 8) & \underline{30}(3 \text{ marks} \\ \text{Rem.} & 6 \\ \text{Mult. by} & \underline{16} \\ 8) & \underline{96}(12 \text{ ſchillings} \end{array}\right\}\text{anſwer.}$$

In 940 rix-dollars, 3 marks, 12 ſchillings, how much ſterling, exchange at 48d. per rix-dollar? Anſwer, 188l. 2s. 6d.

IX.

IX. With RIGA.

Accounts are kept here in rix-dollars, grochens, &c.

$$\left.\begin{array}{lrr} \text{1 Mark} = \text{6 groſs or grochens} = & \text{0s.} & 3\frac{3}{5} \\ \text{1 Guilder} = \text{5 marks} = \text{30 groſs} = & 1 & 6 \\ \text{1 Rix-dollar} = \text{15 marks} = \text{90 groſs} = & 4 & 6 \end{array}\right\}\text{ſterling at par.}$$

Exchanges are negociated by the rix-dollar with Holland and Hamburgh, in bank-money, the exchange is rated by an uncertain number of grochen for a rix-dollar banco, and the courſe runs to 100 or more per rix-dollar banco. If any direct exchange be made to England, it is rated by an uncertain number of grochen, for 1l. ſterling.

Bought goods at Riga to the value of 2814 rix-dollars, 80 grochen; how much ſterling does the ſame amount to, exchange at $55\frac{1}{8}$d. ſterling per rix-dollar?

Firſt, $2814 \times 90 + 80 = 253340$ groſs, and 1 rix-dollar = 90 groſs, and $55 \times 8 + 1 = 441$ half-farthings. As 90 : 441 :: 253340; or, as 1 : 49 :: 25334 : 1241366 half-farthings = 646l. 10s. $10\frac{3}{4}$d. the anſwer.

Remitted 646l. 10s. $10\frac{3}{4}$d. ſterling to Riga, how many rix-dollars, &c. does the ſame amount to there, exchange at $55\frac{1}{8}$d. per rix-dollar?

Firſt 646l. 10s. $10\frac{3}{4}$d. = 1241366 half-farthings, and $55\frac{1}{8}$d. = 441 half-farthings.

As 441 : 1 rix-dollar :: 1241366 :

$$\left.\begin{array}{rrl} & \overset{1}{} & \\ & 441)\overline{1241366}(& 2814 \text{ rix-dol.} \\ \text{Rem.} & 392 & \\ & 90 & \\ & 441)\overline{35280}(& 80 \text{ grochen} \end{array}\right\}\text{anſwer}$$

X. With TURKEY, SMYRNA, SCANDEROON, ALEPPO, ALEXANDRETTO, &c.

Books and accounts are kept at theſe places in dollars and aſpers, 80 aſpers = 1 dollar; or in ſultanes and aſpers, 120 aſpers = 1 ſultane. Exchanges are negociated by the aſper or cara grouch, the par of the cara grouch is 4s. 6d. ſterling, and it is given in exchange for a Spaniſh Seville dollar, or a rix-dollar of Germany, Amſterdam, &c. allowing a premium on the negociation as the courſe of exchange rules. But in general, exchanges are rated by an uncertain number of aſpers for the dollar peſo, &c.

Bought ſilk at Smyrna to the value of 7846 cara grouch, $42\frac{1}{2}$ aſpers; how many Spaniſh dollars, &c. does the ſame amount to, exchange at 125 aſpers per dollar?

Firſt, $7846 \times 120 + 42\frac{1}{2} = 941562\frac{1}{2}$ aſpers.

Then, as 125 : 1 dol. :: $941562\frac{1}{2}$: $7532\frac{1}{2}$ dol. the anſwer.

An Engliſh merchant bought $7532\frac{1}{2}$ Spaniſh dollars, and remitted them to Smyrna; how many cara grouch does this remittance amount to?

As 1 dol. : 125 aſpers :: $7532\frac{1}{2}$ dol. : $941562\frac{1}{2}$ aſpers — And $941562\frac{1}{2} \div 120 = 7846$ dol. $42\frac{1}{2}$ aſpers, the anſwer.

ARBITRATION of EXCHANGE.

By Arbitration, or the Compariſon, of Exchange, is to be underſtood a method of remitting to, or drawing upon, foreign places in ſuch a manner as ſhall be moſt advantageous to the merchant; and this is of two kinds, Simple and Compound.

SIMPLE ARBITRATION is when the exchanges among three places only are concerned, and the arbitrated price is ſuch a rate of exchange between two of the places as ſhall be in proportion to the rate aſſigned between each of them and a third. All queſtions in this rule may be performed, with a little conſideration, by one or more operations in the Rule of Three.

If the exchange between London and Amſterdam be 33s. 9d. per pound ſterling, and the exchange between London and Paris be 32d. per crown, or ecu; what is the par of arbitration between Amſterdam and Paris?

Firſt 33s. 9d. = 405d. and 1l. ſterling = 240d. Then, as 240 : 405 :: 32 : 54d. Flemiſh, per ecu.

Amſterdam changes on London, at 34s. 4d. per pound ſterling, and, on Liſbon, at 52d. Flemiſh for 400 reas; how ought the exchange to go between London and Liſbon?

Firſt, as 400 reas : 52d. :: 1000 reas : 130d. and 34s. 4d. = 412d. 1l. = 240d. Then, as 412 : 240 :: 130 : $75\frac{75}{103}$d. ſterling, per milrea

If London can remit to, or draw upon, Hamburgh at 33s. 4d. per pound ſterling, and to Holland at 34s. 2d. what muſt be the priee of exchange between London and Amſterdam, to be on a par with the exchange from London to thoſe places?

Firſt, 1 dollar of Hamburgh = 2 marks = 32 ſchillings lubs = 64d. Flemiſh. Alſo 33s. 4d. = 400d. Flemiſh, and 34s. 2d. = 410d. Flemiſh. As 400 : 410 :: 64 : $65\frac{3}{5}$ grotes or pence Flemiſh, the anſwer.

When Amſterdam can remit to London at 34s. 2d. per pound ſterling, and Hamburgh at $65\frac{3}{5}$d. per dollar, what muſt the rate of exchange be between London and Hamburgh, to be upon equality with the other two?

Firſt $65 \times 5 + 3 = 328$ and $410 \times 5 = 2050$ fifths of pence. As 328 : 64d. Flem. :: 2050 : 400d. Flem. = 33s. 4d. Flemiſh, the anſwer.

If Hamburgh draws on London at 33s. 4d. Flemiſh per pound ſterling, and on Amſterdam at $65\frac{3}{5}$d. per dollar, what will be the arbitrated price of exchange between London and Amſterdam?

Firſt $65 \times 5 + 3 = 328$ fifths of pence, and 33s. 4d. = 400d. Flemiſh. Then, as 64 : 328 :: 400 : 2050 fifths; then $2050 \div 5 = 410$d. = 34s. 2d. the anſwer.

Suppoſe London remits to Paris at $34\frac{7}{8}$d. per crown, and draws for the value upon Amſterdam at 35s. 10d. per pound, but when the order arrives bills on Paris are at $35\frac{3}{8}$d. per crown; what rate muſt the exchange to Amſterdam be, to make up the advance that would attend the remittance aforeſaid?

Firſt, 35s. 10d. = 430d. alſo $34\frac{7}{8}$d. = 279, and $35\frac{3}{8}$d. = 283 half-farthings. Recip. as 279 : 430 :: 283 : $423\frac{261}{283}$d. = 35s. $3\frac{3}{4}$d. + the anſwer.

If London remits to Genoa at $53\frac{5}{8}$d. per pezzo, and draws upon Spain at 43d. per piaſtre, but before the order be fulfilled bills on Genoa are at $55\frac{5}{8}$d. per pezzo; at what rate muſt London draw upon Spain to make the remittance equal to the draught?

Firſt $53 \times 8 + 5 = 429$, and $55 \times 8 + 5 = 445$ half-farthings. Then, as 429 : 445 :: 43 : $44\frac{252}{429}$d. = 3s. $8\frac{1}{2}$d. + the anſwer.

If England remits 2200 ducats to Venice at 52d. per ducat, and draws for the value upon Spain at 44d. per piaſtre, and when the order comes to hand bills on Venice are at $58\frac{1}{2}$d. at what price muſt England draw upon Spain, to make the remittance equal to the draught?

As 52 : $58\frac{1}{2}$ :: 44 : $49\frac{1}{2}$d. the anſwer.

The proof of this appears from what follows: Firſt, if 1 duc. : 52d. :: 2200 duc : 114400d. = 476l. 13s. 4d. the amount of 2200 ducats according to the order. Next, if 44d. : 1 piaſtre :: 114400d. : 2600 piaſtres, the anſwer.

Then by the courſe, 2200 ducats at $58\frac{1}{2}$d.

If 1 duc. : $58\frac{1}{2}$d. :: 2200 duc. : 128700d. = 536l. 5s.

If $49\frac{1}{2}$d. : 1p. :: 128700d. : 2600 piaſtres, as above.

Thus it appears that remitting to Venice at $58\frac{1}{2}$d. per ducat, and drawing upon Spain at $49\frac{1}{2}$d. per piaſtre, comes to the ſame number of piaſtres, as remitting at 52d. and drawing at 44d. according to the order.

If England owes a ſum of money for corn at Dantzic, and if Dantzic can draw on England at $16\frac{4}{5}$ florins per pound ſterling, and on Holland at 280 grochen per pound Flemiſh banco, the queſtion is, whether it will be more to the advantage of England to make payment in Holland, or allow Dantzic to draw for the money directly on England, ſuppoſing the exchange to Holland at that time to be 35s. $9\frac{1}{2}$d. per pound ſterling?

Firſt $16\frac{4}{5}$ florins $\times 30 = 504$ groſs. Then, as 280 : 20s. :: 504 : 36s. Flemiſh for 1l. ſterling; but, as the courſe from Holland to Dantzic is only 35s. $9\frac{1}{2}$d. it would be more advantageous to make payment directly to Dantzic, by about one-half per cent. ſterling.

If A at London owes B at Peterſburgh 5000 rubles, and

B adviſe him that he can draw for them directly on England at 50d. ſterling per ruble, or on Holland at 45 ſtivers, or 90d. banco, per ruble; which method will be the moſt advantageous to A, ſuppoſing the exchange between Holland and England at that time to be 36s. 4d. per pound ſterling?

As 50d. ſterling : 90d. Flemiſh :: 240d. ſterling : 432d. =36s. Flemiſh, the arbitrated price between Holland and England, according to the other exchange from Peterſburgh. Then, as 1 ruble : 50d. :: 5000 rubles : 250000d. =1041l. 13s. 4d. ſterling, the amount if drawn for directly on England.

As 1 ruble : 90d. :: 5000 rubles : 450000d. = 1875l. Flemiſh. As 36⅓s. Flemiſh : 1875l. Flemiſh :: 20s. ſterling : 1032l. 2s. 2½d. nearly. Laſtly, 1041l. 13s. 4d.—1032l. 2s. 2½d. = 9l. 11s. 1½d. ſterling, ſaved by this negociation coming through Holland.

If Amſterdam draws on Hamburgh to remit to Cadiz at 120d. Flemiſh per ducat of 375 marvidies, and to draw for the value on London at 33s. 4d. per pound ſterling, what price muſt the exchange between Amſterdam and Cadiz be, ſuppoſing the courſe between London and Amſterdam at 34s. 6d. per pound ſterling?

As 33s. 4d. : 120d. :: 34s. 6d. : 124⅕d. Flemiſh per ducat, the anſwer.

COMPOUND ARBITRATION, has reſpect to the exchanges of four or more different places, and its utility conſiſts in diſcovering the beſt and moſt advantageous method of negociating exchanges with different countries or cities. Or when ſeveral different ſorts of things are compared together, as to their value, to find how many of one ſort are equal to a given number of another ſort.

Rule. Place the terms in two perpendicular columns, the antecedents to the left, and the conſequents to the right, with the ſign = between; ſo that there may not be found, in either column, two terms of one kind. Then the numbers in the leſs column muſt be multiplied together for a diviſor, and the number in the greater column, where the odd term ſtands, for a dividend, the quotient thence ariſing will be the anſwer. To abridge the work, throw out any common numbers that are found in both columns, by the ſecond rule in Compound Proportion.

London having to remit 500l. to Spain, how many piaſtres of 272 marvidies will it amount to there, excluſive of charges, ſuppoſing the ſaid ſum be remitted to Holland at 34s. per pound; from thence to France at 56d. Flemiſh per crown; from France to Venice at 160 ecus per 84 ducats banco; and from Venice to Spain at 320 marvidies per ducat banco?

Thus, if 1l. ſterling = 34s. or 408d. Flemiſh
56d. Flemiſh = 1 ecu of France
160 Ecus of France = 84 ducats Venice
1 Ducat Venice = 320 marvidies Spain
272 Marvidies = 1 piaſtre
How many piaſtres = 500l. ſterling?

$$\frac{408\times1\times84\times320\times1\times500}{1\times56\times160\times1\times272}=\frac{51\times1\times84\times2\times1\times125}{1\times7\times1\times1\times68}=$$
$$\frac{51\times12\times1\times125}{1\times34}=3\times6\times125=2250 \text{ piaſtres, the anſwer.}$$

A merchant of Amſterdam, owing 1200l. Flemiſh to London, remits the ſame firſt to France, at 54d. Flemiſh per crown; from thence he orders it to be remitted to Venice at 100 crowns for 63 ducats, from thence to Hamburgh at 99d. Flemiſh per ducat, from thence to Liſbon at 48d. per cruſade of 400 reas, and laſtly from Liſbon to England at 5s. 5d. per milrea; now the queſtion is, how much will the ſame amount to in ſterling money, and how much will be ſaved, ſuppoſing the exchange from Holland directly to England at 36s. 4½d. per l. ſterling at that time?

If 54d. Flemiſh = 1 crown of France
100 Crowns of France = 63 ducats of Venice
1 Ducat of Venice = 99d. Hamburgh
48d. of Hamburgh = 400 reas of Portugal
1000 Reas of Portugal = 65d. ſterling
How many pence ſterling = 1200l. Flemiſh = 288000d. Flemiſh?

$$\frac{1\times63\times99\times400\times65\times1200}{54\times100\times1\times48\times1000}=\frac{7\times99\times4\times65\times12}{6\times1\times48\times10}=$$
$$\frac{7\times33\times65}{2\times10}=750\text{l. 15s. now 36s. }4\tfrac{1}{2}\text{d.}=291 \text{ and } 1200=$$

192000 three-halfpences.

As 291 : 1l. :: 192000 : 959l. 15s. 10d. $2\frac{6}{97}$ qrs. amount in ſterling money, if the remittance had been made directly to England. Laſtly, 750l. 15s. — 659l. 15s. 10½d. = 90l. 19s. 1½d. gained by this negociation.

If A of Hamburgh orders B his correſpondent in England to buy 441 ells of cloth, and adviſes him he muſt have five yards for 4l. ſterling, and, though he does not know exactly the proportion between their ell and the yard of England, he adviſes him that 1⅙ of their ells make one ell in Holland, and that ſeven ells in Holland make four of France, and laſtly that ſeven ells of France make five yards of England; now the queſtion is, how much cloth muſt B ſend, and how much will it come to? Anſwer, 150 yards, and comes to 120l.

Of DUODECIMALS.

Duodecimals are ſo called becauſe every ſuperior place, or denomination, is twelve times its next inferior in that ſcale of notation; that is, the foot is divided into twelve equal parts, called primes (or inches), each being one inch broad and twelve inches long; the prime into twelve equal parts, called ſeconds; the ſecond into twelve equal parts, called thirds; and ſo on, each inferior denomination being twelve inches long, and juſt one-twelfth part in breadth of the next ſuperior denomination; therefore any lower denomination, being divided by twelve, will reduce it to the next higher.

Rule for multiplying duodecimally. Under the multiplicand write the correſponding denominations of the multiplier; multiply each term of the multiplicand by each term of the multiplier, and obſerve, that feet into feet give feet; feet into primes, give primes; feet into ſeconds, give ſeconds; primes into primes, give ſeconds; primes into ſeconds, give thirds; primes by thirds, give fourths, &c. and in general let feet be marked with $(^{0})$, primes with $(^{\mathrm{I}})$, ſeconds with $(^{\mathrm{II}})$, thirds with $(^{\mathrm{III}})$, fourths with $(^{\mathrm{IV}})$, &c. which are called indices of the factors; and the name of the product of any two factors will be expreſſed by the ſum of their two indices. In multiplying feet, inches, and parts, the operation may often be abbreviated, by taking aliquot parts as in Practice.

Ex. What is the product of 24 feet, 7 inches, 5 ſeconds, into 8 feet, 6 inches, 9 ſeconds?

$$\begin{array}{llrrrrrl}
 & & {}^{0} & {}^{\mathrm{I}} & {}^{\mathrm{II}} & & & \\
\text{Multiply} & & 24 & 7 & 5 & & & =a \\
\text{By} & & 8 & 6 & 9 & & & =b \\
\cline{3-8}
 & & & & & {}^{\mathrm{III}} & {}^{\mathrm{IV}} & \\
a\times\overset{0}{8} & = & 196 & 11 & 4 & 0 & 0 & =c \\
a\times\overset{\mathrm{I}}{6} & = & 12 & 3 & 8 & 6 & 0 & =d \\
a\times\overset{\mathrm{II}}{9} & = & 1 & 6 & 5 & 6 & 9 & =e \\
\hline
a+b+c & = & 210 & 9 & 6 & 0 & 9 & =\text{the product.}
\end{array}$$

Or thus, by the rule of Practice:

$$\begin{array}{llrrrrrllrrr}
 & & {}^{0} & {}^{\mathrm{I}} & {}^{\mathrm{II}} & & & & & & & \\
 & & 24 & 7 & 5 & & & =a & & & & \\
 & & 8 & 6 & 9 & & & =b & & & & \\
\cline{3-8}
 & & & & & {}^{\mathrm{III}} & {}^{\mathrm{IV}} & & & {}^{0} & {}^{\mathrm{I}} & {}^{\mathrm{II}} \\
a\times8 & = & 196 & 11 & 4 & 0 & 0 & =c. & \text{for} & 8 & 0 & 0 \\
a\div2 & = & 12 & 3 & 8 & 6 & 0 & =d & & 0 & 6 & 0 \\
d\div8 & = & 1 & 6 & 5 & 6 & 9 & =e & & 0 & 0 & 9 \\
\hline
a+b+c & = & 210 & 9 & 6 & 0 & 9 & \text{anſwer} & \text{for} & 8 & 6 & 9
\end{array}$$

Ex. 2. How many ſquare feet in a pavement whoſe length is 17 feet 10 inches, and breadth 15 feet 7 inches?

Thus $\overset{0}{17}\ \overset{\mathrm{I}}{10}\times\overset{0}{15}\ \overset{\mathrm{I}}{7}=\overset{0}{277}\ \overset{\mathrm{I}}{10}\ \overset{\mathrm{II}}{10}$ the anſwer.

ALLIGATION.

When corn, wine, ſpices, metals, &c. are to be mixed together, the method of proportioning ſuch mixture is called the rule of Alligation; and is of two kinds, *medial* and *alternate.*

Alligation Medial is the method of finding the rate or quality of the compoſition, from having given the rates and quantities of the ſimples or ingredients. The rule of operation is this: Multiply each quantity by its rate, and add all the products together; then divide the ſum of the products by the ſum of the quantities, or whole compound, and the quotient will be the rate ſought. For example, Suppoſe it were required to mix together 6 gallons of wine, worth 5s. a gallon; 8 gallons, worth 6s. the gallon; and 4 gallons, worth 8s. the gallon; and to find the worth or value, per gallon, of the whole mixture.

	Gall.		s.		Products.
Here	6	mult. by	5	gives	30
	8	by	6		48
	4	by	8		32
Whole comp.	18				110 ſum of products

Then 18)110($6\frac{2}{18}$ or $6\frac{1}{9}$s. is the rate ſought.
108
2

Alligation Alternate, is the method of finding the quantities of ingredients or ſimples, neceſſary to form a compound of a given rate. The rule of operation is this: 1ſt, Place the given rates of the ſimples in a column, under each other; noting which rates are leſs, and which are greater, than the propoſed compound. 2d, Connect or link, with a crooked line, each rate which is leſs than the propoſed compound rate, with one or any number of thoſe which are greater than the ſame; and every greater rate with one or any number of the leſs ones. 3d, Take the difference between the given compound rate and that of each ſimple rate, and ſet this difference oppoſite every rate with which that one is linked. 4th, Then, if only one difference ſtand oppoſite any rate, it will be the quantity belonging to that rate; but, when there are ſeveral differences to any one, take their ſum for its quantity. For example, Suppoſe it were required to mix together gold of various degrees of fineneſs, viz. of 19, of 21, and of 23, caracts fine, ſo that the mixture ſhall be of 20 caracts fine. Hence,

	Rates		Diffs.	Sums of Differences
Comp. rate 20	21	-	1	1 of 21 caracts fine
	19	-	1+3	4 of 19 caracts fine
	23	-	1	1 of 23 caracts fine

That is, there muſt be an equal quantity of 21 and 23 caracts fine, and 4 times as much of 19 caracts fine. Various limitations, both of the compound and the ingredients, may be conceived; and, in ſuch caſes, the differences are to be altered proportionally. Queſtions of this ſort are however commonly beſt and eaſieſt reſolved by common Algebra, of which they form a ſpecies of indeterminate problems, as they admit of many or an indefinite number of anſwers.

VULGAR FRACTIONS.

A fraction is ſome part or parts of an unit, or any other number or quantity whatever, and conſiſts of two numbers or terms, called the *numerator*, and the *denominator*, placed one above another with a line of ſeparation between them, as $\left\{\begin{array}{l}3 \text{ numerator} \\ 4 \text{ denominator}\end{array}\right\}$ which is called three-fourths, the numerator being firſt named, then the denominator. The denominator ſhews how many parts the integer is divided into; and the numerator expreſſes how many of thoſe parts the fraction conſiſts of. Therefore with a given denominator, if you increaſe the numerator, you increaſe the value of the fraction; but, with a given numerator, if you increaſe the denominator, you diminiſh its value; for the value of every fraction is directly as its numerator, and inverſely as its denominator.

A *proper* fraction is that whoſe numerator is leſs than its denominator, as $\frac{3}{4}$, or $\frac{4}{5}$, or $\frac{1}{4}$, or $\frac{3}{8}$, &c.

An *improper* fraction, is that whoſe denominator is leſs than or equal to the numerator, as $\frac{4}{3}$, or $\frac{7}{7}$, &c.

A *ſingle* fraction, is that which conſiſts but of one numerator and one denominator, as $\frac{4}{5}$, or $\frac{7}{6}$, &c.

A *compound* fraction, or fraction of a fraction, is that whoſe parts are vulgar fractions connected by the word of, as $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{4}{5}$ of $7\frac{1}{3}$.

A *complex* fraction is that whoſe numerator or denominator, or both, is a vulgar fraction, or mixed number, as $\frac{5\frac{1}{3}}{8}$ or $\frac{5}{8\frac{1}{4}}$ or $\frac{7\frac{1}{2}}{9\frac{1}{3}}$, &c.

A *mixed number* is a whole number with a fraction annexed, as $9\frac{3}{5}$, $17\frac{2}{3}$, &c.

A fraction is ſaid to be *inverted*, when the numerator is ſet in the place of the denominator, and the denominator in the place of the numerator, as $\frac{5}{6}$ inverted becomes $\frac{6}{5}$.

Scholium. In any fraction, as $\frac{4}{5}$, the numerator may be conſidered as a dividend, the denominator as a diviſor, and $\frac{4}{5}$ repreſents the quote. Hence fractions whoſe numerator are leſs than, equal to, or greater, than their denominator, are reſpectively leſs than, equal to, or greater than, unity or 1.

Lemma I. To multiply a fraction by a whole number is to multiply the numerator, but to divide a fraction by a whole number is to multiply the denominator, by the ſaid number, as for example:

Let $\frac{4}{7}$ both be multiplied and divided by 9.

$$\text{Thus}\left\{\begin{array}{l}\dfrac{4\times 9}{7}=\dfrac{36}{7}\text{ the product.}\\[2ex] \dfrac{4}{7\times 9}=\dfrac{4}{63}\text{ the quotient.}\end{array}\right.$$

Lemma II. To multiply one fraction by another, is to multiply the numerators together for the numerator, and the denominators together for the denominator of the product; but to divide one fraction by another, is to multiply the dividend into the diviſor inverted; as for example,

Let $\frac{5}{6}$ be multiplied and divided by $\frac{7}{9}$.

Thus $\dfrac{5\times 7}{6\times 9}=\dfrac{35}{54}$ the product, and $\dfrac{5\times 9}{6\times 7}=\dfrac{45}{42}$ the quotient.

REDUCTION of VULGAR FRACTIONS.

By Reduction, fractions are converted out of one form, or denomination, into another, for the greater eaſe in working, but ſtill always retaining the ſame value.

Problem I. *To reduce a fraction into another of equal value.* Multiply or divide both terms of the fraction by one and the ſame number, and you will have a new fraction equivalent to that given.

Ex. Reduce $\frac{9}{24}$ to two other fractions, each of the ſame value.

$$\text{Thus}\left\{\begin{array}{l}\dfrac{9\times 4}{24\times 4}=\dfrac{36}{96}\\[2ex] \dfrac{9\div 3}{24\div 3}=\dfrac{3}{8}\end{array}\right\}$$

The new fractions each of the ſame value with $\frac{9}{24}$, that is, $\frac{9}{24}=\frac{36}{96}=\frac{3}{8}$. This ſhould be well remembered.

Problem II. *To reduce a whole number to the form of a fraction.* Place 1 under it for a denominator

Ex. Reduce 3, 6, 7, 8, and 11, each to the form of a fraction. Thus $\frac{3}{1}$, $\frac{6}{1}$, $\frac{7}{1}$, $\frac{8}{1}$, $\frac{11}{1}$.

Problem III. *To reduce a whole number to a fraction, with a given denominator.* Multiply the whole number by the given denominator, and under the product write the ſame denominator.

Ex. Reduce 3, 4, and 5, each to a fraction whoſe denominator may be 9.

Thus $\dfrac{3\times 9}{9}=\dfrac{27}{9}$; $\dfrac{4\times 9}{9}=\dfrac{36}{9}$; and $\dfrac{5\times 9}{9}=\dfrac{45}{9}$; the fractions required.

Problem IV. *To reduce a mixed number to an improper fraction.*

fraction. Multiply the whole number by the denominator of the fraction, and to the product add the numerator, and the ſum is a new numerator, under which write the given denominator.

Ex. Reduce $2\frac{1}{2}$, $4\frac{2}{3}$, $5\frac{3}{4}$, and $7\frac{3}{4}$, each to an improper fraction.

Thus $\frac{2\times2+1}{2}=\frac{5}{2}$; $\frac{4\times3+2}{3}=\frac{14}{3}$; $\frac{5\times4+3}{4}=\frac{23}{4}$; and $\frac{7\times4+3}{4}=\frac{31}{4}$.

PROBLEM V. *To reduce an improper fraction to a whole or mixed number.* Divide the numerator by the denominator, the quotient is the whole or mixed number.

Ex. Reduce $\frac{24}{6}$, $\frac{5}{2}$, $\frac{14}{3}$, $\frac{23}{4}$, and $\frac{39}{5}$, each to a whole or mixed number.

Thus $24\div6=4$; $5\div2=2\frac{1}{2}$; $14\div3=4\frac{2}{3}$; $23\div4=5\frac{3}{4}$, and $39\div5=7\frac{4}{5}$; the numbers required.

PROBLEM VI. *To reduce a fraction to its loweſt terms.* Divide both terms of the fraction by the greateſt common meaſure or diviſor, and the quotients will be the terms of the fraction required. The greateſt common meaſure is found thus; Divide the greater term by the leſs, and this diviſor by the remainder; and ſo on, dividing always the laſt diviſor by the laſt remainder, till nothing remains; then is the laſt diviſor the greateſt common meaſure required. But, if the laſt diviſor be 1, the fraction is already in its loweſt terms.

Ex. Reduce $\frac{168}{240}$ and $\frac{144}{560}$ to their loweſt terms.

```
             168)240(1                         144)560(3
                 168                               432
                 ---                               ---
                  72)168(2                         128)144(1
                     144                               128
                     ---                               ---
Common mea.           24)72(3   Common meaſure          16)128(8
                         72                                128
                         --                                ---
                          *                                 *
```

Then $\frac{168}{240}\div24=\frac{7}{10}$, and $\frac{144}{560}\div16=\frac{9}{35}$ in their loweſt terms.

Any fraction may be reduced by a continual diviſion of both terms by 2, if they end with an even number or a cypher.

Ex. Reduce $\frac{176}{192}$ to its loweſt terms.

Thus $\frac{176}{192}\div2=\frac{88}{96}\div2=\frac{44}{48}\div2=\frac{22}{24}\div2=\frac{11}{12}$ in its loweſt terms.

If the ſum of the digits of any number can be divided by 3, the number itſelf may alſo be divided by 3.

Ex. Reduce $\frac{741}{954}$ to its loweſt terms.

Here $7+4+1=12$, the ſum of the digits in the numerator. And $9+5+4=18$, the ſum of the digits in the denominator; each being diviſible by 3; therefore the numbers 741 and 954 are alſo diviſible by 3.

Then $\frac{741}{954}\div3=\frac{247}{318}$ in its loweſt terms.

When both terms end with 5, or one with 5 and the other with a cypher, divide both by 5.

Ex. Reduce $\frac{45}{85}$, $\frac{30}{75}$, and $\frac{65}{70}$, to their loweſt terms.

Thus $\frac{45}{85}\div5=\frac{9}{17}$, $\frac{30}{75}\div5=\frac{6}{15}\div3=\frac{2}{5}$, and $\frac{65}{70}\div5=\frac{13}{14}$, in the loweſt terms.

If both terms end with cyphers, caſt off as many as are common to both; then reduce the ſignificant figures to lower terms, by ſome of the foregoing rules.

Ex. Reduce $\frac{3500}{56000}$, $\frac{15000}{135000}$, and $\frac{4500}{75000}$, to their loweſt terms.

$$\text{Thus}\left\{\begin{array}{l}\frac{3500}{56000}=\frac{35}{560}\div5=\frac{7}{112}\div7=\frac{1}{16}\\ \frac{15000}{135000}=\frac{15}{135}\div5=\frac{3}{27}\div3=\frac{1}{9}\\ \frac{4500}{75000}=\frac{45}{750}\div5=\frac{9}{150}\div3=\frac{3}{50}\end{array}\right\}\text{in their loweſt terms.}$$

When the ſame numbers are both in the numerator and denominator, they may be omitted or caſt out of both.

Ex. 1. Reduce $\frac{3\times5\times1\times4\times3}{4\times8\times3\times5\times6}$ to its loweſt terms.

Thus $\frac{3\times5\times1\times4\times3}{4\times8\times3\times5\times6}=\frac{3}{8\times6}=\frac{1}{8\times2}=\frac{1}{16}$; by omitting the common terms 3, 5, 4, and then dividing by 3.

Ex. 2. Alſo $\frac{9\times5\times7\times3\times2\times8\times7}{5\times7\times2\times5\times3\times9\times6}=\frac{4\times7}{5\times3}=1\frac{13}{15}$ by omitting the common terms and dividing by 2.

PROBLEM VII. *To reduce a complex fraction to a ſimple one.* When the the fractional part is annexed to the numerator, multiply the numerator of the fraction by the denominator of the fractional part, and to that product add the numerator of the fractional part for a numerator; then multiply the denominator of the fraction by the denominator of the fractional part of the numerator for a denominator.

Ex. Reduce $\frac{5\frac{3}{4}}{7}$, $\frac{9\frac{4}{5}}{12}$, and $\frac{5\frac{1}{4}}{6}$, each to a ſimple fraction.

Thus $\frac{5\times4+3}{7\times4}=\frac{23}{28}$; $\frac{9\times5+4}{12\times5}=\frac{49}{60}$, and $\frac{5\times4+1}{6\times4}=\frac{21}{24}=\frac{7}{8}$; the ſimple fractions required.

When the fractional part is annexed to the denominator: multiply the denominator of the fraction by the denominator of the fractional part, and to that product add the numerator of the fractional part for a new denominator. Then multiply the numerator of the fraction by the denominator of the fractional part, for a new numerator.

Ex. Reduce $\frac{3}{4\frac{1}{2}}$, $\frac{4}{5\frac{3}{4}}$, and $\frac{5}{8\frac{2}{3}}$, each to a ſimple fraction.

Thus $\frac{3\times2}{4\times2+1}=\frac{6}{9}\div3=\frac{2}{3}$; $\frac{4\times4}{5\times4+3}=\frac{16}{23}$; and $\frac{5\times3}{8\times3+2}=\frac{15}{26}$; the fractions required.

PROBLEM VIII. *To reduce a compound fraction to a ſingle one.* Multiply all the numerators together for a new numerator, and all the denominators together for a new denominator, of the ſingle fraction. If any part of the compound fraction be a whole or mixed number, reduce it to a fraction by the foregoing rules.

Ex. 1. Reduce $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{4}{5}$ of $\frac{5}{7}$ to a ſingle fraction.

Thus $\frac{2\times3\times4\times5}{3\times4\times5\times7}=\frac{2}{7}$, by Problem VI.

Ex. 2. Reduce $\frac{1}{2}$, of $\frac{3}{4}$, of $\frac{5}{6}$, of $\frac{5}{7\frac{1}{2}}$, of $6\frac{3}{4}$, of $7\frac{4}{9}$, of $\frac{2\frac{2}{5}}{6}$, to a ſingle fraction.

Firſt $\frac{5}{7\frac{1}{2}}=\frac{10}{15}=\frac{2}{3}$; $6\frac{3}{4}=\frac{27}{4}$; $7\frac{4}{9}=\frac{67}{9}$; and $\frac{2\frac{2}{5}}{6}=\frac{12}{30}=\frac{2}{5}$; now the compound fractions are reduced to $\frac{1}{2}$ of $\frac{3}{4}$, of $\frac{5}{6}$, of $\frac{2}{3}$, of $\frac{27}{4}$, of $\frac{67}{9}$, of $\frac{2}{5}=\frac{1\times3\times5\times2\times27\times67\times2}{2\times4\times6\times3\times4\times9\times5}=\frac{2\times27\times67}{4\times6\times4\times9}=\frac{1\times9\times67}{2\times2\times4\times9}=\frac{67}{2\times2\times4}=\frac{67}{16}$, the anſwer.

PROBLEM IX. *To find the value of a fraction in known parts of the integer.* Multiply the numerator by the integer, and divide by the denominator; multiply the remainder by the next inferior denomination, and divide by the denominator; and ſo on till you come at the loweſt denomination, as in Compound Diviſion.

EXAMPLES.

1. What is the value of $\frac{7}{11}$ of a pound ſterling?

```
      7
     20
11)140(12s.
      8
     12
11) 96(8d.
      8
      4
11) 32(2 10/11 qrs.
     10
```

Anſwer, 12s. 8d. $2\frac{10}{11}$ qrs.

2. What is the value of $\frac{4}{5}$ of a guinea?

```
    21
     4
5)84(16s.
     4
    12
5)48(9d.
     3
     4
5)12(2 2/5 qrs.
     2
```

Anſwer, 16s. 9d. $2\frac{2}{5}$ qrs.

3. What is the value of $\frac{3}{4}$ of a lb. troy?

3
12
4)36(9oz. the anſwer.

4. What is the proper quantity of $\frac{11}{16}$ of a ton?

11
20
16)220(13 cwt.
12
4
16)48(3 qrs.
Anſwer, 13 cwt. 3 qrs.

5. What is the value of $\frac{4}{7}$ of 8l. 3s. 7½d.

l. s. d.
8 3 7½
4
7)32 14 6 (
Anſwer, 4 13 6

6. What is the proper quantity of $\frac{3}{7}$ of 7 cwt. 3 qrs. 8¾lb.

Cwt. qrs. lb.
7 3 8¾
3
7)23 1 26¼
Anſwer, 3 1 11¾

Problem X. *To reduce any given quantity to the fraction of any greater denomination of the ſame kind.* Reduce the quantity to its loweſt denomination mentioned, annexing thereto the fraction (if any) of that denomination for a numerator; then reduce the integral part to the ſame denomination for a denominator, and, laſtly, reduce the fraction to its loweſt terms. This and the laſt Problem prove each other.

Ex. 1. Reduce 12s. 8d. $2\frac{10}{11}$qrs. to the fraction of a pound ſterling. Thus, 12s. 8d. $2\frac{10}{11}$qrs. = $610\frac{10}{11}$qrs. for a numerator, and 1l. = 960qrs. for a denominator.

Therefore, $\frac{610\frac{10}{11}}{960}=\frac{610\times11+10}{960\times11}=\frac{6720}{10560}=\frac{7}{11}$l. the fraction required; the greateſt common meaſure being 960.

Ex. 2. Reduce 16s. 9d. $2\frac{2}{5}$qrs. to the fraction of a guinea.

Thus $\frac{16\text{s. }9\text{d. }2\frac{2}{5}}{1\text{ guinea}}=\frac{806\frac{2}{5}}{1008}=\frac{806\times5+2}{1008\times5}=\frac{4032}{5040}=\frac{4}{5}$ of a guinea, the anſwer.

Ex. 3. What part of 8l. 3s. 7½d. is 4l. 13s. 6d.

Thus $\frac{4\text{l. }13\text{s. }6\text{d.}}{8\text{l. }3\text{s. }7\frac{1}{2}\text{d.}}=\frac{4488}{7854}$qrs. $=\frac{4}{7}$, the anſwer.

Problem XI. *To reduce fractions of one denomination to their equivalent of another denomination.* When a certain number of the leaſt denomination are contained in, or equal to, one of the greateſt, multiply the numerator by the ſaid number when the reduction is from a greater to a leſs denomination, but the denominator by the ſaid number when from a leſs to a greater. When a certain number of the leaſt denomination is not equal to one of the greateſt, reduce the given fraction for a numerator, and the integer the fraction is to be brought to for a denominator, both to one denomination.

Ex. 1. Reduce $\frac{3}{8}$ of a penny to the fraction of a pound ſterling. Thus $\frac{3}{8\times12\times20}=\frac{1}{640}$l.

Ex. 2. Reduce $\frac{1}{640}$l. to the fraction of a penny.

Thus $\frac{1\times12\times20}{640}=\frac{12}{32}=\frac{3}{8}$d.

Ex. 3. Reduce $\frac{1}{1440}$l. to the fraction of a farthing.

Thus $\frac{1\times20\times12\times4}{1440}=\frac{1\times12\times4}{72}=\frac{2}{3}$qrs.

Ex. 4. Reduce $\frac{17280}{5}$grs. troy, to the fraction of a pound.

Thus $\frac{17280}{5\times24\times20\times12}=\frac{864}{5\times24\times1\times12}=\frac{3}{5}$lb. the anſ.

Problem XII. *To reduce a fraction to its equivalent that ſhall have any aſſigned denominator.* As the denominator of the given fraction is to its numerator, ſo is the aſſigned denomination to its numerator.

Ex. Reduce $\frac{3}{4}$ to a fraction of the ſame value, whoſe denominator may be 16. As 4 : 3 :: 16 : 12, new numerator; therefore, $\frac{12}{16}$ is the fraction required.

Problem XIII. *To reduce a fraction to its equivalent that ſhall have any aſſigned numerator.* As the numerator of the given fraction is to its denominator, ſo is the aſſigned numerator to its denominator.

Ex. Reduce $\frac{3}{4}$ to a fraction of the ſame value, whoſe numerator ſhall be 12. As 3 : 4 :: 12 : 16, the new denominator; and $\frac{12}{16}$ the new fraction.

Problem XIV. *To reduce fractions of different denominators to thoſe of equal value, having a common denominator.* Multiply each numerator into all the other denominators, except its own, for a new numerator; then multiply all the denominators together for a common denominator. And when any of the propoſed quantities are whole or mixed numbers, compound or complex fractions, reduce them firſt to ſimple ones by their proper rules.

Ex. Reduce $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, and $\frac{6}{7}$, to a common denominator.

$$\left.\begin{array}{l}1\times3\times4\times5\times7=420\\2\times4\times5\times7\times2=560\\3\times5\times7\times2\times3=630\\4\times7\times2\times3\times4=672\\6\times2\times3\times4\times5=720\end{array}\right\}\text{ new numerator for }\left\{\begin{array}{l}\frac{1}{2}\\\frac{2}{3}\\\frac{3}{4}\\\frac{4}{5}\\\frac{6}{7}\end{array}\right.$$

$2\times3\times4\times5\times7=840$ the common denominator: which put under every one of the new numerators found above, and you have a new ſet of fractions, viz. $\frac{420}{840}$, $\frac{560}{840}$, $\frac{630}{840}$, $\frac{572}{840}$, and $\frac{720}{840}$, all of the ſame denomination, as appears from the operation itſelf; and all of the ſame value with their reſpective original fractions, by Problem I.

If the denominators have all one common meaſure, divide them by it, then multiply both terms of each given fraction by the quotients of all the other denominators, which will produce as many new fractions, in lower terms than the firſt rule.

Ex. Reduce $\frac{5}{12}$, $\frac{4}{9}$, and $\frac{8}{21}$, to a common denominator. The quotients are 4, 3, and 7, the greateſt common meaſure being 3.

$$\text{Then}\left\{\begin{array}{l}\frac{5}{12}=\frac{5\times3\times7}{12\times3\times7}=\frac{105}{252}\\\frac{4}{9}=\frac{4\times7\times4}{9\times7\times4}=\frac{112}{252}\\\frac{8}{21}=\frac{8\times4\times3}{21\times4\times3}=\frac{96}{252}\end{array}\right\}\text{the new fractions required.}$$

When the ſeveral denominators are all diviſible by the ſame number, divide them by their greateſt common diviſor, ſetting the quotients underneath; then find the leaſt number that all theſe quotients can meaſure, and divide this number ſeverally by all theſe quotients, ſetting the new quotients underneath. Then multiply both terms of each fraction by its new quotient, and you will have the correſpondent fraction required in its loweſt terms.

Ex. Reduce $\frac{13}{36}$, $\frac{1}{24}$, $\frac{11}{18}$, and $\frac{4}{9}$, to a common denominator. The firſt quotients are 12, 8, 6, and 3; the greateſt common meaſure being 3. Now the leaſt number theſe quotients will meaſure is 24, which being divided ſeverally by each of theſe firſt quotients, the new quotients will be 2, 3, 4, and 8. Multiply the terms of each given fraction by its reſpective new quotient, and they will be $\frac{26}{72}$, $\frac{3}{72}$, $\frac{44}{72}$, and $\frac{32}{72}$, being reduced to a common denominator, and in lower terms than by any of the foregoing rules.

Problem XV. *Several fractions being given, to find as many whole numbers in the ſame proportion.* Reduce the fractions to a common denominator, and the ſeveral numerators will be to each other as the given fractions.

Ex. Suppoſe the given fractions, $\frac{5}{8}$ and $\frac{3}{4}$; find two whole numbers in the ſame proportion. Theſe reduced to a common denominator are $\frac{5}{8}$ and $\frac{6}{8}$. Therefore the numbers 5 and 6 are in proportion to each other, as $\frac{5}{8}$ and $\frac{3}{4}$.

That is, $\frac{5}{8}:\frac{3}{4}::5:6$; for $\frac{5\times6}{8}=\frac{3\times5}{4}=3\frac{3}{4}$.

ADDITION of VULGAR FRACTIONS.

Reduce complex and compound fractions to ſingle ones (by Prob. VII. and VIII.) and fractions of different denominators to a common denominator (by Prob. XIV.) Add all the numerators together, and under their ſum write the common denominator; then, if it be an improper fraction, reduce it to a whole or mixed number (by Prob. V.) If there be any whole numbers in the queſtion, add their ſum to the ſum of the fractions, for the required ſum.

Ex. 1. Add $\frac{2}{3}$, $\frac{3}{4}$, $9\frac{4}{5}$, and $7\frac{5}{6}$, into one ſum. The fractions reduced to a common denominator, become $\frac{240}{360}$, $\frac{270}{360}$, $\frac{288}{360}$, and $\frac{300}{360}$.

Then $\frac{240+270+288+300}{360}=\frac{1098}{360}=3\frac{1}{20}$, the ſum of the fractions; then $9+7+3\frac{1}{20}=19\frac{1}{20}$, the ſum required.

Ex. 2. Add $3\frac{5}{6}$, $\frac{7}{12}$, $8\frac{5\frac{1}{2}}{9}$, and $6\frac{1}{2\frac{2}{11}}$, into one ſum.

Firſt the fractions reduced to ſingle ones become $\frac{5}{6}$, $\frac{7}{12}$, $\frac{11}{18}$ and $\frac{11}{24}$, reſpectively; which, reduced to a common denominator (by Prob. XIV. rule 3), will be $\frac{60}{72}$, $\frac{42}{72}$, $\frac{44}{72}$, and $\frac{33}{72}$, which being added together make $\frac{179}{72}=2\frac{35}{72}$, the ſum of the fractions; then, $3+8+6+2\frac{35}{72}=19\frac{35}{72}$, the ſum required.

If many fractions are to be added, the beſt way is, firſt to add two of them together; to that ſum add a third, to that a fourth, and ſo on.

Ex. 3. What is the ſum of $5\frac{2}{5}$, $1\frac{3}{10}$, $3\frac{4}{15}$, $8\frac{3}{20}$, and $7\frac{8}{25}$? Firſt $\frac{2}{5}+\frac{3}{10}=\frac{7}{10}$, and $\frac{7}{10}+\frac{4}{15}=\frac{29}{30}$, and $\frac{29}{30}+\frac{3}{20}=\frac{67}{60}$, and $\frac{67}{60}+\frac{8}{25}=\frac{431}{300}=1\frac{131}{300}$, the ſum of the fractions; then, $5+1+3+8+7+1\frac{131}{300}=25\frac{131}{300}$, anſwer.

Ex. 4. Add 37, $3\frac{5}{7}$, $8\frac{6}{7}$, $\frac{5}{9}$, $\frac{3}{5}$, $\frac{7}{9}$, $\frac{4}{5}$, $9\frac{1}{2}$, $6\frac{2}{3}$, $19\frac{3}{4}$, $15\frac{1}{4}$, and $\frac{4}{11}$, into one ſum; and obſerve, that ſuch of the given fractions as have the ſame denominator may be added without any previous reduction.

Thus, $\frac{5}{7}+\frac{6}{7}=1\frac{4}{7}$, and $\frac{5}{9}+\frac{7}{9}=1\frac{1}{3}$, and $1\frac{1}{3}+\frac{2}{3}=2$, and $\frac{3}{5}+\frac{4}{5}=1\frac{2}{5}$, and $\frac{3}{4}+\frac{1}{4}=1$; then, $\frac{1}{2}+\frac{4}{11}=\frac{19}{22}$, and $\frac{19}{22}+\frac{4}{7}=\frac{221}{154}$, and $\frac{221}{154}+\frac{2}{5}=\frac{1413}{770}=1\frac{643}{770}$, and $1\frac{643}{770}+1+2+1+1=6\frac{643}{770}$, the ſum of all the fractions. Therefore, $37+3+8+9+6+19+15+6\frac{643}{770}=103\frac{643}{770}$, the ſum required.

In fractions of different denominations reduce them to one denomination (by Prob. XI.) then add then together as before directed. Or you may reduce them to their proper quantities (by Prob. IX.) and add them together as in Compound Addition.

Ex. Add $\frac{4}{7}$ of a pound, $\frac{5}{8}$ of a ſhilling, and $\frac{3}{8}$ of a penny, into one ſum. Firſt $\frac{3}{8}$d. $=\frac{1}{32}$s. and $\frac{4}{7}$l. $=\frac{80}{7}$s. then $\frac{80}{7}+\frac{5}{8}=\frac{675}{56}$s. and $\frac{675}{56}+\frac{1}{32}=\frac{2707}{224}$s. $=12\frac{19}{224}$s. $=$ 12s. 1d. $0\frac{1}{14}$qrs. the anſwer.

$$\text{Or thus}\left\{\begin{array}{lcccc} & & \text{s.} & \text{d.} & \text{q.}\\ \frac{4}{7}\text{ of a pound} & = & 11 & 5 & 0\frac{4}{7}\\ \frac{5}{8}\text{ of a ſhilling} & = & 0 & 7 & 2\\ \frac{3}{8}\text{ of a penny} & = & 0 & 0 & 1\frac{1}{2}\end{array}\right\}\begin{array}{l}\text{Reduced to their}\\ \text{proper values by}\\ \text{Prob. IX.}\end{array}$$

$$\text{Anſwer}\quad \underline{12\quad 1\quad 0\tfrac{1}{14}},\ \text{the ſame as above.}$$

SUBTRACTION *of* VULGAR FRACTIONS.

The fractions are to be prepared in all reſpects as before directed in Addition. Then ſubtract one numerator from the other, and under their difference write the common denominator. In mixed numbers, ſubtract the fractions from the fractions, and the whole numbers from the whole numbers, borrowing at the denominator when occaſion requires.

Ex. 1. From $\frac{4}{7}$ take $\frac{4}{9}$, reduced to $\frac{45}{63}$, and $\frac{28}{63}$.

Then $\frac{45-28}{63}=\frac{17}{63}$, the remainder.

Ex. 2. From $\frac{2}{3}$ of $\frac{4}{7}$ of $\frac{5}{2}$ of 3 take $\frac{3}{4}$ of $\frac{1}{2}$ of 3, reduced to $\frac{20}{7}$ and $\frac{9}{8}$, and again to $\frac{160}{56}$ and $\frac{63}{56}$.

Then $\frac{160-63}{56}=\frac{97}{56}=1\frac{41}{56}$, the remainder.

Ex. 3. What is the difference between $\frac{4}{7}$l. and $\frac{5}{8}$ of a ſhilling? Firſt, $\frac{4}{7}$l. $=\frac{80}{7}$s. then $\frac{80}{7}$ and $\frac{5}{8}$ are reduced to $\frac{640}{56}$ and $\frac{35}{65}$.

Then $\frac{640-35}{56}=10\frac{45}{65}$s. the anſwer.

$$\begin{array}{llcccc} & & & \text{oz.} & \text{dwt.} & \text{gr.}\\ \text{Ex. 4. From } \frac{7}{9}\text{ of a pound troy} & - & = & 9 & 6 & 16\\ \qquad\text{Take } \frac{4}{7}\text{ of an ounce} & - \ - & = & 0 & 11 & 10\frac{2}{7}\\ \hline & \text{Remainder,} & & 8 & 15 & 5\frac{5}{7}\end{array}$$

Ex. 5. What is the difference between $\frac{4}{11}$ of a year, and $\frac{5}{13}$ of a month, reckoning 13 months to the year?

Anſwer, 4 mon. 1 w. 2d. 14h. 15m. $56\frac{92}{143}$ſec.

MULTIPLICATION *of* VULGAR FRACTIONS.

Reduce whole numbers to the form of fractions by Prob. II. mixed numbers to improper fractions by Prob. IV. complex fractions to ſimple ones by Prob. VII. and fractions of different denominations to the ſame denomination by Prob. X. and XI. then multiply all the numerators together for a numerator of the product, and all the denominators together for a denominator of the product. Firſt let the product be expreſſed by the ſign × between the figures, then throw out the figures common to both numerator and denominator, or divide both by any figures you can, in order to reduce it, by the rules in Prob. VI.

Ex. 1. Multiply $\frac{3}{7}$, $\frac{4}{5}$, $\frac{5}{9}$, $\frac{7}{8}$, and $\frac{2}{3}$ of $\frac{3}{4}$ of 9 together.

Thus $\frac{3\times4\times5\times7\times2\times3\times9}{7\times5\times9\times8\times3\times4\times1}=\frac{3}{4}$ the product by Prob. 6.

Ex. 2. Multiply $\frac{5\frac{1}{2}}{6}$, $17\frac{3}{11}$, $\frac{18}{95}$ and $\frac{1\frac{1}{4}}{5}$ of $\frac{4}{7}$ of $\frac{7}{11}$ together. Theſe reduced to ſimple fractions, and placed as the rule directs, will ſtand thus $\frac{11\times190\times18\times1\times4\times7}{12\times11\times95\times4\times7\times11}=\frac{2\times3}{2\times1\times11}=\frac{3}{11}$, the product.

Ex. 3. Multiply 17l. 17s. 6d. into 4l. 13s. 4d. a pound the integer.

Firſt 17l. 17s. 6d. $=\frac{143}{8}$l. and 4l. 13s. 4d. $=\frac{14}{3}$l.

Then $\frac{143\times14}{8\times3}=\frac{143\times7}{4\times3}=\frac{1001}{12}$l. $=$ 83l. 8s. 4d. product.

Ex. 4. Multiply 7l. 9s. 4d. into 11s. $10\frac{1}{2}$d. one pound the integer. Firſt 7l. 9s. 4d. $=\frac{112}{15}$l. and 11s. $10\frac{1}{2}$d. $=\frac{19}{32}$l. by Prob. X.

Then $\frac{112\times19}{15\times32}=\frac{14\times19}{15\times4}=\frac{7\times19}{15\times2}=\frac{133}{30}=$ 4l. 8s. 8d. the product.

DIVISION *of* VULGAR FRACTIONS.

Prepare the fractions as directed for multiplication, then multiply the dividend into the diviſor inverted, and that fraction will be the quotient.

Ex. 1. Divide $\frac{5}{14}$ by $\frac{4}{7}$. Here the diviſor inverted is $\frac{7}{4}$.

Then $\frac{5\times7}{14\times4}=\frac{5}{4\times2}=\frac{5}{8}$, the quotient.

Ex. 2. Divide $\frac{4}{9}$ by 8. Thus $\frac{4}{9\times8}=\frac{1}{9\times2}=\frac{1}{18}$ quotient.

Ex. 3. Divide 56 by $\frac{8}{9}$. Thus $\frac{56\times9}{1\times8}=\frac{7\times9}{1}=63$, the quotient.

Ex. 4. Divide $9\frac{5}{9}$ by $4\frac{2}{3}$. Firſt $9\frac{5}{9}=\frac{86}{9}$, and $4\frac{2}{3}=\frac{14}{3}$.

Then $\frac{86}{9}\times\frac{3}{14}=\frac{43\times1}{3\times7}=\frac{43}{21}=2\frac{1}{21}$, the quotient.

Ex. 5. Divide 4l. 8s. 8d. by 11s. $10\frac{1}{2}$d. one pound the integer. Firſt 4l. 8s. 8d. $=$ 266 groats for a numerator, and 1l. $=$ 60 groats for a denominator; therefore, 4l. 8s. 8d. $=\frac{266}{60}$l. $=\frac{133}{30}$l. the dividend. Alſo, 11s. $10\frac{1}{2}$d. $=$ 95 three-halfpences, and 1l. $=$ 160 three-halfpences; therefore, 11s. $10\frac{1}{2}$d. $=\frac{95}{160}$l. $=\frac{19}{32}$l. the diviſor.

Then $\frac{133\times32}{30\times19}=\frac{7\times32}{30\times1}=\frac{224}{30}$l. $=$ 7l. 9s. 4d. the quotient. This is a proof of Ex. 4. in Multiplication, and in this manner may any compound quality be divided by another.

Ex. 6. What is the quotient of 98 yds. 4 ft. $47\frac{31}{32}$ inches, by 7 yds. 1 ft. $10\frac{5}{8}$ inches? Anſwer, 12 yds. 2 ft. $8\frac{3}{4}$ in.

DECIMAL FRACTIONS.

A decimal fraction is one whoſe denominator is unity, with one or more cyphers annexed, as $\frac{1}{10}$, $\frac{7}{10}$, $\frac{9}{100}$, $\frac{31}{10}$, $\frac{7}{1000}$, &c. The integer, or any thing which is called one, whether it be coin, weight, meaſure, or time, &c. as 1 pound, 1 ſhilling, &c. is ſuppoſed to be divided into 10 equal parts, and each of theſe parts into 10 parts more, and ſo on by continual ſubdiviſion.

A decimal fraction is expreſſed by prefixing a point near the top on the left of it. Thus ·4 ſignifies $\frac{4}{10}$, ·04 ſignifies $\frac{4}{100}$, ·45 ſignifies $\frac{45}{100}$, and ·007 ſignifies $\frac{7}{1000}$. The following Table will farther illuſtrate the notation of decimals:

Whole Numbers.

7	Millions, &c.
5	Hundreds of Thouſands
6	Tens of Thouſands
3	Thouſands
4	Hundreds
2	Tens
1	Units place

Decimal Parts.

·3	Parts of 10
4	Parts of 100
5	Parts of 1000
6	Parts of 10000
7	Parts of 100000
8	Parts of 1000000
4	Parts of 10000000

From this Table it appears, that as whole numbers increaſe in a tenfold proportion from the units place towards the left hand; ſo do decimal parts decreaſe in the ſame proportion towards the right. And decimal parts are only ſeparated and known from the whole numbers by a point, and take their name from their diſtance below the units place towards the right hand.

Thus { 0·7 is 7 parts of ten
0·75 is 75 parts of a hundred
0·875 is 875 parts of a thouſand

In any decimal fraction, the firſt figure next the decimal point is greater in value than all the reſt, as in the decimal ·199999, the firſt figure 1 is greater in value than ·099999; and unity, or 1, is greater than ·999999, &c. Cyphers to the right of a decimal neither increaſe nor diminiſh its value; thus ·4, ·40, ·400, &c. are all equal, becauſe $\frac{4}{10}=\frac{40}{100}=\frac{400}{1000}$, &c. as is plain from vulgar fractions; and therefore decimals are ſoon reduced to a common denominator by annexing cyphers. But cyphers prefixed to a decimal, diminiſh its value by removing it farther from the decimal point, or units place.

Then { 0·5 is 5 parts of ten
0·05 is 5 parts of a hundred
0.005 is 5 parts of a thouſand, &c.

Conſequently the true value of all decimal parts is eaſily known by their diſtance from the units place.

ADDITION and SUBTRACTION of DECIMALS.

Place all the decimal points directly under each other, and then add or ſubtract as in whole numbers; and, laſtly, put a point under the other points, which will mark off the number of decimal places, in the ſum or difference.

EXAMPLES in ADDITION.

1·937	74·876	·8472	702·83
0·4731	46·761	·70687	74·47
0·7074	447·476	·6731	8·76
9·7476	76·8073	1·76	13·698
3·8073	0·3767	3·0873	8·43
1·0737	67·462	0·076	370·077
0·761	18·9761	7·0073	0·464
5·0407	0·467	0·74109	47·907
23·5478	733·2021		

What is the ſum of 47·82, 8·692, 4 times ·807, 472·9, 1·46, twice 9·07, and ·0763? Anſwer, 552·3163.

What is the ſum of 7·69, 46·8607, ·064, 5 times 4·803, ·3404, 4 times ·0083, and twice ·07603? Anſwer, 79·15536.

In SUBTRACTION.

From	.84	1·0000	·7	·5
Take	·674	0·3849	·07777	·07575
Rem.	·166	·6151	·62223	·42425
Proof	·84	1·0000	·7	·5

What is the difference between 8·98 and ·898? Anſwer, 8·082.

What number added to 10·037 will make it juſt 100·37? Anſwer, 90·333.

What is the difference between 74·8974 and 0·748974? Anſwer, 74·148426.

What number added to 0·3748 will make it juſt 98·1? Anſwer, 97·7252.

MULTIPLICATION of DECIMALS.

RULE. Place the factors and multiply them as in whole numbers, and from the right hand of the product cut off as many places for decimals as there are in both factors together; but, if there ſhould not be ſo many places in the product, make up the number with cyphers to the left hand

Ex. 1. Multiply	382.46	Ex. 2. Mult.	0·03789
By	7·423	By	0·08475
	114738		18945
	76492		26523
	152984		15156
	267722		30312
Product	2839·00058	Product	·0032111775

To find the area of any rectangular figure, multiply the length into the breadth. Thus 53·09×53·09=2818·5481 yards, the anſwer.

Ex. What is the area of a rectangular field, whoſe length is 8·95, and breadth 6·347, chains?

Thus, 8·95×6·347=56·80565 ſquare chains.

When a decimal is to be multiplied into an unit with cyphers annexed, as 10, 100, 1000, &c. you are only to remove the ſeparating point in the multiplicand ſo many places towards the right hand as there are cyphers annexed to the unit, ſubjoining cyphers if needful.

The product of 5·738 by 10=57·38
The product of 49·3 by 100=4930·
The product of ·0547 by 100000=5470·
The product of ·008359 by 1000=8·359

In large decimals the work may be contracted by multiplying by the figures of the multiplier in a contrary order; thus, multiply the whole multiplicand by the left-hand figure of the multiplier; then prick off the right-hand figure of the multiplicand, and multiply the reſt by the next figure of the multiplier, ſetting down the firſt figure of every product directly under each other. Then prick off the next right-hand figure of the multiplicand, and proceed as before; and ſo on to the end. At the beginning of each line obſerve what is to be carried from the preceding figures ſo pricked off, viz. 1 from 5 to 15, 2 from 15 to 25, 3 from 25 to 35, and ſo on. When you multiply by the units place, obſerve what place of the multiplicand it begins with, and cut off ſo many decimals in the product. By this rule you may ſet the units place ſo as to have any required number of decimals in the product. Or obſerve the places of any two decimals that begin the multiplication, and the ſum of them gives the number of decimals in the product.

	·····		·······
Ex. 1. Multiply	83·57468	Ex. 2. Mult.	·8905738
By	6·41807	By	·0347596
	50144808		26717214
	3342987		3562295
	83575		623402
	66860		44529
	585		8010
	536·38815		534
			·030955984

DIVISION

DIVISION of DECIMALS.

Rule. Proceed as in whole numbers till the work be done, then cut off ſo many decimal places in the quotient as the dividend hath more than the diviſor; but, if there is not a ſufficient number of figures in the quotient to anſwer the exceſs, the deficiency muſt be made up by prefixing cyphers to the left hand.

```
        Ex. 1.                        Ex. 2.
56·7)279·8712(4·936          5·326)·2274202(·0427
     226·8                         21304
     -----                         -----
      5307                          14380
      5103                          10652
      ----                          -----
       2041                          37282
       1701                          37282
       ----                          -----
        3402                         * * *
        3402                         -----
        ----
        * * *
        -----
```

If any thing remain, annex a cypher to it, and divide as before, and ſo on; and for every cypher added there muſt be a decimal in the quotient. If the number of decimal places in the diviſor and dividend be equal, all the quotient will be whole numbers; and, if any thing remain, annex cyphers, and proceed as above directed. Ex. Divide 381·764 by ·438.

```
·438)381·764(871 quotient
     3504
     ----
      3136
      3066
      ----
        704
        438
        ---
        266 remainder
        ---
```

The truth of this is evident from hence: If you multiply both the diviſor and dividend by 1000, they will become whole numbers; and, if the whole number 438 divide the whole number 381764, the quotient muſt of courſe be whole numbers. When there are not ſo many decimal places in the dividend as there are in the diviſor, annex cyphers to the dividend to make them equal (which is in reality reducing both to whole numbers); then will the quotient be whole numbers.

Thus ·536)93·800(175 quot. Or 536)93800(175 quot.

When a decimal is to be divided by an integer with cyphers on the right, cut off the cyphers, and remove the ſeparating point in the dividend ſo many places to the left as there are cyphers cut off from the right of the diviſor, then divide as before, prefixing cyphers if needful. Thus, 52·74 divided by 10 = 5·274.

Large diviſions may be contracted as follows:

Ex. Divide 315·46439479 by 46·1062514.

```
46·10625|14)315·46430|479(6·842117 quotient
•• •••••     27663750
             --------
              3882689
              3688500
              -------
               194189
               184425
               ------
                 9764
                 9221
                 ----
                  543
                  461
                  ---
                   82
                   46
                   --
                   36
                   32
                   --
                   ·4
                   --
```

Here 6 is multiplied into 46·10625, then 8 is multiplied into 46·1062, carrying 4; then 4 is multiplied into 46·106, carrying 1; then 2 is multiplied into 46·10, carrying 1; then 1 is multiplied into 46·1; then 46· by 1, and laſtly 4 by 7, carrying 4.

Find, by the general rule, what place of decimals or integers the firſt figure of the quotient will poſſeſs; then take as many of the left-hand figures of the diviſor as you judge neceſſary for your firſt diviſor, and juſt ſo many of the left-hand figures of the dividend as will yield the firſt figure of the quotient. Having found the firſt figure, the following may be found thus; take each laſt remainder for a new dividend, and for a new diviſor prick off one figure from the right of each preceding one; continue the operation till the diviſor is exhauſted. In multiplying the quotient-figure and diviſor, leave out thoſe figures pricked off; only particular regard muſt be had to the increaſe that would ariſe from the laſt figure ſo pricked off, and for ſuch increaſe carry, as in the foregoing rule for multiplication.

REDUCTION of DECIMALS.

To reduce a vulgar fraction to a decimal. Add cyphers to the numerator at pleaſure, repreſenting ſo many places of decimals; and then divide by the denominator, continuing the operation to what length you pleaſe.

Ex. Reduce $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{3}$, $\frac{4}{5}$, $\frac{6}{7}$, $\frac{5}{9}$, and $\frac{8}{11}$, each to a decimal fraction.

$$\text{Thus}\quad \left.\begin{array}{l} 1\cdot00 \div 4 = 0\cdot25 = \frac{1}{4} \\ 1\cdot0 \div 2 = 0\cdot5 = \frac{1}{2} \\ 3\cdot00 \div 4 = 0\cdot75 = \frac{3}{4} \\ 2\cdot000 \div 3 = 0\cdot666 + = \frac{2}{3} \end{array}\right\} \qquad \left.\begin{array}{l} 4\cdot0 \div 5 = 0\cdot8 = \frac{4}{5} \\ 6\cdot000 \div 7 = 0\cdot8571 + = \frac{6}{7} \\ 5\cdot0000 \div 9 = 0\cdot5555 + = \frac{5}{9} \\ 8.0000 \div 11 = 0\cdot7272727 + = \frac{8}{11} \end{array}\right\}$$

To reduce decimals, or integers, to equivalent decimals of a greater denomination. If the decimals or integers propoſed be ſimple, divide continually by all the denominations, from the given one to that ſought, as in Reduction of integers before ſhewn.

Ex. 1. Reduce $\frac{3}{4}$d. = 0·75d. to the decimal of a pound ſterling. Thus 0·75 ÷ 12 = 0·0625s. ÷ 20 = 0·003125l. the anſwer.

Ex. 2. Reduce $5\frac{3}{8}$ grains to the fraction of an ounce troy. Firſt $5\frac{3}{8}$ = 5·375 grs. ÷ 24 = 0·223958 dwts. ÷ 20 = 0·0111979 oz. +

Ex. 3. Reduce 11d. to the decimal of a pound ſterling. Thus 11·000 ÷ 12 = 0·9166s. ÷ 20 = 0·0458333l. anſwer.

Ex. 4. Reduce 8·564 pints of wine to the decimal of a hogſhead. Thus 8·564 ÷ 8 = 1·0705 gall. ÷ 63 = 0·016992 hogſheads, the anſwer.

If the given part conſiſt of ſeveral denominations, reduce them to the leaſt for a numerator, and the integer to the ſame for a denominator; then annex cyphers to the numerator, and divide as before.

Ex. 1. Reduce 18s. $9\frac{3}{4}$d. to the decimal of a pound. Thus 18s. $9\frac{3}{4}$d. = 903 farthings for a numerator, and then $\frac{903}{960}$l. = ·940625l. the anſwer.

```
Or thus,  4 |  3·00
         12 |  9·75d.
         20 | 18·8125
            |  0·940625l. the ſame as before.
```

Ex. 2. Reduce 6 oz. 19 dwts. $7\frac{1}{2}$ grs. to the decimal of a pound troy.

```
   { 6 |  7·5 grs.
24 {   |
   { 4 |  1·25
    20 | 19·3125 dwts.
    12 |  6·965625 oz.
       |  0·58046875lb. the anſwer.
```

To reduce a decimal of ſuperior denomination to its value in the inferior or known parts of the integer. Multiply the given decimal by the number of parts contained in the next inferior denomination, cutting off the decimals from the product (as taught in multiplication), then multiply the decimals ſo cut off by the next lower denomination; thus proceed to the loweſt denomination required, or till the decimals pointed off are all cyphers; then the numbers on the left of the points will expreſs the value of the decimals.

Ex. 1. What known parts of coin are equal to 0·940625l.

$$\begin{array}{r} 0{\cdot}940625\text{l.}\\ 20\\ \hline 18{\cdot}812500\text{s.}\\ 12\\ \hline 9{\cdot}750000\text{d.}\\ 4\\ \hline 3{\cdot}000000\text{ qu.}\\ \hline \end{array}$$

Ex. 2. What is the value of 0·58046875 of a lb. troy ?

$$\begin{array}{r} {\cdot}58046875\text{lb.}\\ 12\\ \hline 6{\cdot}96562500\text{ oz.}\\ 20\\ \hline 19{\cdot}3125000\text{ dwts.}\\ 24\\ \hline 7{\cdot}5000000\text{ grs.}\\ \hline \end{array}$$

To reduce a finite decimal to its leaſt equivalent vulgar fraction. Place the decimal as a numerator over 1, and as many cyphers as there are figures in the decimal, for a denominator; then reduce it to the loweſt terms.

Ex. Required the leaſt vulgar fractions equivalent to ·3065, ·25, ·5, ·75, ·125, and ·0625.

Thus, $\frac{3065}{10000}=\frac{613}{2000}$, $\frac{25}{100}=\frac{1}{4}$, $\frac{5}{10}=\frac{1}{2}$, $\frac{75}{100}=\frac{3}{4}$, $\frac{125}{1000}=\frac{1}{8}$, $\frac{625}{10000}=\frac{1}{16}$, the vulgar fractions required.

CIRCULATING or REPEATING DECIMALS.

When the denominator of a vulgar fraction, in its loweſt terms, is not compounded of 2, or 5, or both, the decimal produced from ſuch a vulgar fraction will be infinite; it is called a repetend, or circulating decimal, from a continual repetition of the ſame figures.

A ſingle repetend is a decimal where only one figure repeats, as ·3333, &c. ·4444, &c. and theſe may be expreſſed by putting a point over the firſt figure. Thus ·3333, &c. may be denoted by $\cdot\dot{3}$, and ·4444, &c. by $\cdot\dot{4}$.

A compound repetend has the ſame figures circulating alternately, as ·507650765076, &c. ·123123123, &c. and theſe may be diſtinguiſhed by putting a point over the firſt and laſt repeating figure: thus, ·50765076, &c. is written $\cdot\dot{5}07\dot{6}$, and ·123123, &c. $\cdot\dot{1}2\dot{3}$.

Pure repetends are ſuch as have no figures in them but what belong to the repetend, that is, when there are no figures, or none but cyphers, betwixt the point and repetend; as ·3434, &c. ·0044, &c. ·046046, &c. ·00303.

Mixed repetends are ſuch as have cyphers, or ſignificant figures, between the repetend and decimal point, or ſuch as have whole numbers to the left hand of the decimal point, as $\cdot3\dot{4}\dot{4}$, &c. $\cdot3048\dot{4}\dot{8}$, &c. ·0467272, &c. 4·375, &c.

Similar circulating decimals are ſuch as conſiſt of the ſame number of figures, and begin at the ſame place, either before or after the decimal point; thus ·33, &c. ·77, &c. are ſimilar circulates, and theſe, 2·345656, &c. ·004242, &c.

Diſſimilar repetends conſiſt of an unequal number of figures, and begin at different places from the decimal point, as $\cdot\dot{3}5\dot{4}$, &c. $2{\cdot}\dot{7}53\dot{4}$, &c. $9{\cdot}\dot{2}5\dot{3}$, &c. $0{\cdot}47\dot{5}\dot{2}$, &c.

Similar and conterminous circulates are ſuch as begin and end at the ſame place; as $58{\cdot}2\dot{7}5\dot{3}$, $81{\cdot}9\dot{1}0\dot{4}$, and $\cdot0\dot{6}1\dot{3}$, &c.

A ſeries of nines infinitely continued is equal to 1 on the left-hand place; thus ·9999, &c. ad infinitum =1, ·09999, &c. =·1, and 7·9999, &c. =8, if infinitely continued.

Any number may be multiplied by 9, 99, 999, &c. by annexing as many cyphers to the right hand of it, and then ſubtracting it from itſelf thus increaſed. Thus 236×9=2360—236=2124, 236×99=23600—236=23364, and 236×999=236000—236=23364, the products.

In any circulating number, the whole circulating or repeating part, running on for ever, is equal to a vulgar fraction whoſe numerator is the number repeating (or the repetend), and denominator as many nines as there are figures in the repetend. As in 24·35076507650765076, &c. ad infinitum; 507650765076 5076, &c. $=\frac{5076}{9999}=\frac{564}{1111}$, in the loweſt terms.

The circulation may be ſuppoſed to begin at any figure of the repetend; and therefore 24·35076350763507, &c. $=24{\cdot}3\frac{5076}{9999}$, $=24{\cdot}35\frac{0765}{9999}$, $=24{\cdot}350\frac{7650}{9999}=24{\cdot}3507\frac{6507}{9999}=24{\cdot}35076\frac{5076}{9999}$, &c. Hence, if the repetend be divided by as many nines as it has places, the quotient will be equal to the whole circulating part, or the figures of the repetend repeated for ever. Thus $\frac{5076}{9999}=$ the whole circulating part. And, if the whole circulating part be multiplied by a number conſiſting of as many nines as there are places in the repetend conſidered as a decimal, the product will be the repetend. For $\frac{5076}{9999}\times9999=5076$, and $5076\times{\cdot}99999=5076$, the firſt repetend.

If a circulating decimal has a repetend of any number of figures, it may be conſidered as having a repetend of twice or thrice the number of figures, or any multiple thereof. Thus in the number 4·137,37,37, having the repetend 37 of two places; it may be conſidered as having the repetend 3737, or 373737; of four or ſix places, &c. Hence any number of diſſimilar repetends may be made ſimilar and conterminous, by changing them into other repetends which ſhall each conſiſt of as many figures as the leaſt common multiple of the ſeveral numbers of places, found in all the repetends.

	Diſſimilar.		Made ſimilar and conterminous.
EXAMPLES	$68{\cdot}3\dot{4}\dot{5}$	=	$68{\cdot}345\dot{4}545\dot{4}5$
	$9{\cdot}\dot{6}2\dot{1}$	=	9·621621621
	$0{\cdot}\dot{2}\dot{4}$	=	0·242424242
	1·5	=	1·500000000
	$0{\cdot}2\dot{6}$	=	0·266666666
	$73{\cdot}08\dot{3}$	=	73·083333333
	$8{\cdot}\dot{0}\dot{9}$	=	8·090909090

REDUCTION of CIRCULATING DECIMALS.

To reduce a ſingle or compound repetend to a vulgar fraction, Place the figures of the repetend for a numerator, and as many nines for a denominator; then reduce it to the loweſt terms. If one or more of the left-hand places, in the given decimal, be cyphers, annex as many cyphers to the right-hand of the nines in the denominator. If there are integral figures in the circulate, as many cyphers muſt be annexed to the numerator as the higheſt place of the repetend is diſtant from the decimal point.

Ex. 1. Required the leaſt vulgar fractions equal to $\cdot\dot{3}$, $\cdot0\dot{5}$, $\cdot\dot{1}2\dot{3}$, $2{\cdot}\dot{6}\dot{3}$, $\cdot0\dot{5}944\dot{0}5$, $\cdot\dot{7}6923\dot{0}$, and $1{\cdot}\dot{6}\dot{2}$.

Thus $\cdot\dot{3}=\frac{3}{9}=\frac{1}{3}$ $\qquad 2{\cdot}\dot{6}\dot{3}=2\frac{63}{99}=2\frac{7}{11}$

$\cdot0\dot{5}=\frac{5}{90}=\frac{1}{18}$ $\qquad \cdot0\dot{5}944\dot{0}5=\frac{594405}{9999990}=\frac{17}{286}$

$\cdot\dot{1}2\dot{3}=\frac{123}{999}=\frac{41}{333}$ $\qquad \cdot\dot{7}6923\dot{0}=\frac{769230}{999999}=\frac{10}{13}$

Ex. 2. What are the leaſt vulgar fractions equivalent to $\cdot\dot{6}$, $\cdot\dot{1}6\dot{2}$, $\cdot\dot{9}4\dot{5}$, and $\cdot\dot{0}\dot{9}$? Anſwer, $\frac{2}{3}$, $\frac{6}{37}$, $\frac{35}{37}$, and $\frac{1}{110}$.

To reduce a mixed repetend to a vulgar fraction. To as many nines as there are figures in the repetend annex as many cyphers as there are finite places, for the denominator of the vulgar fraction. Multiply the nines in the ſaid denominator by the finite part of the decimal, and to the product add the repeating part for the numerator. Or find the vulgar fraction as before anſwering to the repetend, then join it to the finite part, and reduce them to a common denominator.

Ex. Required the leaſt vulgar fractions equivalent to $\cdot5\dot{3}$, $\cdot58\dot{3}$, $\cdot13\dot{8}$, and $\cdot5\dot{9}2\dot{5}$.

$$\left.\begin{array}{l} \cdot5\dot{3}=\dfrac{9\times5+3}{90}=\dfrac{48}{90}=\dfrac{8}{15}\\ \cdot58\dot{3}=\dfrac{58\times9+3}{900}=\dfrac{525}{900}=\dfrac{7}{12}\\ \cdot13\dot{8}=\dfrac{13\times9+8}{900}=\dfrac{125}{900}=\dfrac{5}{36}\\ \cdot5\dot{9}2\dot{5}=\dfrac{5+999+925}{9990}=\dfrac{5920}{9990}=\dfrac{16}{27} \end{array}\right\}\text{Anſwers.}$$

Having a vulgar fraction given in the loweſt terms, to find whether the decimal fraction equal thereto be finite or infinite; and, if infinite, whether it will produce a pure or mixed repetend; and how many places the repetend will conſiſt of? Divide the denominator by 2, or 5, as often as poſſible; then divide 9999, &c. by the former reſult till nothing remains, and the number of nines made uſe of will be equal to the number of places in the repetend;

which will begin after as many places of figures as there were 2's or 5's divided by. If the whole denominator vaniſhes in dividing by 2 or 5, the decimal will be finite, and will conſiſt of as many places as you perform diviſions.

Ex. 1. Required to find whether the decimal equal to $\frac{83}{9768}$ be finite or infinite; if infinite, how many places the repetend will conſiſt of, whether there will be a finite decimal to the left of the repetend, and how many?

Firſt, 9768÷2=4884÷2=2442÷2=1221;

Then, 1221)999999(719; here are ſix nines made uſe of before nothing remain, and the denominator has been divided by 2 three times, and cannot be abridged any more; therefore the decimal will be infinite, and will conſiſt of three finite decimals and ſix pure repetends. Thus $\frac{83}{9768}$ = ·008$\dot{4}$9713$\dot{3}$.

Ex. 2. Whether is the decimal equal to $\frac{3}{16}$ finite or infinite? Firſt, 16÷2=8÷2=4÷2=2÷2=1; hence the decimal is finite, and conſiſts of four places. Thus $\frac{3}{16}$= ·1875.

ADDITION *of* CIRCULATING DECIMALS.

Make the repetends ſimilar and conterminous, by the rule before laid down, and find their ſum as in common Addition. Divide this ſum by as many nines as there are places in the repetend, and the remainder is the repetend of the ſum; which muſt be ſet under the figures added, with cyphers to the left hand when it has not ſo many places as the repetends. Carry the quotient of this diviſion to the next column, and proceed with the reſt as in finite decimals.

Ex. 1.		Similar & conter.	Ex. 2.		Similar & conter.
39·6545	=	39·6545$\dot{0}$	3·$\dot{6}$	=	3·666$\dot{6}$
81·04$\dot{6}$	=	81·0466$\dot{6}$	8·347$\dot{6}$	=	8·347$\dot{6}$
42·3$\dot{5}$	=	42·3555$\dot{5}$	9·$\dot{3}$	=	9·333$\dot{3}$
9·83$\dot{7}$	=	9·8377$\dot{7}$	0·375	=	0·375$\dot{0}$
87·534	=	87·5340$\dot{0}$	0·2$\dot{7}$	=	0·277$\dot{7}$
1·$\dot{9}$	=	1·9999$\dot{9}$	7·$\dot{4}$	=	7·444$\dot{4}$
	Sum	262.42840		Sum	29·4348

SUBTRACTION *of* CIRCULATING DECIMALS.

Make the repetends ſimilar and conterminous, as in Addition; then ſubtract as uſual: only, if the repetend of the ſubducend exceed the repetend of the minuend, make the laſt figure of the remainder 1 leſs than it would be if the expreſſions were finite.

Ex. 1.				Ex. 2.			
From	76·3$\dot{2}$	=	76·322$\dot{2}$	From	89·57$\dot{6}$	=	89·576$\dot{0}$
Take	54·$\dot{7}$61$\dot{7}$	=	54·$\dot{7}$61$\dot{7}$	Take	12·584$\dot{6}$	=	12·584$\dot{6}$
	Remainder		21·560$\dot{4}$		Remainder		76·991$\dot{3}$

MULTIPLICATION *of* CIRCULATING DECIMALS.

When a repetend is to be multiplied by a finite number, multiply as in common numbers, only obſerve what muſt be carried from the beginning of the repetend to the end of it. And make all the lines ſimilar and conterminous when they are to be added. In multiplying a finite decimal by a ſingle repetend, multiply by the repetend and divide by ·9 or $\frac{9}{10}$. In more complex caſes, reduce the repetends to vulgar fractions, then find the product of theſe fractions as uſual, and reduce the fraction expreſſing the product to a decimal, if neceſſary.

Ex. 1.	Ex. 2.	Ex. 3.
716·293$\dot{5}$	2·10$\dot{4}$	3·02$\dot{8}$
·27	1·2	17
5514054$\dot{8}$	420$\dot{8}$	2120$\dot{2}$
14325871$\dot{1}$	2104$\dot{4}$	3028$\dot{8}$
193·39926$\dot{0}$	2·525$\dot{3}$	51·49$\dot{1}$

Ex. 4.

27·1241

3·$\dot{6}$

9)162·7446

1808273

813723

99·4550$\dot{3}$

Or $3\cdot\dot{6}=3\frac{6}{9}=3\frac{2}{3}=\frac{11}{3}$.

Then $\frac{27\cdot1241\times11}{1\times3}=\frac{298\cdot3651}{3}=$ 99·45503 product.

DIVISION *of* CIRCULATING DECIMALS.

If the dividend only be a repetend, divide as in common numbers, bringing down always the recurring figures, till the quotient become as exact as requiſite. If either the dividend or diviſor, or both, be repetends, reduce them to their finite values, and then apply the rule in Diviſion of Vulgar Fractions.

Ex. 1. 1·2)2·525$\dot{3}$(2·10$\dot{4}$41$\dot{6}$ Ex. 2. 17)51·49$\dot{1}$(3·02$\dot{8}$

Ex. 3. Divide 22·690$\dot{1}$8$\dot{3}$ by 52·7$\dot{6}$7$\dot{8}$. Being reduced to their finite values, they are $\frac{22667493}{999000}$, and $\frac{527151}{9990}$;

Then $\frac{22667493}{999000}\times\frac{9990}{527151}=\frac{22667493}{52715100}$=0·43 quotient.

If the diviſor be a circulate, whatever the dividend is, take the finite value of the diviſor, and by its denominator multiply the dividend, then divide the product by the numerator, and you will have the quotient ſought.

Ex. Divide 5·7648 by 8·4$\dot{7}$=$\frac{763}{90}$. Firſt multiply 5·7648 by 90, the product is 51·884, which divide by 763, the quotient is ·68.

INVOLUTION.

Involution is the raiſing of powers from any propoſed number called its firſt power or root. The higher powers are frequently diſtinguiſhed by an index annexed to the root riſing according to the height of the power. Thus, the index of the ſquare or ſecond power is 2, of the cube or third power is 3, and ſo on.

Rule. Multiply the given root continually into itſelf till the number of multiplications be one leſs than the index of the power ſought, and the laſt product will be the power required.

Thus ſuppoſe 5 the root or firſt power;

Then $5\times5=25$, the ſquare or ſecond power, or 5^2.

$5\times5\times5=125$, the cube or third power, or 5^3.

$5\times5\times5\times5=625$, the biquadrate or fourth power, or 5^4.

$6\times6\times6\times6\times6=46656$, the ſurſolid or fifth power, or 6^5.

And here obſerve, if any number end with 5 or 6, all the powers of that number will end with 5 or 6. Alſo, the ſum of any two or more indices of powers will be the index of a power reſulting from the multiplication of theſe ſeveral powers into each other. As $5^{2+3}=5^2\times5^3=25\times125=3125$, the fifth power of 5.

Ex. 1. What is the ſquare or ſecond power of 37? Anſwer, 1369.

Ex. 2. What is the ſquare of $\frac{7}{9}$? Thus $\frac{7}{9}\times\frac{7}{9}=\frac{49}{81}$, anſ.

Ex. 3. What is the cube of 2·07? Anſwer, 8·869743.

Ex. 4. What is the fourth power of ·022. Anſwer, ·000000234256.

Ex. 5. What is the ſquare or ſecond power of $6\frac{2}{5}$. Anſwer, 40·96.

EVOLUTION *or* EXTRACTION *of* ROOTS.

This is the reverſe of Involution; for, as that is finding the power of a given root, ſo this is finding the root or firſt power of any given higher power, either exactly, or by approximation ſufficiently near, in decimals. The roots which approximate are called ſurd roots, and thoſe which are perfectly accurate are called rational roots.

To Extract the Square Root. Set a point over every other figure of the given number, beginning at the place of units in integers, and proceeding to the left; and beginning at the place of hundreds in decimals, and proceeding to the right; and this will mark it out into as many periods as there will be figures in the root. Find the greateſt ſquare contained in the firſt period towards the left hand, and put the root of it as the firſt figure of the root required. Subtract the aſſumed ſquare from the firſt period, and to the remainder bring down the next period for a dividend. Place the double of the root, already found, on the left hand of the dividend, for a diviſor. Conſider what figure muſt be annexed to the diviſor, ſo that, if the reſult be multiplied by it, the product may be equal to, or next leſs than, the dividend, and it will be the ſecond figure of the root. Subtract the product from the dividend, and to the remainder bring down the next period for a new dividend. Find a diviſor as before, by doubling the figures already in the root, and from theſe find the next figure of the root, as explained above; and ſo on through all the periods to the laſt; and if there be a remainder you may bring down cyphers two at a time, and carry the root into decimals at pleaſure.

Inſtead of doubling the quotient every time for a diviſor, you may always add the laſt quotient figure to the laſt diviſor for a new diviſor, and proceed as before. To prove the work, multiply the root by itſelf, and to the product add the remainder, and the ſum will be the given number.

Ex. What is the ſquare root of 408970·07277789824?

$$\dot{4}0\dot{8}9\dot{7}0\cdot\dot{0}7\dot{2}7\dot{7}8\dot{9}8\dot{2}4(639\cdot50768 \text{ the root required.}$$

$$\begin{array}{r|l}
\multicolumn{2}{l}{36} \\
\hline
123 & 489 \\
+3 & 369 \\
\hline
1269 & 12070 \\
+9 & 11421 \\
\hline
12785 & 64907 \\
+5 & 63925 \\
\hline
1279007 & \cdot9822778 \\
+7 & 8953049 \\
\hline
12790146 & \cdot86972998 \\
+6 & 76740876 \\
\hline
127901528 & \cdot1023212224 \\
 & 1023212224 \\
\hline
 & {*}{*}{*}{*}{*}{*}{*}{*}{*}
\end{array}$$

Proof $639\cdot50768\times639\cdot50768=408970\cdot07277789824$.

Where the operation is large, and the root required to be carried to many places in decimals, the work may be much abbreviated thus; when more than half the figures of the root are found by the common method, all the reſt may be as truly found by common Diviſion.

To extract the Square Root of a Vulgar Fraction or Mixed Number. Firſt prepare all vulgar fractions by reducing them to their loweſt terms, both for this and all other roots. Then take the root of the numerator, and of the denominator, for the reſpective terms of the root required. And this is the beſt way, if the denominator is a complete power. But, if it is not, multiply the numerator and denominator together; take the root of the product; this root being made the numerator to the denominator of the given fraction, or made the denominator to the numerator of it, will form the fractional root required.

That is, $\sqrt{\frac{x}{y}}=\frac{\sqrt{xy}}{y}=\frac{x}{\sqrt{xy}}$. And this rule will ſerve whether the root be finite or infinite. Or, reduce the vulgar fraction to a decimal, and extract its root.

Mixed numbers may be either reduced to improper fractions, and extracted by the firſt and ſecond rule; or, the vulgar fraction may be reduced to a decimal, then joined to the integer, and the root of the whole extracted.

Ex. 1. What is the ſquare root of $\frac{27}{75}$? Firſt $\frac{27}{75}=\frac{9}{25}$ in its loweſt terms; then $\sqrt{9}=3$, and $\sqrt{25}=5$; therefore, $\sqrt{\frac{9}{25}}=\frac{3}{5}$, the anſwer.

Ex. 2. What is the ſquare root of $\frac{49}{64}$, and of $\frac{25}{64}$? Anſwer, $\frac{7}{8}$ and $\frac{5}{8}$.

Ex. 3. What is the ſquare root of $\frac{11}{15}$?

Thus, $\frac{\sqrt{11\times15}}{15}=\frac{12\cdot84523}{15}=\cdot85$.

Ex. 4. What is the ſquare root of $\frac{495}{270}$? Firſt $\frac{495}{270}=\frac{11}{6}$, then, $\frac{\sqrt{11\times6}}{6}=\frac{8\cdot124038}{6}=1\cdot354006+$ the anſwer.

Application of the Square Root. To find a mean proportional between any two numbers, *a* and *b*. $\sqrt{ab}=$ the anſwer. That is, multiply the two numbers together, the ſquare root of the product is the proportional required.

What is the mean proportional between 7 and 343? Anſwer, $\sqrt{7\times343}=49$. For as $7 : 49 :: 49 : 343$. $\therefore 343\times7=49\times49=2401$.

A tub of Iriſh butter weighed in one ſcale 64lb. and in the other 49lb. what was the true weight of the butter. Anſwer, $\sqrt{64\times49}=56$lb.

To EXTRACT the CUBE ROOT.

Separate the given number into periods of three figures each; thus, Put a point over the units place, and over every third figure from thence, to the left hand in whole numbers, and to the right, beginning at the place of thouſands, in decimals. Find the greateſt cube in the firſt period, and put its root in the quotient. Subtract the cube thus found from the firſt period, and to the remainder annex the firſt figure of the ſecond period, and call this the dividend. Divide this dividend by thrice the ſquare of the root laſt found, and the quotient will be the ſecond figure of the root ſought. Cube the root thus found, and ſubtract it from the two firſt periods, and to the remainder bring down the firſt figure of the next period for a new dividend. Divide this new dividend by the triple ſquare of the whole root thus found, the quotient figure annex to the root again. Cube the whole root, and ſubtract it from as many periods as you have brought down, and proceed in this manner till the whole work is ended. If there be a remainder, annex periods of cyphers, and carry the root into decimals, as far as you pleaſe.

Ex. What is the cube root of 146363183?

$$\begin{array}{rl}
 & 14\dot{6}36\dot{3}18\dot{3}(527 \text{ the root required} \\
 & \underline{125} = \text{cube of } 5 \\
5^2\times3=75) & \underline{213} \\
 & 146363 = \text{two firſt periods} \\
 & \underline{140608} = \text{cube of } 52 \\
52^2\times3=8112) & \underline{57551} = \text{new dividend} \\
\text{Proof} & \left\{\begin{array}{l} 146363183 = \text{the three periods} \\ \underline{146363183} = \text{the cube of } 527. \end{array}\right.
\end{array}$$

Find by trials a cube as near the given number as poſſible, either greater or leſs, and call it the aſſumed cube. Then, by the Rule of Three, ſay, As the ſum of twice the aſſumed cube and given number is to the ſum of twice the given number and aſſumed cube, ſo is the root of the aſſumed cube to the root required. By taking the cube of the root thus found for the ſecond aſſumed cube, and repeating the operation, the root will be found to a ſtill greater degree of exactneſs.

Ex. What is the cube root of 98003449?

Let $\overline{500}|^3=125000000$, the aſſumed cube; then $125000000\times2+98003449=348003449$, the firſt term, And $98003449\times2+125000000=321006898$ ſecond term. As $348003449 : 321006898 :: 500 : 461$, the firſt corrected root.

Again, let $\overline{461}|^3=97972181$, the ſecond aſſumed cube; $97972181\times2+98003449=293947811$, firſt term, and $98003449\times2+97972181=293979079$, ſecond term; then As $293947811 : 293979079 :: 461 : 461\cdot04903778$, the root required, and true to the laſt place of decimals.

The reſolvend being pointed into periods, as taught in the firſt rule, find a number whoſe cube comes the neareſt to the firſt period of the reſolvend, to this annex ſo many cyphers as there are remaining points over the whole numbers in the reſolvend, and call this the aſſumed root. Divide the given reſolvend by three times the aſſumed root, and from the quotient ſubtract one-twelfth of the ſquare of the aſſumed root; the ſquare root of the remainder added to half the aſſumed root will give the true root required. When the given reſolvend is a ſurd number, and great exactneſs is required, the operation muſt be repeated once or oftener, always taking the laſt-found root for the aſſumed root, and by each operation you will double the number of decimals in the root preceding.

Ex. What is the cube root of $\dot{7}98\dot{9}59\dot{2}24\dot{4}3$?

Aſſume the root 4000. Then $4000\times3=12000$, three times the aſſumed root.

From $79895922443\div12000 = 6657993$ the quotient
Take $4000^2\div12$ - $= \underline{1333333}$
Remainder - - $\underline{5324660}$

Then $\sqrt{5324660}$ - $= 2307$
To which add $4000\div2$ $= \underline{2000}$
The ſum is - - $\underline{4307}$ the root required.

Proof $4307\times4307\times4307=79895922443$.

To EXTRACT the ROOTS of all POWERS.

Prepare the given number for extraction, by pointing off from the units place as the index of the given root directs. Find the firſt figure of the root by trial, and ſubtract its power from the firſt period of the given number. To the remainder bring down the firſt figure of the next period, and call it the dividend. Involve the root to the next inferior power to that which is given, and multiply it by the number denoting the given power for a diviſor. Find how many times the diviſor may be had in the dividend, and the quotient will be another figure of the root. Involve the whole root to the given power, and ſubtract it from the two firſt periods of the given number as before. Bring down the firſt figure of the next period to the remainder, to which find a new diviſor as before, and ſo on till the whole is completed.

Ex. What is the cube root of 82312875?

$\dot{8}2\dot{3}12\dot{8}75(435$ root
$\underline{64} =$ cube of 4
$4^2\times3=48)\underline{183}$ dividend
$82312 =$ two firſt periods
Subt. $\underline{79507} =$ cube of 43
$43^2\times3=5547)\underline{28058}$ new dividend
$82312875 =$ three periods
Subt. $\underline{82312875} =$ cube of 435.

The extraction of roots is greatly expedited by obſerving what integer numbers multiplied together produce the index of the required root, and making ſuch extractions as are denominated by theſe numbers. Thus, inſtead of the biquadrate root, extract the ſquare root twice, i. e. extract the ſquare root, and then the ſquare root of that root; inſtead of the ſixth root extract the firſt ſquare root, and then the cube root of that, and ſo on.

To extract the Cube Root of a Vulgar Fraction. Reduce the fraction to its loweſt terms, then extract the cube root of both terms for the terms of the required root; but, if the terms will not extract exactly, multiply the numerator by the ſquare of the denominator, and the cube root of the product divided by the denominator will give the root required. Or, multiply the denominator by the ſquare of the numerator, then divide the given numerator by the cube root of the product for the root required. That is,

$$\sqrt[3]{\frac{x}{y}}=\frac{\sqrt[3]{xy^2}}{y}=\frac{x}{\sqrt[3]{yx^2}}.$$

Or, univerſally, thus, let n denote the index of the required root; then

$$\left.\overline{\frac{x}{y}}\right|^{\frac{1}{n}}=\frac{\left.\overline{xy^{n-1}}\right|^{\frac{1}{n}}}{y}=\frac{x}{\left.\overline{xy^{n-1}}\right|^{\frac{1}{n}}},$$

the root required.

Or, reduce the vulgar fraction to a decimal, and then extract the root

Ex. 1. What is the cube root of $\frac{1296}{2058}$? $\frac{1296}{2058}=\frac{216}{343}$, then the cube root of 216 is 6, and of 343 is 7; therefore $\frac{6}{7}$ is the cube root required.

Ex. 2. Required the cube root of $\frac{8}{27}$? By the theorem, $27^2\times8=5832$, whoſe cube root is 18, then $\frac{18}{27}=\frac{2}{3}$, is the root ſought. Or, $8\times8\times27=1728$, whoſe cube root is 12; therefore, $\frac{8}{12}=\frac{2}{3}$, the root as before.

Arithmetic, is inconologically deſcribed by a very beautiful but penſive woman ſitting, and having the numeration table before her, her garment of divers colours and ſtrewed with muſical notes, on the ſkirts of it the words *par & impar*, (even and odd.) Her beauty denotes that the beauty of all things reſult from her, for God made all things by number, weight, and meaſure; her perfect age ſhews the perfection of this art; and the various colours, that ſhe gives the principles of all parts of the mathematics.

ARITHME'TICAL, *adj.* According to the rules or method of arithmetic.—The principles of bodies may be infinitely ſmall, not only beyond all naked or aſſiſted ſenſe, but beyond all *arithmetical* operation or conception. *Grew.*

ARITHME'TICALLY, *adv.* In an arithmetical manner; according to the principles of arithmetic.—Though the fifth part of a xeſtes being a ſimple fraction, and *arithmetically* regular, it is yet no proper part of that meaſure. *Arbuthnot.*

ARITHMETI'CIAN, *ſ.* A maſter of the art of numbers.—A man had need be a good *arithmetician*, to underſtand this author's works. His deſcription runs on like a multiplication table. *Addiſon.*

ARIT'ZAR, a town of European Turkey, in the province of Bulgaria, ten miles ſouth of Viddin.

A'RIUS, a divine of the fourth century, the head and founder of the Arians, a ſect which denied the eternal divinity and ſubſtantiality of the Word. He was born in Lybia, near Egypt. Euſebius, biſhop of Nicomedia, a great favourite of Conſtantia, ſiſter of the emperor Conſtantine, became a zealous promoter of Arianiſm. He took Arius under his protection, and introduced him to Conſtantia; ſo that the ſect increaſed, and ſeveral biſhops embraced it openly. There aroſe, however, ſuch diſputes in the cities, that the emperor was obliged to aſſemble the council of Nice, where, in the year 325, the doctrine of Arius was condemned. Arius was baniſhed, his books were ordered to be burnt, and capital puniſhment was denounced againſt whoever dared to keep them. After five years baniſhment, he was recalled to Conſtantinople, where he preſented the emperor with a confeſſion of his faith, drawn up ſo artfully, that it fully ſatisfied him. Notwithſtanding which, Athanaſius, biſhop of Alexandria, refuſed to admit him and his followers to communion. This ſo enraged them, that, by their intereſt at court, they procured that prelate to be depoſed and baniſhed. But the church of Alexandria ſtill refuſing to admit Arius into their communion, the emperor ſent for him to Conſtantinople; where, upon delivering in a freſh confeſſion of his faith in terms leſs offenſive, the emperor commanded Alexander, the biſhop of that church, to receive him the next day into his communion; but that very evening Arius died. The manner of his death was very extraordinary: as his friends were conducting him in triumph to the great church of Conſtantinople, Arius, preſſed by a natural neceſſity, ſtepping aſide to eaſe himſelf, expired on the ſpot, his bowels guſhing out. But the hereſy did not die with the hereſiarch; his party continued ſtill in great credit at court. In ſhort, this ſect continued with great luſtre above 300 years: it was the reigning religion of Spain for above two centuries; it prevailed in Italy, France, Pannonia, and Africa; and was not extirpated till about the end of the eighth century. It was again ſet on foot in the weſt by Servetus, who, in 1531, wrote a treatiſe againſt the myſtery of the Trinity. After his death Arianiſm got footing in Geneva; from whence it removed into Poland; but, at length, it degenerated in a great meaſure into Socinianiſm.

Arius, one of the principal Centaurs, who fought with the Lapithæ.

ARJUZAN', a town of France, in the department of Landes, and chief place of a canton, in the diſtrict of Tartas, eleven miles north of Tartas.

ARI'ZA, a town of Spain, in Arragon, ſituated on the Xalon, eight leagues above Calataind.

ARK, *ſ.* [*arca*, Lat. a cheſt.] A floating veſſel built by Noah, for the preſervation of his family and the ſeveral ſpecies of animals during the deluge. The wood whereof the ark was built is called in the Hebrew *Gopher-wood*, and in the Septuagint *ſquare timbers.* Some tranſlate the original *cedar*, others *pine*, others *box*, &c. Pelletier prefers cedar, on account of its incorruptibility, and the great plenty of it in Aſia; whence Herodotus and Theophraſtus relate, that the kings of Egypt and Syria built whole fleets thereof, inſtead of *deal.* The learned Mr. Fuller, in his Miſcellanies, has obſerved, that the wood whereof the ark was built was nothing but that which the Greeks call *κυπαρισσος*, or the *cypreſs-tree*; for, taking away the termination, *kupar* and *gopher* differ very little in ſound. This obſervation the great Bochart has confirmed, and ſhewn very plainly that no country abounds ſo much with this wood as that part of Aſſyria which lies about Babylon. In what place Noah built his ark, is no leſs a matter of diſputation. But the moſt probable opinion is, that it was built in Chaldea, in the territories of Babylon, where there was a great quantity of cypreſs; and this conjecture is confirmed by the Chaldean tradition, which makes Xithurus (another name for Noah) ſet ſail from that country.

The dimenſions of the ark, as given by Moſes, are three hundred cubits in length, fifty in breadth, and thirty in height; which ſome have thought too ſcanty, conſidering the number of things it was to contain; and hence an argument has been drawn againſt the authority of the relation. But Buteo and Kircher have proved geometrically, that, taking the common cubit of a foot and a half, the ark was abundantly ſufficient for all the animals ſuppoſed to be lodged in it. Snellius computes the ark to have been half an acre in area. F. Lamy ſhews, that it was 110 feet longer than the church of St. Mary at Paris, and ſixty-four feet narrower: and, if ſo, it muſt have been longer than St. Paul's church in London, from weſt to eaſt, and broader than that church is high in the inſide, and fifty-four feet of our meaſure in height; and Dr. Arbuthnot computes it to have been 81,062 tons.

The things contained in it were, beſides eight perſons of Noah's family, one pair of every ſpecies of unclean animals, and ſeven pair of every ſpecies of clean animals, with proviſions for them all during the whole year. The former appears, at firſt view, almoſt infinite; but, if we come to a calculation, the number of ſpecies of animals will be found much leſs than is generally imagined; out of which, in this caſe, are excepted ſuch animals as can live in the water: and biſhop Wilkins ſhews, that only ſeventy-two of the quadruped kind needed a place in the ark. Upon the whole, the learned biſhop remarks, that of the two, it appears much more difficult to aſſign a number and bulk of neceſſary things to anſwer the capacity of the ark, than to find ſufficient room for the ſeveral ſpecies of animals already known to have been there. This he attributes to the imperfection of our liſt of animals, eſpecially thoſe of the unknown parts of the earth; adding, that the moſt expert mathematician at this day could not aſſign the proportion of a veſſel better accommodated to the purpoſe than is here done; and hence he finally concludes, that the capacity of the ark, which had been made an objection againſt ſcripture, ought to be eſteemed a confirmation of its divine authority: ſince, in thoſe ruder ages, men, being leſs verſed in arts and philoſophy, were more obnoxious to vulgar prejudices than now; ſo that, had it been an human invention, it would have been contrived, according to thoſe wild apprehenſions which ariſe from a confuſed and general view of things, as much too big as it had been repreſented too little. See Deluge.

Ark of the Covenant, a ſmall cheſt or coffer, three feet nine inches in length, two feet three inches in breadth, and the ſame in height. In it were contained the golden pot that had manna, Aaron's rod, and the tables of the covenant. This coffer was made of ſhittim-wood, and covered with a lid of ſolid gold. The ark was depoſited in the holieſt place of the tabernacle. It was taken by the Philiſtines, and detained twenty, ſome ſay forty, years, at Kirjath-jearim; but the people, being afflicted with emerods on account of it, returned it with divers preſents. It was afterwards placed in the temple. The lid or covering of the ark was called the *propitiatory* or *mercy-ſeat*; over which were two cherubims, with expanded wings of a peculiar form. Here the Schechinah reſted both in the tabernacle and temple in a viſible cloud: hence were iſſued the divine oracles by an audible voice; and the high prieſt appeared before this mercy-ſeat once every year on the great day of expiation; and the Jews, wherever they worſhipped, turned their faces towards the place where the ark ſtood. In the ſecond temple there was alſo an ark, made of the ſame ſhape and dimenſions with the firſt, and put in the ſame place, but without any of its contents and peculiar honours. It was uſed as a repreſentative of the former on the day of expiation, and as a repoſitory of the original copy of the holy ſcriptures, collected by Ezra and the men of the great ſynagogue, after the captivity. And in imitation of this, the Jews to this day have a kind of ark in their ſynagogues, wherein their ſacred books are depoſited. This they call *aron.* Leo of Modena gives a deſcription thereof in his Account of the Cuſtoms and Ceremonies of thoſe of his Nation. "The Jews, (ſays he,) in the eaſtern ſide of their ſynagogues, have an ark, or armory, called *aron*, in memory of the ark of the covenant. In this are preſerved the five books of Moſes, written on vellum, with ink made on purpoſe," &c. Some have ſuppoſed that the figure of this ark is ſtill remaining on the triumphal arch of Titus at Rome; others are of opinion, that it is the table of ſhew-bread. Tertullian calls this ark *Armarium Judaicum*; whence the phraſe, *to be in the armory of the ſynagogue*; q. d. in the number of canonical writings.

A cheſt or coffer, very nearly reſembling the Jewiſh ark, and called the *houſe of God*, was found in Huaheine, one of the iſlands in the South Sea. The particulars are given in Hawkeſworth's Voyages, vol. ii. p. 252.

ARKADINSKAI'A, a town of Ruſſian Tartary, in the country of the Koſſacks, on the river Medveditza, 240 miles north-eaſt of Azoph, and 124 ſouth-weſt of Saratov. Lat. 50. 10. N. lon. 50. 60. E. Ferro.

AR'KIT-KAN, a town of Aſiatic Turkey, in the province of Caramania, eighteen miles eaſt of Akſhehr.

ARK'LOW, a neat market-town and ſea-port in the county of Wicklow. The tide flows very little here. It is thirteen miles ſouth of Wicklow, and twenty-ſix of Dublin. Lat. 52. 42. N. lon. 6. 5. W.

Arklow Bank, ſand banks in the Iriſh Sea, about ten miles in length, but hardly one in breadth; five miles from the coaſt of Ireland, the town of Arklow being nearly oppoſite the centre.

ARL (Groſs), a town of Germany, in the circle of Bavaria, and biſhopric of Salzburg, ten miles ſouth-weſt of Radſtadt, and thirty-eight ſouth-ſouth-eaſt of Salzburg.

ARLANT', a town of France, in the department of Puy de Dome, and chief place of a canton, in the diſtrict of Ambert, three leagues ſouth of Ambert.

ARLAN'ZO, a town of Spain, in Old Caſtile, three leagues from Lerma.

ARLAY', a town of France, in the department of Jura, and chief place of a canton, in the diſtrict of Lons-le-Saunier, five miles north of Lons-le-Saunier.

AR'LEN, a town of Germany, in the county of Tyrol, ſituated on a mountain, eight miles north-weſt of Landeck.

AR'LES, a city of France, in the department of the Mouths of the Rhone, in Provence, ſeated on the eaſt ſide of the Rhone, on a hill, whoſe declivity is towards the north. Conſtantine, the Roman emperor, took great delight in this place, and made it the ſeat of the Roman empire in Gaul. It is celebrated for its antiquities, both within and without the city. Thoſe of which any remains are now to be ſeen, are the amphitheatre, the obeliſk, the elyſian fields, the ſepulchres, columns with their capitals, buſts, pedeſtals, aqueducts, with ſome remains of the capitol, and the temples of their gods. The other ancient monuments are entirely deſtroyed. Under the amphitheatre, in 1651, they found the ſtatue of Venus, which was worſhipped by this city, and was afterwards carried to the caſtle of Verſailles. It is a maſter-piece which will always be admired by connoiſſeurs. The amphitheatre is one of the moſt remarkable pieces of antiquity. It was built by the Romans, but the time is unknown, though ſome ſay by Julius Cæſar. It is of an oval form, and about 400 yards in circumference, and the front is 34 yards in height. The middle, called the *arena*, is 142 yards wide and 104 broad. The porticos or piazzas are three ſtories, built with ſtone of a prodigious ſize. Each of them conſiſts of ſixty arches, which ſtill remain; and the walls are of a ſurpriſing thickneſs, but gone to decay. The obeliſk is the only one of this kind to be ſeen in France. It ſeems to be one of the forty brought from Egypt to Rome, becauſe it is of the ſame oriental granite with them. The Pagans burying-place, called the *Elyſian Fields*, is without the city, upon an agreeable hill, divided into two parts. Pieces of coin, of gold, ſilver, and bronze, are found here; as alſo urns, lamps, and cups, without number. Arles is ſurrounded with marſhy land, which renders the air full of vapours, and makes it not very wholeſome. Lat. 43. 41. N. lon. 22. 18. E. Ferro.

Arles, a town of France, in the department of the Eaſt Pyrenees, and chief place of a canton, in the diſtrict of Ceret, eighteen miles ſouth-weſt of Perpignan. Lat. 42. 27. N. lon. 20. 18. E. Ferro.

ARLES'HEIM, a town of Swiſſerland, in the biſhopric of Bâle, three miles ſouth of Bâle.

AR'LES-PENNY, *ſ.* Earneſt-money given to ſervants when they are firſt hired.

ARLEU'X, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Douay, eight miles north-weſt of Cambray.

ARLON', an ancient town of the Netherlands, is ſeated on a mountain, ten miles north-weſt of Luxembourg. Lat. 49. 45. N. lon. 5. 56. E.

ARM', *ſ.* [*earm*, *eorm*, Sax.] The limb which reaches from the hand to the ſhoulder.—If I have lift up my hand againſt the fatherleſs, when I ſaw my help in the gate, then let mine *arm* fall from my ſhoulder-blade, and mine *arm* be broken from the bone. *Job.* The bough of a tree:

Where the tall oak his ſpreading *arms* entwines,
And with the beech a mutual ſhade combines. *Gay.*

An inlet of water from the ſea.—We have yet ſeen but an *arm* of this ſea of beauty. *Norris.* Power; might. In this ſenſe is uſed the ſecular *arm*, &c.—Curſed be the man that truſteth in man, and maketh fleſh his *arm*, and whoſe heart departeth from the Lord. *Jer.* xvii. 5.

O God, thy *arm* was here!
And not to us, but to thy *arm* alone,
Aſcribe we all. *Shakeſpeare.*

"Stretch your *arm* no farther than your ſleeve will reach." The Latins ſay, *Metiri ſe quamque ſuo modulo ac pede verum eſt.* The High Germans, *Strecke dich nach der necke:* Stretch your legs according to your coverlet. The Italians, *Li biſogna tagliare il veſtito ſecondo il panno:* We muſt cut our coat according to our cloth. All cautions againſt undertaking what we are not able to go through with, or ſpending beyond one's income. He is my right *arm*, or what I have moſt to depend on.

Arm, in the manege, is applied to a horſe, when, by preſſing down his head, he endeavours to defend himſelf againſt the bit, to prevent his being checked by it. The remedy is, to have a wooden ball covered with velvet, or other matter, put on his chaul, which will ſo preſs him between the jaw-bones as to prevent his bringing his head ſo near his breaſt.

Arm, in reſpect to the magnet. A loadſtone is ſaid to be armed, when it is capped, caſed, or ſet in iron or ſteel, in order to make it take up the greater weight, and alſo to diſtinguiſh readily its poles. See Magnetism.

Arm's end, *ſ.* A phraſe taken from boxing, in which the weaker man may overcome the ſtronger, if he can keep him from cloſing.—Such a one as can keep him at *arm's end*, need never wiſh for a better companion. *Sidney.* In the ſame ſenſe is uſed *arm's length*.

To Arm, *v. a.* [*armo*, Lat.] To furniſh with armour of defence, or weapons of offence.—And when Abram heard that his brother was taken captive, he *armed* his trained ſervants, born in his own houſe, three hundred and eighteen, and purſued them unto Dan. *Geneſis.*

True conſcious honour is to feel no ſin;
He's *arm'd* without that's innocent within. *Pope.*

To plate with any thing that may add ſtrength. To furniſh; to fit up; to provide againſt.

To Arm, *v. n.* To take arms; to be fitted with arms.

ARMACA'LES, a river of Babylon, called *Foſſa Regia*, the *Royal Trench* or *Cut*, or the *Royal River*; a factitious channel or cut, made by Nabuchadonoſor, and a horn or branch of the Euphrates. *Abydenus.* The Euphrates naturally divides into two channels, one paſſing through Babylon, the other through Seleucia, and then falls into the Tigris; the factitious channel between theſe two is the Royal River, which mixes with the Tigris, a great deal lower down than Seleucia, at Apamea. *Ptolemy.*

ARMA'DA, *ſ.* [Spaniſh.] An armament for ſea; a fleet of war. It is often erroneouſly ſpelt *armado.* For particulars of the Spaniſh armada, which attempted to invade this country, ſee England.

ARMADIL'LA, *ſ.* in Spaniſh America, denotes a ſquadron of men of war, to the number of ſix or eight, from twenty-four to fifty pieces of cannon, which the king maintains, to prevent foreigners from trading with the Spaniards and the Indians, both in time of war and peace. The veſſels of this armadilla are thoſe that have been ſo much talked of, under the name of *guarda coſtas.* They have even power to take all Spaniſh merchant-ſhips they meet with on the coaſts that have not licences from the king. The South Sea has its armadilla as well as the North Sea. The ordinary abode of the former are at Calao, a port of Lima; that of the latter at Carthagena.

ARMADIL'LO, *ſ.* in zoology, a ſynonime of the daſypus. See Dasypus.

ARMAGED'DON, a place ſpoken of in the Revelations, (xvi. 16.) which literally ſignifies the mountain of Mageddon or Megiddo, a city ſituated in the great plain at the foot of mount Carmel, where king Joſiah received his mortal wound in the battle againſt Necho king of Egypt.

ARMA'GH, a county of Ireland, in the province of Ulſter; bounded on the north by the county of Tyrone and Lough Neagh, on the eaſt by the county of Down, on the ſouth by Louth, and on the weſt by the counties of Tyrone and Monaghan; twenty-five miles from north to ſouth, and fifteen from eaſt to weſt, containing about 283 ſquare miles. It contains 21,983 houſes, and the inhabitants are eſtimated at 120,000. The linen manufacture flouriſhes in this county; the principal towns are Armagh, Lurgan, Blackwater-town, and Portadown: the face of the country is diverſified with hills, but the ſoil is fertile, and generally well cultivated. Six members are returned to parliament; two for the county, two for Armagh, and two for Charlemont.

Armagh, a city of Ireland, and capital of the county ſo called, is the ſee of an archbiſhop, who is lord primate of all Ireland. St. Patrick founded the ſee in the year 444. This city was much decayed, but, by the munificence of lord Rokeby, the archbiſhop, it has been conſiderably increaſed;

creaſed; he has built a handſome palace, and a noble houſe for the ſchool, which is a royal foundation; to which he added a public library for the promotion of ſcience. He has alſo erected an obſervatory, with a liberal income for an aſtronomer, ſecuring the endowments by ſeveral acts of the legiſlature. It is ſixty-two miles north of Dublin, and forty-ſix ſouth-ſouth-eaſt of Londonderry. Lat. 54. 21. N. lon. 6. 35. W. Greenwich.

ARMA'GIA, a town of Arabia, ſixty-eight miles ſouth of Cathem.

ARMAGNAC', a province of Guienne in France, ſo called before the late new diviſion; fifty-five miles in length and forty in breadth; bounded on the eaſt by Languedoc, on the ſouth by Bigorre and Bearn, on the weſt by Gaſcony, and on the north by Condomois and Agenois. Auch is the capital town. It now forms part of the department of Gers. It is fertile in corn and wine, and carries on a conſiderable trade in brandy, wool, &c.

ARMAMAX'I, *ſ.* in antiquity, Scythian chariots or carriages, compoſed of two wheels, variouſly adorned with crowns, ſhields, breaſt-plates, and other ſpoils, carried in proceſſion after the images of the gods and great men.

AR'MAMENT, *ſ.* [*armamentum*, Lat.] A force equipped for war; generally uſed of a naval force.

ARMAMEN'TARY, *ſ.* [*armamentarium*, Lat.] An armoury; a magazine or arſenal of warlike implements.

AR'MAN, *ſ.* A confection for reſtoring appetite in horſes.

ARMAN'CE, a river of France, which runs into the Armançon, near St. Florentin, in the department of the Yonne.

ARMANCON', or Armanson, a river of France, which riſes near Semur-en-Auxois, and runs into the Yonne near Ivigny.

AR'MANTHWAITE, a village in Cumberland, adjoining Ouſebridge, at the foot of Baſſingthwaite-water. It commands a pretty proſpect of this beautiful lake, of the romantic hills of Withop on the right, the lofty Skiddaw on the left, and the diſtant hills of Borrowdale, or Keſwick, terminate the view.

ARMA'TA, a ſurname of Venus, ſo called by the Lacedæmonians, becauſe her image was repreſented in armour.

ARMATU'RA, *ſ.* in the ancient military art, a kind of exerciſe, performed with miſſive weapons, as darts, ſpears, arrows, and the like. The armatura was practiſed with great diligence among the Romans; and they had their *campidoctores*, on purpoſe to inſtruct the *tyrones* or young ſoldiers in it. Armatura is alſo a denomination given to the ſoldiers in the emperor's retinue. Of theſe we find two ſchools, mentioned in the *Notitia Imperii*, called the *armaturæ ſeniores* and *armaturæ juniores*. Their commander was intitled *tribunus armaturarum*.

AR'MATURE, *ſ.* [*armatura*, Lat.] Armour; ſomething to defend the body from hurt.—Others ſhould be armed with hard ſhells; others with prickles; the reſt, that have no ſuch *armature*, ſhould be endued with great ſwiftneſs and pernicity. *Ray.* Offenſive weapons; leſs properly.—The double *armature* is a more deſtructive engine than the tumultuary weapon.

AR'ME, *ſ.* [from *αρω*, to adapt.] A junction of the lips of wounds; alſo the joining of the ſutures of the head.

AR'MED, *adj.* in heraldry, is uſed in reſpect of beaſts and birds of prey, when their teeth, horns, feet, beak, talons, or tuſks, are of a different colour from the reſt; as, He bears a cock or a falcon *armed*, or. *Chalmers.*

Armed, in the ſea-language. A croſs-bar ſhot is ſaid to be *armed*, when ſome rope-yarn or the like is rolled about the end of the iron-bar which runs through the ſhot.

Armed Chair, *ſ.* An elbow chair, or a chair with reſts for the arms.

ARME'NE, or Armi'na, anciently a hamlet of Paphlagonia. *Ptolemy.* The inhabitants encompaſſed it with a wall, becauſe of the coldneſs of the place, imagining by that means to render it warmer. But this, proving ineffectual, gave riſe to the proverb *Armenen muro cingere*, uſed to expreſs ſome egregious folly.

ARME'NIA, a country of Aſia, anciently divided into Armenia Major and Minor. Armenia Major, according to Strabo, was bounded on the ſouth by mount Taurus, which ſeparated it from Meſopotamia; on the eaſt, by the two Medias; on the north, by Iberia and Albania, or rather that part of mount Caucaſus which ſurrounds them both; and on the weſt, by Armenia Minor, or the mountains Paryadres, ſome Pontic nations, and the Euphrates. The moſt conſiderable cities were Artaxata, Tigranocerta, and Thedoſiopolis. Armenia Minor was bounded on the eaſt by the Euphrates; on the ſouth by mount Taurus, which ſeparated it from Cilicia; on the weſt and north, by a long chain of mountains, called in different places *Mons Scordiſcus*, *Amanus*, and *Antitaurus*, by which it was ſeparated from Cappadocia.

Whence this tract received its name, is not determined. The Greeks ſuppoſe it to be ſo called from *Armenus*, who attended Jaſon in the Argonautic expedition, and afterwards ſettled in this country. Others, transforming Armenia into Aramia, derive it from Aram the ſon of Shem, or from one of the kings of Armenia bearing that name. Bochart imagines it to be a contraction or compound of *Aar*, a Hebrew word ſignifying a "mountain," and *Mini*, ſignifying "metal," and which was the name of a province of Armenia mentioned by the prophet Jeremiah. Herodotus derives the ancient Armenians from the Phrygians, becauſe ſeveral Phrygian words were found in the ancient Armenian language. But Strabo conceives them to have been originally Syrians; which Bochart alſo thinks the moſt probable opinion.

Armenia is ranked very early among the ancient kingdoms. Beroſus makes Sytha the firſt founder of this monarchy, whoſe ſucceſſor Bardanes was driven out by Ninus king of Aſſyria. Plutarch mentions Araxes king of Armenia, who, in a war with the Perſians, being aſſured of ſucceſs by an oracle, provided he ſacrificed his two daughters, cauſed the two daughters of Mieſalcus, a nobleman of his court, to be ſacrificed in their ſtead, vainly flattering himſelf that he thereby complied with the oracle. But Mieſalcus did not fail to revenge the injury, by putting the king's two daughters to death, and immediately attacking and purſuing the king, who was drowned in attempting to ſwim acroſs the Araxes, which was then called *Helmus*. The Armenians were in proceſs of time ſubdued by the Medes, to whom Aſtyages made them tributaries, but allowed them to be governed by their own kings; but, on the diſſolution of the Median empire by Cyrus, the kingdom was reduced to the form of a province, and they were governed by Perſian prefects or lieutenants. On the deſtruction of the Perſian empire by Alexander the Great, Armenia fell into the hands of the Macedonians; to whom it continued ſubject till the beginning of the reign of Antiochus the Great. This prince having appointed two prefects called *Zadriades* and *Artaxos* to govern Armenia, they excited the people to a revolt, and cauſed themſelves to be proclaimed king of the provinces over which they preſided. Antiochus being then very young, they were attended with ſucceſs beyond their expectation; which encouraged them to attempt the enlargement of their territories. Accordingly, invading the neighbouring countries, they took from the Medes the provinces of Caſpiana, Phaunitia, and Baſoropida; from the Iberians, Chorzena and Gogorena on the other ſide of the Cyrus; from the Chalybes and Moſſynæci, the provinces of Pareneta and Herexena, which bordered on Armenia Minor. On this occaſion, the diviſion of the kingdom into Armenia Major and Minor firſt took place. Artaxias became king of Armenia Major, and Zadriades of Armenia Minor.

By whom Artaxias was ſucceeded is not known; neither have we any account of the tranſactions of his reign, farther than that Antiochus led a powerful army againſt him and Zadriades, but without being able to recover a ſingle province. Upon this he concluded a peace, deſigning to fall upon them at a more convenient opportunity; but they, having entered into alliance with the Romans, by that means ſecured themſelves in the poſſeſſion of the kingdom. After this, Artaxias was defeated and taken priſoner by Antiochus Epiphanes; but was afterwards reſtored to his kingdom.

From this time we meet with a chaſm in the Armenian hiſtory for ſeventy years; during which all we know is, that Tigranes, the king's ſon, was delivered up as an hoſtage to the Parthians; from whence it is plain, that the Armenians had been carrying on an unſucceſsful war with that nation. On the news of his father's death, however, the Parthians ſet the young king at liberty, having firſt obliged him to give up a conſiderable part of his kingdom by way of ranſom. Tigranes, thus reſtored to his father's kingdom, entered into an alliance with Mithridates Eupator, againſt the Romans. One of the articles of this treaty was, that Mithridates ſhould have the conquered countries, and Tigranes the captives and plunder. In conſequence of this, Tigranes was to invade Cappadocia, which he had lately been obliged, by a decree of the ſenate of Rome, to give up to Ariobarzanes. But, before theſe princes took the field, a marriage was ſolemnized between Tigranes and Cleopatra, the daughter of Mithridates. Immediately after the nuptials, Tigranes ſet out on his intended expedition; and Ariobarzanes, on the firſt news of his march, abandoned his kingdom and fled to Rome. Thus Tigranes, without fighting a battle, enriched himſelf with the booty, and proclaimed Ariarathes, Mithridates's ſon, king of Cappadocia.

In the mean time the Syrians, haraſſed with a long and inteſtine war of the Seleucidæ, invited Tigranes to come and take poſſeſſion of their country; which he accordingly did, and kept it for eighteen years. Encouraged by this ſucceſs, he next invaded Armenia Minor; defeated and killed king Artanes, and in one campaign made himſelf maſter of the whole kingdom. From Armenia Minor he marched againſt the Aſiatic Greeks, the Adiabenians, the Aſſyrians, and the Gordians, carrying all before him, and obliging the people wherever he came to acknowledge him as their ſovereign. From this ſecond expedition he returned loaded with booty, which he ſoon after increaſed by the ſpoils of Cappadocia; which kingdom he invaded a ſecond time, at the inſtance of Mithridates, who had been obliged by the Romans to withdraw his forces from thence. From Cappadocia, Tigranes brought into Armenia no leſs than 300,000 captives, having ſurrounded the country with his numerous forces in ſuch a manner that none could eſcape. Theſe, with the priſoners he had taken in his two firſt expeditions, he employed in building the city of Tigranocerta, which they afterwards peopled.

In the interim Mithridates, who had concluded a peace with the Romans for no other end than to gain time, ſent a ſolemn embaſſy to Tigranes, inviting him to enter into a ſecond alliance againſt the common enemy. This he at firſt declined; but in the end was prevailed upon by his wife Cleopatra to ſend him conſiderable ſupplies, though he never came heartily into the war, not caring to provoke the Romans, who on their part kept fair with him, taking no notice for the preſent of the ſupplies he had ſent Mithridates. That unfortunate prince, being ſoon after defeated by Lucullus, was forced to fly into Armenia, where his ſon-in-law promiſed to protect his perſon, and allotted him one of his caſtles, a princely retinue, and a table ſuitable to his former condition.

Though this total overthrow of Mithridates might have opened the eyes of Tigranes, and induced him to oppoſe the growing power of the Romans, he nevertheleſs ſuffered them to finiſh their conqueſt of Pontus, while he marched at the head of a very numerous army againſt the Parthians, with a deſign to recover the dominions they had formerly extorted from him before they ſet him at liberty. Theſe he eaſily retook; and, not ſatisfied with what formerly belonged to him, he added to them all Meſopotamia, the countries that lay about Ninus and Arbela, and the fruitful province of Migdonia; for the Parthians, though a mighty people, fled every where before him. From Meſopotamia he marched into Syria, to quell a rebellion which had been raiſed by Cleopatra, ſurnamed *Selene*; who, after the death of her huſband Antiochus Pius, reigned jointly with her ſons in that part of Syria which Tigranes had not ſeized upon. The malcontents were quickly reduced, and the queen herſelf was taken priſoner, and confined to the caſtle of Seleucia, where ſhe was put to death by the king's orders. From Syria, Tigranes paſſed into Phœnice, which he ſubdued in great part, ſpreading far and wide the terror of his arms, inſomuch that all the princes of Aſia, except thoſe who were in alliance with the Romans, either in perſon or by deputies, ſubmitted and paid homage to the conqueror.

The king having now ſubdued all Syria to the borders of Egypt, and being elated with a long courſe of proſperous events, began, as is too often the caſe, to look upon himſelf as far above the level of other crowned heads. He aſſumed the title of *king of kings*, and had many kings waiting upon him as ſervants. He never appeared on horſeback without the attendance of four kings dreſſed in livery, who ran by his horſe; and, when he gave anſwers to the nations that applied to him, the ambaſſadors ſtood on either ſide the throne with their hands claſped together, that attitude being then accounted among the orientals the greateſt acknowledgment of vaſſalage and ſervitude. In the midſt of all this hauteur, he was viſited by an ambaſſador from Lucullus the Roman general, who without ceremony told him, that he was ſent to demand Mithridates king of Pontus, who had taken refuge in his dominions; and, in caſe of his refuſal, to denounce war againſt him. Tigranes returned a mild anſwer to this meſſage; but refuſed to deliver up his father-in-law; and, being highly provoked at Lucullus, for not giving him the title of *king of kings* in his letter, he did not ſo much as beſtow upon him the title of *general* in his anſwer. In the mean time, being informed that Zarbienus king of the Gordians had entered into a private alliance with the Romans, he put him, his wife, and children, to death; and, then returning into Armenia, received a viſit from his father-in-law Mithridates, whom to that time he had not ſeen, though he had reſided a year and eight months in his dominions. They had ſeveral private conferences; and at laſt Mithridates was ſent back to Pontus with 10,000 horſe, to raiſe there what ſuccours he could.

Lucullus, on the other hand, hearing of the king's reſolution to protect Mithridates, began his march for Armenia, at the head of only two legions of foot and 3000 horſe, having left 6000 men in Pontus to keep that country quiet. After paſſing the Euphrates, he detached two parties; one to beſiege a city, where he heard Tigranes's treaſure and concubines were kept; and the other under Sextilius, to block up Tigranocerta, in order to compel the king to a battle. But Tigranes, after having put to death the ſcout that brought him intelligence of the approach of the Romans, made towards mount Taurus, which he had appointed for the place of the general rendezvous. The Roman general then diſpatched Muræna in purſuit of the king; who, having overtaken him in a narrow paſs, defeated him, and, beſides all the baggage, carried off a great many priſoners, the king himſelf having fled in the beginning of the ſkirmiſh. After this, he ſent out ſeveral parties to ſcour the country, in order to prevent the innumerable forces of Tigranes from joining into one body. This, however, he was not able to effect: Tigranes was joined by ſuch numbers of Gordians, Medes, Adiabenians, Albanians, Iberians, &c. that, before he left mount Taurus, his army conſiſted, according to Plutarch, of 150,000 foot, 35,000 pioneers, 20,000 archers and ſlingers, and 55,000 horſe.

Lucullus was ſo far from being diſmayed at this formidable army, that the only fear he had was leſt the king ſhould follow the advice of Mithridates, which was not to engage the Romans, but, by ravaging the country, diſtreſs them for want of proviſions. The event, however, turned out to his wiſhes. Tigranes having called a council of war, it was unanimouſly reſolved to attack the Romans; and Taxilis, whom Mithridates ſent to diſſuade the king from riſking a battle, was in danger of loſing his head, on account of the advice he gave. The Roman general, upon this information, left Muræna with 6000 men to carry on the ſiege, while he himſelf marched againſt the king's vaſt army with only 10,000 men according to ſome, and the higheſt computations make them no more than 18,000. The Romans were at firſt greatly diſheartened; but, being encouraged by Lucullus, they ſoon broke the Armenian army, who betook themſelves to flight almoſt at the firſt onſet. The Romans purſued them till night, making a moſt terrible ſlaughter. Plutarch informs us, that of the Armenians 100,000 foot were killed, and that very few of the cavalry eſcaped; whereas of the Romans only five men were killed and 100 wounded. Antiochus the philoſopher, mentioning this battle, ſays, that the ſun never beheld the like; and Livy, that the Romans never fought at ſuch a diſadvantage; the conquerors not amounting to a twentieth part of the conquered. Tigranes in his flight, having met with his ſon in as forlorn a condition as himſelf, reſigned to him his royal robes and diadem, deſiring him to ſhift for himſelf and ſave thoſe royal enſigns. The young prince delivered them to a truſty friend, who, being taken by the Romans, conſigned them to Lucullus.

While the king was making his eſcape, he was met by Mithridates, who was marching to his aſſiſtance at the head of a conſiderable army. The king of Pontus cheered up his ſon-in-law, adviſing him, inſtead of fruitleſsly bewailing the preſent diſaſter, to rally his troops, raiſe new ſupplies, and renew the war; not queſtioning but that in another campaign he might repair all the loſſes he had ſuſtained: but, while the two kings were conſulting, Lucullus made himſelf maſter of Tigranocerta. From this city he marched into the ſmall kingdom of Gordyene, where he celebrated, with the utmoſt pomp, the obſequies of king Zabienus, whom Tigranes had put to death. In this kingdom, beſides immenſe ſums of gold and ſilver, he met with ſuch ſtore of proviſions as enabled him to carry on the war without putting the republic to any charge.

The two kings, having levied new forces, appointed their troops to rendezvous in the ſpacious plains near mount Taurus; whereupon Lucullus, leaving Gordyene, encamped cloſe by the enemy. Several ſkirmiſhes happened without any conſiderable advantage; but Lucullus could by no means draw them to a general engagement. Upon this he decamped, as if he deſigned to march againſt Artaxata and lay ſiege to that place, where Tigranes had left his wife and children, with great part of his treaſures. He had ſcarcely formed his camp when the enemy appeared, and ſat down cloſe by him. Lucullus did not allow them to fortify their camp, but immediately attacked them; and, having put them to flight after a faint reſiſtance, purſued them all night with great ſlaughter, and took moſt of the officers priſoners.

The Roman ſoldiers, now finding the cold very ſevere, requeſted their general to allow them to retire into winter quarters. This requeſt he rejected with indignation; upon which they mutinied. Lucullus did all he could to perſuade them to continue in their duty, and prevailed ſo far that they conſented to lay ſiege to Niſibis, in hopes of booty. This place they took; and Lucullus, to the great ſatisfaction of his troops, took up his winter quarters there. The next year, however, his forces again mutined, accuſing him of amaſſing immenſe wealth for himſelf; and, throwing their empty purſes at his feet, told him, that, as he enriched himſelf alone, he might carry on the war alone. He endeavoured to appeaſe them as much as poſſible; but the ſedition being fomented by a party in the intereſt of Pompey, at that time aſpiring to the command of Lucullus's army, the latter was obliged to ſit ſtill, and ſee Mithridates and Tigranes over-run Cappadocia, and recover all Armenia, and great part of Pontus. They would have gained greater advantages, had not a ſon of Tigranes taken up arms againſt his father, and obliged him to divide his troops. The father and ſon coming to a pitched battle, the latter was defeated, and forced to ſave himſelf in Parthia, where he perſuaded Phrahates, king of that country, to aſſiſt him with a numerous army. Phrahates having laid ſiege to Artaxata, Tigranes the elder was obliged to hide himſelf in the mountainous parts of his kingdom; upon which the king of Parthia returned home. Of this Tigranes the father being appriſed, he abandoned the faſtneſſes of the mountains; and, falling upon his ſon at Artaxata, diſperſed the rebels with great ſlaughter, and entered his metropolis in triumph. Tigranes the ſon firſt fled to Mithridates; but, finding him reduced to great ſtraits, having been defeated a few days before, with the loſs of 40,000 men, by Pompey, he went over to the Romans, and led them into Armenia againſt his father, as an ally of Mithridates. Tigranes being quite diſpirited, and unable to make head againſt the Romans, reſolved at once to ſubmit. Accordingly he waited on Pompey in his camp; and, having delivered his ſword to two lictors, proſtrated himſelf before him, and laid his diadem at his feet. Pompey gave him a gracious reception, and generouſly reſtored him the kingdom of Armenia, but fined him 6000 talents for making war on the Roman people without a cauſe. As the king had appealed to the Roman general for juſtice againſt his ſon, Pompey heard both parties the next day, and made the ſon governor of Gordyene and Sophene; but the treaſures that were kept in the latter he adjudged to the father, becauſe without them he could not pay the fine. The ſon, being thus diſappointed, endeavoured firſt to make his eſcape, and afterwards, by private meſſengers, ſolicited the inhabitants not to deliver up the treaſures to his father. This being reſented by Pompey, he cauſed him to be kept in irons; yet even then he found means to ſtir up Phrahates king of Parthia, whoſe daughter he had married, againſt the Romans, and to form a conſpiracy againſt his father's life; whereupon Pompey ſent him in chains to Rome, where he was kept priſoner till the tribuneſhip of P. Clodius; who, being bribed with a large ſum of money, ſet him at liberty in ſpite of Pompey and the ſenate. Tigranes now yielded to the Romans Cappadocia, Syria, Silicia, and that part of Phœnice which he poſſeſſed, contenting himſelf with his paternal kingdom; and not only paid the fine laid upon him, but made large preſents to Pompey, and to all the officers of his army, which procured him the title of *the friend and ally of the Roman people.* He afterwards entered into a war with Phrahates king of Parthia, by whom he was overcome, and would have been driven out of his kingdom, had not a peace been brought about by the mediation of Pompey. He ever after cultivated a ſtrict friendſhip with the Romans; inſomuch that he not only refuſed to receive Mithridates, who fled to him after he had been routed by Pompey near mount Stella, but even offered a reward of one hundred talents to any one who would put him to death. His ſecond ſon alſo, by name Sariaſter, took up arms againſt him; but by the aſſiſtance of the Romans that rebellion was ſoon quelled. He died in the 85th year of his age; and was ſucceeded by his ſon Artuaſdes, called by Joſephus *Artabazes*, by Oroſius *Artabanes*, and by others *Artoadiſtes*.

From this time to the reign of Trajan, Armenia was governed by its own kings; but, as they were vaſſals to the Romans, their hiſtory falls under that of the Romans. By Trajan, Armenia Major was reduced to a Roman province; but it ſoon recovered its liberty, and was again governed by its own kings in the reigns of Conſtantine the Great and his ſucceſſor, to whom the kings of Armenia were feudatories. In the reign of Juſtin II. the Saracens ſubdued and held it till the irruption of the Turks, who poſſeſſed themſelves of this kingdom, and gave it the name of *Turcomania*. The Turks, after the reduction of Armenia, invaded Perſia, and other countries ſubject to the emrors of the eaſt; which gave the Armenians an opportunity of ſhaking off the Turkiſh yoke, and again ſetting up kings of their own, by whom they were governed till the country was ſubdued by Occadan, or, as ſome ſtyle him, *Heccata*, the ſon of Cingis, the firſt cham of the Tartars. Neither was the conqueſt of Armenia by the Tartars ſo abſolute as to extirpate the race of their kings: for we read of *Haithon*, ſurnamed the *Armenian*, reigning ſome time after, and going in perſon to treat with Mungo, the great cham of Tartary, of the concerns of his kingdom; and in our chronicles we find mention made of Leo king of Armenia, who in the reign of Richard II. came into England to ſue for aid againſt the Turks, by whom he had been driven from his kingdom. In the year 1472 of the Chriſtian era, Uſſan Caſſanes, king of Armenia, ſucceeding to the crown of Perſia, made Armenia a province of that empire; in which ſtate it continued till the year 1522, when it was ſubdued by Selim II. and made a province of the Turkiſh empire; ſince which time it has continued ſubject to the Turks, except the eaſtern part, which is under the dominion of the Perſians.

Concerning Armenia Minor we find very little recorded, except what has been already mentioned, and what falls under the Roman hiſtory. It was made a Roman province by Veſpaſian, and continued ſo till the diviſion of the empire, when it was ſubjected to the emperors of the eaſt; and, on the decline of their power, was ſubdued firſt by the Perſians, and afterwards by the Turks, who gave it the name of *Genech*, and have continued maſters of it ever ſince.

This country is ſtill divided into the Great and Small. Great Armenia comprehends what is now called *Turcomania*. It has Georgia on the north, from which it is ſeparated by high mountains; the river Euphrates on the weſt; Diarbeker, Curdiſtan, and Aderbijan, on the ſouth; and Shirvan on the eaſt. The chief towns in that part of Armenia belonging to Turkey are, Arzum the capital, near the ſprings of the Euphrates, a large city and a great thoroughfare for the caravans between Turkey and Perſia; Kara, a ſtrong city, head of the government of the ſame name; Bayazid, a republic of Hurds, near mount Ararat; Baha, another republic of the ſame; and Van or Wan, on the lake Van, the head of a government of the ſame name; with other towns of leſs note. That part of Armenia ſubject to Perſia is chiefly contained in the province of Aran, in which are ſeveral fine towns; as, Erivan or Rivan, the capital of the whole; Ganjals, one of the fineſt cities in Perſia, in the north of the province, near the Kur; Kapan, on the ſouth ſide, near the Aras; beſides Nakchivan, Aſtabad Julſa, Ordabad, Baylakan or Pilkan, on the Aras; Berdah and Shilkah on the Kur.

The country in general is full of mountains and valleys, lakes and rivers; particularly the country about the three churches, near Erivan, is admirably fine, being full of rivulets, which render it extremely fruitful. Beſides great quantities of all ſorts of grain, here are fields of a prodigious extent covered with tobacco: but it is not a native of the place, though ſuppoſed by ſome to be the ſeat of paradiſe, or the garden of Eden mentioned in the Scriptures. The reſt of the country produces rice, cotton, flax, melons, and grapes; in ſhort, there is nothing wanting but olives; which is by ſome thought to prove that the ark could not reſt on monnt Ararat, becauſe the dove brought an olive-branch in her mouth, and this tree never leaves a place where it once grew. It ſeems, however, to have been otherwiſe anciently; for Strabo tells us, that the olive grew in Gogarene, a province of Armenia. The water-melons are as cold as ice in the hotteſt day, and melt in the mouth; the beſt are produced in the ſalt-lands, near the three churches and the river Aras. After rain, the ſea-ſalt lies in cryſtals upon the fields, and even crackles under the feet. About ten miles from the three churches, in the road to Teflis, there are pits or quarries of foſſile ſalt, which yield enough to ſupply all Perſia, without being exhauſted: they cut it into large pieces like ſtone, and each buffalo carries two of them; the mountain from whence it is dug is an entire maſs of ſalt, which appears like a rock of ſilver, when the ſun ſhines, on the places not covered with earth. The whole country has been remarkable for its extreme cold, from the remoteſt antiquity. Sir John Chardin tells us, that he found ice in the rivulets in the mornings even of the month of July. In many places, alſo, if they had not the convenience of watering their grounds, they would be almoſt entirely barren.

The Armenians are an honeſt, civil, polite, people, ſcarcely troubling themſelves about any thing elſe but trade, which they carry on in moſt parts of the world, by which means they have ſpread themſelves over the eaſt, and alſo a great part of Europe. The religion of the Armenians is the Chriſtian, of the Eutychian ſect: that is, they own but one nature in Jeſus Chriſt; and, when they ſpeak of the hypoſtatical union, that he is perfect God and perfect man without mixture. The Armenian clergy conſiſt of patriarchs, archbiſhops, doctors, ſecular prieſts, and monks. The ſecular prieſts are not allowed to marry a ſecond time, and therefore they take care to chooſe young healthy wives: they maintain themſelves and families by following ſome occupation, inſomuch that they have hardly time to perform their eccleſiaſtical functions: they lie in the churches on the vigils of thoſe days they are obliged to officiate. The Armenian monks are of the order of St. Baſil; and every Wedneſday and Friday they eat neither fiſh, nor eggs, nor oil, nor any thing made of milk, and during Lent they live upon nothing but roots: they are allowed wine only on the Saturday in the Holy Week, and meat on the Eaſter Sunday. Beſides the great Lent, they have four others of eight days each, which are inſtituted to prepare for the fonr great feſtivals of the Nativity, the Aſcenſion, the Annunciation, and St. George; in which times they do not eat eggs, fiſh, oil, or butter. They have ſeven ſacraments; baptiſm, confirmation, penance, the euchariſt, extreme unction, orders, and matrimony. In baptiſm, the child is plunged three times into the water, and the ſame form of words that is uſed with us is repeated every time; the prieſt then puts a ſmall cord made with ſilk and cotton on the neck of the infant, and anoints his forehead, chin, ſtomach, arm-pits, hands, and feet, making the ſign of the croſs on each part. When the child is baptized, he is carried home by the godfather with the ſound of drums and trumpets. The women do not go to church till forty days after their delivery; and they obſerve many Jewiſh cuſtoms.

ARMENI'ACA, *ſ.* in botany. See PRUNUS.

ARME'NIAN, *ſ.* Something belonging to or produced in Armenia: thus we ſay, *Armenian ſtone*, *Armenian bole*, &c.

ARMEN'TAL, or ARMEN'TINE, *adj.* [*armentalis*, or *armentinus*, Lat.] Belonging to a drove or herd of cattle.

ARMENTE'QUI, or ARMENZA, a village of Spain, in the country of Alava, once a city and ſee of an archbiſhop, but now only a ſmall place, one mile from Vittoria.

ARMENTIE'RES, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Lille, ſituated on the Lys. It was taken and retaken ſeveral times in the wars between France and Spain. Lewis XIV. deſtroyed the fortifications in 1667. It is eight leagues eaſt of St. Omer, and two and a quarter weſt of Lille.

ARMEN'TO, a town of Italy, in the kingdom of Naples, and province of Baſilicata, twenty miles ſouth-ſouth-eaſt of Potenza.

ARMENTO'SE, *adj.* [*armentoſus*, Lat.] Abounding with cattle.

ARME'NUS, one of the Argonauts, and of Theſſalian origin. From him the country of Armenia is ſaid to have received its name.

ARMENUS LAPIS, or ARMENIAN STONE, a mineral ſubſtance, which is but improperly called a *ſtone*; being no other than an ochreous earth, and properly called *blue ochre*. It is a very valuable ſubſtance in painting, being a bright and lively blue. It was in ſo high eſteem as a paint among the ancients, that counterfeits were continually attempted to ſerve in its place. Theophraſtus has recorded it as a thing judged worthy a place in the Egyptian annals, which of their kings had the honour of inventing the factitious kind; and he tells us the genuine native ſubſtance was a thing of that value, that preſents were made of it to great perſons, and that the Phœnicians paid their tribute in it. It is a very beautiful earth, of an even and regular texture; and of a fine blue, ſometimes deeper, ſometimes paler, and frequently mixed with green. It is ſoft, tender, and light; of an even, but ſomewhat duſty, ſurface; it adheres firmly to the tongue, and is dry, but not harſh to the touch. It eaſily breaks between the fingers, and does not ſtain the hands. It is of a brackiſh diſagreeable taſte, and will ſometimes ferment with acids, and ſometimes not. It is a very ſcarce foſſil, but is found very pure, though in but ſmall quantities, in the mines at Goſſelaer in Saxony. It is frequently found ſpotted with green, and ſometimes with black, and very often is mixed among the green ochre, called *berggruen* by the Germans, which has thence been erroneouſly called by its name. It is too ſoft to give fire with ſteel, and loſes its colour when heated. It operates inſtantly as an emetic, in a doſe of four grains. It differs little from the *lapis lazuli*.

ARME'RIA, *ſ.* in botany. See DIANTHUS.

ARME'RIUS. See DIANTHUS and SILENE.

AR'MET, a town on the iſland of Nouſſa Laout, one of the Molucca iſlands.

ARM'GAUNT, *adj.* [from *arm* and *gaunt*.] Slender as the arm:

So he nodded,
And ſoberly did mount an *armgaunt* ſteed. *Shakeſpeare.*

ARM'-HOLE, *ſ.* [from *arm* and *hole*.] The cavity under the ſhoulder.—Tickling is moſt in the ſoles of the feet, and under the *arm-holes*, and on the ſides. The cauſe is the thinneſs of the ſkin in thoſe parts, joined with the rareneſs of being touched there. *Bacon.*

AR'MIGER, *ſ. eſquire, eſcuyer, ſcutarius,* is a name of dignity, next above the degree of gentleman, and below a knight. Anciently he was one that was attendant on ſuch as had the order of knighthood, bearing their ſhields and other armour, and helping them to horſe, and performing other ſuch like ſervices. See ESQUIRE.

ARMI'GEROUS, *adj.* [from *armiger*, Lat. an armour-bearer.] Bearing arms.

ARMIL'LA, *ſ.* [*armus*, Lat. the arm.] The round ligament which confines the tendons of the carpus.

ARMIL'LARY, *adj.* [from *armilla*, Lat. a bracelet.] Something conſiſting of rings or circles.

ARMILLARY SPHERE, an artificial ſphere compoſed of a number of circles of the mundane ſphere, put together in their natural order, to eaſe and aſſiſt the imagination in conceiving the conſtitution of the heavens, and the motions of the celeſtial bodies. The armillary ſphere revolves upon its axis within a ſilvered horizon, which is divided into degrees, and moveable every way upon a braſs ſupporter. The other parts are the equinoctial, zodiac, meridian, the two tropics, and the two polar circles.

ARMILLARY TRIGONOMETER, an inſtrument for expeditiouſly reſolving many problems in aſtronomy, dialling, and ſpherical trigonometry. It was invented by Mr. Murray, and greatly improved by Mr. Ferguſon.

AR'MILLATED, *adj.* [Latin.] Having bracelets.

ARMILUS'TRIUM, *ſ.* A feſtival celebrated by the Romans in the field of Mars, on the nineteenth day of October, in which they offered ſacrifices for the proſperity of the arms of the Roman empire.

AR'MINGS, *ſ.* in a ſhip, the ſame with waſte-clothes, being clothes hung about the outſide of the ſhip's upperworks fore and aft, and before the cubbrige heads. Some are alſo hung round the tops, called *top armings*. *Chambers.*

ARMI'NIANS, a religious ſect, or party, which aroſe in Holland by a ſeparation from the Calviniſts. They followed the doctrine of Arminius, who thinking the doctrine of Calvin, with regard to free-will, predeſtination, and grace, too ſevere, began to expreſs his doubts concerning them in the year 1591; and, upon farther inquiry adopted ſentiments more nearly reſembling thoſe of the Lutherans than of the Calviniſts. The controverſies on this ſubject became very general after the death of Arminius, in the year 1609, and threatened to involve the United Provinces in civil diſcord. The Arminian tenets gained ground under the mild and favourable treatment of the magiſtrates of Holland; though, in the reſult of the conteſt, the Armenians were overpowered and oppreſſed, and reduced to a ſtate of exile, till after the death of prince Maurice. The Arminian ſyſtem has very much prevailed in England ſince the time of archbiſhop Laud, and its votaries in other countries are very numerous.

The diſtinguiſhing tenets of the Arminians may be compriſed in the following five articles; relating to predeſtination, univerſal redemption, the corruption of man, converſion, and perſeverance. 1. With reſpect to the firſt, they maintained, "That God, from all eternity, determined to beſtow ſalvation on thoſe who he foreſaw would perſevere unto the end in their faith in Jeſus Chriſt; and to inflict everlaſting puniſhments on thoſe who ſhould continue in their unbelief, and reſiſt unto the end his divine ſuccours: ſo that election was conditional, and reprobation in like manner the reſult of foreſeen infidelity and perſevering wickedneſs." 2. On the ſecond point the Arminians taught, "That Jeſus Chriſt, by his ſufferings and death, made an atonement for the ſins of all mankind in general, and of every individual in particular; that, however, none but thoſe who believe in him can be partakers of their divine benefit." 3. On the third article they held, "That true faith cannot proceed from the exerciſe of our natural faculties and powers, nor from the force and operation of free will; ſince man, in conſequence of his natural corruption, is incapable either of thinking or doing any good thing; and that therefore it is neceſſary, in order to his converſion and ſalvation, that he be regenerated and renewed by the operation of the Holy Ghoſt, which is the gift of God through Jeſus Chriſt." 4. "That this divine grace, or energy of the Holy Ghoſt, begins and perfects every thing that can be called good in man, and conſequently all good works are to be attributed to God alone; that, nevertheleſs, this grace is offered to all, and does not force men to act againſt their inclination, but may be reſiſted and rendered ineffectual by the perverſe will of the impenitent ſinner." Some modern Arminians interpret this and the laſt article with a greater latitude. 5. "That God gives to the truly faithful, who are regenerated by his grace, the means of preſerving themſelves in this ſtate;" and, though the firſt Arminians made ſome doubt with reſpect to the cloſing part of this article, their followers uniformly maintain, "that the regenerate may loſe true juſtifying faith, forfeit their ſtate of grace, and die in their ſins." The modern ſyſtem of Arminianiſm likewiſe extends the limits of the Chriſtian church in ſuch a manner, that Chriſtians of all ſects and denominations, Papiſts excepted, may be formed into one religious body, and live together in brotherly love and concord. The Arminians are alſo called *Remonſtrants*, from an humble petition entitled their *Remonſtrance*, which, in the year 1610, they addreſſed to the States of Holland. Their principal writers are, Arminius, Epiſcopius, Vorſtius, Grotius, Curcellæus, Limborch, Le Clerc, Wetſtein, and many others of more modern date.

ARMI'NIUS (James), whoſe real name in Low Dutch was James Harmanni, a famous Proteſtant divine, from whom the ſect of Arminians took their name, was born at Oude-water, in Holland, in 1560. He was ordained miniſter at Amſterdam, in Auguſt 1588; and he ſoon after diſtinguiſhed himſelf by his ſermons, which gained him univerſal applauſe. Martin Lydias, profeſſor of divinity at Franker, judging him a fit perſon to refute a writing in which Beza's doctrine of predeſtination had been attacked by ſome miniſters of Delft, Arminius at his intreaties undertook the taſk; when, upon examining the reaſons on both ſides, he came into the very opinions he had undertaken to deſtroy, and wrote much ſtronger in their favour. In 1602, a peſtilential diſeaſe raged at Amſterdam, during which he acted with the greateſt reſolution, in aſſiſting the poor, and comforting the ſick; and Lucas Trelcatius and Francis Junius dying of that diſeaſe at Leyden, Arminius was choſen profeſſor of divinity there, and was made doctor of divinity. Diſputes were ſoon after kindled in that univerſity; and he was engaged in a conteſt, occaſioned by a diſputation of his concerning the divinity of the Son. Theſe conteſts, his continual labour, and the concern of ſeeing his reputation blaſted by a multitude of ſlanders in relation to his religious opinions, impaired his health, and threw him into a fit of ſickneſs, of which he died, on the 19th of October, 1609. Arminius was eſteemed an excellent preacher: his voice was low, but audible; and his pronunciation was admirable: he was eaſy and affable to perſons of all ranks, and facetious in his converſation amongſt his friends. His great deſire was, that Chriſtians would bear with one another in all controverſies which did not affect the fundamentals of their religion; and, when they perſecuted each other for points of indifference, it gave him the utmoſt diſſatisfaction. The curators of the univerſity of Leyden had ſo great a regard for him, that they ſettled a penſion upon his wife and children. He left ſeveral works, viz. 1. Diſputationes de diverſis Chriſtianæ religionis capitibus. 2. Orationes, itemque tractatus inſigniores aliquot. 3. Examen modeſti libelli Gulielmi Perkinſi de prædeſtinationis modo et ordine, itemque de amplitudine gratiæ divinæ. 4. Analyſis capitis noni ad Romanos. 5. Diſſertatio de vero et genuino ſenſu capitis ſeptimi epiſtolæ ad Romanos. 6. Amica collatio cum D. Franciſco Junio de prædeſtinatione per literas habita. 7. Epiſtola ad Hippolitum a collibus."

ARMI'POTENCE, *ſ.* [from *arma*, arms, and *potentia*, power, Lat.] Power in war.

ARMI'POTENT, *adj.* [*armipotens*, Lat.] Powerful in arms; mighty in war.—The manifold linguiſt, and the *armipotent* ſoldier. *Shakeſpeare.*

For if our God, the Lord *armipotent*,
Thoſe armed angels in our aid down ſend,
That were at Dathan to his prophet ſent,
Thou wilt come down with them. *Fairfax.*

Beneath the low'ring brow, and on a bent,
The temple ſtood of Mars *armipotent*. *Dryden.*

ARMI'RA, a ſea-port town of European Turkey, on the weſt ſide of the Gulf of Volo, on the coaſt of Theſſaly, ten miles S. of Volo. Lat. 39. 20. N. lon. 40. 54. E. Ferro.

ARMIRA, a town of South America, in Guiana, four leagues from Cayenne.

ARMISCA'RA, *ſ.* A ſort of puniſhment decreed or impoſed on an offender by the judge. *Malmſb.* lib. 3. p. 97. *Walſingham*, p. 430. At firſt it was to carry a ſaddle at his back in token of ſubjection. Brampton ſays, that in the year 1176, the king of the Scots promiſed king Henry II. at York, *Lanceam & ſellam ſuam ſuper altare Sancti Petri ad perpetuam hujus ſubjectionis memoriam offerre.* See *Spelm.* in v.

ARMI'SONOUS, *adj.* [Lat.] Ruſtling with armour.

AR'MISTICE, *ſ.* [*armiſtitium*, Lat.] A ſhort truce; a ceſſation of arms for a ſhort time.

ARM'LET, *ſ.* [from *arm.*] A little arm; as, An *armlet* of the ſea. A piece of armour for the arm. A bracelet for the arm:

And, when ſhe takes thy hand, and doth ſeem kind,
Doth ſearch what rings and *armlets* ſhe can find. *Donne.*

ARMOI'SIN, *ſ.* A ſilk ſtuff, or kind of taffety, manufactured in the Eaſt Indies, at Lyons in France, and at Lucca in Italy. That of the Indies is ſlighter than thoſe made in Europe.

ARMO'NA, a town in the iſland of Negroponte, twenty-two miles ſouth-eaſt of Negroponte.

ARMO'NIAC. See AMMONIAC.

ARMORA'CIA, *ſ.* in botany. See COCHLEARIA.

AR'MORER, *ſ.* [*armorier*, Fr.] He that makes armour, or weapons.—The *armorers* make their ſteel more tough and pliant, by aſperſion of water and juice of herbs. *Bacon.* He that dreſſes another in armour:

The *armorers* accompliſhing the knights,
With buſy hammers cloſing rivets up,
Give dreadful note of preparation. *Shakeſpeare.*

Among the Romans, armorers were diſpoſed in certain places in the empire, it being forbid either to ſell, or buy, or make arms, elſewhere. They were exempt from all offices and taxes, and received a ſalary from the public. When once they had taken the employment on themſelves, neither they, nor their children, were allowed to quit it. To prevent this, they had a kind of note, or ſtigma, impreſſed upon the arm, whereby they might be known. If any of them fled, or ſecreted their ware, the reſt were obliged to anſwer for him; on account of which, the effects of ſuch as died without a legal heir went to the college. There were fifteen armamentaries, or repoſitories of arms, in the Eaſtern empire, placed near the frontiers, and nineteen in the Weſtern.

ARMORER of a SHIP, a perſon whoſe office is to take care that the arms are in a condition fit for ſervice.

ARMO'RIAL, *adj.* [French.] Belonging to the arms or eſcutcheon of a family, as enſigns *armorial.*

ARMO'RIC, or AREMORIC, *ſ.* Something that belongs to the province of Bretagne, or Brittany, in France. The name *Armorica* was anciently given to all the northern and weſtern coaſt of Gaul, from the Pyreneans to the Rhine; under which name it was known even in Cæſar's time. The word is of Bas Breton origin, and denotes as much as *maritime*; compounded, according to M. Menage, of *ar*, "upon," and *mare*, "ſea."

AR'MORIST, *ſ.* A perſon ſkilled in heraldry.

ARMO'RUM CONCUS'SIO, the claſhing of armour, practiſed by the Roman armies previous to an engagement, and intended to ſtrike a panic into their enemies.

AR'MORY, *ſ.* [from *armour.*] The place in which arms are repoſited for uſe:

The ſword
Of Michael, from the *armory* of God,
Was giv'n him, temper'd ſo, that neither keen,
Nor ſolid, might reſiſt that edge. *Milton.*

Armour; arms of defence. Enſigns armorial:

Well worthy be you of that *armory*,
Wherein you have great glory won this day. *Fairy Queen.*

AR'MOUR, *ſ.* [*armateur*, Fr. *armatura*, Lat.] A defenſive habit, wherewith to cover and ſecure the body from the attacks of an enemy. In ancient ſtatutes this is frequently called *harneſs*. The defenſive armour of a knight, or man at arms, was anciently a coat of mail, called alſo a *hauberk*, or *habergeon*. It was compoſed of ringlets of iron, linked together like a net; this covered the body, and to it were joined a hood, breeches, ſtockings, and ſabatons or ſhoes, all of the ſame conſtruction; the hands and arms were alſo defended by ſleeves of mail. The hauberk was the proper armour of a knight; an eſquire might wear a ſhirt of mail over his gambeſon, but might not uſe the hood, breeches, hoſe, nor ſleeves, of mail. In France, the hauberk, or coat of mail, was armour peculiarly appropriated to perſons poſſeſſed of certain eſtates or ſeigneuries, called *fiefs d'haubert*, and might not be worn by perſons of an inferior degree. Commonly under the hauberk, though ſometimes over it, was worn a looſe garment, called a *gambeſon*, which deſcended as low as the knees; it was ſtuffed with wool or cotton, and quilted; the uſe of it was to deaden the ſtrokes of the ſword or lance, which, though they did not divide the mail, might, without the interpoſition of the gambeſon, ſeverely bruiſe the body: under or between the hauberk and gambeſon, a breaſt-plate of forged iron, called a *plaſtron*, was occaſionally put on; over all, men of family wore ſurcoats of ſatin, velvet, or cloth of gold or ſilver, richly embroidered with their armorial bearings. Princes, and certain great lords, had over all, their coats of arms, which held the place of the paludamentum of the ancient Roman captains, and was in figure like a Dalmatic without ſleeves; and, deſcending

ſcending to the knees, it was charged with the eſchutcheons or armorial bearings of the wearer, and often was of cloth of gold or ſilver, rich ſurs, or cut velvet.

Another kind of armour, about this time in uſe, was called *brigandines*, ſo denominated from the *brigands*, a ſpecies of mercenary troops, who firſt introduced it. This armour was compoſed of a number of ſmall plates of iron, ſewed upon quilted linen or leather, through a ſmall hole in the centre of the plate, their edges laid over each other like the ſcales of a fiſh. They were proof againſt the ſtroke of a ſword, or puſh of a pike, and yet extremely pliable to every motion of the body. By a ſtrap, hung over the neck, the knights carried a ſhield made of wood, covered with leather, bound or ſtrengthened with iron or braſs, having handles on the inſide for braſing it, which was the term then in uſe, to expreſs the putting it over the left arm. Theſe ſhields were moſtly of a triangular form, pointed at the bottom, and a little convex in the direction of their breadth. The helmets of knights, or men at arms, were of different forms; ſome conical or pyramidical, with a ſmall projection called a naſal, to defend the face from a tranſverſe ſtroke; ſome cylindrical, covering the whole head down below the chin, with apertures for ſight and breath; and others in which the face was totally uncovered. This was the prevailing kind of armour worn in Europe, until the fourteenth century; about which time the hauberk or coat of mail gave way to plate armour, which was formed of plates of iron, and ſo conſtructed, as to act upon the principle of the ſhell or tail of a lobſter. A ſuit of plate armour conſiſted of a cloſe helmet, having a viſor to lift up and let down, or one with a viſor and beaver, both revolving on the ſame pivots. When theſe were cloſed, the air was admitted through apertures made alſo for ſight, and other ſmaller perforations oppoſite the mouth and noſtrils. The neck and throat were defended by a gorget, or hallercet; the body by a cuiraſs, formed of two pieces hooked together, denominated backs and breaſt plates, from the parts they covered: to the back was joined a gard de reines, or culet; the arms were covered with braſſarts, called alſo avant bras, and corruptly vambraces, the hands by gauntlets, the ſhoulders by pouldrons, the thighs by cuiſſarts, and the legs by iron boots, called greaves, and ſometimes by boots of jacked leather. Under all theſe, was worn a jacket of thick fuſtian or buff leather; and this they called *armour cap-a-pie*. On the creſts of the helmets kings frequently wore their crowns, dukes and earls their coronets, generals or other officers of rank either their armorial cogniſances, or any other device they thought proper; this was done to make them look larger and more terrible to their enemies, and to render themſelves conſpicuous to their officers and ſoldiers. In Bab. Cott. Tiberius, E. viii. is a manuſcript, written about the time of Henry VIII. wherein, among other military arrangements, is one entitled "The Order of a Kynge, if he entered to fyghte. The kynge, arrayed in his own coat of armes, muſt be on horſe-back, on a good horſe, covered alſo with his armes: the kynge muſt alſo wear a crowne upon his headpiece." Henry V. wore his crown at the battle of Agincourt; part of it was cut off by the duke of Alençon, with a ſtroke of his ſword. King Richard III. wore his crown at the battle of Boſworth, which was, according to Rapin and others, after his death, found in the field of battle by a ſoldier, who brought it to the lord Stanley. To this liſt of defenſive armour may alſo be added the war-ſaddle, whoſe arcon or bows of ſteel covered the rider as high as the navel. The knights of the three or four reigns next ſucceeding the conqueſt commonly wore the pryck ſpur, which had only a ſingle point; after which the rouelle, or wheel ſpur, came in faſhion; ſome of theſe rouelles were near ſix inches in diameter.

Plate armour, on the firſt introduction of muſquetry, came to be made of a prodigious thickneſs; inſomuch that M. de la Noue, in his fifth military diſcourſe, ſays, "that, to guard againſt the violence of harquebuſſes, the men at arms loaded themſelves with anvils, inſtead of covering themſelves with armour; it was alſo ſo cloſely fitted as to make it difficult to penetrate the joints with the miſericorde, or dagger." Father Daniel deſcribes an inſtance of this at the battle of Fornoue, under Charles VIII. where a number of Italian knights who were overthrown could not be ſlain on account of the ſtrength of their armour, till broken up like huge lobſters, by the ſervants and followers of the army, with large wood-cutter's axes; each man at arms having three or four men employed about him. Thus enveloped, and loaded with ſuch a number of weighty incumbrances, it is by no means wonderful, that in the midſt of ſummer, in the heat, duſt, and preſs of an engagement, men at arms ſhould be ſuffocated in their armour, an event which we learn from hiſtory has ſometimes happened; beſides the inconveniency ariſing from the heat, a man thus ſwathed up, like an Egyptian mummy, could have but ſmall powers of action. Indeed, in a charge of cavalry, very little exertion was required on the part of the rider, the ſucceſs chiefly depended on the ſtrength of the horſe. All that the ancient knights had to do, was to keep their ſeats, and direct their lances; but how they were able to uſe the ſword or mace to any effect, ſeems incomprehenſible; though indeed, this in ſome meaſure accounts for the ſmall number of knights ſlain in many engagements between cavalry only, in ſome of which we read not one knight was killed; probably, as ranſom was ſo great an object with ſoldiers of thoſe days, they rather wiſhed to capture than to kill their adverſaries; for this purpoſe therefore they endeavoured to unhorſe them, as a knight when overthrown was immoveable, and lay on the ſpot till remounted by his friends, or ſeized by his enemies. Hence James I. obſerved, in praiſe of armour, that it not only protected the wearer, but alſo prevented him from injuring any other perſon. Of all this furniture of war, ſcarcely any thing is now retained except the cuiraſs; the gorget or neck-piece, worn by officers, being at preſent only a badge of honour, and of no defence.

After the heavy armour had had its day, and its abſurdity was both ſeen and experienced, the gallantry of going to the battle naked, without any defenſive armour, prevailed ſo far, that the French, during the reign of Louis XIV. were obliged to be continually iſſuing ordonnances to reſtrain it; in conſequence of which the general officers, and thoſe of the cavalry, were obliged to reſume the cuiraſs, which was yet but ill obſerved.

ARMOUR-BEARER, *ſ.* [from *armour* and *bear.*] He that carries the armour of another.

ARMOUR, *Coat*, is the eſcutcheon of any perſon, or family, with its ſeveral charges and other furniture; as mantling, creſt, ſupporters, mottos, &c. Thus we ſay, a gentleman of coat armour; meaning one who bears arms.

ARMO'ZA, or HARMO'ZIA, a town in Carmania, at the mouth of the Anamis, which falls into the Perſian gulf: called *Armuza* by Ptolemy. From this the neighbouring iſland, and a ſmall kingdom, take the modern name of *Ormus*. Lat. 27.20. N. lon. 56.17. E.

ARM'PIT, *ſ.* [from *arm* and *pit.*] The hollow place under the ſhoulder.—The handles to theſe gouges are made ſo long, that the handle may reach under the *armpit* of the workman. *Moxon.*

ARMS, *ſ. without the ſingular number.* [*arma*, Lat.] Weapons of offence, or armour of defence. The enſigns armorial of a family. A ſtate of hoſtility. War in general. Action; the act of taking arms:

Up roſe the victor angels, and to *arms*
The matin trumpet ſung. *Milton.*

The ſeas and rocks and ſkies rebound
To *arms*, to *arms*, to *arms!* *Pope.*

It is ſuppoſed that the firſt artificial arms were of wood, and were only employed againſt beaſts; and that Belus, the ſon of Nimrod, was the firſt that waged war: whence, according to ſome, came the appellation *bellum*. Diodorus Siculus takes Belus to be the ſame with Mars, who firſt trained ſoldiers to battle. Arms of ſtone, and even of braſs, appear to have been uſed before they came to iron and ſteel. Joſephus aſſures us, that the patriarch Joſeph firſt taught the uſe of iron arms in Egypt, arming the troops of Pharaoh with a caſque and buckler. What contributed moſt to render the Romans maſters of the world, was, that, having ſucceſſively warred againſt all nations, they conſtantly renounced their own methods, arms, &c. whenever they met with better. Thus Romulus during his war with the Sabines, a bold and warlike nation, adopted their broad buckler in lieu of the ſmall Argian buckler, which he had uſed till that time.

The principal arms of the ancient Britons were hatchets, ſcythes, lances, ſwords, and bucklers: the Saxons, &c. brought in the halberd, bow, arrows, arbaliſts, &c. By the ancient laws of England, every man was obliged to bear arms, except the judges and clergy. Under Henry VIII. it was expreſsly enjoined on all perſons to be regularly inſtructed, even from their tender years, in the exerciſe of the arms then in uſe; viz. the long bow and arrows; and to be provided with a certain number of them. 33 Hen. VIII.

Arms, in the underſtanding of the law, are extended to any thing that a man wears for his defence, or takes into his hands, or uſeth in anger to ſtrike or caſt at another. *Cromp. Juſt.* 65. Arms are alſo what we call *inſignia*, enſigns of honour; as to the original of which, it was to diſtinguiſh commanders in war; for the ancient defenſive armour being a coat of mail, &c. which covered the perſons, they could not be diſtinguiſhed, and therefore a certain badge was painted on their ſhields, which was called *arms*; but not made hereditary in families till the time of Richard I. on his expedition to regain Jeruſalem from the Turks: and, beſides ſhields with *arms*, they had a ſilk coat drawn over their armour, and afterwards a ſtiff coat, on which their *arms* were painted all over, now the herald's coat of *arms*. *Sid.* 352. By ſtat. 13 Rich. II. ſt. 1. c. 2. The conſtable (lord high conſtable) ſhall have cognizance of contracts touching deeds of arms done out of the realm; but it ſeems he cannot puniſh for painting coats of arms, &c. 2 *Hawk. P. C.* c. 4. ſ. 5-8. By the common law it is an offence for perſons to go or ride *armed* with dangerous and *unuſual* weapons: but gentlemen may wear common armour, according to their quality. 3 *Inſt.* 160. By ſtatute 7 Edw. I. ſt. 1. The king may prohibit force of *arms*, and puniſh offenders according to law; and herein every ſubject is bound to be aiding. And by ſtat. 2 Edw. III. c. 3. enforced by ſtatutes 7 Rich. II. c. 13. and 20 Rich. II. c. 1. None ſhall come with *force* and *arms* before the king's juſtices, nor ride nor go *armed* in affray of the peace, on pain to forfeit their armour, and ſuffer impriſonment, &c. Under theſe ſtatutes none may wear (unuſual) armour publicly upon pretence of protecting his *perſon*; but a man may aſſemble his neighbours to protect his *houſe*, without tranſgreſſing the act. 1 *Hawk. P. C.* 267. But no wearing of arms is within the ſtatute, unleſs they are ſuch as *terrify*, therefore the weapons of faſhion, as ſwords, &c. or privy coats of mail, *may* be worn. *Id.* ib. And one may arm to ſuppreſs riots or dangerous inſurrections. *Id.* 268. By the Bill of Rights, 1 Will. & Mary, ſt. 2. c. 2. it is declared, that "the ſubjects which are Proteſtants may have arms for their defence ſuitable to their conditions as allowed by law." 33 Hen. VIII. c. 6. Embezzling the king's armour or arms, felony; ſtat. 31 Eliz. c. 4. Arms may be exported, unleſs prohibited by proclamation; ſtat. 12 Car. II. c. 4. Importing arms or ammunition prohibited; 1 Jac. II. c. 8.

Fire-Arms, are thoſe charged with powder and ball: ſuch are cannon, mortars, and other ordnance; muſkets, carabines, piſtols, and even bombs, granadoes, carcaſſes, &c.

Arms, *paſs of*, was a kind of combat in uſe among the ancient cavaliers.

Arms, *ſtand of*. A ſtand of arms ſignifies a muſket, a bayonet, a ſword, belt, and cartridge-box.

Arms *of parade*, or *courteſy*, were thoſe uſed in the ancient juſts and tournaments; which were commonly unſhod lances, ſwords without edge or point, wooden ſwords, and even canes.

Arms denote the natural weapons, or parts of defence, of beaſts: as claws, teeth, tuſks of elephants, beaks of birds, &c.

Arms are alſo uſed figuratively for the profeſſion of a ſoldier. Thus we ſay, He was bred to arms.

Arms, or *Armories*, are alſo uſed in heraldry for marks of dignity and honour, regularly compoſed of certain figures and colours, given or authoriſed by ſovereigns, and borne in banners, ſhields, coats, &c. for the diſtinction of perſons, families, and ſtates; and paſſing by deſcent to poſterity. They are called *arms*, in regard they are borne principally on the buckler, cuiraſs, banners, and other apparatus of war. They are alſo called *coats of arms*, *coat armour*, &c. becauſe anciently embroidered on ſurcoats, &c. See Heraldry. Some will have the name to have been firſt occaſioned by the ancient knights, who in their juſts and tournaments bore certain marks (which were frequently their miſtreſs's favours) in their armour, i. e. their helmet or ſhield, to diſtinguiſh them from each other.

Arms, at preſent, follow the nature of titles, which being made hereditary, theſe are alſo become ſo, being the ſeveral marks for diſtinguiſhing families and kindreds, as names are of perſons and individuals.

Arms are variouſly diſtinguiſhed by the heralds, as appertaining to different events, great and noble acquiſitions, alliances of ſtates or families, of communities, ſocieties, &c. for all which ſee Heraldry.

Arms, in falconry, denote the legs of a hawk, from the thigh to the foot. See Falconry.

ARM'SEN, a town of Germany, in the circle of Weſtphalia, and county of Verden, ſeven miles eaſt-ſouth-eaſt of Verden.

ARM'STRONG (Dr. John), an eminent phyſician, poet, and miſcellaneous writer, was born in Caſtleton pariſh, Roxburghſhire, where his father and brother were miniſters; completed his education in the univerſity of Edinburgh, where he took his degree in phyſic, Feb. 4, 1732. It has been obſerved of Dr. Armſtrong, that his works have great inequalities, ſome of them being poſſeſſed of every requiſite to be ſought after in the moſt perfect compoſition, while others can hardly be conſidered as ſuperior to the productions of mediocrity. "The Art of preſerving Health," his beſt performance, which was publiſhed in 1744, will tranſmit his name to poſterity, as one of the firſt Engliſh writers. In 1770, Dr. Armſtrong publiſhed his Miſcellanies, in two vols. An Epiſtle to a young Critic, 1753. Imitations of Shakeſpeare and Spenſer. The Univerſal Almanac, by Noureddin Ali. And, in 1771, he publiſhed, A ſhort Ramble through ſome Parts of France and Italy; and a quarto pamphlet, under the title of Medical Eſſays. He died in September, 1779.

ARMUY'DEN, or Arnemu'den, a ſtrong ſea-port town of Zealand, ſituated on the eaſtern ſide of the iſland of Walcheren. It was anciently ſo conſiderable as to be divided into the Old and New town; the conveniences of the port, with the depth of water, and its proximity to the ſea, drawing a great deal of commerce to it. The ſea has ſeveral times done conſiderable damage, particularly in 1438. In 1571, it was ſurrounded with walls, and had the privileges of a city granted; the trade, chiefly in ſalt, is now not conſiderable. Its harbour being choked up, the ſea is made navigable by means of a canal to Middleburg, from which city Armuyden is diſtant one league eaſt, and two north-north-eaſt from Fluſhing. Lat. 51. 31. N. lon. 3. 42. E. Greenwich.

A'RMY, *ſ.* [*armée*, Fr.] A collection of armed men, obliged to obey one man. *Locke.*—Number itſelf importeth not much in *armies*, where the people are of weak courage. *Bacon.*—The meaneſt ſoldier, that has fought often in an *army*, has a truer knowledge of war, than he that has writ whole volumes, but never was in any battle. *South.* A great number.—The fool hath planted in his memory an *army* of good words. *Shakeſpeare.*

Armies were anciently a ſort of militia, compoſed chiefly of the vaſſals and tenants of the lords, or of people choſen by lot to go to the wars; or ſometimes of a whole nation, called forth by their prince or king; as we frequently read both in the ſcriptures and in profane hiſtory. One of the firſt ſtanding armies of which we have any diſtinct account in authentic hiſtory, is that of Philip of Macedon. His continual wars with the Thracians, Illyrians, Theſſalians, and ſome of the Greek cities in the neighbourhood of Macedon, gradually formed his troops, which in the beginning were militia, to the exact diſcipline of a ſtanding army. When he was at peace, which was very ſeldom, and never for any long time together, he was careful not to diſband his army. It vanquiſhed and ſubdued, after a long and violent ſtruggle, all the gallant and well-exerciſed militias of the principal republics of ancient Greece; and afterwards the effeminate and ill-exerciſed militia of the great Perſian empire. The fall of the Greek republics, and of the Perſian empire, was the effect of the irreſiſtible ſuperiority which a ſtanding army has over every ſort of militia. It is the firſt great revolution in the affairs of mankind of which hiſtory has preſerved any diſtinct or circumſtantial account.

The fall of Carthage, and the conſequent elevation of Rome, is the ſecond. All the varieties in the fortune of thoſe two famous republics, may be accounted for from the ſame cauſe. From the end of the firſt to the beginning of the ſecond Carthaginian war, the armies of Carthage were continually in the field, and employed under three great generals, who ſucceeded each other in the command: Amilcar, his ſon-in-law Aſdrubal, and his ſon Hannibal; firſt in chaſtiſing their own rebellious ſlaves, afterwards in ſubduing the revolted nations of Africa, and laſtly, in conquering the great kingdom of Spain. The army which Hannibal led from Spain into Italy muſt neceſſarily, in thoſe different wars, have been gradually formed to the exact diſcipline of a ſtanding army. The Romans, in the mean time, though they had not been altogether at peace, yet they had not, during this period, been engaged in any war of very great conſequence; and their military diſcipline, it is generally ſaid, was a good deal relaxed. The Roman armies which Hannibal encountered at Trebia, Thraſymenus, and Cannæ, were militia oppoſed to a ſtanding army. This circumſtance, it is probable, contributed more than any other to determine the fate of thoſe battles. The ſtanding army which Hannibal left behind him in Spain, had the like ſuperiority over the militia which the Romans ſent to oppoſe it, and in a few years, under the command of his brother the younger Aſdrubal, expelled them almoſt entirely from that country.

Hannibal was ill ſupplied from home. The Roman militia, being continually in the field, became in the progreſs of the war a well-diſciplined and well-exerciſed ſtanding army; and the ſuperiority of Hannibal grew every day leſs and leſs. Aſdrubal judged it neceſſary to lead the whole, or almoſt the whole, of the ſtanding army which he commanded in Spain, to the aſſiſtance of his brother in Italy. In this march he is ſaid to have been miſled by his guides; and, in a country which he did not know, was ſurpriſed and attacked by another ſtanding army, in every reſpect equal or ſuperior to his own, and was entirely defeated.

When Aſdrubal had left Spain, the great Scipio found nothing to oppoſe him but a militia inferior to his own. He conquered and ſubdued that militia; and, in the courſe of the war, his own militia neceſſarily became a well-diſciplined and well-exerciſed ſtanding army. That ſtanding army was afterwards carried to Africa, where it found nothing but a militia to oppoſe it. In order to defend Carthage, it became neceſſary to recal the ſtanding army of Hannibal. The diſheartened and frequently-defeated African militia joined it, and at the battle of Zama compoſed the greater part of the troops of Hannibal. The event of that day determined the fate of the two rival republics.

From the end of the ſecond Carthaginian war till the fall of the Roman republic, the armies of Rome were in every reſpect ſtanding armies. The ſtanding army of Macedon made ſome reſiſtance to their arms. In the height of their grandeur it coſt them two great wars and three great battles to ſubdue that little kingdom; of which the conqueſt would probably have been ſtill more difficult, had it not been for the cowardice of its laſt king. The militias of all the civilized nations of the ancient world, of Greece, of Syria, and of Egypt, made but a feeble reſiſtance to the ſtanding armies of Rome. The militias of ſome barbarous nations defended themſelves much better. The Scythian or Tartar militia, which Mithridates drew from the countries north of the Euxine and Caſpian ſeas, were the moſt formidable enemies whom the Romans had to encounter after the ſecond Carthaginian war. The Parthian and German militias too were always reſpectable, and upon ſeveral occaſions gained very conſiderable advantages over the Roman armies. In general, however, and when the Roman armies were well commanded, they appear to have been very much ſuperior.

Many different cauſes contributed to relax the diſcipline of the Roman armies. Its extreme ſeverity was, perhaps, one of thoſe cauſes. In the days of their grandeur, when no enemy appeared capable of oppoſing them, their heavy armour was laid aſide as unneceſſarily burdenſome, their laborious exerciſes were neglected as unneceſſarily toilſome. Under the Roman emperors, beſides the ſtanding armies of Rome, thoſe particularly which guarded the German and Pannonian frontiers became dangerous to their maſters, againſt whom they uſed frequently to ſet up their own generals. In order to render them leſs formidable, according to ſome authors Diocleſian, according to others Conſtantine, firſt withdrew them from the frontiers, where they had always before been encamped in great bodies, generally of two or three legions each, and diſperſed them in ſmall bodies through the different provincial towns, from whence they were ſcarcely ever removed, but when it became neceſſary to repel an invaſion. Small bodies of ſoldiers quartered in trading and manufacturing towns, and ſeldom removed from thoſe quarters, became themſelves tradeſmen, artificers, and manufacturers. The civil came to predominate over the military character; and the ſtanding armies of Rome gradually degenerated into a corrupt, neglected, and undiſciplined, militia, incapable of reſiſting the attack of the German and Scythian militias, which ſoon afterwards invaded the weſtern empire. It was only by hiring the militia of ſome of thoſe nations to oppoſe to that of others, that the emperors were for ſome time able to defend themſelves. The fall of the weſtern empire is the third great revolution in the affairs of mankind, of which ancient hiſtory has preſerved any diſtinct or circumſtantial account. It was brought about by the irreſiſtible ſuperiority which the militia of a barbarous has over that of a civilized nation; which the militia of a nation of ſhepherds has over that of a nation of huſbandmen, artificers, and manufacturers. The victories which have been gained by militias have generally been not over ſtanding armies, but over other militias in exerciſe and diſcipline inferior to themſelves. Such were the victories which the Greek militia gained over that of the Perſian empire; and ſuch too were thoſe which in latter times the Swiſs militia gained over that of the Auſtrians and Burgundians.

The military force of the German and Scythian nations, who eſtabliſhed themſelves upon the ruins of the weſtern empire, continued for ſome time to be of the ſame kind in their new ſettlements as it had been in their original country. It was a militia of ſhepherds and huſbandmen, which in time of war took the field under the command of the ſame chieftains whom it was accuſtomed to obey in peace. It was therefore tolerably well exerciſed and tolerably well diſciplined. As arts and induſtry advanced, the authority of the chieftains gradually decayed, and the great body of the people, being employed in domeſtic avocations, had leſs time to ſpare for military exerciſes. Hence, therefore, a ſtanding army, though they may never have ſeen an enemy, have greatly the advantage over a militia; and, though in a long peace the generals may ſometimes forget their ſkill, a well-regulated ſtanding army ſeem never to forget their valour.

It ſeems univerſally agreed by all hiſtorians, that king Alfred firſt ſettled a national militia in England, and by his prudent diſcipline made all the ſubjects of his dominions ſoldiers. Under thoſe regulations, every freeman of an age capable of bearing arms, and not incapacitated by any bodily infirmity, was, in caſe of a foreign invaſion, internal inſurrection, or other emergency, obliged to join the army, that being one of the ſervices compriſed under the title of the *trinoda neceſſitas*. In aſſembling their armies, all ſuch as were qualified to bear arms in one family were led to the field by the head of that family. Every ten families made a tything, which was commanded by the borſholder, in his military capacity ſtyled conductor. Ten tythings conſtituted an hundred; the ſoldiers of each hundred were led by the chief magiſtrate of the hundred, ſometimes called the hundredary. Several hundreds formed a trything; which, in Yorkſhire, is corruptedly called a *riding*, from the ſimilarity of ſounds; the eaſt, north, and weſt, ridings, really meaning the eaſt, north, and weſt, trythings. This officer was elected by the hundred, at their public court, where they met armed; and every member, as a token of his obedience, touched the weapon of the hundredary; whence theſe courts were called *wapentakes*, a name ſtill kept up in ſeveral counties. The forces of the county or ſhire were commanded by the hertoch, or duke, and he by the king, or an officer called the *kyning's-hold*, i.e. the king's lieutenant or general, which office laſted only during the war. In times of peace, or when the king did not think it neceſſary to have a general, the militia remained under the command of the dukes of each county. The clergy were alone exempted from perſonal military ſervices, not only as being contrary to their profeſſion, but likewiſe that they might the better attend to their religious duties. Their eſtates were however made chargeable to the *trinoda neceſſitas*, and is the only impoſition to which they were liable.

Upon the Norman conqueſt, the feodal law was introduced here with all its rigour, the whole of which is built on a military plan. In conſequence thereof, all the lands in the kingdom were divided into what were called *knight's fees*, in number above 60,000; and, for every knight's fee a knight or ſoldier, *miles*, was bound to attend the king in his wars, for forty days in a year; in which ſpace of time, before war was reduced to a ſcience, the campaign was generally finiſhed, and a kingdom either conquered or victorious. By this means the king had, without any expence, an army of 60,000 men always ready at his command. And accordingly we find one, among the laws of William the Conqueror, which in the king's name commands and firmly enjoins the perſonal attendance of all knights and others: "Quod habeant et teneant ſe ſemper in armis et equis, ut decet et oportet: et quod ſemper ſint prompti et parati ad ſervitium ſuum integrum nobis explendum et peragendum, cum opus adfuerit, ſecundum quod debent de feodis et tenementis ſuis de jure nobis facere." This perſonal ſervice in proceſs of time degenerated into pecuniary commutations or aids; and at laſt the military part of the feodal ſyſtem was aboliſhed at the Reſtoration, by ſtatute 12 Car. II. c. 24. See FEODAL SYSTEM.

In the mean time, we are not to imagine that the kingdom was left wholly without defence in caſe of domeſtic inſurrections, or the proſpect of foreign invaſions. Beſides thoſe who by their military tenures were bound to perform forty days ſervice in the field, the ſheriff, with the *poſſe comitatus*, was bound to defend his county againſt any of the king's enemies. The *poſſe comitatus*, or power of the county, included every free man above the age of fifteen, and under that of ſixty; and, although the chief deſtination of this eſtabliſhment was to preſerve the peace under the command of the ſheriff, they were alſo, in caſe of hoſtile invaſions, called out to defend the country, and repel the enemy. The *poſſe comitatus* differed from the feudal troops in this; they were only liable to be called out in caſe of internal commotions, or actual invaſions, on which occaſions only they could legally be marched out of their reſpective counties, and in no caſe out of the kingdom; whereas the feudal troops were ſubject to foreign ſervice at the king's pleaſure.

The aſſize of arms, enacted 27 Henry II. and afterwards the ſtatute of Wincheſter, under Edward I. alſo obliged every man, according to his eſtate and degree, to provide a determinate quantity of ſuch arms as were then in uſe, in order to keep the peace; and conſtables were appointed in all hundreds by the latter ſtatute, to ſee that ſuch arms were provided. Theſe weapons were changed, by the ſtatute 4 and 5 Phil. & Mary, c. 2. into others of more modern ſervice; but both this and the former proviſions were repealed in the reign of James I. While theſe continued in force, it was uſual from time to time for our princes to iſſue commiſſions of array, and ſend into every county officers in whom they could confide, to muſter and array (or ſet in military order) the inhabitants of every diſtrict; and the form of the commiſſion of array was ſettled in parliament in the 5 Hen. IV. But, at the ſame time it was provided, that no man ſhould be compelled to go out of the kingdom at any rate, nor ſhould provide ſoldiers, unleſs by conſent of parliament. About the reign of Henry VIII. lord-lieutenants began to be introduced, as ſtanding repreſentatives of the crown, to keep the counties in military order; for we find them mentioned as known officers in the ſtatute 4 and 5 Phil. & Mary, c. 3. though they had not been then long in uſe; for Camden ſpeaks of them in the time of queen Elizabeth as extraordinary magiſtrates, conſtituted only in times of difficulty and danger. In this ſtate things continued till the repeal of the ſtatutes of armour in the reign of James I. after which, when Charles I. had, during his northern expeditions, iſſued commiſſions of lieutenancy, and exerted ſome military powers, which, having been long exerciſed, were thought to belong to the crown, it became a queſtion in the long-parliament, how far the power of the militia did inherently reſide in the king; being now unſupported by any ſtatute, and founded only upon immemorial uſage. This queſtion, long agitated with great heat and reſentment on both ſides, became at length the immediate cauſe of the fatal rupture between the king and his parliament: the two houſes not only denying this prerogative of the crown, but alſo ſeizing into their hands the entire power of the militia.

Soon after the reſtoration of Charles II. when the military tenures were aboliſhed, it was thought proper to aſcertain the power of the militia, to recogniſe the ſole right of the crown to govern and command them, and to put the whole into a more regular method of military ſubordination: and the order in which the militia now ſtands by law, is principally built upon the ſtatutes which were then enacted. It is true, the two laſt of them are apparently repealed; but many of their proviſions are re-enacted, with the addition of ſome new regulations, by the preſent militia-laws; the general ſcheme of which is to diſcipline a certain number of the inhabitants of every county, choſen by lot for five years, and officered by the lord-lieutenant, the deputy-lieutenants, and other principal landholders, under a commiſſion from the crown. They are not compellable to march out of their counties, unleſs in time of war, or actual rebellion, nor in any caſe compellable to march out of the kingdom. They are to be exerciſed at ſtated times; and their diſcipline in general is liberal and eaſy; but, when drawn out into actual ſervice, they are ſubject to the rigours of martial law, as neceſſary to keep them in order. This is the conſtitutional army which our laws have provided for the public peace, and for protecting the realm againſt foreign or domeſtic violence; and which the ſtatutes declare is eſſentially neceſſary to the ſafety and proſperity of the kingdom.

When the nation was engaged in war, more veteran troops and more regular diſcipline were eſteemed to be neceſſary, than could be expected from a mere militia; and therefore at ſuch times more rigorous methods were put in uſe for the raiſing of armies and the due regulation and diſcipline of the ſoldiery: which are to be looked upon only as temporary excreſcences bred out of the diſtemper of the ſtate, and not as any part of the permanent and perpetual laws of the kingdom. For martial law, which is built upon no ſettled principles, but is entirely arbitrary in its deciſions, is, as Sir Matthew Hale obſerves, in truth and reality no law, but ſomething indulged rather than allowed as a law. The neceſſity of order and diſcipline in an army is the only thing which can give it countenance; and therefore it ought not to be permitted in time of peace, when the king's courts are open for all perſons to receive juſtice according to the laws of the land. Wherefore, Thomas earl of Lancaſter being convicted at Pontefract, 15 Edw. II. by martial law, his attainder was reverſed 1 Edw. III. becauſe it was done in time of peace. And it is laid down, that if a lord-lieutenant, or other, that hath commiſſion of martial authority, doth in time of peace hang or otherwiſe execute any man by colour of martial law, this is murder; for it is againſt *magna charta*. And the petition of right enacts, that no ſoldier ſhall be quartered on the ſubject without his own conſent; and that no commiſſion ſhall iſſue to proceed within this land according to martial law. And whereas, after the Reſtoration, Charles II. kept up about 5000 regular troops, by his own authority, for guards and garriſons; which James II. by degrees increaſed to no leſs than 30,000, all paid from his own civil liſt; it was made one of the articles of the bill of rights, that the raiſing or keeping a ſtanding army within the kingdom in time of peace, unleſs it be with conſent of parliament, is againſt law.

But, as the faſhion of keeping ſtanding armies, which was firſt introduced by Charles VII. in France, in 1445, has univerſally prevailed over Europe, (though ſome of its potentates, being unable themſelves to maintain them, are obliged to have recourſe to richer powers, and receive ſubſidiary penſions for that purpoſe,) it has alſo for many years paſt been annually judged neceſſary by our legiſlature, for the ſafety of the kingdom, the defence of the poſſeſſions of the crown of Great Britain, and the preſervation of the balance of power in Europe, to maintain even in time of peace a ſtanding body of troops, under the command of the crown; who are however *ipſo facto* diſbanded at the expiration of every year, unleſs continued by parliament. And it was enacted by ſtatute 10 Will. III. c. 1. that not more than 12,000 regular forces ſhould be kept on foot in Ireland, though paid at the charge of that kingdom: which permiſſion is extended by ſtat. 8 Geo. III. c. 13. to 16,235 men in time of peace.

In a land of liberty, it is extremely dangerous to make a diſtinct order of the profeſſion of arms. In abſolute monarchies, this is neceſſary for the ſafety of the prince; and ariſes from the main principle of their conſtitution, which is that of governing by fear: but, in free ſtates, the profeſſion of a ſoldier, taken ſingly and merely as a profeſſion, is juſtly an object of jealouſy. In theſe no man ſhould take up arms but with a view to defend his country and its laws: he puts not off the citizen when he enters the camp; but it is becauſe he is a citizen, and an advocate for freedom, that he makes himſelf for a while a ſoldier. The laws, therefore, and conſtitution of theſe kingdoms, know no ſuch ſtate as that of a perpetual ſtanding ſoldier, bred up to no other profeſſion than that of war; and it was not till the reign of Henry VII. that the kings of England had ſo much as a guard about their perſons. Nothing then, according to theſe principles, ought to be more guarded againſt in a free ſtate, than making the military power, when ſuch a one is neceſſary to be kept on foot, a body too diſtinct from the people. It ſhould wholly be compoſed of natural ſubjects; it ought only to be enliſted for a ſhort and limited time; the ſoldiers alſo ſhould live intermixed with the people; no ſeparate camp, no barracks, no inland fortreſſes, ſhould be allowed. And perhaps it might be ſtill better, if, by diſmiſſing a ſtated number, and enliſting others at every renewal of their term, a circulation could be kept up between the army and the people, and the citizen and the ſoldier be more intimately connected together. To keep this body of troops in order, an annual act of parliament likewiſe paſſes, "to puniſh mutiny and deſertion, and for the better payment of the army and their quarters." This regulates the manner in which they are to be diſperſed among the ſeveral inn-keepers and victuallers throughout the kingdom, and eſtabliſhes a law-martial for their government. By this, among other things, it is enacted, that if any officer or ſoldier ſhall excite or join any mutiny, or, knowing of it, ſhall not give notice to the commanding officer, or ſhall deſert, or enliſt in any other regiment, or ſleep upon his poſt, or leave it before he is relieved, or hold correſpondence with a rebel or enemy, or ſtrike or uſe violence to his ſuperior officer, or ſhall diſobey his lawful commands; ſuch offender ſhall ſuffer ſuch puniſhment as the court-martial ſhall inflict, though it extend to death itſelf.

However expedient the moſt ſtrict regulations may be in time of actual war, yet, in times of profound peace, a little relaxation of military rigour would not, we ſhould hope, be productive of much inconvenience. And, upon this principle, though by our ſtanding laws (ſtill remaining in force, though not attended to) deſertion in time of war is made felony without benefit of clergy, and the offence is triable by a jury, and before the judges of the common law; yet, by our military laws, a much ſlighter puniſhment is inflicted for deſertion in time of peace. So, by the Roman law alſo, deſertion time of war was puniſhed with death, but more mildly in time of tranquillity. But our mutiny-act makes no ſuch diſtinction: for any of the faults above-mentioned are, equally at all times, puniſhable with death itſelf, if a court-martial ſhall think proper. This diſcretionary power of the court-martial is indeed to be guided by the directions of the crown; which, with regard to military offences, has almoſt an abſolute legiſlative power. "His majeſty (ſays the act) may form articles of war, and conſtitute courts-martial, with power to try any crime by ſuch articles, and inflict ſuch penalties as the articles direct." A vaſt and moſt important truſt! an unlimited power to create crimes, and annex to them any puniſhments not extending to life or limb! Perhaps, in ſome future reviſion of this act, which is in many reſpects haſtily penned, it may be thought worthy the wiſdom of parliament to aſcertain the limits of military ſubjection, and to enact expreſs articles of war for the government of the army, as is done for the government of the navy; eſpecially as, by our preſent conſtitution, the nobility and gentry of the kingdom, who ſerve their country as militia officers, are ſubjected to the ſame arbitrary rule during actual ſervice.

One of the greateſt advantages of our law is, that not only the crimes themſelves which it puniſhes, but alſo the penalties which it inflicts, are aſcertained and notorious: nothing is left to arbitrary diſcretion; the king by his judges diſpenſes what the law has previouſly ordained, but is not himſelf the legiſlator. How much, therefore, is it to be regretted, that a ſet of men, whoſe bravery has ſo often preſerved the liberties of their country, ſhould be reduced to a ſtate of ſervitude in the midſt of a nation of free men; for Sir Edward Coke and judge Blackſtone inform us, that it is one of the genuine marks of ſervitude, to have the law, which is our rule of action, either concealed or precarious; *Miſera eſt ſervitus, ubi jus eſt vagum aut incognitum.* Nor is this ſtate of ſervitude quite conſiſtent with the maxims of ſound policy obſerved by other free nations. But as ſoldiers, by this annual act, are thus put in a worſe condition than any other ſubjects; ſo, by the humanity of our ſtanding laws, they are in ſome caſes put in a much better. By ſtatute 43 Eliz. c. 3. a weekly allowance is to be raiſed in every county for the relief of ſoldiers that are ſick, hurt, and maimed; not forgetting the royal hoſpital at Chelſea for ſuch as are worn out in their duty. Officers and ſoldiers, that have been in the king's ſervice, are, by ſeveral ſtatutes, at liberty to uſe any trade or occupation in any town in the kingdom (except the two univerſities), notwithſtanding any ſtatute, cuſtom, or charter, to the contrary. And ſoldiers in actual military ſervice may make nuncupative wills, and diſpoſe of their goods, wages, and other perſonal chattels, without thoſe forms and expences which the law requires in other ſubjects. The pay of a foot-ſoldier was raiſed, May 25, 1797, to 1s. a-day.

AR'NA, in fabulous hiſtory, a princeſs of Athens, metamorphoſed into an owl, for deſigning to betray her country in favour of Minos.

ARNA'CIS, *ſ.* [*αρνακις*, from *αρς*, a lamb.] A lamb's ſkin with the wool on.

ARNAL'DIA, *ſ.* [from *αρς*, a lamb, and *αλδος* for *αλγος*, pain.] A ſlow malignant diſeaſe attended with baldneſs; ſo called becauſe lambs are ſubject to it.

AR'NALL (William), a noted political writer in defence of Sir Robert Walpole, was originally an attorney's clerk; but, being recommended to Walpole, he employed him for a courſe of years in writing the *Free Briton*, and other papers in defence of his adminiſtration. By the report of the ſecret committee, he appears to have received, in the ſpace of four years, no leſs than 10,997l. 6s. 8d. out of the treaſury for his writings! But, ſpending his money as faſt as it came, and his ſupplies ſtopping on Sir Robert's reſignation, he died broken-hearted and in debt, in the twenty-ſixth year of his age. His invention was ſo quick, that his honourable employer uſed to ſay, no man in England could write a pamphlet in ſo little time as Arnall.

ARNAU', a town of Bohemia, in the circle of Konigingratz on the Elbe, nine miles weſt of Tratenau.

ARNAU'D DE MEYRVEILH, or MEREUIL, a poet of Provence, who lived at the beginning of the thirteenth century. He wrote a book intitled *Las Recaſtenas de ſa Comteſſe*, and a collection of poems and ſonnets. He died in the year 1220.

ARNAUD DE VILLA NOVA, a famous phyſician, who lived about the end of the thirteenth and beginning of the fourteenth century. He ſtudied at Paris and Montpelier, and travelled through Italy and Spain. He was well acquainted with languages, and particularly with the Greek, Hebrew, and Arabic. He was at great pains to gratify his ardent deſire after knowledge; but this paſſion carried him rather too far in his reſearches: he endeavoured to diſcover future events by aſtrology, imagining this ſcience to be infallible; and upon this foundation he publiſhed a prediction, that the world would come to an end in the middle of the fourteenth century. He practiſed phyſic at Paris for ſome time; but, having advanced ſome new doctrines, he drew upon himſelf the reſentment of the univerſity. Upon his leaving France, he retired to Sicily, where he was received by king Frederic of Arragon with the greateſt marks of kindneſs and eſteem. Some time afterwards, this prince ſent him to France, to attend pope Clement in his illneſs; and he was ſhipwrecked on the coaſt of Genoa, about the year 1313. The works of Arnaud, with his life prefixed, were printed in one volume in folio, at Lyons, in 1520; and at Baſil in 1585, with the notes of Nicholas Tolerus.

ARNAUD D'ANDILLY (Robert), the ſon of a celebrated advocate of the parliament of Paris, was born in 1588; and, being introduced young at court, was employed in many conſiderable offices, which he diſcharged with great integrity and reputation. In 1644, he retired into the convent of Port Royal des Champs, where he paſſed the remainder of his days in a continued application to works of piety and devotion; and enriched the French language with many excellent tranſlations of different writers, as well as with religious compoſitions of his own. He died in 1674, and his works are printed in eight volumes folio.

ARNAUD (Anthony), brother of the preceding, and a doctor of the Sorbonne, was born in 1612. He publiſhed, in 1643, "A Treatiſe on frequent Communion," which highly diſpleaſed the Jeſuits; and the diſputes upon grace, which broke out about this time in the univerſity of Paris, and in which he took a zealous part with the Janſeniſts, helped to increaſe the animoſity between him and the Jeſuits. But nothing raiſed ſo great a clamour againſt him as the two letters he wrote on "Abſolution;" in the ſecond of which the faculty of divinity found two propoſitions which they condemned, and M. Arnaud was expelled the ſociety. Upon this he retired; and, during a retreat which laſted near twenty-five years, he compoſed that great variety of works which are extant of his, on grammar, geometry, logic, metaphyſics, and theology. In 1679, he withdrew from France, living in obſcurity in the Netherlands, and died in 1694. His heart, at his own requeſt, was ſent to be depoſited in the Port Royal.

ARNAU'T BEL'IGRAD, a town of European Turkey, in the province of Albania, forty miles N.E. of Valona.

AR'NAY-LE-DUC, a town of France, and principal place of a diſtrict, in the department of the Côte d'Or, twenty-five miles ſouth-weſt of Dijon, and twenty-four ſouth of Semur on Auxois.

ARN'DORF, a town of Germany, in the circle of Bavaria, and principality of Saltzbach, four miles eaſt of Kemnat.

ARNDT (John), a famous Proteſtant divine of Germany, born at Ballenſtad, in the duchy of Anhalt, in 1555. At firſt he applied himſelf to the ſtudy of phyſic; but, falling into a dangerous ſickneſs, he made a vow to change his profeſſion for that of divinity, if he ſhould be reſtored to health; which he accordingly did upon his recovery. He was miniſter firſt at Quedlinburg and then at Brunſwick. He met with great oppoſition in this laſt city: his ſucceſs as a preacher raiſed the enmity of his brethren, who became his bitter enemies. To ruin his character, they aſcribed a variety of errors to him; and perſecuted him to ſuch a degree, that he was obliged to leave Brunſwick, and retire to Iſleb, where he was miniſter for three years. In 1611, George duke of Lunenburg, who had a high opinion of his integrity and ſanctity, gave him the church of Zell, and appointed him ſuperintendant of all the churches in the duchy of Lunenburg; which office he diſcharged for eleven years, and died in 1621. It is reported that he foretold his death, having ſaid to his wife, upon his return home after his laſt ſermon, that now he had preached his funeral ſermon. He wrote in High Dutch a Treatiſe on True Chriſtianity, which has been tranſlated into ſeveral languages.

ARNE (Dr. Thomas Auguſtine), diſtinguiſhed by his ſkill in muſic, was the ſon of Mr. Arne an upholſterer in Covent-garden, whom Addiſon is ſuppoſed to have characteriſed in No. 155 and No. 160 of the Tatler; and brother of Mrs. Cibber the player. He was early devoted to muſic, and ſoon became eminent in his profeſſion. July 6, 1759, he had the degree of doctor of muſic conferred on him at Oxford. His compoſitions are univerſally applauded, and he was alſo particularly ſkilful in inſtructing vocal performers. He died March 5, 1778, having written the following operas: Artaxerxes, 1762. The Guardian outwitted, 1764. The Roſe, 1778.

ARNE, a daughter of Æolus, who gave her name to a town in Theſſaly, and to another in Bœotia. Neptune changed himſelf into a bull to enjoy her company.

AR'NEBERG, or ARNEBURG, a town of Germany, in the circle of Upper Saxony, and the Old Mark of Brandenburg, fifty miles weſt of Berlin. Lat. 52. 45. N. lon. 29. 45. E. Ferro.

ARNE'DO, a ſea-port town of South America, on the coaſt of Peru, with a good harbour on the Pacific Ocean, nine leagues north of Lima. Lat. 11. 38. N. lon. 76. 54. W. Greenwich.

ARNEC', a town of Hindooſtan, in the Carnatic, fourteen miles ſouth of Arcot, and fifty-two north-weſt of Pondicherry.

AR'NEN, or AR'NEM, a town of Swiſſerland, in the Valais, thirty-five miles eaſt of Sion.

ARNE'SCIO, a town of Italy, in the kingdom of Naples, and country of Bari, ſeven miles weſt-ſouth-weſt of Andria.

ARN'FELS, a town of Germany, in the duchy of Stiria, ten miles ſouth-eaſt of Landſpuig.

ARNGIT'ZES, a town of Wallachia, forty-two miles ſouth-ſouth-eaſt of Hermanſtadt.

ARNHAU'SEN, a town of Germany, in the circle of Upper Saxony, and duchy of Pomerania, fourteen miles ſouth of Corbin, and twenty-four eaſt of New Stettin.

ARN'HEIM, a town of the United Netherlands, and capital of a fourth quarter of Guelderland, called *Welvwe*, is ſituated on the north ſide of the Rhine, near its union with the Iſſel, large, ſtrong, and populous, thirty miles eaſt of Utrecht, and forty-five ſouth-eaſt of Amſterdam. Lat. 52. 0. N. lon. 23. 23. E. Ferro.

AR'NICA, *ſ.* [πλαϱνυμαι, to ſneeze.] In botany, a genus of the ſyngeneſia polygamia ſuperflua claſs, in the natural order of compoſitæ diſcoideæ. The generic characters are—Calyx: common imbricate, ſhorter than the ray of the corolla; leaflets lanceolate, the length of the calyx, erect. Corolla: compound radiate; corollules hemaphrodite in the diſk, very numerous; females in the ray about twenty; proper of the hermaphrodite tubular, erect, five-cleft, equal; female lanceolate, very long, three-toothed, ſpreading. Stamina: to the hermaphrodites, filaments very ſhort, anthera cylindric; to the females, filaments ſubulate erect, antheræ none. Piſtillum: germ oblong; ſtyle ſimple, the length of the ſtamens; ſtigma bifid. Pericarpium: none; calyx unchanged. Seeds: ſolitary, oblong; down ſimple; in the hermaphrodites pubeſcent, long. Receptaculum: naked.—*Eſſential Character.* Receptaculum naked; down ſimple; corollules of the ray have five filaments without antheræ.

Species. 1. Arnica montana, or mountain arnica: leaves ovate entire, ſtem-leaves twin, oppoſite. Root woody, blackiſh, ſuperficial, appearing as if cut off, having bunches of long fibres, perennial. Stem a foot or a foot and a half high, not more than ſix inches in alpine ſituations, obſcurely angular, ſimple, terminated by three (ſometimes only two or even one) upright peduncles, each bearing one flower, two inches in diameter, of a deep yellow colour, tinged with brown or ruſſet and orange. The root is aromatic; the whole plant has a ſtrong ſcent, and is acrid. The flowers follow the ſun. Kine do not touch the plant; but goats are very fond of it. In Smoland, they ſnuff the powder of the leaves up the noſtrils, to make them ſneeze, and ſmoke them as tobacco. It is a native of moſt parts of the continent of Europe, and alſo of Siberia. It flowers with us in July, and was cultivated by Mr. Miller in 1759. In Germany it is eſteemed a ſpecific for reſolving coagulated blood, occaſioned by falls or bruiſes. It is recommended likewiſe in ſundry obſtinate chronical diſorders. It appears to be too violent in its operation for general uſe, unleſs repeated ſmall doſes ſhould be accompanied with the good effects, without the diſturbance which a full doſe is ſaid to produce. Dr. Collin, of Vienna, recommends beginning with an infuſion of one drachm of the herb in flower, morning and evening, increaſing the doſe gradually to half an ounce, and keeping the body open. Infuſed in ſmall beer, and taken as common drink, it is reported to have cured the chronical rheumatiſm of the loins; and, in one or two doſes, taken two hours before the fit, to have put a ſtop to intermittents of long ſtanding. Bergius tried this infuſion, and alſo the powder of the root, in quartan agues, without ſucceſs. Allioni relates his having cured the palſy by the flowers; but that it did not anſwer with him in putrid fevers. He adds, that his patients could not endure an ounce of the flowers in infuſion, which is what Dr. Collin recommends; and that he never ventured on more than three drachms, and that divided into ſeveral doſes. Villars celebrates the arnica as one of the beſt remedies in the vegetable kingdom: as eminently diuretic and tonic; as a febrifuge, antiparalytic and antiarthritic. He ſays that all parts of it may be uſed in infuſion or decoction, in a doſe of half a grain: or, if given in ſubſtance, leſs, eſpecially at the beginning, becauſe it is apt to diſcourage patients by giving them the heart-burn. "How many ſick (he exclaims) have I benefited, and even cured of the dropſy, by this ſimple remedy!"

2. Arnica piloſelloides: leaves quite entire, elliptic, villoſe; ſcape one-flowered, woolly; calyx equalling the ray. A copious down iſſues from the crown of the root, involving the leaves and ſtem. The leaves are two or three inches long, and an inch and a half broad, hairy, eſpecially on the back, entire and ending in a point. The flower is large. Native of the Cape of Good Hope.

3. Arnica ſcorpioides, or alternate-leaved arnica: leaves alternate, toothed. Roots much jointed, dividing into many irregular fleſhy offsets, which are variouſly contorted; whence ſuperſtitious perſons were formerly led to imagine, that they would expel the poiſon of ſcorpions, and cure the wounds made by the bite of that animal. Stems ſeveral, from ſix or eight inches to a foot in height, terminated by one handſome flower, of a deep yellow colour, two inches over. The root and the whole plant have a ſtrong diſagreeable ſmell, eſpecially in the ſhade and expoſed to the north. Native of Switzerland, Savoy, Dauphiné, and Auſtria. Miller received the ſeeds from Bohemia and Siberia.

4. Arnica doronicum: leaves alternate, ſubſerrate, oblong, rough. This plant varies in its leaves, which are ovate or elliptic, or eſpecially on the ſtem very long ellipſes; ſometimes they are quite entire about the edge, but they have generally a few teeth; theſe are ſometimes large, and ſo remote that the leaf becomes angular: the ſurface of the leaves is hairy more or leſs, ſhorter or longer. The height is generally four inches, but ſometimes it is twice as high. The ſtem always bears one flower. Native of the high Alps of the Griſons, Dauphiné, Piedmont, and Auſtria.

5. Arnica maritima, or ſea arnica: leaves lanceolate, the lower ones ſerrate; ſtem leafy, many-flowered. Native of Kamtſchatka and North America.

6. Arnica crocea, or ſaffron-flowered arnica: leaves ovate, repand-toothletted, tomentoſe underneath. Crown of the root woolly. Native of the Cape.

7. Arnica ciliata, or ciliate-leaved arnica: leaves ſtem-claſping, ovate, toothed, ciliate, ſmooth; ſtem ſimple, one-flowered. Stem angular, with white briſtles, upright, a foot high. Leaves alternate; the lower attenuated at the baſe. Flower terminating, red, the ſize of a ſmall pear.

8. Arnica Japonica, or Japaneſe arnica: leaves gaſh-palmated, toothletted; flowers terminal, ſub-binate. Stem hollow, round, ſtriated, ſmooth, upright, a foot or more in height. Leaves alternate, ſmooth, green above, pale beneath.

9. Arnica palmata, or palmate-leaved arnica: leaves gaſh-palmated, toothed; flowers panicled. Stem round, very finely ſtreaked, upright, ſmooth, two feet high. Flowers terminating, ſmall, yellow. This and the two foregoing are natives of Japan.

10. Arnica gerbera: leaves pinnatifid, lobes rounded.

11. Arnica coronopifolia: leaves pinnate, diviſions linear. Very nearly allied, and natives of the Cape.

12. Arnica oporina: ſhrubby, leaves lanceolate, callous-crenate, tomentoſe beneath; peduncles one-flowered, ſolitary, terminating, ſcaly. Native of New Zealand.

Propagation and Culture. The European ſorts, 1, 2, 3, 4, 5, are hardy, and require a moiſt ſhady ſituation. They may be propagated by parting the roots in autumn, when the ſtalks begin to decay; or by the ſeeds ſown in autumn, ſoon after they are ripe, for thoſe ſown in the ſpring often fail: but, if the ſeeds are permitted to ſcatter, the plants will often come up of themſelves, without any other care but to keep them clean from weeds. The other ſpecies muſt be kept in pots under a frame, or in a dry ſtove. They may be increaſed by ſeeds, cuttings, or parting the roots; and muſt be treated as other plants from the Cape. See DORONICUM.

ARNISÆ'US (Henningus), a philoſopher and phyſician of great reputation, about the beginning of the 17th century. He was born at Halberſtad in Germany, and was profeſſor of phyſic in the univerſity of Helmſtad. His political works are much eſteemed. The moſt remarkable of them is his book "De Authoritate Principum in Populum ſemper inviolabili," Frankfort, 1612. In this he maintains that the authority of princes ought never to be violated. He wrote alſo, upon the ſame doctrine, "De Jure Majeſtatis," and "Reflectiones Politicæ," printed in 1615. Having received an invitation to Denmark, he went, and was made counſellor and phyſician to the king. Beſides the pieces already mentioned, he wrote ſeveral philoſophical, medicinal, and political, treatiſes; and died in the year 1635.

AR'NO, a river of Italy, which riſes in the Apennine mountains, in the duchy of Tuſcany, paſſes by Florence, Piſa, &c. and enters the Mediterranean, twelve miles north of Leghorn, and four below Piſa, to which place it is navigable for ſmall veſſels.

ARNO'BIUS, profeſſor of rhetoric at Sicca, in Numidia, towards the end of the third century. Owing to certain dreams, he became deſirous of embracing Chriſtianity. For this purpoſe he applied to the biſhops to be admitted into the church; but they had a diſtruſt of him, and, before they would admit him, inſiſted on ſome proofs of his ſincerity. In compliance with this demand, he wrote againſt the Gentiles; wherein he has expoſed the abſurdities of their religion, and ridiculed the adoration of falſe gods. In this treatiſe he has employed all the flowers of rhetoric, and diſplayed great learning. There are ſeveral editions of this work; one publiſhed at Rome in 1542, at Baſil in 1546 and 1560, at Paris in 1570, at Antwerp in 1582, and at Hamburgh in 1610, with notes by Gebbard Helmenhorſtius. He wrote alſo "De Rhetoricæ Inſtitutiones;" but this is not extant.

AR'NOLD, [of *are*, honour, and *nold*, Sax. faithful, q. d. faithful to his honour.] A name of men.

ARNOLD, of Breſcia, in Italy, diſtinguiſhed himſelf by being the founder of a ſect which oppoſed the wealth and power of the Romiſh clergy. He went into France, and ſtudied under the celebrated Peter Abelard. Upon his return to Italy, he put on the habit of a monk, and opened his invectives in the ſtreets of Breſcia. The people crowded round him. He told them he was ſent to reform abuſes, to pull down the proud, and to exalt the humble. He then pointed his declamation againſt the biſhops and clergy, but to the laity he was indulgent. The church of Breſcia was ſoon thrown into confuſion; and the people, thus prejudiced againſt their miniſters, threatened to overturn their altars. To ſuppreſs this growing evil, a grand council was held at Rome in 1139, and Arnold was cited before it. His accuſers were the biſhop of Breſcia, and many others, whom he had ridiculed and inſulted. He was found guilty, and ſentenced to perpetual ſilence. Upon this he left Italy, croſſed the Alps, and found a refuge in Zurich.

Though Arnold was thus driven from the country, yet had his opinions taken deep root, and Rome itſelf was infected by them. Irritated by the conduct of Innocent II. the Roman people aſſembled in the Capitol. It was propoſed that the power of the pontiff ſhould be reſtrained; and, as if ſuddenly inſpired by the genius of the place, they moved that the ſenate, which for years had been aboliſhed, ſhould be reſtored. The propoſition was received with the loudeſt acclamations. Innocent in vain oppoſed the bold deſign: there was a magic in it which ſpread irreſiſtibly, and for a moment ſeemed to rouſe the fallen ſpirit of the nation. The pope viewed with horror the reverſe of fortune which threatened him, and he fell ſick and died. Under his two immediate ſucceſſors, Celeſtin and Lucius, whoſe reigns were but of a few months, the Romans purſued their darling object. They waited on the latter, and, in an imperious tone, demanded the reſtitution of all the honours and civil rights which had been uſurped from the people. Lucius ſurvived this event but a few days. His ſucceſſor was Eugenius III. the friend and diſciple of the renowned Bernard. The night before his conſecration the ſenators aſſembled, and it was agreed, that he ſhould ſolemnly confirm all their proceedings, or they would annul his election. This reſolution was notified to him. He called together his friends; and it was their advice, that he ſhould neither accede to the extravagant demand, nor expoſe himſelf, by a refuſal, to the fury of the populace. He therefore ſilently withdrew from Rome, and retired to a neighbouring fortreſs, where the ceremony of his conſecration was performed.

Arnold, who in baniſhment had contemplated the effect of his admonitions on the minds of the Romans, and the ſucceſs which ſeemed to follow their exertions, was now informed that the pope had retired, and that the gates of the capital were open to receive him. Arnold took fire at the news; an unuſual glow of enthuſiaſm filled his breaſt; and he fancied that, like Junius Brutus, he was called to give liberty to Rome. On his appearance, the citizens called him their friend and deliverer. The Breſcian walked amongſt them; his deportment was humble, his countenance emaciated, his addreſs affable; and he ſpoke to them of moderation, of ſubmiſſion, of obedience. With the nobles and new ſenators he held another language; though to them alſo he was mild and diffident, ſpeaking much of virtue and of reſpect for religion and the laws. But no ſooner was he ſenſible of his own real influence, than he threw aſide the maſk, and harangued the people. He talked of their forefathers the ancient Romans, who, by the wiſdom of their ſenate, and the valour of their armies, had conquered nations and ſubdued the earth. He dwelt on the names and the atchievments of the Bruti, the Gracchi, and the Scipios; and of theſe men, ſaid he, are you not the children? He adviſed, that the Capitol be inſtantly repaired; that the equeſtrian order be reſtored; that the people have their tribunes; that dignity attend the ſenate; and that the laws which had been ſilent and neglected, be revived in all their vigour. He ſpoke of the pope as of a depoſed and baniſhed tyrant: "But, ſhould you again be diſpoſed (continued he) to admit him within theſe walls; firſt fix your own rights, and determine his." Fired by this harangue, the people, headed by the moſt diſaffected of the nobles, attacked the few cardinals and churchmen who remained in the city; they ſet fire to the palaces; and they compelled the citizens to ſwear obedience to the new government. Moderate men were ſhocked at theſe exceſſes of popular frenzy; but it was in vain to oppoſe the torrent: they ſubmitted, looking forward to the termination of an event which had begun in extravagance, and muſt end in diſappointment.

Eugenius had viewed, with ſome concern, the derangement of his people: but, when it ſeemed that their eyes were opening to their own exceſſes, he could be inactive no longer. He excommunicated the ringleaders of the faction; and, at the head of his troops, who were chiefly compoſed of Tiburtini, a people hoſtile to the Romans, he marched againſt the enemy. His friends within the walls, who were numerous, co-operated with his deſigns, and in a few days overtures for peace were made to him. He acceded; but on condition that they ſhould annul the arrangements they had made; and, if they would have ſenators, they ſhould acknowledge all their power was from him. The people were ſatisfied, and they threw open the gates, through which Eugenius entered, among the acclamations of an inconſtant multitude. Before this event Arnold had retired; but he left behind him many friends ſtrongly attached to his perſon and principles. Of himſelf we hear little more till the reign of Adrian; when, on account of freſh tumults, he and his adherents were excommunicated, and Rome was threatened with an interdict unleſs they expelled the whole party from their walls. This they did. The Arnoldiſts retired with their champion into Tuſcany, where he was received as a prophet, and honoured as a ſaint. His enemies, however, finally prevailed; he was made priſoner, and conducted under a ſtrong eſcort to Rome. In vain was intereſt made to ſave his life; he was condemned and executed, and his aſhes thrown into the Tiber, leſt the people ſhould collect his remains, and venerate them as the relics of a ſainted martyr.

"Such was Arnold of Breſcia; a man (ſays Mr. Berrington), whoſe character, whoſe principles, and whoſe views, we perhaps ſhould be diſpoſed to admire, had his life been recorded by unprejudiced hiſtorians, and not brought down to us drawn in the blackeſt colours which party, bigotted zeal, and enthuſiaſm, could lay on. He was raſh, misjudging, and intemperate, or never would he have engaged in ſo unequal a conteſt. The view of ſuch a phenomenon in the twelfth century excites a pleaſing admiration. To attack the Roman pontiff and his clergy in the very centre of their power, required a more than common ſhare of fortitude; to adopt a ſettled ſcheme of reſtoring to its priſtine glory the republic of Rome, demanded a ſtretch of thought comprehenſive and enterpriſing; and to forego the eaſe and indulgence of a diſſipated age, for the reformation of manners and the ſuppreſſion of what he thought uſurped dominion, argued a character of mind diſintereſted, generous, and benevolent. But Arnold, like other reformers, went too far; and paſſion ſoon vitiated undertakings which were begun perhaps with motives the moſt laudable."

AR'NOLDISTS, a ſect ſo called from their leader Arnold of Breſcia.

AR'NOLDSGRUN, a town of Germany, in the circle of Upper Saxony, four miles eaſt of Oelſnitz.

AR'NOLDSTEIN, or Arl'stein, a town of Germany, in Carinthia, ſeven miles ſouth-weſt of Willach.

ARNOL'DUS (Gothofredus), paſtor and inſpector of the churches of Perleberg, and hiſtoriographer to the king of Pruſſia, was born at Annaburg, in the mountains of Miſnia, in 1666. He was a zealous defender of Pietiſts, a ſect among the German Proteſtants, and compoſed a great number of religious works. He died in 1714.

AR'NON, a brook running between the borders of the Moabites and Ammonites on the other ſide Jordan. Joſephus calls it a river riſing on the borders of Arabia, and at length falling into the Dead Sea. Alſo a river of France, which runs into the Cher, not far from Vierzon.

ARNO'SERIS, *ſ.* in botany. See Lapsana.

ARNOSO'RA, a town of Italy, in the kingdom of Naples, and province of Principatro Gitra, twelve miles ſouth-eaſt of Salerno.

ARNO'TA, a town of Wallachia, eighteen miles weſt of Kimnick.

ARNOT'TO, *ſ.* in botany. See Bixa.

ARN'SBURG, a town of Germany, in the circle of Upper Saxony, and country of Schwartſburg Rudolſtadt, three miles ſouth-eaſt of Sonderſhauſen.

Arnsburg, a town of Germany, in the circle and county of Solms-Braunfels, three miles north-eaſt of Muntzenberg, and ſix ſouth-ſouth-eaſt of Gieſſen.

ARN'SFELD, a town of Germany, in the circle of Upper Saxony, and country of Erzgeberg, five miles ſouth of Wolkenſtein.

ARN'SHAUG, a town of Germany, in the circle of Upper Saxony, and circle of Neuſtadt, one mile ſouth of Neuſtadt.

ARN'SHEIM, a town of Germany, in the circle of the Lower Rhine, and palatinate of the Rhine, twenty miles north-weſt of Worms, and fourteen ſouth-weſt of Mentz.

ARN'STADT, a town of Germany, in the circle of Upper Saxony, and county of Schwartzburg, on the Gera, twelve miles ſouth of Erfurt, and twenty ſouth-weſt of Weimar. Lat. 50. 40. N. lon. 28. 34. E. Ferro.

ARN'STEIN, a town of Germany in Thuringia, and county of Mansfield, between Mansfield and Quedlimburg.

ARN'STORF, a town of Germany, in the archduchy of Auſtria, ſix miles weſt of Maultern.

ARNT'SEE, a town of Germany, in the circle of Upper Saxony, and Old Mark of Brandenburg, on the ſide of a deep lake, formed by an earthquake in the year 811.

AR'NULPH, or Er'nulph, biſhop of Rocheſter in the reign of Henry I. He was born in France, where he was ſome time a monk of St. Lucian de Beauvais. The monks led moſt irregular lives in this monaſtery; for which reaſon he reſolved to quit it, but firſt took the advice of Lanfranc archbiſhop of Canterbury. This prelate invited him to England, and placed him in the monaſtery of Canterbury, where he lived till Lanfranc's death. When Anſelm came to the archi-epiſcopal ſee, Arnulph was made prior of the monaſtery of Canterbury, and afterwards abbot of Peterborough. In 1115, he was conſecrated biſhop of Rocheſter, which ſee he held nine years, and died in March, 1124, aged eighty-four. Arnulph wrote, 1. A piece concerning the foundation, endowment, charters, laws, and other things, relating to the church of Rocheſter: it is known by the title of *Textus Roffenſis*, and is preſerved in the archives of the cathedral church of Rocheſter. 2. An Epiſtle in Anſwer to ſome Queſtions of Lambert abbot of Munſter. 3. An Epiſtle on Inceſtuous Marriage.

AR'NUS, a famous ſoothſayer, who went to Naupacte, and was taken for a ſpy by a grandſon of Hercules, and ſlain; upon which the plague began to rage among the inhabitants, and the oracle, being conſulted, anſwered, that they muſt expiate the death of Arnus, by baniſhing the murderer, and inſtitute funeral games to the honour of the deceaſed, which was accordingly done.

Arnus, now *Arno*, a river of Tuſcany.

ARN'WAY (John), a clergyman diſtinguiſhed by his benevolence and loyalty to Charles I. was deſcended from a good family in the county of Salop, from which he inherited a conſiderable eſtate. He was educated at Oxford; and obtained the rectories of Hodnot and Ightfield, where he diſtinguiſhed himſelf by his piety and exemplary charity: for it was his cuſtom to clothe annually twelve poor people, and every Sunday to entertain as many at his table. The civil war breaking out, he preached againſt rebellion, and raiſed and clothed eight troopers for the ſervice of king Charles, upon which his houſe was plundered by the parliament's army. He then went to Oxford to ſerve the king in perſon, which ſubjected him to a new train of misfortunes: for his eſtate was ſoon after ſequeſtered, and himſelf impriſoned till the king's death; after which he went to the Hague, where he publiſhed, 1. The Tablet, or the Moderation of Charles I. the Martyr; and, 2. An Alarm to the Subjects of England. He at laſt went to Virginia, where he died in 1653.

A'RO, a river of Spain, which runs into the Mediterranean, two leagues ſouth from Palamos in Catalonia.

A'ROBE. See Arrobas.

ARO'CHE, a town of Spain, in the province of Andaluſia, and country of Seville, on the frontiers of Eſtremadura, ſituated near a chain of mountains, to which it gives name, that extends along Spaniſh Eſtremadura, to the frontiers of Portugal, forty-ſix miles N.W. of Seville.

AROKHA'GE, or Arroukhage, a city and capital of a country of Aſia, to which it gives name, 100 miles ſouth of Candahar. Lat. 30. 40. N. lon. 65. 30. E. Greenwich.

ARO'LEO, *ſ.* an American weight equal to twenty-five of our pounds.

AROL'SEN, a town of Germany, in the circle of the Upper Rhine, and county of Waldeck, twenty-nine miles ſouth-ſouth-eaſt of Paderburn, and thirty-eight weſt-ſouth-weſt of Gottingen. Lat. 51. 15. N. lon. 26. 22. E. Ferro.

ARO'MA, *ſ.* [from αρι, intenſely, and οζω, to ſmell.] Any thing fragrant: ſometimes it means myrrh. The odorate principle.

AROMA'TA, a town of Lydia, famous for its generous wines; and hence the appellation. *Strabo.* Alſo the name of a trading town, and promontory, of Ethiopia, at the termination of the Sinus Avalites of the Red Sea. *Arrian.*

AROMAT'IC, *adj.* [from *aroma*, Lat. ſpice.] Spicy. Fragrant; ſtrong ſcented:

Or, quick effluvia darting through the brain,
Die of a roſe in *aromatic* pain. *Pope.*

AROMAT'ICAL, *adj.* Spicy; fragrant; high ſcented.—All things that are hot and *aromatical* do preſerve liquors or powders. *Bacon.*—Volatile oils refreſh the animal ſpirits, but likewiſe are endued with all the bad qualities of ſuch ſubſtances, producing all the effects of an oily and *aromatical* acrimony. *Arbuthnot.*

AROMAT'ICS, *ſ.* Spices.—They were furniſhed for exchange of their *aromatics,* and other proper commodities. *Raleigh.*

Aromatics, or ſpicy drugs, are of a warm pungent taſte, with more or leſs of a fragrant ſmell; ſome are purely aromatic, as cinnamon, nutmegs, &c. others have a ſweetneſs mixed with them, as in the angelica root, aniſeed, &c. ſome have an aſtringency, as cinnamon; others a mucilage, as the caſſia lignea, &c. ſome a bitterneſs, as orange-peel; and others are alſo bitter and aſtringent, as the bark. The ſeveral medicinal virtues of theſe mixed aromatics are extracted by the ſame means as from thoſe which are leſs compounded; thus the aromatic part of lemon-peel ariſes in diſtillation with water, whilſt the bitter remains behind in the extract, &c. The aromatic matter contained in different ſubjects differs much in their pharmaceutic properties. The virtues of all aromatics are extracted by ſp. vini rect. Water extracts a portion from ſome, but from many none at all. In diſtillation they ariſe with water more perfectly than with ſpirit, though in ſome few inſtances the aromatic matter wholly riſes in diſtillation, both with ſpirit and with water, as of lemon-peel, whilſt pepper ſtill retains part of its aromatic matter, though diſtilled with water. In the eſſential oil and reſinous part of aromatics, all their peculiar qualities reſide. The more eſſential oil any vegetable affords, the weaker the oil is, and *vice verſa.* Aromatics warm the ſtomach, and by degrees the whole body, hence are uſeful where the vital heat is below the par of health; they promote the natural ſecretions; they reſiſt putrefaction, hence ſo plentifully produced in hot climes.

AROMA'TITIS, *ſ.* [from αρωμα, an odour.] An Arabian ſtone, of a bituminous ſubſtance and fragrant ſmell.

AROMATIZA'TION, *ſ.* The mingling of a due proportion of aromatic ſpices or drugs with any medicine.

To A'ROMATIZE, *v. a.* [from *aroma,* Lat. ſpice.] To ſcent with ſpices; to impregnate with ſpices.—Drink the the firſt cup at ſupper hot, and half an hour before ſupper ſomething hot and *aromatized. Bacon,*—To ſcent; to perfume.—Unto converted Jews no man imputeth this unſavoury odour, as though *aromatized* by their converſion. *Bacon.*

AROMATO'POLA, *ſ.* [from αρημα, an odour, and πωλεω, to ſell.] A druggiſt; a vender of drugs and ſpices.

AROMAZ', a town of France, in the department of Jura, and chief place of a canton, in the diſtrict of Orgelet, fourteen miles ſouth of Orgelet.

A'RON, a town of Perſia, in the province of Irak, two leagues from Cachan.

ARO'NA, a town of Italy, in the Milaneſe, belonging to Piedmont, on the ſide of a hill, near the weſt coaſt of lake Maggiora: the environs are exceedingly fertile, and its wines much ſought for: twenty three miles ſouth-ſouth-eaſt of Donno d'Oſcella, and ſeventeen north-north-weſt of Novara.

ARONABABAD', a town of Perſia, in the province of Irak, twenty leagues ſouth of Iſpahan.

ARON'CHES, or ARRON'CHES, a town of Portugal, in the province of Alentejo: it is walled and defended with a caſtle, though only one pariſh, with about 600 inhabitants: ninety-five miles eaſt of Liſbon. Lat. 38. 58. N. lon. 11. 32. E. Ferro.

ARON'DE, a river of France, which runs into the Oiſe, oppoſite Compeigne.

ARO'NIA, *ſ.* in botany. See ORONTIUM.

AROO'L, a town of the empire of Ruſſia, in the Ukrain, ſeated on the river Occa. Lat. 51. 48. N. lon. 38. 15. E.

A'ROPH, a contraction of *aroma philoſophorum;* a name given to ſaffron.

AROPH PARACELSI, a name given to a kind of chemical flowers, probably of the ſame nature with the *ens veneris,* elegantly prepared by ſublimation from equal quantities of lapis hæmatitis and ſal ammoniac.

AROPH is alſo a term uſed frequently by Paracelſus in a ſenſe ſynonymous with *lithontriptic.*

AROSBAY', a town of the Eaſt Indies, on the coaſt of the iſland of Madura, near Java. Lat. 9. 30. N. lon. 14. 30. E.

ARO'SE, the preterite of the verb *ariſe.* See ARISE.

AROUKORTCHIN', a country of Tartary, near the great wall of China.

AROU'ND, *adv.* [from *a* and *round.*] In a circle. On every ſide:

He ſhall extend his propagated ſway,
Where Atlas turns the rolling heav'ns *around,*
And his broad ſhoulders with their lights are crown'd.
Dryden.

AROUND, *prep.* About; encircling, ſo as to encompaſs:

From the young Iülus head
A lambent flame aroſe, which gently ſpread
Around his brows, and on his temples fed. *Dryden.*

AROU'RA, *ſ.* a Grecian meaſure of fifty feet. It was more frequently uſed for a ſquare meaſure of half the plethron. The Egyptian aroura was the ſquare of 100 feet.

To AROU'SE, *v. a.* [from *a* and *rouſe.*] To wake from ſleep; to raiſe up; to excite:

But abſent, what fantaſtic woes *arous'd*
Rage in each thought, by reſtleſs muſing fed,
Chill the warm cheek, and blaſt the bloom of life. *Thomſ.*

ARO'W, *adv.* [from *a* and *row.*] In a row; with the breaſts all bearing againſt the ſame line:

But with a pace more ſober and more ſlow,
And twenty, rank in rank, they rode *arow. Dryden.*

AROW, iſlands in the Indian ſea, dependant on the iſland of Banda, ſituated about lat. 7. 10. S.

AROY'NT, *adv.* [a word of uncertain etymology, but very ancient uſe.] Be gone; away: a word of expulſion or avoiding:

Saint Withold footed thrice the wold,
He met the night-mare, and her name told,
Bid her alight, and her troth plight,
And *aroynt* thee, witch, *aroynt* thee right. *Shakeſpeare.*

AR'PAD, anciently a city of Syria. It was always placed with Hamath (2 Kings xviii. 34. xix. 13.) Sennacherib boaſts of having reduced Arpad and Hamath, or of having deſtroyed the gods of theſe two places. Hamath is known to be the ſame with Emeſa; and it is thought that Arpad is the ſame with Arad or Arvad, as it is ſometimes called in Hebrew.

ARPA'GIUS, or HARPA'GIUS, *ſ.* [from αρπαζω, I ſnatch.] Among the ancients, one who died in the cradle, at leaſt in early youth. The Romans made no funerals for their *arpagii.* They neither burnt their bodies, nor made tombs, monuments, or epitaphs, for them. In aftertimes it became the cuſtom to burn ſuch as had lived to the age of forty days, and had cut any teeth; and theſe they called αρπακτοι, and αρπαγμενοι, q. d. *rapti,* "raviſhed." The uſage ſeems to have been borrowed from the Greeks; among whom, Euſtathius aſſures us, it was the cuſtom never to bury their children either by night or full day, but at the firſt appearance of the morning; and that they did not call their departure by the name of *death,* but by a ſofter appellation, ημερας αρπαγη, importing that they were raviſhed by Aurora, or taken away to her embraces.

ARPA'IA, a town of Italy, in the kingdom of Naples, and Principato Ultra, ſix miles S. S. W. of Benevento.

ARPAJON', or ARPAJOU', a town of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of Corbeil, ſixteen miles ſouth of Paris.

AR'PA-SOU, a river of Perſia, between Erivan and Tauris.

ARPEG'GIO, [Ital.] In muſic, is to cauſe the ſeveral notes or ſounds of an accord to be heard, not together, but one after another, beginning always with the loweſt.

AR'PENBURG, a town of Germany, in the circle of Upper Saxony, and Old Mark of Brandenburg, nine miles ſouth of Saltzwedel.

AR'PEN, or AR'PENT, *ſ.* An acre or furlong of ground; and, according to the old French account in domeſday-book, 100 perches make an arpent. The moſt ordinary acre, called *l'arpent de France*, is 100 perches ſquare: but ſome account it but half an acre.

ARPENTA'TOR, *ſ.* A meaſurer or ſurveyor of land.

ARPHAX'AD, [ארפכשר Heb. of ארפ he healed, and שיר he made deſolate, i. e. a healer of deſolation.] The ſon of Shem and father of Salah. Arphaxad was born in the year of the world 1658, a year after the deluge, and died in the year of the world 2096, at the age of 438 years. Gen. xi. 12, &c.

AR'PI, a town of Italy, in the kingdom of Naples, and province of Capitanata, fourteen miles weſt of Manfredonia.

ARPI. See ARGOS HIPPIUM.

AR'PINAS, or ARPINO, (Joſeph Cæſar,) a famous painter, born in 1560, at the caſtle of Arpinus, in the kingdom of Naples. He lived in great intimacy with pope Clement VIII. who conferred upon him the honour of knighthood. In the year 1600 he went to Paris with cardinal Aldobrandin, who was ſent legate to the French court on the marriage of Henry IV. with Mary of Medicis. His Chriſtian majeſty gave Arpinas many conſiderable preſents, and created him a knight of St. Michael. The colouring of this painter is thought to be cold and inanimate; yet there is ſpirit in his deſigns, and his compoſitions have ſomewhat of fire and elevation. The touches of his pencil, being free and bold, give pleaſure to connoiſſeurs in painting: yet they are often incorrect. His paintings of the Roman hiſtory are the moſt eſteemed of all his works. He died at Rome in 1640.

ARPI'NUM, a town of the Volſci, to the eaſt of the confluence of the rivers Liris and Fibrenus, in the Terra di Lavora; now decayed, and called *Arpino*. It was the native place of Cicero, and of C. Marius. *Salluſt.*

AR'QUA, a town of Italy, in the Padua, and territory of Venice, remarkable for the tomb of Petrarch. Lat. 45. 43. N. lon. 11. 43. E.

ARQUA'TA, a town of Italy, in the ſtate of Genoa, ſituated on the Scrivia. It is a fief of the empire, twenty-five miles north of Genoa.

ARQUA'TUS MOR'BUS, [of *arquus*, or *arcus celeſtis*, Lat.] The jaundice, a diſeaſe ſo called from its reſembling the colours of the rainbow.

AR'QUE, a town of France, in the department of the ſtraits of Calais, and chief place of a canton, in the diſtrict of St. Omer, half a league ſouth-eaſt of St. Omer.

ARQUEBUSA'DE, *ſ.* [from *arquebuſe*, Fr. a hand-gun.] A diſtilled water; ſo called becauſe it is uſed as a vulnerary in gun-ſhot wounds. It is mint, ſage, mugwort, &c. diſtilled in wine.

AR'QUEBUSE, *ſ.* [Fr. ſpelt falſely *harquebuſs.*] A hand-gun. It anciently meant much the ſame as our carabine, or fuſee.—A *harquebuſe*, or ordnance, will be farther heard from the mouth of the piece, than backwards or on the ſides. *Bacon.*

ARQUEBUSIER', *ſ.* A ſoldier armed with an arquebuſe.—He compaſſed them in with fifteen thouſand *arquebuſiers*, whom he had brought with him well appointed. *Knolles.*

ARQUENON', a river of France, which paſſes by Jugon, in the department of the North Coaſts, and runs into the Engliſh Channel, about thirteen miles N. of that town.

AR'QUES, a river of France, which paſſes by the town of that name, in the department of the Lower Seine, and runs into the Engliſh Channel near Dieppe.

ARQUES, a town of France, in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Dieppe, one league ſouth-eaſt of Dieppe.

ARQUES, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Limoux, three leagues ſouth-eaſt of Limoux.

ARRACHE'E, *ſ.* in heraldry, a term applied to the repreſentations of plants torn up by the roots.

AR'RACK. See ARACK.

AR'RACOURT, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Chateau Salins, five miles ſouth-ſouth-eaſt of Marſal, and five ſouth of Chateau Salins.

ARRA'DES, a town of Africa, in the kingdom of Tunis, celebrated for its baths.

ARRADON', a town of France, in the department of Morbihan, and chief place of a canton in the diſtrict of Vannes, three miles ſouth-weſt of Vannes.

AR'RAGON, a province of Spain, bounded on the weſt by Navarre, and the two Caſtiles; on the north by the Pyrenean mountains, which ſeparate it from France; on the eaſt by Catalonia, and a part of Valencia; and on the ſouth by Catalonia. Its extent from north to ſouth is nearly 120 miles, and from eaſt to weſt about ſeventy-eight. The river Ebro runs from north-weſt to ſouth-eaſt through the province, and divides it into two parts nearly equal. The air is pure and wholeſome, and the country near the rivers is fertile in corn, wine, flax, and fruit; but in other places it is dry and ſandy. It produces ſaffron, and there are mines of ſalt. Saragoſſa is the capital.

The Arragoneſe have the character of being bold, courageous, and well bred; but poſitive in their opinions, and bigotted in their religion. Theſe were the firſt of the Spaniards that threw off the Mooriſh yoke. The principal towns of Arragon, beſides Saragoſſa, are, Balbaſtro, Jaca, Sarazona, Haeſca, Calatajud, Albarrazin, Trevel, Daroca, and Boria.

ARRAI', a town of Japan, in the province of Tootomi, or Jenſiju.

To ARRAI'GN, *v. a.* [*arranger*, Fr. to ſet in order.] To ſet a thing in order, or in its place. One is ſaid to *arraign* a writ in a county, that fits it for trial before the juſtices of the circuit. A priſoner is ſaid to be *arraigned*, where he is indicted and brought forth to his trial. To accuſe; to charge with faults in general, as in a controverſy, in a ſatire.—He that thinks a man to the ground, will quickly endeavour to lay him there: for, while he deſpiſes him, he *arraigns* and condemns him in his heart. *South.*—It has *for* before the fault.—My own enemies I ſhall never anſwer; and, if your lordſhip has any, they will not *arraign* you *for* want of knowledge. *Dryden.*

ARRAI'GNMENT, *ſ.* The act of arraigning; an accuſation; a charge.

A priſoner is arraigned, when he is indicted and brought to trial; and to arraign a writ of aſſize, is to cauſe the demandant to be called to make the plaint, in ſuch a manner as the tenant may be obliged to anſwer. *Co. Lit.* 262. But no man is properly arraigned but at the ſuit of the king, upon an indictment found againſt him, or other record wherewith he is to be charged: and this arraignment is to take care that the priſoner do appear to be tried, and hold up his hand at the bar, for the certainty of the perſon, and plead a ſufficient plea to the indictment. *Co. Lit.* 262, 263. The priſoner is to hold up his hand only in treaſon and felony; but this is merely a ceremony. If he owns that he is the perſon, it is ſufficient without it; and then upon his arraignment his fetters are to be taken off, and he is to be treated with all the humanity imaginable. 2 *Inſt.* 315, 3 *Inſt.* 35. A peer need not hold up his hand. 4 *St. Trials* 211, 508. Priſoners are now generally tried in their irons, becauſe taking them off is uſually attended with great pain and trouble.

An attainder of high treaſon has been reverſed for the omiſſion of an arraignment. 2 *Hawk. P. C.* 438. If, in action of ſlander for calling one thief, the defendant juſtifies that the plaintiff ſtole goods, and iſſue is thereon taken;

if it be found for the defendant in *B. R.* and for felony in the ſame county where the court ſits, or before juſtices of aſſize, &c. he ſhall be forthwith arraigned upon this verdict of twelve men, as on an indictment. 2 *Hale's Hiſt. P.C.* 151. The pleas upon arraignment are either the general iſſue, Not guilty; plea in abatement, or in bar; and the priſoner may demur to the indictment. He may alſo confeſs the fact, but then the court has nothing more to do than to proceed to judgment againſt him.

AR'RAN, an iſland of Scotland, in the frith of Clyde, between Kintyre and Cunningham. Of this iſland an entertaining deſcription is given by Mr. Pennant, in his Tour through Scotland, vol. ii. 172-184. “Arran, or properly *Arr-inn*, or ‘the iſland of mountains,’ ſeems not to have been noticed by the ancients, notwithſtanding it muſt have been known to the Romans, whoſe navy, from the time of Agricola, had its ſtation in the *Glota Eſtuarium*, or the frith of Clyde. Camden indeed makes this iſland the Glota of Antonine; but no ſuch name occurs in his Itinerary: it therefore was beſtowed on Arran by ſome of his commentators. By the immenſe cairns, the vaſt monumental ſtones, and many relics of druidiſm, this iſland muſt have been conſiderable in ancient times. Here are ſtill traditions of the hero Fingal, or Fin-mac-coul, who is ſuppoſed here to have enjoyed the pleaſures of the chace; and many places retain his name: but I can diſcover nothing but oral hiſtory that relates to the iſland till the time of Magnus the Barefooted, the Norwegian victor, who probably included Arran in his conqueſts of Kintyre. In 1456, the whole iſland was ravaged by Donald earl of Roſs and lord of the iſles. At that period it was the property of James II. but in the reign of his ſucceſſor James III. when that monarch matched his ſiſter to Thomas lord Boyd, he created him earl of Arran, and gave him the iſland as a portion. Soon after, on the diſgrace of that family, he cauſed the counteſs to be divorced from her unfortunate huſband; and beſtowed both the lady and iſland on Sir James Hamilton, in whoſe family it continues to this time.

“Arran is thirteen miles from Sgreadan-point north, to Beinnean ſouth; and the number of inhabitants are about 7000, who chiefly inhabit the coaſts; the far greater part of the country being uninhabited by reaſon of the vaſt and barren mountains. Here are only two pariſhes, Kilbride and Killmore; with a ſort of chapel of eaſe to each, founded in the laſt century, in the golden age of this iſland, when it was bleſſed with Anne ducheſs of Hamilton, whoſe amiable diſpoſition, and humane attention to the welfare of Arran, render at this diſtant time her memory dear to the inhabitants. The principal mountains of Arran are, Goatfield or Gaoilbheinn, or ‘the mountain of the winds,’ of a height equal to moſt of the Scottiſh Alps, compoſed of immenſe piles of moor-ſtone, in form of woolpacks, clothed only with lichens and moſſes, inhabited by eagles and ptarmigans; Beinbharrin, or ‘the ſharp-pointed;’ Ceum-na-Caillich, ‘the ſtep of the carline or old hag;’ and Grianan-Athol, that yields to none in ruggedneſs. The lakes are Loch-jorſa, where ſalmon come to ſpawn; Loch-tana; Loch-na-jura, on the top of an high hill; Loch-mhachrai; and Loch-knoc-a-charbei, full of large eels. The chief rivers are, Abhan-mhor, Moina-mhor, Slondrai-machrei, and Jorſa; the two laſt remarkable for the abundance of ſalmon.

“The climate is very ſevere; for, beſides the violence of wind, the cold is very rigorous. The principal diſeaſe here is the pleuriſy. The practice of bleeding twice every year ſeems to have been intended as a preventative againſt the pleuriſy: but it is now performed with the utmoſt regularity at ſpring and fall. The duke of Hamilton keeps a ſurgeon in pay; who at thoſe ſeaſons makes a tour of the iſland. On notice of his approach, the inhabitants of each farm aſſemble in the open air; extend their arms; and are bled into a hole made in the ground, the common receptacle of the vital fluid. In burning fevers, a tea of wood ſorrel is uſed with ſucceſs, to allay the heat. An infuſion of ranſoms, or *allium urſinum*, in brandy, is eſteemed here a good remedy for the gravel. The men are ſtrong, tall, and well made; and all ſpeak the Erſe language, but the ancient habit is entirely laid aſide. The leaſes of their farms are for nineteen years. The ſucceeding tenants generally find the ground little better than a *caput mortuum*; and for this reaſon: Should they at the expiration of the leaſe leave the lands in a good ſtate, ſome avaricious neighbours would have the preference in the next ſetting, by offering a price more than the perſon who had expended part of his ſubſtance in enriching the farm could poſſibly do. This induces them to leave it in the original ſtate. The method of ſetting a farm is very ſingular; each is commonly poſſeſſed by a number of ſmall tenants; thus a farm of 40l. a-year is occupied by eighteen different people, who by their leaſes are bound, conjunctly and ſeverally, for the payment of the rent to the proprietor. Theſe live on the farm in houſes cluſtered together, ſo that each farm appears like a little village. The tenants annually divide the arable land by lot; each has his ridge of land, to which he puts his mark, ſuch as he would do to any writing: and this ſpecies of farm is called *run-rig*, i. e. ridge. They join in ploughing; every one keeps a horſe or more; and the number of thoſe animals conſume ſo much corn, as often to occaſion a ſcarcity; the corn and peaſe raiſed being (much of it) deſigned for their ſubſiſtence, and that of the cattle, during the long winter. The paſture and moor-land annexed to the farm is common to all the poſſeſſors.” Arran forms part of the county of Bute; and in it are many natural curioſities highly deſerving the attention of travellers.

ARRAN, a province of Perſia, ſituated between Georgia, Adirbeitzan, and Shirvan, ſurrounded by mountains.

ARRAN ISLES, three iſlands on the weſt coaſt of Ireland, in the mouth of Galway-bay, in lat. 53. 0. N. lon. 10. 0. W. They are called the South Iſles of Arran, to diſtinguiſh them from another iſland of the ſame name, called the North Iſle of Arran, ſituated on the coaſt of Donnegal in Ulſter. Lat. 55. 0. N. lon. 8. 50. W.

To ARRAN'GE, *v. a.* [*arranger*, Fr.] To put in proper order for any purpoſe.—How effectually are its muſcular fibres *arranged*, and with what judgment are its columns and furrows diſpoſed! *Cheyne.*

ARRAN'GEMENT, *ſ.* The diſpoſition of the parts of a whole, in a certain order. The modern philoſophy ſhews us, that the diverſity of the colours of bodies depends entirely on the ſituation and arrangement of the parts, which reflect the light differently; the diverſity of taſtes and ſmells on the different arrangements of the pores, which render them differently ſenſible; and the general diverſity of bodies on the different arrangement of their parts. The happy arrangement of words makes one of the greateſt beauties of diſcourſe.

AR'RANT, *adj.* [a word of uncertain etymology, but probably from *errant*, which being at firſt applied in its proper ſignification to vagabonds, as an *errant* or *arrant rogue*, that is, a *rambling rogue*, loſt, in time, its original ſignification; and, being by its uſe underſtood to imply ſomething bad, was applied at large to any thing that was mentioned with hatred or contempt.] Bad in a high degree.—Country folks, who hallooed and hooted after me as at the *arranteſt* coward that ever ſhewed his ſhoulders to the enemy. *Sidney.*

AR'RANTLY, *adv.* [from *arrant.*] Corruptly; ſhamefully.—Funeral tears are as *arrantly* hired out as mourning clokes. *L'Eſtrange.*

AR'RAS, *ſ.* [from *Arras*, a town of Artois, where hangings are woven.] Tapeſtry; hangings woven with images:

Thence to the hall, which was on every ſide
With rich array and coſtly *arras* dight. *Fairy Queen.*

ARRAS, a city of France, and capital of the department of the Straits of Calais, ſituated on the Scarp. Before the revolution, Arras was the capital of Artois; it was taken by the French king Lewis XIII. and annexed to France in 1640. It contained eleven pariſh churches, beſides the cathedral. The fortifications are the work of the celebrated Vauban, nine leagues north-weſt of Cambray, and 44 north of Paris. Lat. 50. 17. N. lon. 20. 26. E. Ferro.

AR'RATS, a river of France, which runs into the Garonne, about two miles north-weſt of Auvillard, in the department of the Lot and Garonne.

ARRA'Y, *ſ.* [*arroy*, Fr. *arreo*, Span. *arredo*, Ital. from *reye*, Teut. order. It was adopted into the middle Latin, *mille hominum arraitorum*, Knighton.] Order, chiefly of war.—The earl, eſpying them ſcattered near the army, ſent one to command them to their *array*. *Hayward*. Dreſs:.

> In this remembrance, Emily ere day
> Aroſe, and dreſs'd herſelf in rich *array*. *Dryden*.

ARRAY, in law, ſignifies the ranking or ſetting forth of a jury of men impanelled upon a cauſe. And when we ſay to *array* a panel, that is, to ſet forth the men impanelled one by another. *F. N. B.* 157. To *challenge the array* of the panel, is at once to except againſt all the perſons *arrayed* or impanelled, in reſpect of partiality, &c. *Co. Lit.* 156. If the ſheriff be of affinity to any of the parties; or if any one or more of the jurors are returned at the nomination of either party; or for any other partiality; the *array* ſhall be *quaſhed*.

To ARRAY, *v. a.* [*arroyer*, old French.] To put in order. To deck; to dreſs; to adorn the perſon: with the particle *with* or *in*.—Deck thyſelf now with majeſty and excellency, and *array* thyſelf *with* glory and beauty. *Job*, xl. 10.

> Now went forth the morn,
> Such as in higheſt heav'n, *array'd in* gold
> Empyreal. *Milton*.

ARRA'YERS, ARRAGERS, or ARRAITORES, is uſed in ſome ancient ſtatutes, for ſuch officers as had care of the ſoldiers armour, and ſaw them duly accoutred in their kinds. In ſome reigns, commiſſioners have been appointed for this purpoſe. Such were the commiſſioners of array appointed by Charles I. in 1642.

ARREA'R, *adv.* [*arriere*, Fr. behind.] Behind. This is the primitive ſignification of the word, which, though not now in uſe, ſeems to be retained by *Spenſer*:

> To leave with ſpeed Atlanta ſwift *arrear*,
> Through foreſts wild and unfrequented land
> To chaſe the lion, boar, or rugged bear. *Fairy Queen*.

ARREAR, *ſ.* That which remains behind unpaid, tho' due:

> His boon is giv'n; his knight has gain'd the day,
> But loſt the prize; th' *arrears* are yet to pay. *Dryden*.

It will comfort our grand-children, when they ſee a few rags hung up in Weſtminſter-hall, which coſt an hundred millions, whereof they are paying the *arrears*, and boaſting, as beggars do, that their grandfathers were rich. *Swift*.

ARREA'RAGE, *ſ.* [from *arriere*, Fr. behind.] *A word now little uſed.—Arrearage* is the remainder of an account, or a ſum of money remaining in the hands of an accountant; or, more generally, any money unpaid at the due time, as *arrearage* of rent. *Cowell*.

ARREA'RANCE, *ſ.* The ſame with *arrear*.

ARREA'U, a town in France, in the department of the Higher Pyrenees, and chief place of a canton, in the diſtrict of La Barthe-de-Neſtes, thirteen miles ſouth-eaſt of Bagneres en Bigorre, and twenty-three ſouth-ſouth-eaſt of Tarbes.

AR'RENS, a town of France, in the department of the Higher Pyrenees, and chief place of a canton, in the diſtrict of Argellez, on the Garonne, eight miles ſouth-weſt of Argellez.

ARRENTA'TION, *ſ.* [from *arrendar*, Span. to farm.] Is, in the foreſt law, the licenſing an owner of lands in the foreſt, to incloſe them with a low hedge and ſmall ditch, in conſideration of a yearly rent.

ARREPTI'TIOUS, *adj.* [*arreptus*, Lat.] Snatched away: [from *ad* and *repo*.] Crept in privily.

ARREST', *ſ.* [*arreſtum*, Lat. from *arrêter*, Fr. to ſtop, or ſtay.] A reſtraint of a man's perſon, obliging him to be obedient to the law: and it is the execution of the command of ſome court of record, or officer of juſtice. An *arreſt* is the beginning of impriſonment, where a man is firſt taken, and reſtrained of his liberty, by power or colour of a warrant; alſo it ſignifies the decree of a court, by which a perſon is *arreſted*. 2 *Shep. Abr.* 299. Arreſts are either in *civil* or *criminal* caſes. An arreſt in a *civil cauſe* is the apprehending or reſtraining one's perſon by proceſs in execution of the command of ſome court, or officer of juſtice. There are ſeveral ſtatutes, ſecuring the liberty of the ſubject, againſt unlawful arreſts and ſuits. See *Magna Charta*, c. 29. 3 Edw. I. c. 35. Some perſons are alſo privileged from arreſts, viz. peers of the realm, members of parliament, peereſſes by birth, peers of Scotland, a peereſs by marriage, members of convocation actually attending thereon, biſhops, ambaſſadors, or the domeſtic ſervant of an ambaſſador, *really and bonâ fide in that capacity*; the king's ſervants, marſhal, warden of the Fleet, clerks, attornies, and all other perſons attending the courts of juſtice, clergymen performing divine ſervice, and not merely ſtaying in the church with a fraudulent deſign; ſuitors, witneſſes ſubpœnaed, and other perſons neceſſarily attending any court of record upon buſineſs; a bankrupt coming to ſurrender, or within forty-two days after his ſurrender; witneſſes properly ſummoned before commiſſioners of bankrupt, or other commiſſioners under the great ſeal, but not creditors coming to prove their debts; heirs, executors, or adminiſtrators; except on perſonal contracts by themſelves, or in caſes of *devaſtavit*; ſailor or volunteer ſoldier, (unleſs the debt is twenty pounds.) Officers of courts are allowed theſe privileges only where they ſue or are ſued in their own right; not if as executors or adminiſtrators, nor in joint actions. *Hob.* 177. *Dyer*, 24. p. 150. 2 *Sid.* 157. *Latch.* 199. *Godb.* 10. 2 *Rol. Abr.* 274. But this privilege does not extend to Iriſh or other foreign peers, or to peereſſes by marriage, if they afterwards intermarry with commoners. And though the ſervants of peers, neceſſarily employed about their perſons and eſtates, could not formerly be arreſted; yet this privilege ſeems to have been taken away by the ſtatute 10 Geo. III. c. 50. ſ. 2. *Jacob's Law Dict.*

Members of corporations aggregate, and hundredors, not being liable to a *capias*, cannot be arreſted in their corporate capacity, or on the ſtatutes of hue and cry, &c. Corporations muſt be made to appear by *diſtringas*: *Finch.* 353. 3 *Salk.* 46. In an action againſt huſband and wife, the huſband alone is liable to be arreſted, and ſhall not be diſcharged until he have put in bail for himſelf and wife; and, if ſhe is arreſted, ſhe ſhall be diſcharged on common bail. 1 *Term. Rep.* 486. 1 *Salk.* 115. A clerk of the court ought not to be arreſted for any thing which is not criminal, becauſe he is ſuppoſed to be always preſent in court to anſwer the plaintiff. 1 *Lill.* 94. Arreſts are not to be made within the liberty of the king's palace; nor may the king's ſervants be arreſted in any place, without notice firſt given to the lord-chamberlain, that he remove them, or make them pay their debts. There is this difference between arreſts in civil and criminal caſes: that none ſhall be arreſted for debt, treſpaſs, &c. or other cauſe of action, but by virtue of a precept or commandment out of ſome court; but for treaſon, felony, or breach of the peace, any man may arreſt without warrant or precept. *Terms de Ley*, 54.

The abuſes of gaolers and ſheriff's officers towards their priſoners are well reſtrained and guarded againſt by ſtatute 32 Geo. II. c. 28. the chief proviſions of which are, that an officer ſhall not carry his priſoner to any tavern, &c. without his conſent, nor charge him for any liquor but ſuch as he ſhall freely call for, nor demand for caption or attendance any other than his legal fee, nor exact any gratuity-money, nor carry any priſoner to jail within twenty-four hours after his arreſt, unleſs the priſoner refuſes to go to ſome ſafe houſe (except his own) *of his own chooſing*. Nor ſhall any officer take for the diet, lodging, or expences, of his priſoner, more than ſhall be allowed by an order of ſeſſions. Bailiffs to ſhew a copy of the act to priſoners, and to permit a peruſal thereof; and the priſoner to ſend for his own victuals, bedding, &c. Sheriffs and their officers to take no reward for doing their office but according to law. The fees now allowed by the maſter for arreſts on meſne proceſs in term are 10s. 6d. in the country 1l. 1s. and 1s. per mile. *Impey's Sheriff*, 122.

By ſtat. 29 Car. II. c. 7. No writ, proceſs, warrant, &c. (except in caſes of treaſon, felony, or for breach of the peace,) ſhall be ſerved on a *Sunday*; on pain that the perſon ſerving them ſhall be liable to the ſuit of the party grieved, and anſwer damages, as if the ſame had been done without writ: an action of falſe impriſonment lies for arreſt on a *Sunday*, and the arreſt is void. 1 *Salk.* 78. A defendant was arreſted on a *Sunday* by a writ out of the Marſhalſea; and, in the court of B. R. being moved to diſcharge him, it was denied; and he was directed to bring an action of falſe impriſonment. 5 *Mod. Rep.* 95. The defendant being taken upon a *Sunday*, without any warrant, and locked up all that day; on *Monday* morning a writ was got againſt him, by which he was arreſted; it was ruled, that he might have an action of falſe impriſonment, and that an attachment ſhould go againſt thoſe who took him on the *Sunday*. *Mod. Caſ.* 96. Attachments have been often granted againſt bailiffs for making arreſts on *Sunday*; but affidavit is uſually made, that the party might be taken upon another day. 1 *Mod.* 56. A perſon may be retaken on a *Sunday*, where arreſted the day before, &c. and a man may be taken on a *Sunday* on an eſcape-warrant: or on freſh purſuit when taken the day before. 2 *Ld. Raym.* 1028. 2 *Salk.* 626. when he goes at large out of the rules of the King's Bench or Fleet priſon, &c. ſtat. 5 Anne, c. 9. Alſo bail may take the principal on a *Sunday*, and confine him till *Monday*, and then render him. 1 *Atk.* 239. 6 *Mod.* 251. A party cannot be arreſted on a *Sunday* on an attachment for non-performance of an award, it being only in the nature of a civil execution. By ſtatutes 12 Geo. I. c. 29. and 5 Geo. II. c. 27. both made perpetual by ſtatute 21 Geo. II. c. 3. No perſon can be arreſted, or held to bail, on a writ ſued out of the *ſuperior* courts, unleſs the cauſe of action be 10l. or upwards. And now by ſtat. 19 Geo. III. c. 70. No perſon can be *arreſted* or held to bail upon proceſs out of any *inferior* court for leſs than 10l. but proceedings are to be had in inferior courts according to the directions of 12 Geo. I. c. 29. extended by 19 Geo. III. to debts under 10l. By ſtat. 11 and 12 Will. III. c. 9. No perſon is to be held to bail in Wales on proceſs out of the courts at Weſtminſter for leſs than 20l.

In trover the defendant may be held to bail of courſe. 2 *Str.* 1122. *Cowp.* 529. For this is more an action of property than a *tort*. 1 *Wilſ.* 23. In an action of debt on a judgment, whether after verdict or by default, defendant cannot be arreſted if he was previouſly held to bail in the original action. *Say.* 160. It is now ſettled, both in K. B. and C. P. that a defendant may be arreſted in an action on a judgment for 10l. for damages and *coſts*, though the original debt alone were under 10l. 4 *Term. Rep.* 570. on the authority of 2 *Black. Rep.* 1274; (though it had been otherwiſe ruled in K. B. 2 *Burr.* 1389. 4 *Burr.* 2117. 5 *Burr.* 2660. *Cowp.* 128.) Bail cannot be had in an action on the *ſecond judgment*, where bail has been given on the firſt. 2 *Str.* 782. See Bail.

Formerly one great obſtruction to public juſtice, civil as well as criminal, was the number of privileged places, ſuch as the Mint, Savoy, &c. under pretence of their being ancient palaces; but theſe ſanctuaries for iniquity are now aboliſhed, and the oppoſing any proceſs therein is made highly penal by ſtat. 8 and 9 Will. III. c. 27. ſ. 15. 9 Geo. I. c. 28. ſ. 1. and 11 Geo. I. c. 22. by which perſons oppoſing the execution of proceſs, or abuſing the officer, if he receives any bodily hurt, are declared guilty of felony. When a perſon is apprehended for debt, &c. he is ſaid to be arreſted: and writs expreſs *arreſt* by two ſeveral words, *capias* and *attachias*, to take and catch hold of a man; for an officer muſt actually lay hold of a perſon, beſides ſaying he arreſts him, or it will be no lawful arreſt. 1 *Lill. Abr.* 96. If a bailiff be kept off from making an arreſt, he ſhall have an action of aſſault; and, where the perſon arreſted makes reſiſtance, or aſſaults the bailiff, he may juſtify the beating of him. If a bailiff *touches* a man, which is an *arreſt*, and he makes his eſcape, it is a *reſcous*, and attachment may be had againſt him. 1 *Salk.* 79. If a bailiff lays hold of one by the hand, (whom he had a warrant to arreſt) as he holds it out at the window, this is ſuch a taking of him, that the bailiff may juſtify the breaking open of the houſe to carry him away. 1 *Vent.* 306.

When a perſon has committed treaſon or felony, &c. doors may be broke open to arreſt the offender; but not in civil caſes, except it be in purſuit of one arreſted; or where a houſe is recovered by real action, or in ejectment, to deliver poſſeſſion to the perſon recovering. *Plowd.* 5 *Rep.* 91. Action of treſpaſs, &c. lies for breaking open a houſe to make arreſt in a civil action. *Mod. Caſ.* 105. But if it appears a bailiff found an outer door, &c. open, he may open the inner door to make an arreſt. *Comb.* 327. In the caſe of Lee *v.* General Ganſell, the court of King's Bench determined, that the chamber door of a lodger, is not to be conſidered as his *outer* door; but that, the ſtreet door being open, the officers had a right to force open the chamber door, the defendant being in the room, and refuſing to open it. *Cowp.* 1. Alſo, it is enacted by the 3 and 4 Jac. I. par. 35. That upon any lawful writ, warrant, or proceſs awarded to any ſheriff or other officer, for the taking of any popiſh recuſant, ſtanding excommunicated for ſuch recuſancy, it ſhall be lawful, if need be, to break any houſe. 2 *Hawk. P. C.* c. 14. ſ. 10. But it hath been reſolved, that where juſtices of the peace are, by virtue of a ſtatute, authoriſed to require perſons to come before them to take certain oaths preſcribed by ſuch ſtatute, the officer cannot lawfully break open the doors. 2 *Hawk. P. C.* c. 14. ſ. 11. An arreſt in the night, as well as the day, is lawful. 9 *Rep.* 66. And every one is bound by the common law to aſſiſt not only the ſheriff in the execution of writs, and making arreſts, &c. but alſo his bailiff that hath his warrant to do it. 2 *Inſt.* 193. A bailiff upon an arreſt ought to ſhew at whoſe ſuit, out of what court the writ iſſues, and for what cauſe, &c. *when the party arreſted ſubmits himſelf to the arreſt*: a bailiff, ſworn and known, need not ſhew his warrant, though the party demands it; nor is any other ſpecial bailiff bound to ſhew his warrant, unleſs it be demanded. 9 *Rep.* 68, 69. *Cro. Jac.* 485. If an action is entered in one of the *compters* of the city of London, a city ſerjeant may arreſt the party without the ſheriff's warrant. 1 *Lill. Abr.* 94. And, by the cuſtom of London, a debtor may be arreſted before the money is due, to make him find ſureties: but not by the common law. 1 *Nelſ. Abr.* 258.

If a wrong perſon is arreſted; or one for felony, where no felony is done, &c. it will be falſe impriſonment. By Glynn, Ch. J. Mich. 1658. If one be arreſted by the ſheriff of the county, within a liberty, without a *non omittas*, yet the arreſt is good; for the ſheriff is ſheriff of the whole county, but the bailiff of the liberty may have his action againſt the ſheriff, for entering of his liberty. But, upon a *quo minus*, a ſheriff may enter any liberty, and execute it *impunè*. *Pract. Reg.* 72.

With regard to arreſts in *criminal* caſes, it hath already been obſerved, that for *treaſon, felony, or breach of the peace*, any perſon may arreſt without warrant or precept. But the king cannot command any one by word of mouth to be arreſted; for he muſt do it by writ, or order of his courts, according to law: nor may the king arreſt any man for ſuſpicion of treaſon, or felony, as his ſubjects may; becauſe, if he doth wrong, the party cannot have an action againſt him. 2 *Inſt.* 186.

Arreſts by *private perſons* are in ſome caſes *commanded*. Perſons preſent at the committing of a felony muſt uſe their endeavours to apprehend the offender, under penalty of fine and impriſonment. 3 *Inſt.* 117. 4 *Inſt.* 177. And for this cauſe, by the common law, if any homicide be committed, or dangerous wound given, whether with or without malice, or even by miſadventure or ſelf-defence, in any town, or in the lanes or fields thereof, in the day time, and the offender eſcape, the town ſhall be amerced, and, if out of a town, the hundred ſhall be amerced. 3 *Inſt.* 53. And ſince the ſtat. of Wincheſter, c. 5. which ordains that walled towns ſhall be kept ſhut from ſun-ſetting to ſun-riſing; if the fact happen in any ſuch town by night, or by day, and the offender eſcape, the town ſhall be amerced. 3 *Inſt.* 53. And, as private perſons are bound to apprehend all thoſe who ſhall be guilty of any of the crimes above-mentioned in their view, ſo alſo are they, with the utmoſt diligence, to purſue and endeavour to take all thoſe who ſhall be guilty thereof out of their view, upon a hue and cry levied againſt them. 3 *Inſt.* 117. Every private perſon is bound to aſſiſt an officer, requiring him to apprehend a felon.

As to the arreſting of offenders by *private perſons* of their own authority, *permitted* by law for the *prevention* of *treaſon* or *felony* only intended to be done; any one may lay hold of a perſon, whom he ſees upon the point of committing treaſon, or felony, or doing an act which would manifeſtly endanger the life of another, and detain him, till it may be reaſonably preſumed he has changed his purpoſe. 2 *Hawk. P. C.* c. 12. ſ. 19. As to arreſts for inferior offences, no private perſon can arreſt another for a bare breach of the peace after it is over; but it is held, that a private man may arreſt a night-walker, or a common cheat going about with falſe dice, and actually caught playing with them, in order to have him before a juſtice of peace; and the arreſt of any other offenders, by private perſons, for offences in like manner ſcandalous, and prejudicial to the public, ſeems juſtifiable. 2 *Hawk. P. C.* c. 12. ſ. 20.

With regard to arreſts by *public officers*, they may be made either with or without proceſs. Arreſts without proceſs may be made by watchmen, conſtables, bailiffs of towns, or juſtices of peace. See *Stat. Wincheſter*, c. 4. It has been holden, that this ſtatute was made in affirmance of the common law, and that every private perſon may by the common law arreſt any *ſuſpicious night-walker*, and detain him till he give a good account of himſelf. 2 *Hawk. P. C.* c. 13. ſ. 6. It is the better opinion at this day, that any conſtable, or even a private perſon, to whom a warrant ſhall be directed from a juſtice of peace, to arreſt a particular perſon for felony, or any other miſdemeanor within his juriſdiction, may lawfully execute it, whether the perſon mentioned in it be, in truth, guilty or innocent; and whether he were before indicted of the ſame offence or not; and whether any felony were, in truth, committed or not: for, however the juſtice himſelf may be puniſhable for granting ſuch warrant without ſufficient grounds, it is reaſonable that he alone be anſwerable for it, and not the officer, who is not to examine or diſpute the reaſonableneſs of his proceeding. 2 *Hawk. P. C.* c. 13. ſ. 11.

The doctrine of *general warrants* (i. e. to apprehend all the authors and publiſhers of libels, or generally all perſons ſuſpected of any particular crime, without mentioning the name of the perſon accuſed) ſeems exploded as illegal. See *Leach's Hawk. P. C.* ii. c. 13. ſ. 10; and Wilkes's caſe. But it is to be obſerved, that the term *general warrant* uſed by Hawkins, does not ſeem to mean a warrant, without the name of the *party* being ſpecified, but one alſo which does not contain the ſpecific *charge* againſt the party. See Money *v.* Leach, and 4 *Comm.* 291. The great point gained by theſe determinations, was the reſcuing perſons from the malice or ignorance of the *inferior* miniſters of juſtice. With regard to arreſts by *bailiffs of towns*, their power is founded on the above-mentioned ſtatute of Wincheſter, c. 4. And, as to arreſts by *juſtices of peace*, arreſts by their command are either by word of mouth or by warrant. A juſtice of peace may, by word of mouth, authoriſe any one to arreſt another, who ſhall be guilty of an actual breach of the peace in his preſence, or ſhall be engaged in a riot in his abſence. 2 *Hawk. P. C.* c. 13. ſ. 14. *Dalt.* c. 117. And a juſtice of peace may lawfully grant a warrant for apprehending or arreſting perſons charged with treaſon, felony, premunire, or any other offence againſt the peace; and generally, wherever a ſtatute gives one or more juſtices of peace a juriſdiction over any offence, any one juſtice of peace may, by his warrant, cauſe ſuch offenders to be arreſted and brought before him. 2 *Hawk. P. C.* c. 13. ſ. 15. But it is ſaid, that anciently no one juſtice of peace could legally make out a warrant for an offence againſt a penal ſtatute, or other miſdemeanor; cognizable only by a ſeſſions of two or more juſtices; for that one ſingle juſtice of peace hath no juriſdiction of ſuch offence, and regularly thoſe only who have juriſdiction over a cauſe can award proceſs concerning it. Yet the long, conſtant, univerſal, and uncontrolled, practice of juſtices of peace ſeems to have altered the law in this particular, and to have given them an authority in relation to ſuch arreſts, not now to be diſputed. *Id.* ſ. 16.

A juſtice of peace may juſtify the granting a warrant for the arreſt of any perſon upon ſtrong grounds of ſuſpicion of felony, or miſdemeanor; but he ſeems to be puniſhable, as well at the ſuit of the king as of the party grieved, if he grant any ſuch warrant groundleſsly, or maliciouſly, without ſuch a probable cauſe as might induce a candid and impartial man to ſuſpect the party to be guilty. *Id.* ſ. 18. Every warrant ought to be under the hand and ſeal of the juſtice of peace, and ſpecify the day it was made out: if it be for the peace or good behaviour, it is adviſable to ſet forth the *ſpecial cauſe* upon which it is granted; but if it be for treaſon or felony, or other offences of an enormous nature, it is ſaid that it is not neceſſary to ſet forth the ſpecial cauſe, and it ſeems to be rather diſcretionary than neceſſary to ſet it forth in any caſe. *Id.* ſ. 21-25. The warrant may be directed to the ſheriff, bailiff, conſtable, or to any indifferent perſon by name, who is no officer; for, tho' the juſtice may authoriſe any one to be his officer, whom he pleaſes to make ſuch, yet it is moſt adviſable to direct to the conſtable of the precinct wherein it is to be executed; for that no other conſtable, and *à fortiori* no private perſon, is compellable to ſerve it. *Id.* ſ. 27.

A bailiff or conſtable, if they be ſworn, and commonly known to be officers, and act within their own precincts, need not ſhew their warrant to the party, notwithſtanding he demand the ſight of it; but that theſe and all other perſons whatſoever making an arreſt, ought to acquaint the party with the ſubſtance of their warrant; and all private perſons to whom ſuch warrants ſhall be directed, and even officers, if they be not ſworn and commonly known, and even theſe, if they act out of their own precincts, muſt ſhew their warrants, if demanded. *Id.* ſ. 28. And therefore ſtat. 27 Geo. II. c. 20. provides, that in all caſes where a juſtice is empowered by ſtatute to iſſue a warrant of diſtreſs for levying a penalty, the officer executing ſuch warrant, if required, ſhall ſhew the ſame to the defendant, and ſuffer a copy to be taken. The ſheriff, having ſuch warrant directed to him, may authoriſe others to execute it; but every other perſon, to whom it is directed, muſt perſonally execute it; yet, it ſeems, that any one may lawfully *aſſiſt* him. *Id.* ſ. 29. After preſentment or indictment found in felony, &c. the firſt proceſs is a *capias*, to arreſt and impriſon the offender: and, if the offender cannot be taken, an exigent is awarded in order to outlawry. *Hawk. P. C.* 209. See Debtor.

Arrest of Judgment. To move in *arreſt of judgment*, is to ſhew cauſe why judgment ſhould be ſtaid, notwithſtanding verdict given. Judgment may be arreſted for good cauſe in criminal caſes, as well as civil; if the indictment be inſufficient, &c. 3 *Inſt.* 210. Arreſts of judgment ariſe from intrinſic cauſes appearing upon the face of the record; for a judgment can never be arreſted but for that which appears on the face of the record itſelf. *Ld. Raym.* 232. Motions in arreſt of judgment may be made at any time before judgment ſigned. *Dougl.* 747. *Str.* 845. *Sunday* is no day, 4 *Burr.* 21, 30. nor a *dies non*. It is a rule to ſhew cauſe, therefore needs no notice to be given, nor yet an affidavit to ground it on, as it ariſes out of the record; and, after judgment upon demurrer, there can be no ſuch motion made, as the court will not ſuffer any one to tell them that the judgment they gave on mature deliberation is wrong. It is otherwiſe indeed in the caſe of judgment by default, for that is not given in ſo ſolemn a manner; or if the fault ariſes on the writ of inquiry or verdict, for then the party could not allege it before. *Str.* 425. It may be made after motion for a new trial diſcharged, *Dougl.* 716. 1 *Burr.* 334. and, if arreſted, each party pays his own coſts. *Cowp.* 407. After verdict, a man may allege any thing in the record, in arreſt of judgment, which may be aſſigned for error after judgment. 2 *Roll. Abr.* 716. And judgment after verdict ſhall not be arreſted for an objection that would have been good on demurrer. 3 *Burr.* 1725.

Arrest of Enquest is to plead in arreſt of taking the enqueſt, upon the former iſſue, and to ſhew cauſe why an enqueſt ſhould not be taken. *Bro.* tit. *Replead.*

To Arrest, *v. a.* [*arreſter*, Fr. to ſtop.] To ſeize by a mandate from a court or officer of juſtice. To ſeize any thing by law.—He hath enjoyed nothing of Ford's but twenty pounds of money, which muſt be paid to maſter Brook; his horſes are *arreſted* for it. *Shakeſpeare.* To ſeize; to lay hands on; to detain by power.—Age itſelf, which, of all things in the world, will not be baffled or defied, ſhall begin to *arreſt*, ſeize, and remind us of our mortality. *South.* To withhold; to hinder:

Nor could her virtues, nor repeated vows
Of thouſand lovers, the relentleſs hand
Of death *arreſt.* *Philips.*

To ſtop motion.—To manifeſt the coagulative power, we have *arreſted* the fluidity of new milk, and turned it into curdled ſubſtance. *Boyle.* To obſtruct; to ſtop.—Aſcribing the cauſes of things to ſecret proprieties, hath *arreſted* and laid aſleep all true enquiry. *Bacon.*

ARRESTAN'DIS BONIS NE DISSIPENTUR, a writ which lay for a man whoſe cattle or goods are taken by another, who during the conteſt doth or is like to make them away, not being of ability to render ſatisfaction.

ARRESTAN'DO IPSUM QUI PECUNIAM RECEPIT, &c. is a writ that lay for apprehending a perſon who hath taken the king's preſt-money to ſerve in wars, and hides himſelf when he ſhould go. *Reg. Orig.* 24.

ARRES'TO FACTO SUPER BONIS MERCATORUM ALIENIGENORUM, a writ that lay for a denizen againſt the goods of aliens found within this kingdom, in recompence of goods taken from him in a foreign country, after denial of reſtitution. *Reg. Orig.* 129. This the ancient civilians called *clarigatio*; but by the moderns it is termed *repriſalia.*

ARRES'TS, *ſ.* in farriery, mangy tumours upon a horſe's hinder legs, between the ham and the paſtern.

ARRE'TED, *adj.* [*arrectatus*, low Lat.] He that is convened before a judge, and charged with a crime. It is uſed ſometimes for *imputed* or *laid unto*; as, No folly may be *arreted* to one under age. *Cowell.*

ARRE'TIUM, one of the twelve ancient towns of Tuſcany, near the Arnis and Clanis, ſituated in a pleaſant valley. Now Arezzo, forty-two miles eaſt of Florence. Lat. 43. 15. lon. 13. 18. E.

ARRHABONA'RII, a ſect of Chriſtians, who held that the euchariſt is neither the real fleſh and blood of Chriſt, nor yet the ſign of them, but only the pledge or earneſt thereof.

ARRHEPHO'RIA, *ſ.* a feaſt among the Athenians inſtituted in honour of Minerva, and Herſe, daughter of Cecrops. The word is compoſed of *αρρητον*, myſtery, and *φερω*, I carry; on account of certain myſterious things which were carried in proceſſion at this ſolemnity. Boys, or, as ſome ſay, girls, between ſeven and twelve years of age, were the miniſters that aſſiſted at this feaſt, and were denominated *αρρηφοροι*. This feaſt was alſo called *Herſiphoria*, from the daughter of Cecrops, already mentioned.

ARRHOE'A, *ſ.* [*αρροια*, from *α* neg. and *ρεω*, to flow.] The ſuppreſſion of any natural flux, as the menſes.

ARRHO'STIA, *ſ.* [*αρρωστια*, from *α* neg. and *ρωννυω*, to ſtrengthen.] Infirmity; ill health.

AR'RIAN, a famous philoſopher and hiſtorian under the emperor Adrian and the two Antonines, was born at Nicomedia in Bithynia. His great learning and eloquence procured him the title of *The ſecond Xenophon*; and raiſed him to the moſt conſiderable dignities at Rome, even the conſulſhip itſelf. We have four books of his "Diſſertations upon Epictetus," whoſe ſcholar he had been; and his "Hiſtory of Alexander the Great," in ſeven books, is greatly admired by the beſt judges.

ARRI'ANA, a village of Africa, in which remain ſome ruins of ancient Carthage.

To ARRI'DE, *v. a.* [*arrideo*, Lat.] To laugh at. To ſmile; to look pleaſantly upon one.

ARRIE'GE, a river of France, which riſes in the Pyrenees, paſſes by Foix, Pamiers, Savarden, St. Gabelle, &c. and joins the Garonne about two miles from Toulouſe. Gold is found in ſeveral parts of this river, particularly near Pamiers. It gives name to one of the departments in the new diviſion of France.

ARRIE'NES, a mountain of France, in the department of the Calvados, remarkable for the reſort of birds of prey, ſuch as eagles, falcons, kites, &c. one league from Falaiſe.

ARRI'ERE, *ſ.* [French.] The laſt body of an army, for which we now uſe *rear.*—The horſemen might iſſue forth without diſturbance of the foot, and the avant-guard without ſhuffling with the battail or *arriere. Hayward.*

Arriere-Ban, *ſ.* [Caſſeneuve derives this word from *arriere* and *ban*; *ban* denotes the convening of the nobleſſe or vaſſals, who hold fees immediately of the crown; and *arriere*, thoſe who only hold of the king mediately.] A general proclamation, by which the kings of France formerly ſummoned to the war all that held of them, both their own vaſſals, or the nobleſſe, and the vaſſals of their vaſſals.

Arriere Fee, or Fief, is a fee dependant on a ſuperior one. Theſe fees commenced, when dukes and counts, rendering their governments hereditary, diſtributed to their officers parts of the domains, and permitted thoſe officers to gratify the ſoldiers under them in the ſame manner. Arriere Vassal, the vaſſal of a vaſſal.

ARRI'GNO, a town in the iſland of Corſica, eight miles eaſt of Calvi.

AR'RION, a town of Perſia, in the province of Adirbeitzan, thirty leagues ſouth-eaſt of Tauris.

Arrion, or Carrion, a river of Spain, which runs into the Piſuerga, near its union with the Duero.

AR'RIPHE, one of Diana's nymphs of great beauty, who was raviſhed by Tmolus, king of Lydia, at the foot of one of Diana's altars; upon which ſhe killed herſelf.

ARRI'SION, *ſ.* [*arriſio*, Lat.] A ſmiling upon.

ARRI'VAL, *ſ.* [from *arrive.*] The act of coming to any place; and, figuratively, the attainment of any purpoſe.

ARRI'VANCE, *ſ.* Company coming: *not in uſe.*

To ARRI'VE, *v. n.* [*arriver*, Fr. to come on ſhore.] To come to any place by water:

At length *arriving* on the banks of Nile,
Wearied with length of ways, and worn with toil,
She laid her down. *Dryden.*

To reach any place by travelling. To reach any point.—The bounds of all body we have no difficulty to *arrive* at; but when the mind is there, it finds nothing to hinder its progreſs. *Locke.* To gain any thing by progreſſive approach.—It is the higheſt wiſdom by deſpiſing the world to *arrive* at heaven; they are bleſſed who converſe with God. *Taylor.*—The virtuous may know in ſpeculation, what they could never *arrive* at by practice, and avoid the ſnares of the crafty. *Addiſon.* The thing at which we *arrive* is always ſuppoſed to be good. To happen: with *to* before the perſon. This ſenſe ſeems not proper:

Happy! *to* whom this glorious death *arrives*,
More to be valued than a thouſand lives. *Waller.*

AR'RO, a river of England, which runs into the Lug, near Leominſter, in Herefordſhire.

AR'ROBAS, or Aro'bas, *ſ.* a weight uſed in Spain, Portugal, and the foreign dominions of both. The arrobas of Portugal is alſo called *arata*, and contains thirty-two Liſbon pounds; that of Spain contains twenty-five Spaniſh pounds. In Peru it is called *arroue*.

To ARRO'DE, *v. a.* [*arrodo*, Lat.] To gnaw or nibble.

ARRO'E, a ſmall iſland of Denmark, in the Baltic Sea, a little ſouth of the iſland of Funen. It is eight miles in length, and about two in breadth; and produces corn, aniſeed, black cattle, and horſes. It has three pariſhes, the moſt conſiderable of which is Koping. It ſtands at the ſouth ſide of the iſland, in the bottom of a bay, and has a port with ſome trade. Lat. 55. 20. N. lon. 9. 40. E.

ARROESKIO'SPING, a town of Denmark, in the iſland of Arroe, nine miles ſouth-weſt from Aſſens, in the iſland of Funen.

AR'ROGANCE, or Ar'rogancy, *ſ.* [*arrogantia*, Lat.] The act or quality of taking much upon one's ſelf; that ſpecies of pride which conſiſts in exorbitant claims:

Pride hath no other glaſs
To ſhew itſelf but pride; for ſupple knees
Feed *arrogance*, and are the proud man's fees. *Shakeſpeare.*

Pride and *arrogance*, and the evil way, and the froward mouth, do I hate. *Prov.* viii. 13.—Humility it expreſſes by the ſtooping and bending of the head; *arrogance*, when it is lifted, or, as we ſay, toſſed up. *Dryden.*

AR'ROGANT, *adj.* [*arrogans*, Lat.] Given to make exorbitant claims; haughty; proud.—An *arrogant* way of treating with other princes and ſtates, is natural to popular governments. *Temple.*

AR'ROGANTLY, *adv.* In an arrogant manner:

Our poet may
Himſelf admire the fortune of his play;
And *arrogantly*, as his fellows do,
Think he writes well, becauſe he pleaſes you. *Dryden.*

AR'ROGANTNESS, *ſ.* The ſame with *arrogance.*

To AR'ROGATE, *v. a.* [*arrogo*, Lat.] To claim vainly; to exhibit unjuſt claims only prompted by pride.—I intend to deſcribe this battle fully, not to derogate any thing from one nation, or to *arrogate* to the other. *Hayward.*—Rome never *arrogated* to herſelf any infallibility, but what ſhe pretended to be founded upon Chriſt's promiſe. *Tillotſon.*

ARROGA'TION, *ſ.* [from *arrogate.*] A claiming in a proud unjuſt manner.

ARRO'JO de St. Servan, a town of Spain, in Eſtramadura, eight miles ſouth of Merida, and twenty-five eaſt of Bajadox. Lat. 38. 36. N. lon. 6. 20. W.

AR'RON, or A'ron, a river of France, which runs into the Loire, near Decize.

ARRON'CHES. See Aronches.

ARRONDE'E, *ſ.* in heraldry, a croſs, the arms of which are compoſed of ſections of a circle, not oppoſite to each other, but lying the ſame way, ſo that the arm is every where of an equal thickneſs, and all of them terminating at the edge of the eſcutcheon, like the plain croſs.

ARRO'S, a river of France, which runs into the Adour, near Aire, in the department of Landes.

ARRO'SION, *ſ.* [from *arroſus*, Lat.] A gnawing.

ARROU', a town of France, in the department of the Eure and Loire, and chief place of a canton, in the diſtrict of Chateaudum, ſeven leagues S. S.W. of Chartres.

ARROU'X, a river of France, which riſes near Arnay le Duc, and runs into the Loire, between Digoin and Motte St. Jean, in the department of the Soane and Loire.

AR'ROW, *ſ.* [*arewe*, Sax.] The pointed weapon which is ſhot from a bow. Darts are thrown by the hand; but in poetry they are confounded.—Here were boys ſo deſperately reſolved, as to pull *arrows* out of their fleſh, and deliver them to be ſhot again by the archers on their ſide. *Hayward.* See Archery, p. 51-54.

AR'ROWY, *adj.* [from *arrow.*] Conſiſting of arrows:

He ſaw them in their forms of battle rang'd,
How quick they wheel'd, and, flying, behind them ſhot
Sharp ſleet of *arrowy* ſhow'r againſt the face
Of their purſuers, and o'ercame by flight. *Milton.*

ARRU'RA, *ſ.* In the black book of Hereford, *De Operationibus Arruræ*, ſignifies days' work of plowing; for anciently cuſtomary tenants were bound to plough certain days for their lord. *Una arrura*, one day's work at the plough: and in Wiltſhire, earing is a day's ploughing. *Paroch. Antiq.* p. 41.

ARS, a town of France, in the department of the Creuſe, and chief place of a canton, in the diſtrict of Aubuſſon, five miles north-weſt of Aubuſſon.

Ars, a river of Spain, which runs into the ſea near Cape Finiſterre, in Galicia.

Ars, a town of France, on the ſouth-weſt coaſt of the iſland of Ré, two leagues weſt of St. Martin de Re. Lat. 46. 12. N. lon. 16. 9. E. Ferro.

ARSA'CES, otherwiſe Mithridates, a king of the Parthians, ſpoken of in the firſt book of Maccabees, xiv. 2. He conſiderably enlarged the kingdom of Parthia by his good conduct and valour. After death he was made a god of his nation, and all his ſucceſſors were called, in honour of his name, *Arſacidæ*; and the Parthians themſelves are ſo named by the poets.

ARSA'GO, a town of Italy, in the Milaneſe, four leagues north from Milan.

AR'SAMAS, a town of the Ruſſian empire, on the river Mokcha-reca, 300 miles ſouth-by-eaſt of Moſcow, and 500 north-by-weſt of Aſtracan.

ARS'CHIN, *ſ.* A long meaſure uſed in China to meaſure ſtuffs. Four arſchins make three yards of London.

ARS'CHOT, a town of Brabant, ſituated on the Demer, erected into a duchy by the emperor Charles V. in the year 1533; ten leagues ſouth-weſt of Antwerp, and twenty north-eaſt of Mons.

ARSE, *ſ.* [*earſe*, Sax.] The buttocks or hind part of an animal.

ARSE'MINI, a town of the iſland of Sardinia, ſeven miles ſouth-weſt of Cagliari.

AR'SENAL, *ſ.* [*arſenale*, Ital.] A repoſitory of things requiſite to war; a magazine of military ſtores.—I would have a room for the old Roman inſtruments of war, where you might ſee all the ancient military furniture, as it might have been in an *arſenal* of old Rome. *Addiſon.*

ARSE'NIAS, *ſ.* [from *arſenicum*, Lat. arſenic.] In the new chemical nomenclature, it means a ſalt formed by the combination of the arſenic acid and a different baſe.

AR'SENIC, *ſ.* [*arſenicum*, Lat. of ανεϱ, Gr. man, or αϱσην, male, and νικαω, I kill, alluding to its poiſonous quality.] The ſubſtance which is ſold in commerce under the name of arſenic, is a metallic calx, of a glittering whiteneſs, ſometimes of a vitreous appearance; exciting an impreſſion of an acrid taſte on the tongue; volatile when expoſed to fire, in which ſituation it riſes in the form of a white fume, with a very evident ſmell of garlic. But although it is moſt commonly met with under this form, it may be reduced to the metallic ſtate by treating it with oils, ſoaps, or charcoal, in cloſed veſſels. It is ſometimes found native in ſtalactites, or in protuberant depoſitions, formed of layers more or leſs diſtinct and concentric, which are ſeparable from each other like the coats of an onion, or the laminæ of ſhells, from which it has obtained the name of teſtaceous arſenic. In other inſtances the maſſes are formed of very ſmall ſcales; which renders the ſurface of the ſpecimen ſometimes granulated, and ſometimes full of ſmall cavities: it is then called ſcaly arſenic. It is alſo found in friable maſſes, poſſeſſing ſcarcely any conſiſtence. It theſe various forms we receive it from Bohemia, Hungary, Saxony, Saint Marie aux Mines, &c.

Arſenic appears to exiſt in the metallic ſtate in its combinations with cobalt in the teſtaceous cobalt ore, or with iron in miſpickel. It is often combined with metals in various ores, and is diſengaged from them by calcination. In various mine-works, long winding chimneys are conſtructed, through which the arſenical vapours paſs, and in which they attach them themſelves. The cruſt, which from time to time is formed againſt the internal ſurface of theſe chimneys, is taken away, and is the ſubſtance met with in the ſhops under the name of arſenic. The cobalt ores of Saxony, which are torrefied to ſeparate this ſemimetal, afford almoſt the whole of what is ſold. This oxide or calx of arſenic may be found native, and very abundant, in ſuch places as are ſituated in the vicinity of ſubterranean fires, ſuch as the ſolfatara, &c.

Of all metals, arſenic abſorbs iron moſt greedily; after this, copper, tin, lead, ſilver, and gold, in this order of ſucceſſion; therefore, all metals may be freed from the foulneſs of arſenic by iron. The ſcoriæ may be uſed for this purpoſe in fuſion, in an open fire; for, though they do not produce this effect as ſcoriæ, yet here, being reduced to iron again, they act in the ſame manner as if pure iron had been put in. Lead mixed with arſenic, and expoſed to the fire, is, in great part, immediately carried away in form of a thick ſmoke; the remainder is a glaſs of a fine ſaffron colour. Silver is alſo penetrated by arſenic in the ſame manner, and loſes it malleability; but the arſenic vaniſhes from it in a ſtrong fire, in the form of a ſmoke. Gold, penetrated by arſenic, becomes very brittle, and loſes its colour; and, being ſuddenly thrown into a violent fire, part of it is ſublimed.

Arſenic is applied to many mechanical purpoſes. It is uſed by dyers, as an ingredient in their compoſition for ſcarlets, and other fine red colours; by goldſmiths, for enamelling; by makers of glaſs, for promoting the fuſion of frit, and the tranſparency of glaſs; by potters, for a white glazing; by aſſayers, in form of glaſs, for promoting the ſcorification of ores which contain tin and antimony, for the preparations of compound metals, and for whitening copper and braſs. Neumann obſerves, that a beautiful metal, like the fineſt ſteel, may be made by melting caſt-iron with arſenic, glaſs, and a little tin; and that a metal reſembling ſilver may be made from iron, tin, arſenic, and perhaps a little copper. Mr. Brandt (Act. Upſal 1733) propoſes to make a varniſh for ſhips of arſenic, with pitch, ſulphur, or roſin, to preſerve the timber from rotting and from worms.

Many attempts have been made to introduce arſenic into the *materia medica*. Mr. Boyle mentions a balſam made of arſenic, with nitre and ſpirit of wine, or vinegar, as efficacious in the cure of venereal ulcers. Dr. Cheyne mentions pills made of arſenic, as uſed for the cure of obſtinate quartans; and in fact it has lately been adopted by many phyſicians for this particular purpoſe. Surgeons have alſo employed it in the cure of cancers; and various formulæ into which arſenic enters as an ingredient are to be found in the *pharmacopœia chirurgica.*

Yet, after all, arſenic is one of thoſe productions which are ſo extremely dangerous, that its advantages are not ſufficient to compenſate for its bad effects. This metal, which is very abundant, and frequently met with in mines, cauſes the deſtruction of a number of workmen who explore them: being very volatile, it forms a duſt which affects and deſtroys the lungs; and the unhappy miners, after a languiſhing life of a few years, all periſh, ſooner or later. The property which it poſſeſſes of being ſoluble in water, multiplies and facilitates its deſtructive power; and it ought always to be proſcribed in commerce, by the ſtrict law which prohibits the ſale of poiſon to unknown perſons. Arſenic is continually the inſtrument by which victims are ſacrificed, either by the hand of wickedneſs or imprudence. It is often miſtaken for ſugar; and theſe miſtakes are attended with the moſt dreadful conſequences. Whenever there is the leaſt reaſon to ſuſpect its preſence, the doubt may be cleared up by throwing a ſmall quantity of the powder upon heated coals. The ſmell of garlic, and the white fumes, are indications of the preſence of arſenic. The ſymptoms which characteriſe this poiſon are, a great conſtriction of the throat, the teeth ſet on edge, and the mouth ſtrongly heated; an involuntary ſpitting, with extreme pains in the ſtomach; vomiting of glairous and bloody matter, with cold ſweats and convulſions. Mucilaginous drinks have been long ago given to perſons poiſoned by arſenic. Milk, fat oils, butter, &c. have been alſo ſucceſſively employed. But Mr. Napier has propoſed a more direct counterpoiſon. He preſcribes one dram of ſulphur, of pot-aſh, or liver of ſulphur, to be diſſolved in a pint of water, which the patient is directed to drink at ſeveral draughts: the ſulphur unites to the arſenic, and deſtroys its cauſticity and effect. When theſe firſt ſymptoms are diſſipated, he adviſes the uſe of mineral ſulphureous waters. He likewiſe approves of milk, but condemns the uſe of oils. Vinegar, which diſſolves arſenic, has been likewiſe recommended by Mr. Sage. For the chemical operations on arſenic, ſee CHEMISTRY.

Motherby, in his new Medical Dictionary, ſays of arſenic, "that it produces ſpeedy dryneſs in the throat, and inflammation, dejection, fainting, ſtupor, delirium, tremors, convulſions, palſy, thirſt, burning in the ſtomach, gripes, vomiting, cold ſweats, hiccoughing, and at laſt death. Beſides the effects which it hath in common with other poiſons, it remarkably attenuates the coats of the ſtomach, and perforates the inteſtines, occaſions a ſwelling and ſphacelation of the whole body, and a ſudden putrefaction after death, and particularly of the pudendæ. When the quantity taken is not fatal, it occaſions tremors, palſies, or lingering hectics. And though there is but little hope, after this poiſon is ſwallowed, yet, if aſſiſtance is to be had (ſays Dr. Motherby), immediately give a ſcruple of the white vitriol to excite a vomiting, and repeat it two or three times; give the patient plentifully of warm water mixed with ſweet oil, after each doſe of the vitriol, that if poſſible the ſtomach may be well cleared of the poiſon; large draughts are peculiarly proper, as they diſtend the ſtomach, and ſo more effectually waſh away what may be lodged in its villous rugæ. After ſufficient vomiting, give mucilages and demulcents, particularly plenty of gum arabic, new milk, and oil, both by the mouth and clyſterwiſe; fat broth ſhould be continued ſome time, and the bowels muſt be kept lax. If the poiſon hath had time to get into the blood, let cordial perſpiratives be added, ſuch as rad. ſerpent. V. &c.

ARSENIC, *Native*, called ORPIMENT, is of a yellow colour; whence it is alſo denominated *auripigmentum.* There is alſo a factitious arſenic, made of white arſenic, ſublimed with one-tenth of its weight of ſulphur: with one-fifth it becomes red, and is called *realgar.*

ARSENIC, *Regulus of*, is its metallic ſtate, prepared by mixing white arſenic with pot-aſhes and ſoap, then fuſing the whole, and caſting it into a mortar; upon which the regulus falls to the bottom.

ARSENIC, *Cauſtic Oil of*, is a butyrous liquor, like butter of antimony, prepared of arſenic and corroſive ſublimate, being a combination of marine acid with the arſenic. Surgeons employ it to eat off fungous excreſcences, and to deſtroy carious bone, &c.

ARSEN'ICAL, *adj.* Containing arſenic; conſiſting of arſenic.—An hereditary conſumption, or one engendered by *arſenical* fumes under ground, is incapable of cure. *Harvey.*

ARSENICAL MAGNET, [*magnes arſenicalis*, Lat.] Is a preparation of antimony, with ſulphur and white arſenic.

ARSE'NIUS, a deacon of the Roman church, of great learning and piety. He was choſen by the emperor Theodoſius, as tutor to his ſon Arcadius. Arſenius arrived at Conſtantinople in the year 383. The emperor happening one day to go into the room where Arſenius was inſtructing Arcadius, his ſon was ſeated and the preceptor ſtanding; at this he was exceedingly diſpleaſed, and thereupon he took from his ſon the imperial ornaments, made Arſenius ſit in his place, and ordered Arcadius for the future to receive his leſſons ſtanding uncovered. Arcadius, however, profited but little by his tutor's inſtructions, for ſome time after he formed a deſign of diſpatching him. The officer to whom Arcadius had applied for this purpoſe, divulged the affair to Arſenius, who retired to the deſerts of Scete, where he paſſed many years in the exerciſes of the moſt fervent devotion. He died aged ninety-five.

ARSENVAL', a town of France, in the department of the Aube, and chief place of a canton in the diſtrict of Bar-ſur-Aube, twenty-three miles eaſt of Troyes.

ARSI'NOE, anciently a town of Egypt, on the weſt ſide of the Arabian gulf, near its extremity, to the ſouth of Heroopolis, called *Cleopatris* by ſome. Another Arſinoe, a town of Cilicia, and the fifth of that name in Cilicia, with a road or ſtation for ſhips. A third Arſinoe, in the ſouth of Cyprus, with a port between Citium and Salamis. *Strabo.* A fourth, an inland town of Cyprus, called *Marium* formerly. *Stephanus.* A fifth in the north of Cyprus, between Arcamas and Soli, ſo called from Arſinoe, a queen of Egypt, Cyprus being in the hands of the Ptolemies. A ſixth Arſinoe, a maritime town of Cyrene, formerly called *Teuchira.* A ſeventh Arſinoe, in the Nomos Arſinoites, to the weſt of the Heracleotes, on the weſtern bank of the Nile, formerly called *Crocodilorum Urbs.* Ptolemy calls this Arſinoe an inland metropolis, and therefore at ſome diſtance from the Nile, with a port called *Ptolemais.* An eighth Arſinoe, a maritime town of Lycia; ſo called by Ptolemy Philadelphus, after the name of his conſort, which did not hold long, it afterwards recovering its ancient name *Patara.* A ninth, a town of the Troglodytæ, near the mouth of the Arabian gulf, which towards Ethiopia is terminated by a promontory called *Dire. Ptolemy.* This Arſinoe is called *Berenice*, and the third of that name in this quarter, with the diſtinction *Epidires*; becauſe ſituate on a neck of land running out a great way into the ſea.

AR'SIS, *ſ.* [of *αιϱω*, to lift up.] The raiſing of the voice in pronunciation. *It is very rarely uſed.*

ARSIS and THESIS, in muſic, is a term applied to compoſitions in which one part riſes and the other falls.

ARSK, a town of Ruſſia, in the government of Kazan, forty miles north-north-eaſt of Kazan. Lat. 56. 20. N. lon. 67. 20. E. Ferro.

ARS'MART, *ſ.* in botany. See POLYGONUM.

AR'SON, *ſ.* [from *ardeo*, Lat. to burn.] Houſe-burning, which is felony at common law. 3 *Inſt.* 66. It muſt be maliciouſly, voluntarily, and actual burning; not putting fire only into a houſe, or any part of it, without burning; but, if part of the houſe is burnt, or if the fire doth burn, and then goeth out of itſelf, it is felony. 2 *Inſt.* 188; *H. P. C.* 85. And it muſt be the houſe of another, for if a man burns his own houſe only, though with an intention to burn others, it was not at common law felony, but a great miſdemeanor, puniſhable with fine, pillory, &c. But a pauper may be guilty of this offence by burning the public workhouſe. *Leach's Hawk. P. C.* i. c. 39, ſec. 3. If a houſe is fired by negligence or miſchance, it cannot amount to arſon. 3 *Inſt.* 67; *H. P. C.* 85. Where one burns the houſe of another, if it be not wilful and malicious, it is not felony, but only treſpaſs; therefore if A ſhoot unlawfully in a gun at the cattle or poultry of B, and by means thereof ſets another's houſe on fire, this is not arſon; for, though the act he was doing was unlawful, yet he had no intent to burn the houſe. 1 *Hale's Hiſt. P. C.* 569. By ſtat. 5 Eliz. c. 13, to burn corn in the four northern counties, is felony without clergy. And the ſtat. 21 & 23 Car. II. c. 7, makes it felony to ſet barns, ſtables, ſtacks of corn, hay, &c. on fire in the night-time, or any out-houſes, or buildings; but the offender may be tranſported for ſeven years. By 9 Geo. I. c. 22, (made perpetual by 31 Geo. II. c. 42,) ſetting fire to any houſe, barn, or out-houſe, or to any hovel, cock, mow, or ſtack of corn, ſtraw, or wood, or to reſcue any offender, is made felony without benefit of clergy. As to other *malicious burnings*, by ſtatute 37 Hen. VIII. c. 6, ſec. 4, to burn any cart loaded with fuel, incurs 10l. penalty and treble damages. By ſtat. 4 & 5 Will. & Mary, c. 23, to burn the covert for red or black game, one month's impriſonment; and by ſtat. 28 Geo. II. c. 19, to burn the covert for deer or game, a penalty between 40s. and 5l. By ſtat. 1 Geo. I. c. 48, to burn any wood or coppice is felony. By ſtat. 10 Geo. II. c. 32, to ſet fire to a coal-mine, felony without clergy. By ſtat. 9 Geo. III. c. 29, to burn any mill, felony without clergy, if proſecuted within eighteen months. The offence of arſon was denied the benefit of clergy, by ſtatute 21 Hen. VIII. c. 1; but that ſtatute was repealed by ſtat. 1 Edw. VI. c. 12; and arſon was afterwards held to be ouſted of clergy, with reſpect to the principal offender, only by inference from the ſtat. 4 & 5 Phil. & Mary, c. 4; which expreſsly denied it to the acceſſory before the fact; tho' now it is expreſsly denied to the principal in all caſes within the ſtat. 9 Geo. I. c. 22. 4 *Comm.* 223.

AR'SUF, a ſea-port town of Paleſtine, ſix miles north-eaſt from Joppa.

AR'SUR IN LE MAIN, burning in the hand, is the puniſhment of criminals that have the benefit of clergy. *Terms de Ley.*

ARSU'RA, *ſ.* in ancient cuſtoms, a term uſed for the melting of gold or ſilver, either to refine them or to examine their value. ARSURA is alſo uſed for the duſt and ſweepings of ſilverſmiths, and others, who work in ſilver melted down.

ART, *ſ.* [*arte*, Fr. *ars*, Lat. of *αϱος*, Gr. utility, profit.] The power of doing ſomething not taught by nature and inſtinct; as, to *walk* is natural, to *dance* is an *art.* A ſcience; as, the liberal *arts.*—*Arts* that reſpect the mind were ever reputed nobler than thoſe that ſerve the body. *Ben Jonſon.*—A trade.—This obſervation is afforded us by the *art* of making ſugar. *Boyle.*—Artfulneſs; ſkill; dexterity; ſpeculation; cunning.—More matter with leſs *art.* *Shakeſpeare.*

ART, among philoſophers, is defined to be a habit of the mind, preſcribing rules for the due production of certain effects; or the introducing the changes of bodies from ſome fore-knowledge and deſign in a perſon endued with a principle or faculty of acting. According to lord Bacon, it is a proper diſpoſition of the things of nature by human thought and experience, ſo as to make them anſwer the deſigns and uſes of mankind. Nature, according to lord Bacon, is ſometimes free, and at her own diſpoſal; and then ſhe manifeſts herſelf in a regular order; as we ſee in the heavens, plants, animals, &c. Sometimes ſhe is irregular and diſorderly, either through ſome uncommon accident, or depravation in matter, when the reſiſtance of ſome impediment perverts her from her courſe; as in the production of monſters. At other times ſhe is ſubdued and faſhioned by human induſtry, and made to ſerve the ſeveral purpoſes of mankind. This laſt is what we call *art*; in which ſenſe, *art* ſtands oppoſed to *nature.* Hence the knowledge of nature may be divided into the hiſtory of *generation*, of *preter-generation*, and of *arts.* The firſt conſiders NATURE at *liberty*; the ſecond, her *errors*; and the third, her *reſtraints.*

ART is alſo uſed for knowledge reduced into *practice.* Several of the ſchoolmen hold logic and ethics to be arts; in as much as they do not terminate in mere *theory*, but tend to *practice.* In this ſenſe, ſome branches of the mathematics alſo are arts; others, matters of *doctrine*, or *ſcience.* *Statics* is wholly ſcientifical, as it comprehends the mere contemplation of motion: *mechanics*, on the contrary, is an art, as it reduces the doctrine of ſtatics into practice. But art is more commonly uſed to denote a certain ſyſtem or collection of rules, precepts, and inventions or experiments, which, being duly obſerved, make the things a man undertakes ſucceed, and render them advantageous and agreeable. In this ſenſe, *art* is oppoſed to *ſcience*, which is a collection of ſpeculative principles and concluſions. With reſpect to their ſcope and object, they may be divided into *human*, as *medicine*; and *divine*, as *theology.* Human arts again may be ſubdivided into *civil*, as *law*, *politics*, &c. *military*, as *fortification*, &c. *phyſical*, as *agriculture*, *chemiſtry*, *anatomy*, &c. *metaphyſical*, as *logic*, pure *mathematics*, &c. *philological*, as *grammar*, *criticiſm*, &c. *mercantile*, to which belong the *mechanical arts* and *manufactures*. But arts are more properly divided into *liberal* and *mechanical*; liberal arts are thoſe that are noble and ingenious; or which are worthy of being cultivated without any immediate regard to the lucre ariſing from them. Such are *poetry*, *muſic*, *painting*, *grammar*, *rhetoric*, the *military art*, *architecture*, and *navigation*. Mechanical arts, are thoſe, wherein the hand and body are more concerned than the mind; and which are chiefly cultivated for the ſake of the profit attending them. Of this kind are moſt of thoſe that furniſh us with the neceſſaries of life, and are popularly known by the name of trades.

The mechanical arts take their denomination from μηχανη, "machine;" as being all practiſed by means of ſome machine or inſtrument. With the liberal arts it is otherwiſe; there being ſeveral of them which may be learnt and practiſed without any inſtrument at all; as *logic*, *eloquence*, *medicine*, properly ſo called, &c. The arts which relate to the ſight and hearing, lord Bacon obſerves, are reputed *liberal*, beyond thoſe which regard the other ſenſes, and are chiefly employed in matters of luxury: theſe are uſually called the *fine arts*; ſuch are *poetry*, *painting*, *ſculpture*, *muſic*, *gardening*, and *architecture*. Uſeful arts will never be neglected in a country where there is any police; for every man finds his account in them. Fine arts are more precarious. They are not reliſhed but by perſons of taſte, who are rare; and ſuch as can ſpare great ſums for ſupporting them are ſtill more rare. For that reaſon, they will never flouriſh in any country, unleſs patroniſed by the ſovereign, or by men of power and opulence. They merit ſuch patronage, as one of the ſprings of government; and a capital ſpring they make, by multiplying amuſements, and humanizing manners; upon which account they have always been encouraged by good princes. It has been well remarked by philoſophers, that, during the riſe and growth of ſtates, the *military arts* chiefly flouriſh; when arrived at their height the *liberal arts*; and, when in a declining ſtate, the *voluptuary arts*. There are alſo divers particular arts; the art of *memory*, the art of *deciphering*, the art of *ſwimming*, the art of *diving*, &c. Democritus maintained, that men learnt all their arts from brutes; that the ſpider taught them weaving; the ſwallow, building; the frog, ſwimming; the nightingale, muſic, &c.

The progreſs of the arts ſeldom fails to be rapid, when a people happen to be rouſed out of a torpid ſtate by ſome fortunate change of circumſtances. Proſperity, contraſted with former abaſement, gives to the mind a ſpring, which is vigorouſly exerted in every new purſuit. The Athenians made but a mean figure under the tyranny of Piſiſtratus; but, upon regaining freedom and independence, they were converted into heroes. Miletus, a Greek city of Ionia, being deſtroyed by the king of Perſia, and the inhabitants made ſlaves, the Athenians, deeply affected with the miſery of their brethren, boldly attacked the king in his own dominions, and burnt the city of Sardis. In leſs than ten years after, they gained a ſignal victory at Marathon; and, under Themiſtocles, made head againſt that prodigious army with which Xerxes threatened utter ruin to Greece. Such proſperity produced its uſual effect; arts flouriſhed with arms, and Athens became the chief theatre for ſciences, as well as for fine arts. The reign of Auguſtus Cæſar, which put an end to the rancour of civil war, and reſtored peace to Rome, with the comforts of ſociety, proved an auſpicious æra for literature; and produced a cloud of Latin hiſtorians, poets, and philoſophers, to whom the moderns are indebted for their taſte and talents. One who makes a figure rouſes emulation in all: one catches fire from another, and the national ſpirit is every where triumphant: claſſical works are compoſed, and uſeful diſcoveries made in every art and ſcience.

He who is emulous to excel in any or either of the fine arts, ought inceſſantly to labour in the improvement of his *taſte*; in acquiring that ſenſible, refined, and clear, diſcernment, by which he will be enabled to diſtinguiſh the real beauties in each object, the ornaments that are agreeable to it, and the proportions and relations that ſubſiſt among the ſeveral parts. Every object in the univerſe has its peculiar nature, of which the artiſt ſhould never loſe ſight. In vain will he otherwiſe ornament his work with the moſt refined and brilliant ſtrokes; for, if nature be not juſtly imitated, it will for ever remain imperfect. In all the polite arts, and in all the ſubjects they embrace, there muſt neceſſarily reign an elevation of ſentiment, that expreſſes each object in the greateſt perfection of which it is ſuſceptible, that imitates nature in her moſt exalted beauty. The deſign of the fine arts being to excite pleaſure by the expreſſion of that which is beautiful, every artiſt ſhould raiſe himſelf above his ſubject; and, chooſing the moſt favourable light wherein to place it, ſhould there embelliſh it with the moſt beautiful ornaments his genius can ſuggeſt, ſtill obſerving a ſtrict imitation of nature.

From the obſervation of theſe, reſults the *ſublime*, which is the union of the greateſt perſpicuity, with the ſtricteſt truth, and moſt exalted expreſſion. It is neceſſary to remark, that the moſt ſimple and common ſubjects are ſuſceptible of a ſublime expreſſion. An idyl or landſcape may be as ſublime in their kinds as an heroic poem. Every artiſt ſhould therefore endeavour to attain the ſublime and beautiful, in whatever he undertakes; ſoaring infinitely above ſervile imitation, and carefully avoiding all mean and vulgar ideas. Every thing that is low, indecent, or diſagreeable, ought to be for ever baniſhed from the noble and liberal arts. We may here remark, that the fine arts can no where flouriſh, without an adequate and liberal patronage. Mr. Bromley, in his Hiſtory of the Fine Arts, has judiciouſly obſerved, that there is certainly a great difference between the ſtate of patronage in the modern world, and that which carried the arts to their high celebrity in ancient Greece. That difference is juſt as great as the political ſituation of different countries, or of the ſame countries in paſt and preſent ages. The profeſſor of fine art, in common with all who move in other profeſſions, looks naturally and properly for patronage to his abilities: but the door which opens to it is much wider to all others than to him. The man of letters repoſes himſelf on that good ſenſe, or that refined intelligence, which is diffuſed through the world: nor does he ever quarrel with another, merely becauſe that other ſtands as high as himſelf in the eſtimation of the learned, even in his own path of excellence: perhaps thoſe parities of merit, where no ſpecial differences of principles ariſe, are more generally ſeen to be the bond and cement of amiable and literary ſociety.

The profeſſor of law riſes on that univerſal call for his abilities, which is miniſtered by the never-ceaſing generation and intercourſe of human tranſactions, and which he knows will evermore ſuſtain and elevate infinite numbers beſides himſelf, in ſpite of all that he can do or ſay: his jealouſies therefore of others, or his oppoſition to thoſe who move in his own immediate line, would probably never throw the ſmalleſt ſhade on their ſituation, nor anſwer any end but the vexation of his own heart. The phyſical and the eccleſiaſtical man, although both of them perhaps come nearer than many others to that peeviſhneſs of ſpirit, which counts every thing gained by others as ſo much loſt to itſelf, yet move on ſo broad a ground, that if one man does in fact ſtand in the way of another, the ſhade is too indiſtinct to irritate the temper, and the origin of it is too remote or too diffuſed to be controuled by any ſchemes of envy or ill nature. The profeſſor of fine art labours under different circumſtances, and experiences patronage in a different meaſure. It riſes to him more limited in its compaſs. It is capable of feeding infinitely fewer numbers: and, if the number of artiſts be every where ſmaller, in fact, than of other profeſſors, yet among the former every individual is a candidate for the ſame reward. They all ſeek to gather the ſame rays of light and warmth: they muſt all baſk in the ſame local ſunſhine, or be left in the ſhade. If to thoſe circumſtances nature ſhould add in the individual the ſpirit of a Diogenes, will he not be as ſevere and cynical as that philoſopher? Every man that comes acroſs him will intercept his comfort. Of a ſcanty and confined ſtock every particle intercepted is a grievous loſs. He grudges it; he cannot bear it. Malevolence ſucceeds to diſappointment, or even to the fear of it: and, ſhould the ſpirit of envy or avarice be uppermoſt, violence will preſently become engrafted on ill will, which ſo often diſturbs the moſt tranquil of profeſſional walks.

Thus it is that the world of art, for want of being tempered by thoſe diſpoſitions which are at all times neceſſary to extract the ſting from rivalſhip, and to render emulation fair and honourable and pleaſant, or for want of that patronage which might open a wider field to the efforts of the profeſſor, has too often become a world of ſtrife; and, in countries where that ſtrife might be indulged to a greater extent by the connivance of the civil power, it has ſometimes become a field of blood. If we would gather from examples the origin of that evil ſpirit, it may be traced to that earlier period when poor Domenico fell by the poniard of the ungrateful Andrea del Caſtagno. The ties of friendſhip and hoſpitality, the obligation of being truſted with an important diſcovery in art, were not ſufficient to prevail over the jealouſy or avarice, which could not bear another to ſhare in the valuable ſecret, although that other was the man by whom that ſecret had been generouſly imparted. Was not that ungrateful artiſt rightly ſtyled *Andrea de gl' impiccati?* Was he not fitly reſerved to paint the conſpirators of Florence, ſo much in his own ſpirit; although it were pity that his natural death deprived that juſtice-hall of exhibiting the monſter in another ſituation than when he painted its walls?

The horror of that example did not hinder others, equally deſperate, from following it in other periods. Peruzzi was poiſoned by his competitors. Lucas of Leyden met the ſame fate, from an artiſt of Fluſhing who was jealous of his merit, and at an entertainment to which he had been invited by his deſtroyer. Baroccio, preciſely in the ſame circumſtance at Rome, received from his malicious competitors the doſe, which only lingered to aggravate and prolong the pains of death. Salviati could not bear the reputation of Roſſo in France; he became licentious and bitter in his cenſures, and then only eſcaped the deſtruction, which he had nearly brought upon himſelf, by quitting that country. The weight of envy, rancour, and perſecution, by the Neapolitan artiſts, lay ſo heavy on Domenichino, that he ſunk under them as much as if he had fallen by the ſword. Yet were theſe events of a private nature, compared with the fury of Caravaggio and Arpino. All was uproar and danger: each of them alike encreaſed the general tumult: each of them was a ſtorm in the world of art, which never ſuffered it to be compoſed. Arpino, conceiving his profeſſional ſucceſs to be ſomewhat annoyed by Annibal Carachi at Rome, offered him a ſword, as he met him one day in the ſtreet, and bade him to defend himſelf with it. It is due to the good ſenſe of Annibal to give his anſwer: taking a pencil out of his pocket, he ſaid, "it is with theſe arms that I fight, and with theſe I bid you defiance." Caravaggio was not quite ſo temperate as Arpino had been in that inſtance. He actually killed a young man, Tomaſino, for having ſaved Arpino from his ſword. Having fled for refuge, and been pardoned, his revenge only became more vehement for having been diſappointed. He challenged Arpino, and even went to Malta, to complete himſelf as a knight, that his antagoniſt might no longer object as a cavalier to meet him. But the fine arts can never thrive very much or very long, where ſuch a ſpirit prevails. With unanimity and an harmonious contribution of abilities for carrying the arts to perfection, great advantages may be gained even where patronage is rare. That patronage will become inſenſibly extended. Thoſe who have no taſte will gather it from profeſſional men. They will gather the zeal of thoſe, who can beſt diſplay the attractions of art, and whoſe zeal goes hand in hand with the amiableneſs of temper. They will come to admire what excites general admiration; and, having fancied in themſelves ſomething that is fed agreeably by the taſte around them, they will be diſpoſed to nouriſh the growth of that taſte in themſelves, and to ſhed favour and patronage upon it in others. It was by ſuch harmonious efforts of profeſſional men, that the fine arts every where gained their firſt footing. It was ſuch a cordial communication and mutual candour, which produced ſome of the firſt ſtandards of art in antiquity. From thence came forth the Laocoon, the united work of the three Rhodians, equally zealous for the perfection of their art, and who have ſhewn us in that great example how much may be reached, whenever the efforts of human genius are fairly concentrated, and earneſtly directed to their object, and when all meaner paſſions are abſorbed in a common zeal to excel.

ART is repreſented in painting or ſculpture by a comely man, clad in a rich embroidered veſtment, leaning with his right arm on a ſhip's rudder, and with his left hand pointing to a bee-hive. Or, by ſome, as an agreeable woman with a pleaſing aſpect, clothed in green, having in one hand a hammer, graving inſtrument, and pencil; and with the other arm leaning upon a pale ſtuck in the ground for the ſupport of a young plant. The agreeableneſs of her countenance declares the charms of art attracting all eyes to it, and cauſing the author to be approved and commended; the inſtruments are for imitating nature; the ſtake ſupplies nature's defects in holding up the tender plant.

AR'TA, by ſome called *Larta*, a town of Lower Albania, in Turkey in Europe, with a Greek archbiſhop's ſee. It contains about 8000 inhabitants, Greeks and Turks, but the former are the moſt numerous. The cathedral is ſupported by above 2000 marble pillars; and was built by Michael Ducas Commeno, emperor of Conſtantinople. It carries on a conſiderable trade in tobacco and furs. Lat. 39. 30. N. lon. 38. 55. E. Ferro.

ARTA, a town of Swiſſerland, in the canton of Schwitz, on the ſouth borders of the lake of Zug.

ARTA, a river of European Turkey, which runs into the gulf of Arta, near the town ſo called.

AR'TABA, *ſ.* An ancient meaſure of capacity, uſed by the Perſians, Medes, and Egyptians. The Perſian artaba is repreſented by Herodotus as larger than the Attic medimnus by three Attic chœnixes: from which it appears, that it was equal to $6\frac{2}{3}$ Roman modii; conſequently, that it contained $166\frac{2}{3}$ pounds of wine or water, or $126\frac{2}{3}$ pounds of wheat. The Egyptian artaba contained five Roman modii, and fell ſhort of the Attic medimnus by one modius; conſequently held $133\frac{1}{3}$ pounds of water or wine, 100 pounds of wheat, or 60 of flour.

ARTABA'NUS, the name of ſeveral kings of Parthia. See PARTHIA.

ARTABA'ZUS, the ſon of Pharnaces, commanded the Parthians and Choraſmians in the famous expedition of Xerxes. After the battle of Salamis, he eſcorted the king his maſter to the Helleſpont with 60,000 choſen men; and, after the battle of Platæa, in which Mardonius engaged contrary to his advice, he made a noble retreat, and returned to Aſia with 40,000 men under his command.

AR'TAKI, a town of Aſiatic Turkey, in the province of Natolia, on the ſouth coaſt of the ſea of Marmora, forty miles eaſt of Gallipoli, and ſeventy-ſix ſouth-weſt of Conſtantinople. Lat. 40. 18. N. lon. 45. 25. E. Ferro.

ARTAKU'I, a town of European Turkey, in the province of Romania, forty-eight miles N.W. of Gallipoli.

ARTAMO'VA, a town of Siberia, 120 miles ſouth-ſouth-eaſt of Tobolſk.

ARTAN', a town of Aſiatic Turkey, in the province of Natolia, twenty-four miles ſouth of Akſerai.

ARTA'NA, or ORTA'NA, a town of Spain, in Navarre, five leagues from Pampeluna.

ARTA'NICA, *ſ.* in botany. See CYCLAMEN.

ARTAVI'VA, a town of Aſia, in Mingrelia, 110 miles north-eaſt of Trebiſond.

ARTAXA'TA, once the royal reſidence and metropolis of Armenia Major. *Pliny.* It was built according to a plan of Hannibal, for king Artaxias, after whom it was called. It was ſituated on the Araxes, which formed a kind of peninſula, and ſurrounded the town like a wall, except on the ſide of the iſthmus, which was ſecured by a rampart and ditch. This town was deemed ſo ſtrong, that Lucullus, after having defeated Tigranes, durſt not lay ſiege to it; but Pompey compelled him to deliver it up without ſtriking a blow. It was then levelled with the ground. Here are the remains of a ſtately palace, ſaid to be that of Tiridates, who reigned in the time of Conſtantine the Great. One front of this building is ſtill conſiderable; and there are many other fine antiquities which the inhabitants call *Tact. Tradat*, that is, the throne of Tiridates. Tavernier mentions the ruins of Artaxata, between Erivan and mount Ararat, but does not ſpecify them. The ancient geographers mention another city of the ſame name, likewiſe ſituated on the Araxes, but in the northern part of Media, known among the ancients by the name of *Atropatia*.

ARTAXER'XES, the name of ſeveral kings of Perſia. See PERSIA.

ARTE'DIA, *ſ.* [from Peter Artedi, ſtudent of medicine, in Sweden.] In botany, a genus of the pentandria digynia claſs, ranking in the natural order of umbellatæ or umbelliferæ. The generic characters are—Calyx: umbel univerſal ſpreading, flat, manifold; partial ſmall, ſimilar; involucre univerſal about ten-leaved; leaflets ovate-oblong, three-briſtled at the end, nearly the length of the umbel; partial two or three leaved, verging outwards; leaflets linear, pinnate, longer than the umbellule. Corolla: univerſal difform, radiate; floſcules of the diſk abortive; proper of the diſk male; petals five, cordate-inflex, erect; of the ray hermaphrodite, with ſimilar petals, but the outermoſt larger. Stamina: filaments five, capillary in all the flowers; antheræ ſimple, roundiſh. Piſtillum: of the ray, germ ſmall, inferior; ſtyles reflex; ſtigmas ſimple. Pericarpium: none; fruit roundiſh, compreſſed, leafy-ſcaled on the edge, bipartile. Seeds: two, oblong, ſet about the edge with roundiſh, ſpreading, ſcales.—*Eſſential Character.* Involucre pinnatifid; floſcules of the diſk male; fruit rough with ſcales.

There is but one ſpecies, called artedia ſquamata. It is a native of the eaſt. Rauwolff found it on mount Libanus; and Tournefort afterwards in Natolia. It is an annual plant, whoſe ſtalks riſe about two feet high, ſending out a few ſide branches, with linear multifid leaves, reſembling thoſe of dill; the extremity of the ſtalk is terminated by a large umbel of white flowers. It flowers in July, and was introduced in 1788, by M. Thouin. This plant decays as ſoon as the ſeeds are perfected, and many times in England before they are ripe; for, unleſs they are ſown in autumn, and the plants come up before winter, they rarely produce good ſeeds here. They ſhould be ſown on a warm border, where the plants are to remain, for they will not bear tranſplanting. All the care they require, is to keep them clean from weeds, and to thin the plants to ſix or eight inches diſtance. But, to ſecure their ſeeding here, they ſhould be raiſed in a hot-bed, and kept in the greenhouſe.

ARTEDIA MURICATA. See DAUCUS.

ARTEMIDO'RUS, famous for his Treatiſe on Dreams, was born at Epheſus; but took upon him the ſurname of *Daldianus* in this book, by way of reſpect to his mother's country Daltis. He ſtyled himſelf *the Epheſia* in his other performances. He not only bought up all that had been written concerning the explication of dreams, but he likewiſe ſpent many years in travelling, in order to contract an acquaintance with fortune-tellers: he carried on an extenſive correſpondence with the people of this claſs, in the cities and aſſemblies of Greece, Italy, and the moſt populous iſlands; collecting at the ſame time all the old dreams, and the events which are ſaid to have followed them. The work which he wrote on dreams conſiſted of five books: it was firſt printed in Greek at Venice in 1518; and at Paris, in Greek and Latin, in 1603. Artemidorus wrote alſo a treatiſe upon Auguries, and another upon Chiromancy; but they are not extant. He lived under the emperor Antoninus Pius.

AR'TEMIS, the Greek name of Diana, whoſe feſtivals, called *Artemiſia*, were celebrated particularly at Delphi.

ARTEMI'SIA, wife of Mauſolus king of Caria, immortalized herſelf by the honours ſhe paid to the memory of her huſband. She built for him in Halicarnaſſus a very magnificent tomb, called the *Mauſoleum*, which was one of the ſeven wonders of the world, and from which the title of *Mauſoleum* was afterwards given to all tombs remarkable for their grandeur; but ſhe died of regret and ſorrow before the Mauſoleum was finiſhed. She appointed panegyrics to be made in honour of him, and propoſed a prize of great value for the perſon who ſhould compoſe the beſt. He died about the end of the 106th Olympiad, 351 years before the Chriſtian era.

ARTEMISIA, queen of Caria, and the daughter of Ligdamis, marched in perſon in the expedition of Xerxes againſt the Greeks, and performed wonders in the ſea-fight near Salamis, 480 years before the Chriſtian era. Being purſued by an Athenian veſſel, ſhe attacked one of the Perſian ſhips, commanded by Demaſithymus, king of Calyndus, and ſunk it: on which the Athenians, thinking that her ſhip was on the ſide of the Greeks, ceaſed their purſuit: but Xerxes was the principal perſon impoſed upon in this affair; for, believing ſhe had ſunk an Athenian veſſel, he declared, that "the men had behaved like women, and the women like men." Xerxes intruſted her with the care of the young princes of Perſia, his ſons, when, agreeably to her advice, he abandoned Greece, in order to return to Aſia. Theſe great qualities did not ſecure her from the weakneſs of love: ſhe was paſſionately fond of a man of Abydos, whoſe name was Dardanus, and was ſo enraged at his neglect of her, that ſhe put out his eyes while he was aſleep. The gods, in order to puniſh her for this, inſpired her with a ſtill ſtronger paſſion for him; ſo that, the oracle having adviſed her to go to Leucas, which was the uſage of deſperate lovers, ſhe took the leap from thence, and was interred at that place. Many writers confound this Artemiſia with the former, the wife of Mauſolus.

ARTEMISIA, *ſ.* [the Latin name is *abſinthium*, from αψινϑιον, Gr. unpleaſant.] In botany, a genus of the ſyngeneſia polygamia æqualis claſs, of the natural order of compoſitæ nucamentaceæ. The generic characters are—Calyx: common roundiſh, imbricate; ſcales rounded, converging. Corolla: compound; corollules hermaphrodite, tubular, ſeveral, in the diſk; females almoſt naked, in the circumference; proper of the hermaphrodite funnel-ſhaped; border five-cleft. Stamina: in the hermaphrodites; filaments capillary, very ſhort; antheræ cylindric, tubular, five-toothed. Piſtillum: in the hermaphrodites; germ ſmall; ſtyle filiform, the length of the ſtamens; ſtigma bifid, revolute; females, germ very ſmall; ſtyle filiform, longer than in the hermaphrodites; ſtigma ſimilar. Pericarpium: none; calyx ſcarcely changed. Seeds: ſolitary, naked. Receptaculum: flat, naked, or villoſe.—*Eſſential Character.* Receptaculum ſubvilloſe, or almoſt naked; down none; calyx imbricate with rounded, converging, ſcales; corolla of the ray none.

Species. I. Shrubby, erect. 1. Artemiſia vermiculata: leaves aceroſe, crowded, very ſmall; panicle racemed, flowers ſeſſile. This is a ſtiff, upright ſhrub, inclining to aſh-colour. It is a native of the Cape of Good Hope.

2. Artemiſia capillaris: leaves ſimple, capillaceous. Stem reddiſh, ſmooth, branching, a foot or more in height. Leaves frequent, ſmooth, half an inch long. Native of Japan, where it flowers in October.

3. Artemiſia Judaica: leaves obovate, obtuſe, lobed, ſmall; flowers panicled, pedicled. Stem a foot and half high. Native of Caramania, the Mogul country, China, Judea, Arabia, &c. Rauwolff found it about Bethlehem; and Shaw in Arabia, and the deſerts of Numidia, plentifully. It has a bitter taſte. Both leaves and ſeeds are

uſed in medicine, in the eaſtern countries; and are reputed to be tonic, ſtomachic, and anthelmintic.

4. Artemiſia Æthiopica: leaves palmate, linear, very minute; flowers racemed, peduncled. This is a ſhrubby plant, a foot high, branching, white, and very obſcurely tomentoſe. Native of the Cape of Good Hope and of Spain.

5. Artemiſia contra: leaves palmate, linear, minute, panicled racemed, flowers ſeſſile. Found by Lerche, in Perſia.

6. Artemiſia abrotanum, or ſouthernwood: leaves ſetaceous, very branching. There are two varieties, namely, the common ſouthernwood, and the dwarf ſouthernwood. The common ſouthernwood is an under-ſhrub, ſeldom riſing more than three or four feet high. Columna however mentions, that it ſometimes grows in gardens, with a ſtout ſtrait ſtem, almoſt to the height of a man. In mountainous ſituations, on the contrary, it is low and ſlender, with the ſtems lying on the ground, and only from a foot to two feet in length. It is a native of Italy, Spain, the ſouth of France, Sileſia, and Carniola, in Europe; of Siberia, Syria, Galatia, Cappadochia, China, and Cochinchina, in Aſia. It was cultivated by Gerard, in 1596, and probably much earlier. Southernwood is bitter and aromatic, with a very ſtrong ſmell. It is not much in uſe, but promiſes conſiderable effects, outwardly in diſcuſſing contuſions and tumours, inwardly for deſtroying worms, and in diſorders peculiar to the female ſex. In catarrhal malignant fevers, it may have great efficacy, by its quality of promoting perſpiration, which it poſſeſſes in a high degree. A table-ſpoonful of the expreſſed juice may be given, half an ounce of the decoction, or a whole ounce of the infuſion of the herb. In the preſent practice it is ſcarcely otherwiſe made uſe of than as an ingredient in diſcutient and antiſeptic fomentations; and for this purpoſe only it is ordered by the medical college of London. The branches dye wool a deep yellow.

7. Artemiſia arboreſcens, or common narrow-leaved tree wormwood: leaves tripinnatifid, ſilky, cinereous, leaflets linear, flowers globoſe; flower-bearing branchlets ſimple. This riſes with a woody ſtalk ſix or ſeven feet high, ſending out many woody branches, with leaves ſomewhat like thoſe of common wormwood, but more finely divided, and much whiter. The branches are terminated by ſpikes of globular flowers in the autumn, but are ſeldom followed by ſeeds here. It is a native of the Levant, and was cultivated here in 1640. Mr. Miller ſays that it grows naturally near the ſea in Italy; and Allioni gives it as a native of Piedmont.

8. Artemiſia argentea, or broad-leaved tree wormwood: leaves bipinnatifid, ſilky, white; leaflets lanceolate-linear; flowers globoſe, flower-bearing branchlets wand-like. The whole plant is of a ſilvery colour. Native of Madeira, where it was found by Maſſon. Flowers in June and July.

9. Artemiſia aragoniæ: leaves linear, bipinnate, hoary; flowers racemed. Scarcely a foot high.

10. Artemiſia Meſſerſchmidii: leaves linear, multifid; racemes erect, ſlender, looſe. 11. Artemiſia tatarica: lower leaves bipinnate, pinnas equal; upper leaves pinnate, linear; racemes erect, looſe, many-flowered. Both theſe were found in Tartary, by Meſſerſchmidt.

12. Artemiſia nitroſa: lower leaves finely multifid; upper entire, obtuſe; corymbs erect, hoary, oblong, ſpiked, ſeſſile. Native of Siberia.

13. Artemiſia Lerchiana: lower leaves pinnate, ſhort, finely divided, pinnas palmate; upper leaves linear, undivided; corymbs ſeſſile, very copious, ſpiked, oblong. Obſerved in Aſtracan, and on the banks of the Volga.

14. Artemiſia tenella: leaves ſhort, very finely multifid; panicles ſlender, looſe, leafy; peduncles one or two flowered. Native of Spain.

15. Artemiſia pauciflora: branches virgate; filiform; corymbs one-ranked, ſpiked, ſubſeſſile. Native of the banks of the Volga.

16. Artemiſia Italica: leaves tomentoſe, looſely pinnate; pinnas long, linear; root-leaves dotted, ſpikes denſe; flowers erect. Native of Italy.

17. Artemiſia Hiſpanica: leaves looſely pinnate; pinnas long, linear, ſpikes very denſe; calyxes oblong. Native of Spain.

18. Artemiſia Gmelini: leaves doubly pinnate, obtuſe, linear; corymbs green, roundiſh, nodding. Leaves aſh-coloured underneath. Found by Gmelin, near the rivers Lena and Angara.

19. Artemiſia Lobelii: leaves petiolate, palmate-multifid, linear; the upper ones ſimple, angular. This ſpecies is of lower growth than common ſouthernwood, and has a ſtrong, balſamic, camphorated, ſmell. The leaves are leſs hoary, and thoſe about the flowers broader, longer, and not ſo much cut. The flowers are of a fine yellow. Native of Piedmont, the Genoeſe Alps, and Dauphiné.

II. Procumbent before flowering. 20. Artemiſia ſantonica, or Tartarian ſouthernwood or worm-ſeed: ſtem-leaves pinnate, multifid; branches undivided, ſpikes, one-ranked, reflex; flowers with five florets. Native of Perſia and Tartary. Cultivated in 1768, by Mr. Miller. It flowers from September to November. The ſeeds both of this and of the third ſort are brought over for *ſemen ſantonicum*, or worm-ſeed, and are uſed in worm caſes: they are reckoned a good balſamic, tonic, ſtomachic, medicine.

21. Artemiſia campeſtris, or field ſouthernwood: leaves multifid, linear; ſtems procumbent, wand-like. The root of field ſouthernwood is perennial, hard, woody, and branching. It grows on open dry heaths, and by road ſides, in moſt parts of Europe. With us, at Elvedon or Elden in Suffolk; between Newmarket and Lynn; alſo near Barton-mills and Thetford; flowering in Auguſt. Our old authors call it wild ſouthernwood; and Ray fine-leaved may-wort. It has the ſame qualities with garden ſouthernwood, but is much weaker. Linnæus recommends an infuſion of it in the pleuriſy.

22. Artemiſia paluſtris, or marſh ſouthernwood: leaves linear, pinnate, quite entire; flowers glomerate, ſubſeſſile. Native of Siberia.

23. Artemiſia erithmifolia, or ſamphire-leaved ſouthernwood: leaves compound, divaricate, linear, fleſhy, ſmooth; ſtem riſing, panicled. This has the habit of field ſouthernwood, but is ſmooth. Stems from half a foot to a foot in height. Native of Portugal, and found by Loefling on the ſandy ſhores there. Flowers from Auguſt to October.

24. Artemiſia valleſiaca, or downy ſouthernwood: leaves pinnate, many-parted, filiform, tomentoſe; flowers ſeſſile, erect, ſubcolumnar, having few florets. This is an erect ſhrub, a foot high. Native of Spain, Piedmont, and the Valais. Introduced in 1775, by the doctors Pitcairn and Fothergill. It flowers in July and Auguſt.

25. Artemiſia maritima, or ſea wormwood: leaves many-parted, tomentoſe; racemes drooping, female florets three. Sea wormwood is a low underſhrub, creeping at the root. The whole plant is white, with a thick down, and has a very ſtrong ſmell of marum or camphor in its native ſoil; but becomes much leſs grateful when cultivated. The leaves vary much in their diviſion; the upper ones are generally ſimple, linear, and blunt; receptacle naked. Native of Britain, Sweden, Germany, Holland, France, Egypt, &c. on the ſea coaſt; flowering in Auguſt. It is uſed as an ingredient in diſtilled waters. A conſerve of the tops, made by beating them with thrice their weight of fine ſugar, is directed by the London college; and they are an ingredient in the decoction for fomentations. This is leſs unpleaſant, but weaker, than common wormwood; it is leſs effectual, therefore, as an antiſeptic and anthelmintic, but more eligible as a ſtomachic.

26. Artemiſia glacialis, or ſilky wormwood: leaves palmate, multifid, ſilky; ſtems aſcending; flowers glomerate, level-topped. Native of Switzerland, the Valais, Auſtria, Dauphiné, and Piedmont; flowers in July and Auguſt.

27. Artemiſia rupeſtris, or creeping wormwood: leaves pinnate, ſtems aſcending; flowers globoſe, nodding, receptacle pappoſe. Native of Oeland, Siberia, Switzerland, and many other parts of Europe, in alpine ſituations. It flowers in Auguſt.

28. Artemiſia ſpicata, or ſpiked wormwood: root-leaves biternate, ſtem aſcending, ſpiked, flowers erect. Linnæus made this only a variety of the foregoing, differing in having longer branches, and in ſome other circumſtances owing perhaps to ſituation. But the leaves are much broader; the ſtems are like thoſe of the foregoing, but not branching, ſcarcely a long ſpan in height. Native of the Alps of Switzerland, Auſtria, Piedmont, and Dauphiné. Theſe three ſorts of alpine wormwood are in great requeſt among the inhabitants of the Alps, under the common name of *genipi*, for reſtoring a ſuppreſſed perſpiration, in pains of the ſide, and in intermittent fevers. They are an uſeful medicine in caſes where ſtrong diaphoretics are ſerviceable, as in the rheumatiſm, and in intermittent and catarrhal fevers; but are dangerous in the pleuriſy, though they are uſed indiſcriminately by the peaſants in all inflammatory diſorders.

III. Erect, herbaceous, with compound leaves. 29. Artemiſia anethifolia, or dill-leaved wormwood: leaves multifid, very ſlenderly divided; corymbs roundiſh, nodding, one-ranked, looſely ſpiked. Native of Siberia.

30. Artemiſia pontica, or Roman wormwood: leaves many-parted, tomentoſe beneath; flowers roundiſh, nodding; receptacle naked. Root creeping; ſtems one or two feet high, in gardens four feet; below ſmooth, reddiſh-brown; above hoary, leafy, with many axillary branches, almoſt upright. The whole plant has a pleaſant aromatic ſmell; and is leſs bitter to the taſte than common wormwood. Its bitterneſs indeed is ſo mixed with a kind of aromatic flavour as ſcarcely to be diſagreeable. It appears to be more eligible than either common or ſea wormwood as a ſtomachic and corroborant; for which purpoſe a conſerve of the tops has been greatly recommended, and it is undoubtedly an elegant and uſeful preparation. Mr. Miller ſays, that it is now never uſed in any of our ſhops, though it might be had in as great plenty as ſea wormwood, which is univerſally ſubſtituted for it, and is indeed ordered by the London college, if it were cultivated by thoſe who ſupply the markets with medicinal herbs. Native of Hungary, Germany, Auſtria, Piedmont, &c. Cultivated in 1683, by Mr. James Sutherland. It flowers in September.

31. Artemiſia Auſtriaca, or Auſtrian wormwood: leaves many-parted, tomentoſe, hoary; flowers oblong, nodding; receptacles naked. The whole plant is pleaſantly and ſtrongly aromatic, and the taſte very bitter. It differs from ſea wormwood in the leaves being much leſs tomentoſe and hoary, roundiſh, not oblong. Native of Auſtria.

32. Artemiſia annua, or annual wormwood: leaves threefold pinnate, ſmooth on both ſides; flowers ſub-globoſe, nodding; receptacle ſmooth, conical. This is an annual plant, with an upright, round, ſtreaked, ſmooth, ſtem, very ſtraight, growing to eight feet in height, (with us ſeldom much more than two,) green when young, but becomes reddiſh brown when old, and ſomewhat woody at the baſe; branches oblique, three-fold, alternate. Flowers pale yellow, ſmaller than a pepper-corn. The plant has a moſt agreeable ſcent, which it retains a long time after it has been dried. Native of Siberia, and China near Pekin, whence Loureiro introduced it into Portugal, where the ſeeds produced plants ten feet in height. It was cultivated in England by Mr. Miller, in 1759, and flowers in July and Auguſt. Loureiro recommends the leaves and flowers in hectic fevers, the dyſentery, and putrid ulcers.

33. Artemiſia tanacetifolia, or tanſy-leaved wormwood: leaves bipinnate, underneath tomentoſe ſhining; pinnas tranſverſe, racemes ſimple. Root perennial. Stems numerous, ſimple, from ſix inches to a foot in height. Native of Dauphiné, Piedmont, and Siberia. It has no ſenſible odour. On very high ſituations it is ſometimes entirely tomentoſe.

34. Artemiſia abſinthium, or common wormwood: leaves compound, multifid; flowers ſubgloboſe, pendulous; receptacle villoſe. Common wormwood has a perennial branching root. Stems from a foot and a half to two feet and upwards in height, upright, grooved, whitiſh, with a very ſhort knap, eſpecially towards the top, branched, the branches making half a right angle with the ſtem. Common wormwood is found wild in almoſt every part of Europe, in rocky places, by road ſides, among rubbiſh, about farm-yards, &c. flowering from July to October. The leaves and flowers are very bitter; the roots are warm and aromatic. A conſiderable quantity of eſſential oil riſes from it in diſtillation. This oil is uſed both externally and internally to deſtroy worms. The leaves put into ſour beer ſoon deſtroy the aſceſcency. They reſiſt putrefaction, and are therefore a principal ingredient in antiſeptic fomentations. An infuſion of them is a good ſtomachic, and, with the addition of fixed alkaline ſalt, a powerful diuretic in ſome dropſical caſes. The aſhes afford a more pure alkaline ſalt than moſt other vegetables, excepting beanſtalks, broom, and the larger trees. Linnæus mentions two caſes, wherein an eſſence prepared from this plant, and taken for a conſiderable time, prevented the formation of ſtones in the kidnies or bladder; the patients forbearing the uſe of wine and acids. It will, like other bitters, weaken the action of the nervous ſyſtem, but in theſe inſtances no ſuch effect took place. An infuſion of it, given to a woman that ſuckles, makes her milk bitter; and it gives a bitterneſs to the fleſh of ſheep that eat it. The plant ſteeped in boiling water, and repeatedly applied to a bruiſe, will remove pain in a ſhort time, and prevent the ſwelling and diſcoloration of the part. Wormwood leaves give out nearly the whole of their ſmell and taſte both to aqueous and ſpirituous menſtrua. The watery infuſions, prepared without heat, are the leaſt ungrateful. The quantity of the eſſential oil, which comes over in diſtillation, varies greatly, according to the ſoil and ſeaſon, ten pounds having afforded two ounces, and twenty pounds little more than one. Wormwood as a ſtomachic and corroborant has given place to bitters leſs unpleaſant. A bitter however ſufficiently elegant, of little or no particular flavour, may be obtained from it, either in a ſolid form, or in that of a watery or ſpirituous ſolution. The ſpirituous extract ſeems preferable as a vermifuge to the pure oil, as it contains, along with the oil, all the bitter matter of the herb. The roots, being moderately warm and aromatic, promiſe to be applicable to ſome uſeful purpoſes. Their virtue reſides in the bark. This powerful plant, though it appears in the liſt of materia medica, is not admitted into any preparation in the London Pharmacopœia. It is however more efficacious than either the ſea or Roman wormwood, and may be had in quantity, in moſt places, without cultivation; which recommends it much, moſt plants in their wild ſtate being abundantly ſtronger, and more fit for medicinal purpoſes, than when cultivated in a garden. Our common or broad-leaved wormwood is called in French *abſinthe commune*; in Italian *aſſenzio* or *abſintio*; in Spaniſh *ajenjo* or *alozna*; in Portugueſe *abſinthio* or *loſna*; in German *wermuth*; in Dutch *alſem*; in Swediſh *malört*; in Daniſh *malurt*; and in Ruſſian *polin* or *gliſtnik*.

35. Artemiſia vulgaris, or mugwort: leaves pinnatifid, flat, gaſhed, tomentoſe underneath; racemes ſimple, recurved; ray five-flowered. Root perennial, creeping far. Mugwort is found wild over the greateſt part of Europe, China, Japan, &c. on the borders of fields and ditch banks, by way-ſides, in waſte places, and about farm-yards. It flowers with us in Auguſt and September. Mugwort has been chiefly recommended for promoting the uterine evacuations, and abating hyſteric ſpaſms; for which purpoſes, infuſions of it have been drunk as tea, and uſed as a bath. It appears to be one of the mildeſt of the ſubſtances uſed in ſuch intentions, and may perhaps be of ſervice, where medicines of more activity would be improper. The flowery tops are conſiderably ſtronger than the leaves. In ſome countries it is uſed as a culinary aromatic. A decoction of it is taken by the common people to cure the ague. A dram of the leaves powdered was given four times a day by Dr. Home, to a woman who had been affected with hyſteric fits for many years. The fits ceaſed in a few days. In this patient aſſafœtida and æther had

been given to no purpoſe. Thunberg informs us that the *moxa* is prepared in Japan from this ſpecies. The leaves are collected in June, dried in the ſhade, and beat in a mortar till they become like tow; this ſubſtance is then rubbed between the hands, till the harder fibres and membranes are ſeparated, and there remains nothing but a very fine cotton. The Japaneſe uſe it for tinder; and twice in a year men and women, young and old, rich and poor, are indiſcriminately burnt with it, either to prevent diſorders, or to cure the rheumatiſm, &c. No quadruped ſeems to feed on this plant. Mugwort is called in French *armoiſe*; in Italian *artemiſia* or *erba di S. Giovanni*; in Spaniſh and Portugueſe *artemiſia* or *hierba de San Juan*; in German *beyfuſs*, *Johannis gurtel*; in Dutch *byvoet*, *S. Jans gordel*; in Swediſh *grabe*, *rodbo*; in Daniſh *bynke*; in Ruſſian *tſchernobilnik*. It is remarkable that our Engliſh name is totally unlike the other European names, and the derivation is no where given, as far as we know.

36. Artemiſia pectinata: leaves pinnate, pectinate, ſmooth, ſeſſile; flowers axillary, ſolitary, ſeſſile, having four florets. This is an elegant and moſt fragrant plant, with an annual root, and an upright herbaceous ſtem, about eight inches high. Found by Pallas, in the dry lands of Dauria.

IV. Leaves ſimple. 37. Artemiſia integrifolia, or entire-leaved mugwort: leaves lanceolate, tomentoſe underneath, quite entire, or with one or two teeth; female florets five. This riſes with ſingle ſtalks about two feet high, with plain narrow leaves, cut into acute ſegments on their edges; flowers axillary, in ſmall looſe ſpikes, and near the top they are often ſingle; they are larger than thoſe of the common ſort, and are of a pale yellow colour. It has abſolutely the air of mugwort, but the leaves are lanceolate, and quite entire about the edge. Native of Siberia.

38. Artemiſia Japonica, or Japaneſe mugwort: leaves ſmooth; thoſe on the branches lanceolate and entire, on the ſtem oblong and trifid; flowers racemed nodding. This is an underſhrub, with an erect, angular, ſtreaked, wand-like, ſmooth ſtem, branching towards the top, two feet high and more. Native of Japan.

39. Artemiſia cœruleſcens, or lavender-leaved wormwood: ſtem-leaves lanceolate, entire; root-leaves multifid; female florets three. This has woody ſtems, eighteen inches and more in height, whitiſh, and full of leaves, which are ſometimes entire, and as large as thoſe of the olive, ſometimes cut into two, three, or four, parts; they have the ſmell of mugwort, and a taſte not unpleaſant. Native of the ſouthern parts of Europe, on the ſea coaſt. It was found on the coaſt of Lincolnſhire, near Boſton, by Mr. Tofield; and was cultivated by Mr. John Tradeſcant, jun. in 1656. It flowers from Auguſt to October.

40. Artemiſia dracunculus, or tarragon: leaves lanceolate, ſmooth, quite entire. Root perennial. Stem ſtiff, ſmooth, branching, from a foot to two feet in height. Native of Siberia and Tartary. Cultivated in 1596, by Gerard. It flowers in Auguſt. Tarragon is frequently uſed in ſallads, eſpecially by the French, to correct the coldneſs of other herbs. The leaves make an excellent pickle; they have a fragrant ſmell, and aromatic taſte. The uſe of them in Perſia has ever been general, at their meals, to raiſe an appetite. It is named in French *eſtragon*, *armoiſe acre*, *herbe au dragon*; in Italian *dragoncello*; in Spaniſh *eſtragon*, *dragoncillo*, *taragona*; in Portugueſe *eſtragao*; in German and all the northern languages *dragon*.

41. Artemiſia Chinenſis, or Chineſe mugwort: leaves ſimple, tomentoſe, obtuſe, lanceolate; the lower ones wedge-ſhaped, three-lobed. Native of China and Siberia. This is the ſpecies from which the *moxa* is prepared in China, from the leaves dried and beaten. In Cochinchina and Japan, the common mugwort is uſed for this purpoſe, and is more efficacious than the Chineſe ſort. Moxa is celebrated in the eaſt, for preventing and curing many diſorders, by being burnt on the ſkin; it produces a dark-coloured ſpot, the exulceration of which is promoted by applying a little garlic, and the ulcer is either healed up when the eſchar ſeparates, or kept running, as circumſtances require. A fungous ſubſtance, found in the fiſſures of old birch trees, is uſed by the Laplanders for the ſame purpoſe; and cotton impregnated with a ſolution of nitre, and then dried, will anſwer the end as well as the moxa. All theſe applications are only means of producing an exulceration of the ſkin, and its conſequence a drain of humours. The Chineſe call it *the phyſician's herb*, and employ it in hæmorrhages, dyſenteries, pleuriſies, and diſorders of the ſtomach; girdles of the down are recommended in the ſciatica; and thoſe who are afflicted with the rheumatiſm in their legs quilt their ſtockings with it.

42. Artemiſia Maderaſpatana, or Madras wormwood: leaves ſimple, lyrate-ſinuate; ſtems procumbent; flowers pedunculate, ſolitary, globoſe, oppoſite to the leaves. This is an annual plant, growing cloſe to the ground. Native of the Eaſt Indies. Introduced in 1780, by M. Thouin. It flowers in July and Auguſt.

43. Artemiſia minima, or leaſt wormwood: leaves wedge-ſhaped, repand, ſtem procumbent, flowers axillary, ſeſſile. This is a very minute annual plant. Native of China, where it was found by Lagerſtrom. Thunberg remarked it alſo in Japan. It was introduced here in 1788, by M. Thouin; and flowers in July.

44. Artemiſia littoralis: procumbent, ſtrigoſe; leaves ſpatulate ſerrate-toothed, calyxes naked, pedicelled. Gathered by Koenig, in the Eaſt Indies, on the coaſt.

Propagation and Culture. Moſt of the plants in this numerous genus are perennials, and may be increaſed without great difficulty, by ſeeds, parting the roots, ſlips, or cuttings. Many of them, having no great beauty, are ſeldom ſeen in gardens. Common ſouthernwood is propagated by ſlips and cuttings, planted in a ſhady border, the beginning of April, obſerving to water them duly in dry weather: here they may remain till the autumn, when they ſhould be tranſplanted, either into pots or thoſe parts of the garden where they are to remain. Wormſeed may be increaſed in the ſame manner, but ſhould be planted in a dry ſoil, and ſheltered ſituation, where it will endure the cold of our ordinary winters; but it will be proper to have a plant or two in pots, which may be ſheltered occaſionally under a common hot-bed frame. Roman wormwood may be readily propagated by its creeping roots, which may be parted in autumn, and planted two or three feet aſunder: the beſt time for this is the middle of October. It will grow in any ſoil which is not too wet. Common wormwood is eaſily propagated by parting the roots, by ſlips, or by ſeeds, ſown in the autumn ſoon after they are ripe; or, if they be permitted to ſcatter, the plants will come up without farther care. Mugwort, being ſo common a plant wild, is rarely admitted into gardens, except the variegated ſort: this may be raiſed by ſlips, cuttings, or parting the roots. Tarragon is a very hardy plant, which propagates greatly by its creeping roots, or may be multiplied faſt by planting the young ſhoots the beginning of May, in the ſame manner as is practiſed for mint; and, if they are duly ſupplied with water in dry weather, they will ſoon ſpread and meet.

ARTEMI'SIUM, a promontory on the north-eaſt of Eubœa, called *Leon* and *Cale Acte* by Ptolemy, memorable for the firſt ſea-engagements between the Greeks and Xerxes. The Grecian fleet was ſtationed in the harbour; while that of the Perſians, too numerous for any harbour to contain, had anchored in the road between the city of Caſtanæa, and the promontory of Sepias. The firſt line of their fleet was ſheltered by the coaſt of Theſſaly; but the other lines, to the number of ſeven, rode at anchor, at ſmall intervals, with the prows of the veſſels turned to the ſea. When they adopted this arrangement, the waters were ſmooth, and the weather calm and ſerene: but on the morning of the ſecond day, the ſky began to lour; and a dreadful ſtorm ſucceeded; which for three days raged with unabating fury. Four hundred galleys were deſtroyed by its violence, beſides a vaſt number of ſtoreſhips. The Perſians, however, having recovered from the terrors of the ſtorm, prepared for battle; and, as they entertained not the ſmalleſt doubt of conquering, they detached 200 of their beſt ſailing veſſels round the iſle of Eubœa, to intercept the expected flight of the enemy through the narrow Euripus. About ſun-ſet the Grecian fleet approached in a line; and the Perſians met them with the confidence of victory, as their ſhips were ſtill ſufficiently numerous to ſurround thoſe of their opponents. At the firſt ſignal the Greeks formed into a circle, and began the fight. Though crowded into a narrow compaſs, and having the enemy on every ſide, they ſoon took thirty of their ſhips, and ſunk many more. Night came on, accompanied with an impetuous ſtorm of rain and thunder; the Greeks retired into the harbour of Artemiſium; but the enemy were driven to the coaſt of Theſſaly. By good fortune, the greateſt part of the Perſian fleet that was engaged gained the Pegaſean bay; but the ſhips ordered to ſail round Eubœa met with a different fate. They were overtaken by the ſtorm, after they had ventured further from ſhore than was uſual with the wary mariners of antiquity. Clouds intercepted the ſtars, by which alone they directed their courſe; and, after continuing during the greateſt part of the night the ſport of the elements, they all periſhed miſerably amidſt the ſhoals and rocks of an unknown coaſt.

The morning aroſe with different proſpects to the Perſians and Greeks. To the former it diſcovered the extent of their misfortunes; to the latter it brought a reinforcement of fifty-three Athenian ſhips. Encouraged by this favourable circumſtance, they determined again to attack the enemy, at the ſame hour as on the preceding day, becauſe their knowledge of the coaſt, and their ſkill in fighting their ſhips, rendered the duſk peculiarly propitious to their deſigns. At the appointed time, they ſailed towards the road of Aphetè; and, having cut off the Cilician ſquadron from the reſt, totally deſtroyed it, and returned at night to Artemiſium. The Perſian commanders, being deeply affected by their repeated diſaſters, determined to make one vigorous effort for reſtoring the glory of their arms. By art and ſtratagem, and under favour of the night, the Greeks had gained many important advantages. It now belonged to the Perſians to chooſe the time for action. On the third day at noon, they ſallied forth, in the form of a creſcent, which was ſtill ſufficiently extenſive to infold the Grecian line. The Greeks, animated by former ſucceſs, were averſe to decline any offer of battle; yet it is probable that their admirals, and particularly Themiſtocles, would much rather have delayed it to a more favourable opportunity. Rage, reſentment, and indignation, ſupplied the defect of the Perſians in ſkill and courage. The battle was longer and more doubtful than on any former occaſion; many Grecian veſſels were deſtroyed, five were taken by the Egyptians, who ſignalized themſelves on the ſide of the Perſians, as the Athenians did on that of the Greeks. The perſevering valour of the latter at length prevailed, the enemy retiring, and acknowledging their ſuperiority, by leaving them in poſſeſſion of the dead, and of the wrecks. But the victory coſt them dear; ſince their veſſels were reduced to a very ſhattered condition; and their great inferiority in the number and ſize of their ſhips, made them feel more ſenſibly every diminution of ſtrength.

Artemisium, a town of Oenotria, now S. Agatha, in the Hither Calabria, on the river Piſaurus, or la Foglia, diſtant eight miles from the Tuſcan Sea. Another of the Conteſtani, in Spain, otherwiſe called *Dianium*; now *Denia*, on the ſea-coaſt of Valencia.

ARTENAY', a town of France, in the department of the Loiret, and chief place of a canton in the diſtrict of Neuville, eleven miles north of Orleans.

ARTERI'ACA, *ſ.* [from αρτηρια, an artery.] Medicines againſt diſorders of the aſpera arteria.

ARTE'RIAL, *adj.* [from *artery.*] That which relates to the artery; that which is contained in the artery.

ARTERIO'TOMY, *ſ.* [from αρτερια, an artery, and τεμνω, to cut.] It is the opening of an artery for the diſcharge of blood. Galen, Antyllus, Oribaſius, P. Ægineta, and ſeveral others, highly extol this practice in inveterate head-achs, which reſiſt all other means; alſo as a remedy againſt violent inflammations of the eyes, the epilepſy, &c. The operation is generally confined to the head, becauſe of the bone being immediately under, and giving the advantage of a proper compreſs. When the temporal artery is opened, a ſmall knife, ſuch as is uſed for the fiſtula lachrymalis, is better than a lancet, and the inciſion muſt be ſo as to divide the artery tranſverſely, then the inconvenience of an aneuriſm is avoided. Heiſter condemns arteriotomy, eſpecially before every other method hath been tried.

ARTE'RN, a town of Germany, in the circle of Upper Saxony, and county of Mansfeld, ten miles ſouth-weſt of Eiſzleben, and twenty-nine north-north-eaſt of Erfurt. Lat. 51.17.N. lon. 28.54.E. Ferro.

AR'TERY, *ſ.* [*arteria*, Lat. from αηρ, air, and τηρεω, Gr. to keep; ſo called, becauſe the ancients ſuppoſed that only air was contained in them.] A conical tube or canal which conveys the blood from the heart to all parts of the body. See Anatomy, vol. i. page 624.

ART'FUL, *adj.* [from *art* and *full.*] Performed with art.—The laſt of theſe was certainly the moſt eaſy, but, for the ſame reaſon, the leaſt *artful. Dryden.* Artificial; not natural. Cunning; ſkilful; dexterous:

O ſtill the ſame, Ulyſſes, ſhe rejoin'd,
In uſeful craft ſucceſsfully refin'd,
Artful in ſpeech, in action, and in mind. *Pope.*

ART'FULLY, *adv.* With art; ſkilfully; dexterouſly. —Vice is the natural growth of our corruption. How irreſiſtibly muſt it prevail, when the ſeeds of it are *artfully* ſown, and induſtriouſly cultivated! *Rogers.*

ART'FULNESS, *ſ.* Skill; cunning.

AR'THA, a river of South Wales, which runs into the ſea, ten miles ſouth of Aberiſtwyth, in Cardiganſhire.

AR'THEL, *ſ.* A Britiſh word, more truly written *arddelw*, or according to the South Welſh, *ardhel*, ſignifying to avouch; as if a man were taken with ſtolen goods in his hand, he was to be allowed a lawful arthel (or vouchee) to clear him of the felony: it was part of the law of Howel Dha; according to whoſe laws every tenant holding of any other than of the prince or of the lord of the fee, paid a fine *pro defenſione regiâ*, which was called *arian ardhel.* The privilege of arthel occaſioning a delay and exemption of criminals from juſtice, proviſion was made againſt it by ſtat. 28 Hen. VIII. c. 6. *Blount.*

AR'THES, a town of France, in the department of the Lower Pyrenees, and chief place of a canton, in the diſtrict of Orthes, five leagues north-weſt of Pau.

ARTHO'ICUM, *ſ.* [αρθοικον, from αρτος, bread.] An oil made by digeſting roots with bread.

ARTHREM'BOLUS, *ſ.* [from αρθρον, a joint, and εμβαλλω, to impel.] An inſtrument for reducing luxated bones.

ARTHRI'TIC, or Arthri'tical, *adj.* [from *arthritis.*] Gouty; relating to the gout.—Frequent changes produce all the *arthritic* diſeaſes. *Arbuthnot.* Relating to joints.—Serpents, worms, and leeches, though ſome want bones, and all extended articulations, yet have they *arthritical* analogies; and, by the motion of fibrous and muſculous parts, are able to make progreſſion. *Brown.*

ARTHRI'TIS, *ſ.* [from αρθρον, a joint.] Any diſtemper that affects the joints, but the gout particularly. *Quincy.*

ARTHROCA'CE, *ſ.* [from αρθρον, a joint.] An ulcer of the cavity of the bone.

ARTHRO'DIA, *ſ.* [from αρθροω, to articulate.] In anatomy, a ſpecies of dearticulation, when a convex head is received into a cavity, and admits motion on all ſides.

Arthrodia, *ſ.* in natural hiſtory, a genus of imperfect cryſtals, found always in complex maſſes, and forming long ſingle pyramids, with very ſhort and ſlender columns.

ARTHRODY'NIA, *ſ.* [from αρθρον, a joint, and οδυνη, pain.] The chronic rheumatiſm.

ARTHROPYO'SIS, *ſ.* [from αρθρον, a joint, and πυον, pus.] An inflammation or abſceſs of a joint.

ARTHRO'SIS, *ſ.* [from αρθροω, to articulate.] An articulation, when the round head of one bone is received into the round hollow of another.

AR'THUR, [i. e. ſtrong man.] The celebrated hero of the Britons, is ſaid to have been the ſon of Uther Pendragon, king of Britain, and to have been born in 501. His life is a continued ſcene of heroic exploits. It is ſaid that he killed four hundred and ſeventy Saxons with his own hand in one day; and, after having ſubdued many nations, and inſtituted the order of the Knights of the Round Table, died, A. D. 542, of wounds which he received in battle. The moſt particular detail of his ſtory and his exploits, is that given by Geoffrey of Monmouth: but the probable is there ſo blended with the marvellous and the extravagant, that not only the truth of the whole, but even the reality of Arthur's exiſtence, has been called in queſtion. In this controverſy, Mr. Whittaker has taken much pains to vindicate the exiſtence, and diſcriminate between the real and the fabulous tranſactions, of the Britiſh worthy. "Many of the actions (he obſerves) attributed to Arthur by the Welſh chronicles of Britain, are as abſurd in themſelves as they are ſpurious in their authority. Written, as thoſe narratives were, many centuries after the facts, and being merely the authentic accounts of Arthur, embelliſhed with the fictions and diſtorted by the perverſions of folly; they are inconſiſtent equally with the ſtate of the times and the hiſtory of the continent and the iſland. And the ignorance of the forgers, and the credulity of their abettors, can be equalled only by the injudiciouſneſs and incredulity of the opponents to both. If ſome accounts of Arthur and Cunobeline in theſe hiſtories be certainly ſpurious, others are as certainly genuine. And the relations of Suetonius, Dio, and Nennius, are not to be rejected, becauſe of the falſehoods which impoſture has engrafted upon them.

"The exiſtence of Arthur is evinced by that of the fables, which have at once annihilated his actions and his name with the miſjudging critic. And the reaſoner's own arguments really turn againſt himſelf, and demonſtrate the point which they were intended to diſprove. The annals of Wales have long laboured in Arthur's commendation. The Highlanders have long had a poetical hiſtory of his exploits in their own language. The whole iſland is in traditionary poſſeſſion of his character; and ſix or ſeven hundred places within it are ſtill diſtinguiſhed by his name. His exploits are mentioned by his own hiſtorians, with a modeſty and conciſeneſs that is no bad argument of the truth, and with a particularity of time and place that is a good evidence of the facts. They are noticed by men, whom the death of the hero had exempted from all temptation to flattery: they are recited by perſons, whom a proximity to the times had precluded from all poſſibility of miſtake: and they are atteſted by the beſt hiſtorical authority, writers who lived cotemporary with him, authors who converſed with his warriors, and hiſtorians that wrote within a few years after him. He is ſpoken of as the honourable father of the Britiſh heroes by the aged Llomarch, a writer actually cotemporary with him, and ſome time reſident at his court.

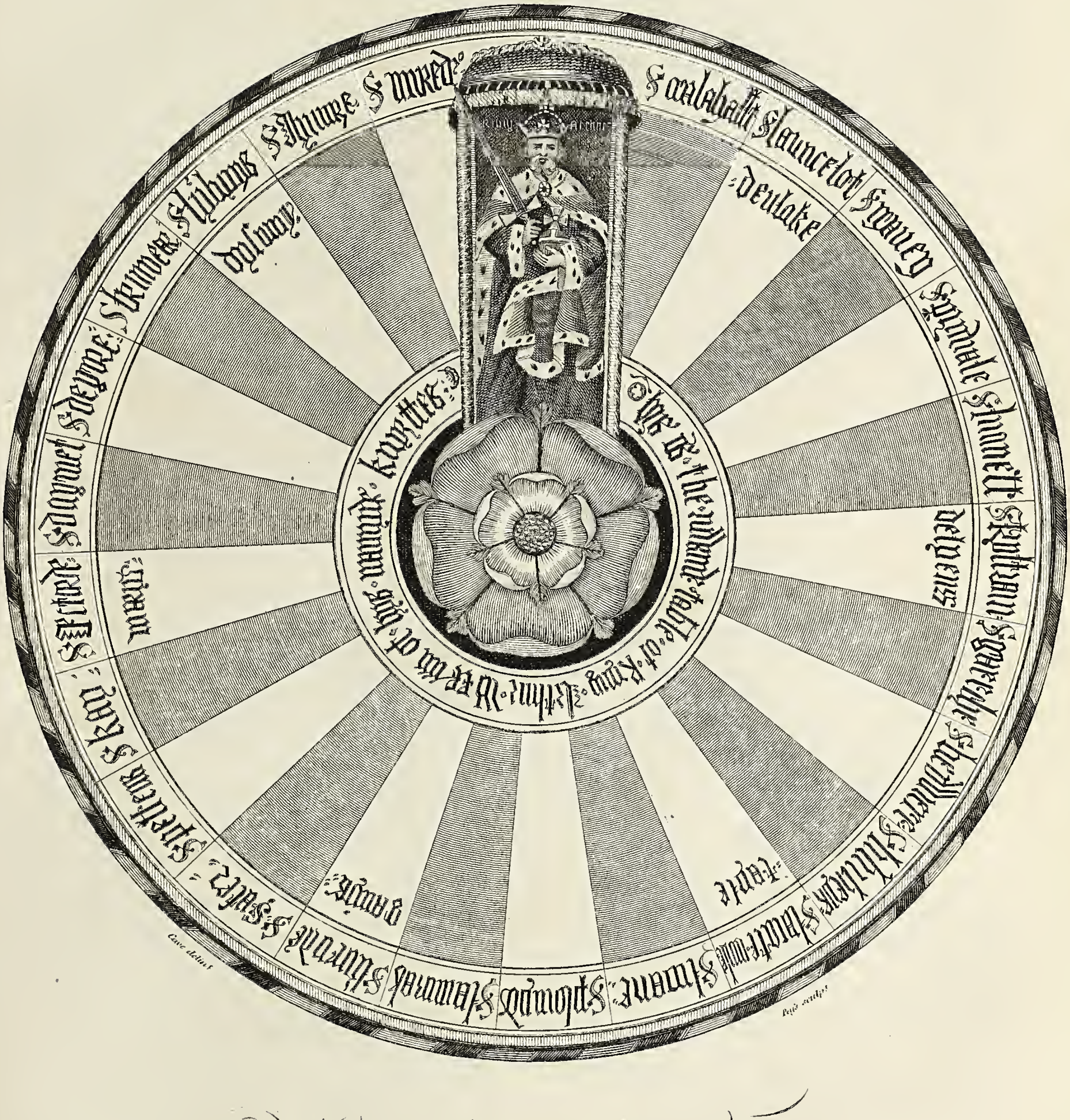
"Arthur's principal exploits were againſt the northern Saxons, whilſt he was only prince of the Silures, and Ambroſius was the dictator or pendragon of the Britons. In a ſeries probably of five campaigns, and in a ſucceſſion certainly of eleven victories, this great commander had repelled the Saxons from the north of Flavia, diſlodged them from all Maxima, and diſpoſſeſſed them of all Valentia. And theſe were ſucceſſes ſo unchequered with misfortunes, ſo great in themſelves, and ſo beneficial to the public, that the name of Arthur claims the firſt rank in the liſt of military and of patriot heroes. The twelfth battle of Arthur was fought on Bandon-hill, ſuppoſed to be Banſdown, near Bath; in which the Saxons received ſuch a terrible overthrow, that for many years they gave the Britons no further moleſtation."

In times of peace, Arthur ſaw that an appointment was wanted, which ſhould at once be a more regular and more honourable ſignature of merit; by the certainty of the honour and the greatneſs of the dignity, call out all the worth of all the worthy in the nation; and collect it round the throne of the pendragon. Accordingly he eſtabliſhed a military order, which he called the "Knights of the Round Table;" becauſe, whenever they were entertained by the king, they ſat with him at a round table, to prevent all poſſibility of jealouſy or contention for the upper places. This table is ſtill preſerved, and is placed over the court of niſi prius, above the judges ſeat, in the great hall of the caſtle of Wincheſter, where the aſſizes are held. This curious remain of antiquity is ſaid to be of near 1250 years ſtanding; though ſome authors have doubted whether it could have endured ſo long. Yet Paulus Jovius, who wrote almoſt three centuries ago, ſays it was then ſo very ancient, that ſeveral of the characters were nearly obliterated; the names of the knights were therefore written afreſh, and the table, with its ornaments, was then completely repaired. It was again repaired, and the characters newly written, in the year 1789, by order of the magiſtrates of the county of Hants, and under the direction of Dr. Joſeph Wharton, maſter of Wincheſter college. Tilts and tournaments are ſuppoſed to have been eſtabliſhed at Wincheſter by king Arthur, who it is ſaid built the original caſtle of that ancient city, and made it his principal reſidence. Hither the emperor Charles V. came, on purpoſe to inſpect this curious table; and it is recorded that he readily deciphered the names of the twenty-four knights that are inſcribed round it. The annexed Plate affords an exact repreſentation of the Table in its preſent ſtate, with the Portrait of king Arthur, and the names of his knights, as written thereon, which are as follow:

Sir Galahallt
Sir Lancelot Dulake
Sir Gauey
Sir Pribale
Sir Lyonell
Sir Triſtram Delyens
Sir Garetbe
Sir Bedwere
Sir B. Bilbrys
Sir Lamternal Tayle
Sir Bicane
Sir Plomyds
Sir Lamorak
Sir Borſde Ganys
Sir Sater
Sir Pellens
Sir Kay
Sir Ector de Marys
Sir Pegonet
Sir Degore
Sir Brumer
Sir Lubyns Dilcony
Sir Allynore
Sir Mordrod

In the middle of the table: "This is the Round Table of King Arthur and twenty-four of his Knights." The table is eighteen feet in diameter.

The above was the firſt order of knighthood eſtabliſhed in England; and it has been imitated by all the nations on the continent. By means of this, Arthur raiſed among the provincials a general glow of ingenuous heroiſm, the firſt ſpirit of chivalry that ever appeared in Europe; that manly and honourable gallantry of ſoul, which has made him and his worthies the ſubject of romantic hiſtories over all the weſtern world. By this, and this alone, could he have been what hiſtory repreſents him, the Father of the Britiſh Heroes in general, even to the concluſion of the ſixth century, and nearly the middle of the ſeventh. The order naturally ſurvived its founder; and the members of it were denominated the *Warriors of Arthur*, though the perſons were born half a century after his death. Under the prudent management of Arthur for twenty years together, a fair proſpect dawned upon the Britons, and long ſcenes of future glories opened to their view. But the gay viſion was deſtroyed at once by the commencement of a civil war. Many towns ſtill remained in ruins, the memorial of former wars, and the diſgrace of the preſent. The diffuſed ſpirit of chivalry was turned upon the nation, and heroiſm became the tool of diſſenſion. The dreadful combination of civil evils was begun and conſummated, at



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King Arthur's round Table
Preserved as a curious piece of Antiquity in the Castle of Winchester.

London, Published as the Act directs June 27th 1796 by J.Wilkes.

once, by the death of the renowned Arthur in battle, in the year 542.

To theſe obſervations we may add the following account of the diſcovery of Arthur's tomb, which appears well authenticated. Henry II. who was the firſt of the Plantagenet line, being at Pembroke, and hearing a Welch bard ſinging to his harp the ſtory of Arthur, concluding with an account of his death and burial in the church-yard of Glaſtonbury, between two pyramids; the king inſtantly gave orders that the matter ſhould be inquired into, and the body dug up. This was done as the king directed; and, at the depth of ſeven feet was found a vaſt ſtone, whereon was fixed a leaden croſs, with this inſcription: *Hic jacet ſepultus inclytus Rex Arturius in Inſula Avalonia*, i. e. "Here lies the famous king Arthur, buried in the iſle of Avalon." Digging ſtill lower, they found the king's body in the trunk of a tree, his beautiful queen lying by him, with long flowing hair, of a yellow colour, which however ſunk into duſt when touched. The king's bones were of a large ſize; and in his ſkull were ten wounds, or more, all cicatrized, except that of which he died. This diſcovery was made in the year 1189, as Giraldus Cambrenſis tells us, who ſaw theſe bones, and examined the whole matter carefully. There was alſo a table containing this ſtory ſet up in the monaſtery of Glaſtonbury, and the leaden croſs with the inſcription remained there till the diſſolution of the monaſtery, where it was ſeen by the great antiquary Leland.

ARTHUR'S SEAT, a high hill in the neighbourhood of Edinburgh, ſaid to have been ſo denominated from a tradition that king Arthur ſurveyed the country from its ſummit, and had alſo defeated the Saxons in its neighbourhood. This hill riſes by a ſteep and rugged aſcent, till it terminates in a rocky point near 700 feet high from the baſe, being more than double the height of the croſs on the top of St. Paul's, London, which is 340 feet. On the ſouth it is in many parts a perpendicular rock, compoſed of baſaltic pillars, regularly pentagonal or hexagonal, about three feet in diameter, and from forty to fifty feet in height. Contiguous, upon the weſt, and partly connected with it at the baſe, are the Saliſbury craggs, of inferior height, but exhibiting an appearance equally ſingular and grand. They preſent to the city an awful front of broken rocks and precipices, forming a ſort of natural amphitheatre of ſolid rock; and backward, from the craggy verge above, the hill forms an extenſive irregular ſlope, the ſurface affording paſture to numerous flocks of ſheep. The craggs, beſides ores, ſpars, rock-plants, &c. afford an inexhauſtible ſupply of granite for paving the ſtreets and other purpoſes. In quarrying, a part of the craggs has been worn down into a ſpacious ſhelf, having the appearance of a lofty terrace, and ſtretching a conſiderable length. From hence is a near and diſtinct proſpect of the city, with its environs, and the adjacent country. But from the pinnacle called *Arthur's Seat* the view is more noble and extenſive. The traveller may here ſit and ſurvey the centre of the country, beſides having a complete view of Edinburgh and its caſtle, on which he looks down as if ſeated among the clouds. In a word, the German ocean, the whole courſe of the Forth, the diſtant Grampians, and a large portion of the moſt populous and beſt cultivated part of Scotland, form a landſcape at once ſublime, various, and beautiful.

AR'TICHOKE, *ſ.* in botany. See CYNARA.

ARTICHOKE of JERUSALEM. See HELIANTHUS.

AR'TICLE, *ſ.* [*articulus*, Lat.] A ſingle clauſe of an account; a particular part of any complex thing.—All the precepts, promiſes, and threatenings, of the goſpel will riſe up in judgment againſt us; and the *articles* of our faith will be ſo many *articles* of accuſation; and the great weight of our charge will be this, That we did not obey the goſpel which we profeſſed to believe; that we made confeſſion of the Chriſtian faith, but lived like heathens. *Tillotſon.*—Terms; ſtipulations.—I embrace theſe conditions; let us have *articles* between us. *Shakeſpeare.*—Point of time; exact time.—If Cansfield had not, in that *article* of time, given them that briſk charge, by which other troops were ready, the king himſelf had been in danger. *Clarendon.*

ARTICLE, in law, ſignifies a complaint exhibited in the eccleſiaſtical court, by way of libel. *Articles of the peace*, are a complaint exhibited in the courts at Weſtminſter, in order to compel the defendant to find ſureties of the peace; in which caſe it is uſual for the court, on iſſuing an attachment, to make an indorſement thereon, directing ſome juſtice of the peace in the country to take the ſecurity of the peace there, ſpecifying the particular ſums in which the party and his ſureties ſhall be bound. *Bur. Manſf.* 1040. *Articles of war*, are a code of laws made by his majeſty from time to time for the regulation of the land-forces, in purſuance of the ſeveral annual acts againſt mutiny and deſertion. *Articles of the navy*, are rules and orders made by ſtatute 31 Geo. II. c. 10, for the government of the royal fleet. *Articles of religion*, commonly called the *thirty-nine* articles, are a body of articles drawn up by the convocation in 1562, unto which perſons admitted into eccleſiaſtical offices are to ſubſcribe. *Articuli cleri*, are ſtatutes containing certain articles relating to the church and clergy, made in the 14 Edw. III.

ARTICLE, in grammar, denotes a particle uſed in moſt languages for the declining of nouns, and denoting the ſeveral caſes and genders thereof; as, *the*, *an*; *the* man, *an* ox, &c. The uſe of articles ariſes chiefly hence, that in languages which have no different terminations to expreſs the different ſtates and circumſtances of nouns, there is ſomething required to ſupply that office. The Latins have no articles; but the Greeks, and moſt of the modern languages, have had recourſe to them, for fixing and aſcertaining the vague ſignification of common and appellative names. The Greeks have their ὁ, the eaſtern tongues their *he emphaticum*; their Italians their *il*, *lo*, and *la*. The French their *le*, *la*, and *les*. The Germans their *der*, *das*, *dat*. Articles are of great ſervice in a language, as they contribute to the more neat and preciſe expreſſing of ſeveral properties and relations, which muſt otherwiſe be loſt. And hence one great advantage of ſuch languages over the Latin, in that the article being either expreſſed or left out, makes an alteration in the ſenſe, which the Latins cannot diſtinguiſh. Thus when Satan ſaid to our Saviour, *Si tu es Filius Dei*, it may either be underſtood, "if thou art *a* ſon of God," or, "if thou art *the* ſon of God." The Italians even prefix articles to proper names, which do not naturally need any, becauſe they themſelves ſignify things individually. Thus they ſay, *il* Arioſto, *il* Taſſo, *il* Petrarcha. Even the French join the article to the proper names of kingdoms, provinces, &c. as, *la* Suede, *la* Normandie. And we likewiſe annex it to the names of certain mountains and rivers; as, *the* Rhine, *the* Danube, *the* Alps, &c.

To ARTICLE, *v. n.* To ſtipulate; to make terms:

Such in love's warfare is my caſe,
I may not *article* for grace,
Having put love at laſt to ſhew this face. *Donne.*

To ARTICLE, *v. a.* To draw up in particular articles.—He, whoſe life ſeems fair, yet, if all his errors and follies were *articled* againſt him, the man would ſeem vicious and miſerable. *Taylor.*

ARTI'CULAR, *adj.* [*articularis*, Lat.] Belonging to the joints. In medicine, an epithet applied to a diſeaſe, which more immediately infeſts the joints. Thus the gout is called *morbus articularis.*

ARTI'CULATE, *adj.* [from *articulus*, Lat.] Diſtinct; divided, as the parts of a limb are divided by joints; not continued in one tone, as, *articulate* ſounds; that is, ſounds varied and changed at proper pauſes, in oppoſition to the voice of animals, which admit no ſuch variety. An *articulate* pronunciation, a manner of ſpeaking clear and diſtinct, in which one ſound is not confounded with another:

The firſt, at leaſt, of theſe I thought deny'd
To beaſts; whom God, on their creation-day,
Created mute to all *articulate* ſound. *Milton.*

—Antiquity expreſſed numbers by the fingers on either hand. On the left they accounted their digits and *articulate* numbers unto an hundred; on the right hand, hundreds and thouſands. *Brown.*—Branched out into articles. *This is a meaning little in uſe.*—Henry's inſtructions were extreme curious and *articulate*; and, in them, more articles touching inquiſition than negociation: requiring an anſwer in diſtinct articles to his queſtions. *Bacon.*

To ARTI'CULATE, *v.a.* [from *article.*] To form words; to utter diſtinct ſyllables; to ſpeak as a man.—Pariſian academiſts, in their anatomy of apes, tell us, that the muſcles of the tongue, which do moſt ſerve to *articulate* a word, were wholly like thoſe of man. *Ray.*—To draw up in articles:

Theſe things, indeed, you have *articulated*,
Proclaim'd at market-croſſes, read in churches,
To face the garment of rebellion
With ſome fine colour. *Shakeſpeare.*

To ARTICULATE, *v.n.* To ſpeak diſtinctly.

ARTI'CULATELY, *adv.* In an articulate voice.—The ſecret purpoſe of our heart, no leſs *articulately* ſpoken to God, who needs not our words to diſcern our meaning. *Decay of Piety.*

ARTI'CULATENESS, *ſ.* The quality of being articulate.

ARTICULA'TION, *ſ.* The juncture or joint of the bones.—With relation to the motion of the bones in their *articulations*, there is a two-fold liquor prepared for the inunction and lubrification of their heads, an oily one, and a mucilaginous, ſupplied by certain glandules ſeated in the *articulations*. *Ray.*—The act of forming words—By *articulation* I mean a peculiar motion and figure of ſome parts belonging to the mouth, between the throat and lips. *Holder.*—In botany, the joints or knots in ſome plants, as the cane, &c.

AR'TIFICE, *ſ.* [*artificium*, Lat.] Trick; fraud; ſtratagem.—Religion needs no legends, no ſervice in an unknown tongue; none of all theſe laborious *artifices* of ignorance; none of all theſe cloaks and coverings. *South.*—Art; trade; ſkill obtained by ſcience or practice.

ARTI'FICER, *ſ.* [*artifex*, Lat.] An artiſt; a manufacturer; one by whom any thing is made.—In the practices of *artificers*, and the manufactures of ſeveral kinds, the end being propoſed, we find out ways. *Locke.*—A forger; a contriver:

He, ſoon aware,
Each perturbation ſmooth'd with outward calm,
Artificer of fraud! and was the firſt
That practis'd falſehood under ſaintly ſhew. *Milton.*

The Roman artificers had their peculiar temples, where they aſſembled and choſe their own patron to defend their cauſes: they were exempted from all perſonal ſervices, and were incorporated into divers colleges or companies, each of which had their tutelar gods, to whom they offered their worſhip. Several of theſe, when they quitted their profeſſion, hung up their tools, a votive offering to their gods. Much of the artificers buſineſs, however, was done by ſlaves and foreigners, who left little for the Romans to mind but their huſbandry and war. By means of the arts, the minds of men are engaged in inventions beneficial to the whole community; and thus prove the grand preſervative againſt the barbariſm and brutality, which ever attend on an indolent and inactive way of life.

In the law relative to artificers, labourers, &c. there are ſeveral ſtatutes for rating of wages in almoſt every kind of work, and penalties injoined againſt taking or giving more than the wages ſo rated. But this hath been ſeldom put in practice. And indeed there are great objections. For beſides that this rating puts good and bad workmen upon a level, and thereby deſtroys emulation; the eaſineſs or difficulty of the ſame kind of work in different circumſtances renders a certain limited ſum very inadequate. Diſputes about wages, and almoſt all other kinds of differences between maſters and workmen in the ſeveral kinds of labour and manufacture, are determinable in a ſummary way by juſtices of the peace. All artificers and labourers, hired at a certain price, ſhall, between the middle of March and the middle of September, continue at work from five in the morning till ſeven at night; except half an hour for breakfaſt, an hour for dinner, and half an hour for drinking: and, between the middle of May and middle of Auguſt, half an hour for ſleep. Between the middle of September and the middle of March they ſhall continue at work from the ſpring of day until night, except half an hour for breakfaſt and an hour for dinner. 5 Eliz. c. 4. In the time of hay or corn harveſt, the juſtices of the peace, and alſo the conſtables, may cauſe all artificers and perſons meet to labour, to ſerve by the day in mowing, reaping, and getting of hay and corn; on pain of impriſonment in the ſtocks two days and one night. 5 Eliz. c. 4. If any artificer or labourer ſhall leave his work unfiniſhed, except for want of payment of his wages, he ſhall ſuffer impriſonment for a month. If any artificer, workman, or labourer, ſhall join in any conſpiracy to raiſe the price of labour, he ſhall forfeit 5l. and, if not paid in ſix days, he ſhall be impriſoned for twenty days, and have only bread and water for his ſuſtenance; for a ſecond offence 20l. or ſhall be ſet in the pillory; for the third offence 40l. or be ſet in the pillory and loſe one of his ears. 2 & 3 Edw. VI. c. 14. If any perſon ſhall contract with, or endeavour to perſuade, any artificer to go into any foreign country, not belonging to the crown of Great Britain, he ſhall forfeit 500l. and be impriſoned twelve months; for a ſecond offence he ſhall forfeit 1000l. and be impriſoned two years. 23 Geo. II. c. 13. And if any artificer ſhall go, or being there ſhall not return after notice, he ſhall be incapable of any legacy, or of being executor or adminiſtrator, and of taking any lands by deſcent, deviſe, or purchaſe, and ſhall forfeit his lands and goods, and be deemed an alien, and out of the king's protection. 3 Geo. c. 27. And by the 23 Geo. II. c. 13, 14 Geo. III. c. 71, and 25 Geo. III. c. 76, there are large penalties for carrying out of the kingdom tools or utenſils in various ſorts of manufacture.

ARTIFI'CIAL, *adj.* [*artificiel*, Lat.] Made by art; not natural. Fictitious; not genuine. Artful; contrived with ſkill:

Why, I can ſmile, and murder while I ſmile,
And cry, Content, to that which grieves my heart,
And wet my cheeks with *artificial* tears. *Shakeſpeare.*

ARTIFICIAL ARGUMENTS, in rhetoric, are proofs on conſiderations which ariſe from the genius, induſtry, or invention, of the orator; which are thus called, to diſtinguiſh them from laws, authorities, citations, and the like, which are ſaid to be *inartificial* arguments.

ARTIFICIAL LINES, on a ſector or ſcale, are certain lines ſo contrived, as to repreſent the logarithmic ſines and tangents; which, by the help of the line of numbers, will ſolve all queſtions in trigonometry, navigation, &c. pretty exactly.

ARTIFICIAL NUMBERS, are the ſame with logarithms.

ARTIFI'CIALLY, *adv.* Artfully; with ſkill; with good contrivance.—How cunningly he made his faultineſs leſs, how *artificially* he ſet out the torments of his own conſcience. *Sidney.*—By art; not naturally: as, A palace *artificially* contrived, and curiouſly adorned.

ARTIFI'CIALNESS, *ſ.* Artfulneſs.

ARTIFI'CIOUS, *adj.* [from *artifice.*] The ſame with ARTIFICIAL.

ARTI'GI, a town of the Turduli, in Bætica; now *Alhama.*

ARTIL'LERY, *ſ.* *It has no plural.* [*artillerie*, Fr.] Weapons of war: always uſed of miſſive weapons.—And Jonathan gave his *artillery* unto his lad, and ſaid unto him, Go, carry them unto the city. 1 *Samuel.*

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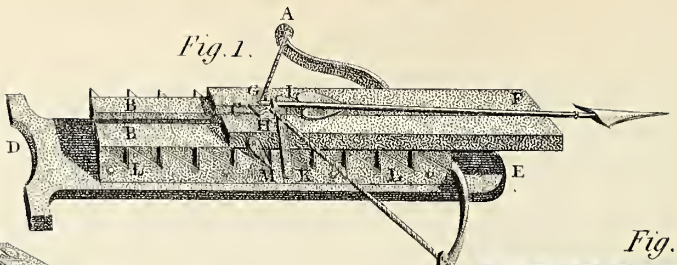
Fig. 1.



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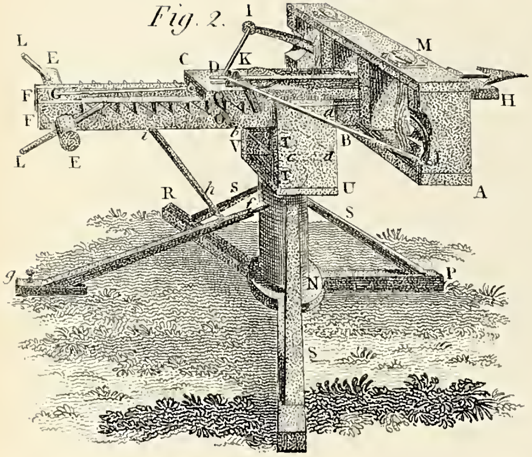

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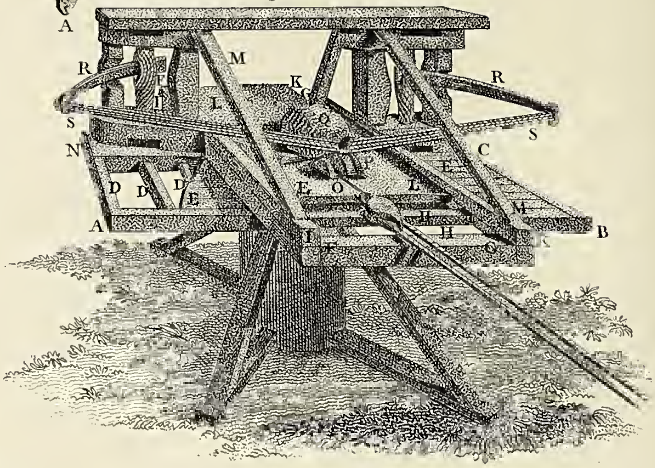

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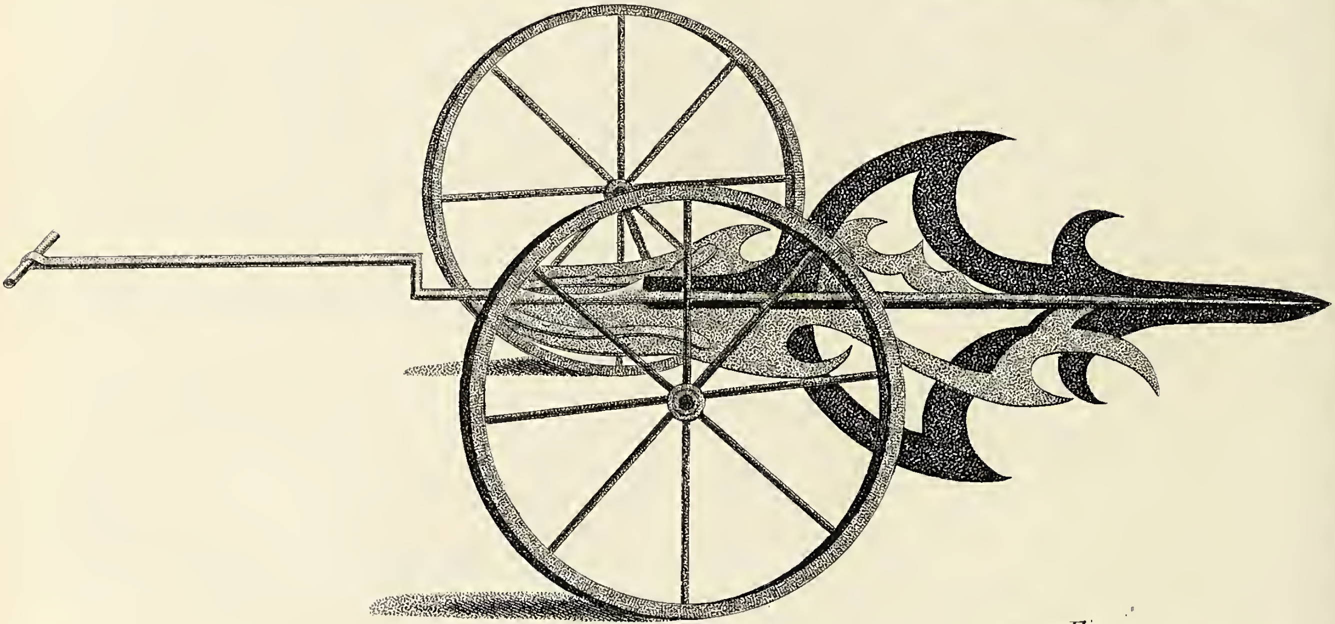

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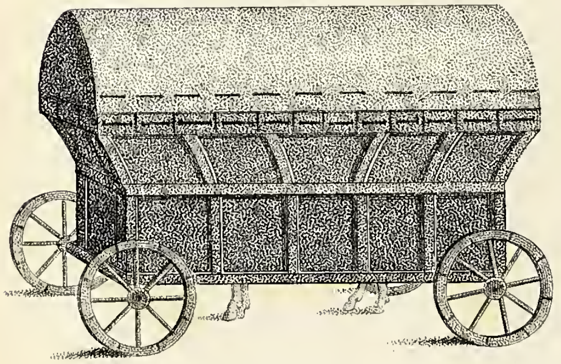
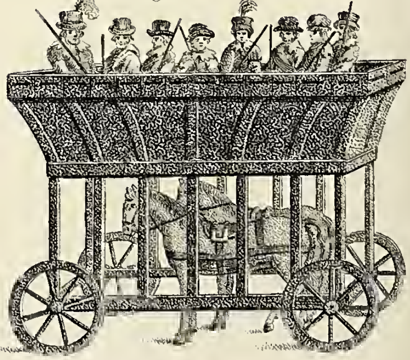


Fig. 5.



Ancient Artillery.

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J. Chapman sculp.

In its modern acceptation the word ſignifies cannon, or fire-arms, mounted on their carriages and ready for action, with their balls, their bombs, their grenades, &c. If we take the term in a more extenſive meaning, it includes the powder, the matches, inſtruments for fire-works, the utenſils of ordnance, the machines which facilitate their motion and tranſport them, the vehicles over which they traverſe rivers, every thing neceſſary to them, and all that enters into the form of a train of artillery. The ſame word, ſtill farther extended in its meaning, likewiſe comprehends the men deſtined for the ſervice of the artillery; the people who provide the artillery with materials and implements when engaged, the cannoniers, the bombadiers, the officers of every rank, and engineers of every kind. By artillery is likewiſe underſtood the ſcience which the officers of artillery ought to poſſeſs. This ſcience teaches to know the nature of all the materials and ingredients which enter into the compoſition and the ſtructure of every thing relative to the artillery, ſuch as nitre, ſulphur, charcoal; the properties of air and fire; the compoſition and preparation of gunpowder; the materials for fire-works; the conſtruction, proportions, &c. of the different warlike machines; the arrangement, movement, and whole management, of cannon, &c. in the field or in ſieges, in ſuch a manner, that each of them, according to the length of its tube and the diameter of its bore, may be ſituated in the beſt place and at the propereſt diſtance for execution, and that the whole train taken together may reciprocally aſſiſt and ſupport each other with the greateſt advantage.

Artillery has undergone many changes from its origin to the preſent time. The artillery or warlike engines of the ancients were the ſcorpion, the catapulta, the baliſta, the onager, &c. The moving powers of moſt of theſe different machines depended on the elaſticity of twiſted cords formed of the bowels of animals, ſinews, human hair, flax, and hemp. The ſcorpion was only a large croſs-bow, the baliſta was at firſt chiefly uſed for throwing ſtones, and the catapulta for lancing darts or arrows; but by degrees they were confounded, and indifferently appropriated to both.

The *ſcorpion*, which is repreſented at *fig*. 1, of the annexed Plate, was the ſmalleſt machine of its kind. It conſiſted of a bow made of ſteel, or of ſome elaſtic wood, having a cord ſtretched from one end the other, and fixed through holes made for that purpoſe at its extremities; in the middle was placed the regula BB, which had in its upper ſurface a channel cut in the ſhape of a ſwallow's tail, the lower part being the broadeſt; this regula was called the ſyrinx; it was fixed on a board DE, ſomewhat exceeding it in length and breadth, called catagogis; upon the ſyrinx was placed another regula, equal to it in length and breadth, having a maſculus, ſwallow-tailed, fitting exactly into the ſwallow-tailed channel or groove cut on the ſyrinx, and which was joined to it in its lower part; this laſt regula was called the dioſtra, and, being placed on the ſyrinx with its maſculus inſerted into the ſwallow-tailed groove, it would ſlide backward and forward, without riſk of ſeparation. In the upper ſurface of this dioſtra was a ſemicircular channel C, of its whole length, called epitoxis, wherein the arrow was placed; at the end of which were two perpendicular plates of iron, called catochas, fixed on the dioſtra, at a ſmall diſtance one from the other; between them was placed a hook or hand of iron G, called chira, and manucla; one of theſe extremities was bent back like a hook, and was ſlit, ſo as to be able to receive the thickneſs of the arrow between its two parts; its other extremity I, terminated in a point; through the ſides of the catochas, and of the chira, was placed an iron axis H, ſo that the chira could turn vertically about; under the pointed extremity I, of the chira, was the end of a thin bar of iron, which was fixed upon the upper ſurface of the dioſtra, to the left of the epitoxis, by an iron pin, on which it turned horizontally; this bar was called the ſchaſteria, and, whilſt its extremity I, reſted under the end of the chira, it hindered the latter from turning on its axis; but, when it was diſplaced by pulling forward the other extremity K, it permitted the hooked end of the chira to turn over, and to put itſelf in the place of the pointed end I, which conſequently turned under, and put itſelf in the place of the hooked end, there being an opening cut in the dioſtra purpoſely to let it paſs. The points AA of the bow were bent upwards, ſo that the ſtring or cord could paſs freely over the upper ſurface of the dioſtra, although the middle of the bow was lower than the maſculus; the catagogis was hollowed out at its extremity D, wherein the engineer leant his body, and then puſhed the dioſtra forward, until the chira G, came to the cord of the bow, which he then put upon the hooks of the chira; and, to prevent it from turning, and conſequently letting go the cord, he put the ſchaſteria under its extremity, which ended in the point I; he then puſhed with all his force the end F of the dioſtra againſt ſome wall, or againſt the ground, keeping his body in the cavity D, of the catagogis. In this manner he drew to him the dioſtra and the chira; the chira having ſeized the ſtring of the bow, this was in like manner drawn towards his body, and the bow thereby bent. The following mechaniſm was made to hinder the bow from drawing the dioſtra backwards: there was a rule with teeth LL, fixed on both ſides the ſyrinx, and a hook of iron M, called cataclida, which turned vertically on an iron axis, on both ſides of the dioſtra; when the dioſtra was puſhed forwards, the cataclida fell ſucceſſively between the teeth of the rule, which hindered the dioſtra from going backwards. When the bow was bent, the engineer placed the arrow in the epitoxis, inſerting its feathered end between the parts of the chira, quite to the ſtring of the bow, which entered into a cut made purpoſely at that end of the arrow; he then raiſed the machine, and took his aim by looking along the arrow, and taking the end K, of the ſchaſteria, drew it towards him, and conſequently drew the other end of the ſchaſteria from under the chira, which by the tenſion of the ſtring of the bow inſtantly turned on its axis, and diſengaged the ſtring, whereby the arrow was diſcharged with a great velocity. This machine was called *gaſtrapheten*, becauſe the bow was bent by the action of puſhing with the belly.

The *catapulta*, which is repreſented at *fig*. 2, of the ſame Plate, was a machine which ſerved for a ſimilar uſe, but acted with greater ſtrength and velocity. To encreaſe its force, without much augmenting its magnitude, ſome of the mechanic powers were added. Inſtead of a bow, as in the ſcorpion, the catapulta had a rectangular frame of wood, conſiſting of four uprights, placed at a convenient diſtance, and two horizontal traverſes, one above, and the other beneath, the four uprights, to which they were ſtrongly joined by tenons and plates of iron; the horizontal traverſes were called ſcutulæ by the Romans, and peritretæ by the Greeks, becauſe they had perforations on all ſides. The two outſide uprights were called paraſtæ, and the two others on the inſide meſoſtæ. Vitruvius gives to all the frames the name of capitule, and Hero of plinthe: the holes were pierced perpendicularly through the two peritretæ; in the middle between the paraſta and meſoſta, on the right and left ſides of the capitule, oppoſite the holes of the peritretæ, were placed two ſtrong bars of iron; and and two others were alſo applied oppoſite, in the holes under the lower peritreta; theſe bars of iron were called epizygis. They then tied to the upper epizygis one of the ends of a cord, the other end being paſſed through the holes of the two peritretæ to the lower epizygis, it was ſtretched round it, and paſſed again through the ſame holes to the upper epizygis, about which it was ſtretched, and again in like manner to the lower epizygis; the ſame operation was repeated till the holes were filled, and that the cord could no longer paſs there; they afterwards inſerted in the middle of this aſſemblage of cords the end of an arm of ſteel, or elaſtic wood; the other end projected out beyond the face of the paraſta near it, and the two epizyges were afterwards turned, ſo that the cords were extremely twiſted; by this means they kept the arm quite firm, and cauſed it to preſs backwards with force againſt the face of the paraſta, where a ſemicircular cavity was cut purpoſely to receive it; the ſame manœuvre was repeated exactly at the other extremity of the capitule with the epizyges; and the two arms, being thus retained by the aſſemblages of twiſted cords, acquired a great degree of elaſtic force, and produced exactly the ſame effect as the bow of the ſcorpion before deſcribed. The cord was paſſed through the extremities of the arms, and fixed; it was of ſuch a length as to retain the arms at a ſmall diſtance from the paraſtæ, ſo that in the diſcharge they ſhould not ſtrike nor endanger them: the arms were called brachiæ, and likewiſe ancones; the aſſemblage of twiſted cords, which retained the arms, was called tonus; and the frame about it was called hemitonus, and ſometimes unitonus: the interval which was between the two hemitones was left for the ſyrinx and the dioſtra, the end of the ſyrinx being ſtrongly fixed upon the upper ſurface of the ſcutula, or lower peritreta. The capitule, thus finiſhed, is ſhewn at AMM, *fig.* 2, affixed upon the end B, of the ſyrinx; with the dioſtra CH, the chira and ſchaſteria D, and cataclida O; the ſame in all reſpects as thoſe already deſcribed in the ſcorpion; but here was no catagogis; inſtead of which it had a ſucula or axis EE, placed at the other end of the ſyrinx, its ſides FF, projecting purpoſely to receive it. In the middle of this ſucula, or axis, between the two ſides of the ſyrinx, was fixed a cord CG, which extended from thence to the end C of the dioſtra, where it was faſtened to a hook. When the machine was prepared, the dioſtra was puſhed forwards until the chira reached the ſtring of the bow IKI, and was hooked to it, the dioſtra being drawn backward by means of the ſucula, which was turned by two men, with the aſſiſtance of the levers LL, which paſſed through its two extremities; by this means the arms II, were drawn and bent, and, when they were bent ſufficiently, the arrow KH, was placed in the epitoxis, and diſcharged in the ſame manner as in the ſcorpion, but with the moſt ſurpriſing velocity.

As this engine was too large to be managed by hand, it was ſupported by the pillar N, or *columella*, (as Vitruvius calls it,) in height two feet and a quarter, fixed upon a foot with three branches PQR, and ſuſtained by the props SSS. On the top of the pillar was a cylindric tenon TT, upon which the chalcheſium UV, turned, which was thus made: Upon a horizontal and rectangular plane UV, two perpendicular and rectangular ſides, U*a* and V*b*, were fixed on the right and left, and between theſe was fixed another ſimilar horizontal plane, *b*, *c*, *d*, a little above the firſt. In the middle of theſe planes were holes capable of receiving the tenon TT, of the pillar; the two perpendicular ſides were at ſuch a diſtance one from the other, that they could receive between them the breadth of the ſyrinx, which being placed there, an iron axis E, was paſſed horizontally acroſs the two ſides of the chalcheſium and of the ſyrinx, binding them together, and permitting the ſyrinx to revolve vertically about that axis, in ſuch a manner that the whole catapulta could be inclined in all poſſible directions, and by means of the chalcheſium, which turned upon the tenon of the pillar, it might be moved horizontally on all ſides, and in this manner it might be pointed towards any object whatſoever. To keep it fixed and immoveable in the direction deſired, it was thus managed: one end *f*, of a piece of wood *fg*, was joined to the top of the columella, or pillar, by a hinge which permitted it to turn vertically, ſo that the other end which reſted on the ground might be placed in different ſituations; this piece was called anteridium; near its upper extremity, the anapauſteria *h i*, was fixed to it by a joint, which permitted it to turn vertically. When the ſyrinx was placed in the propoſed direction, the lower end *g* of the anteridium, was moved, ſo that the anapauſteria reſted perpendicularly under the ſyrinx; the end *i*, of the anapauſteria was then raiſed and fixed under the ſyrinx in the holes purpoſely made: by this means the ſyrinx was rendered immoveable in its poſition, and then the engineer diſcharged the arrow preciſely in the ſame manner as from the ſcorpion. Catapultas were made of different ſizes, but there were only two generally in uſe: the ſmalleſt was called *triſpithamal*, becauſe it threw arrows of three ſpans long; the largeſt was called *tricubital*, becauſe it ſhot arrows of three cubits long.

The *baliſta*, or machine for diſcharging ſtones, is ſhewn at *fig.* 3. Its capitule was ſimilar to that of the catapulta, except that the two hemitones were placed at a greater diſtance one from the other, leaving a larger interval between the two meſoſtæ, which in the baliſta were called antiſtæ. As this machine was ſometimes required to throw very large ſtones, it was neceſſary to have this large interval. There was alſo another difference, namely, that the ſcutulæ or peritretæ, which in the catapulta extended in one piece over the two hemitones, were ſeparated in the baliſta, and extended only over one hemitone. The lower peritretæ were alſo ſeparated in the ſame manner, ſo that the two hemitones were not united by their peritretæ, but by two other pieces of wood, one of which extended over the two upper peritretæ, and the other under the two bottom peritretæ, being faſtened to the ſame by tenons. The paraſtæ were made like thoſe of the catapulta, but had on their back-part a curvelinear projection, oppoſed to the circular cavity, in which was the arm, in order to ſtrengthen it. The antiſtæ had alſo a curved projection called hypopterna, on the ſide next the arm, againſt which the root of the arm, called pterna, reſted. The grain of the wood in the paraſtæ and antiſtæ was perpendicular; they had both tenons placed at their upper and under extremities, which entered into the peritretæ, and there joined them ſtrongly; and all the angles and joints of the capitule were ſtrengthened with plates of iron. The peritretæ in this machine had the figure of a rhombe, in order to permit the arms to diverge ſo much the more. The capitule of the baliſta thus formed, was fixed upon the horizontal frame of wood NABC, in *fig.* 3. This frame was made up of divers pieces of wood DDD, placed at equal diſtances croſſwiſe, the whole length of the capitule; they projected forwards, and were bound at their ſaliant extremity by a tranſverſe piece of wood AB; this frame was called menſa, the Greeks called it trapeza: over it was a covering of boards EE, called tabula, of which the upper ſurface was on a level with the bottoms of the lower peritretæ; on the tabula was placed the climax, or (as Vitruvius calls it) the climaciclos, FGG, which was an horizontal frame of wood reſembling a ladder, from whence it derived its name, and was compoſed of two long pieces GG and FF, joined together by many tranſverſe pieces HH, placed among themſelves at ſuitable diſtances. The climax anſwered to the ſyrinx of the catapulta; it was placed on the tabula, ſo that it projected from it on every ſide; upon two long parallel pieces were placed two others, called alæ, II and KK, equal in breadth and length; between the alæ, and over the tranſverſe pieces HH, of the climax, was placed the dioſtra LLL, which was of the ſame length as the climax; the climax was ſtrongly faſtened to the menſa, and ſtrengthened by the anterides or ſtays MM, extending from the extremities of the alæ to the upper peritretæ. The chira, ſchaſteria, &c. OP, were fixed on the dioſtra, in the ſame manner as in the catapulta; but here the crooked extremity P, of the chira, was not ſplit into a fork, but was made like a finger, and was raiſed high enough above the dioſtra, that the cord of the bow when diſengaged might ſeize the ſtone Q, towards the middle of its height, in order that it might act upon it with more certainty and ſtrength. With the ſame intention the arms RR, were diſpoſed in ſuch a manner that the cord of the bow, in going backwards, might be moved at that height above the dioſtra; moreover, the cord of the bow SS, was made broad like a girdle, and not round as in the catapulta, and had a loop P, in the middle, which hooked upon the finger of the chira.

Theſe machines were made with very ſtrong and hard wood, and as light as could accord with theſe two qualities, in order that they might the more eaſily be tranſported from one place to another. For the ſame reaſon, the different pieces of which they were compoſed might be ſeparated one from the other, except the hemitones, which were always entire, on account of the difficulty and time neceſſary for preparing the tonus. The cords which formed the tonus were commonly made with the ſinews or tendons of animals; thoſe of the legs of the deer kind, and of the neck of a bull, were particularly recommended; but they oftener preferred cords made with women's hair, and conſidered them as the ſtrongeſt.

The ancients had baliſtas and catapultas, which were of conſtructions different from thoſe we have been deſcribing. Bitto has given a deſcription of two of theſe machines, and ſays, that it was often neceſſary to diverſify their form, according to place, poſition, and other circumſtances. Philo alſo makes mention of ſeveral alterations and corrections he had made in the conſtruction which was moſt commonly followed. The catapulta that Lipſius found in the arſenal of Bruſſels, although it much reſembled that above deſcribed, yet differed from it in ſome particulars, and had ſome of the corrections which Philo mentions. The deſcription found in Vegetius and Marcellinus, who lived ſome years after Vitruvius, prove that, during that interval of time, the forms as well as the names of thoſe military machines had undergone many changes. Theſe authors call the machine which lanced arrows and darts *baliſtæ*; and thoſe which threw ſtones *onager*, after the animal of that name, of whom it is reported, that he throws ſtones with his feet at the hunters when purſuing him. Marcellinus alſo ſays, that the ſame machine was called a ſcorpion, becauſe, like the inſect of that name, it had its ſting or dart always raiſed. The power of theſe machines, according to what the ancients relate, muſt have been very great. Athenæus ſpeaks of a catapulta, only one foot long, that threw an arrow to the diſtance of half a mile. It is ſaid, that others could throw javelins from one ſide of the Danube to the other. Baliſtas threw great beams of wood, lances of twelve cubits in length, and ſtones that weighed 300lbs. Polybius makes mention of ſtones which were thrown by baliſtas to hinder veſſels from entering into the port. Joſephus has likewiſe related ſeveral examples of the power of theſe machines; he ſays, they beat down the ramparts and battlements of towers, and overthrew whole files of ſoldiers even to the rear rank; and many other ancient authors have likewiſe ſpoken of their prodigious effect. When breaches were made by theſe engines, they were uſually defended by machines called *lyonors*, one of which is ſhewn at *fig*. 4. Theſe were driven with their points towards the enemy, or fixed firmly in the breach with poſts and chains, ſo that the aſſailants could not ſtorm the works without freſh danger and difficulty.

Other engines of ancient artillery, uſed by our anceſtors, were the mangonel, the trebuchet, the petrary, the robinet, the mate-griffon, the bricolle, the bugle or bible, the eſpringal, the mata-funda, the ribaudequin, engine-à-verge, and the war-wolf; many of which continued in uſe ſome time after the introduction of cannon. The term mangona, it is ſaid, was generical, ſtanding for all kinds of warlike machines; and was a Greek word of that import, in uſe in the time of the lower empire. The trebuchet was an engine for throwing ſtones, for which purpoſe a ſling was ſometimes fixed to it; it acted by means of a great weight faſtened to the ſhort arm of a lever, which being let fall, raiſed the end of the long arm with great velocity, whereby the ſtones were diſcharged. The petrary was alſo a ſtone-throwing machine, as its name imports. The robinet and mate-griffon threw both darts and ſhowers of ſtones. The bricolle, according to Froiſſart, ſhot darts called carreaux, from their ſolid ſquare pyramidical heads of iron; this acted by the ſame moving power as the trebuchet. Beugles or bibles were alſo engines for throwing large ſtones, as we learn from an ancient poem called the Romance of Claris. The eſpringal was calculated for throwing large darts, called muchettæ; ſometimes, inſtead of feathers, they were winged with braſs; theſe darts were alſo called viretons, from their whirling about in the air. The matafunda was a ſtone-throwing machine, probably by means of a ſling; ſome derive its name from the words *funda* and *mactare*, ſometimes written *matare*, i. e. a murdering ſling. The ribaudequin was a large kind of croſs-bow. The war-wolf is very differently deſcribed by different writers. Procopius's account ſeeming to be the moſt accurate, we ſhall give it in his own words: "At the gates they ſet up *wolves*, made thus: they ſet two beams from the ground reaching to the battlements, and laying chequer-wiſe pieces of timber wrought, ſome upright, and ſome croſs; they joint them ſo that the mortiſing holes meete one another; and before each joint ſticks out a pointed piece of wood like a thick ſpurr, and faſtening the croſs timbers to another beam, which, from the top, reaches half way down; they lay the beams flat long upon the gates, and, an enemy approaching, men above lay hold of the higher ends of the beams, and thruſt them down, which, falling ſuddenly among the aſſailants with thoſe wooden points ſticking out, kill all they light on." *Procopius's Hiſtory of the Gothic Wars*, b. i. p. 27. Probably there was a chain or cord to draw it back after it had taken effect. Of the engine-à-verge there is no particular deſcription; but, from a paſſage in the Hiſtory of Charles VII. of France, quoted by father Daniel, we learn, that it was a projectile machine, that it was uſed with cannon, and that it remained in uſe after the other machines were laid aſide: "Leſquels engins-à-verge & bombardes, dit l'hiſtorien, jettoient & tiroient nuit & jour ſans ceſſe contre ce chateau." Of the vaſt force of theſe machines ſurpriſing ſtories are related, though, from the conſtruction of our ancient caſtles, it does not ſeem as if their range was very great, ſince many of our moſt important fortreſſes are commanded by hills within four or five hundred yards of them; as for inſtance, the caſtle of Dover, once deemed the key of this kingdom, and alſo thoſe of Corfe and Guildford. Mezeray ſays, the greateſt range of a mangonel was five ſtadia, or 1042 yards, but then this was at an elevation; theſe machines not only threw darts and large ſtones, but even the bodies of men and horſes, inſtances of both being mentioned by Froiſſart; and many ſurpriſing efforts of a ſimilar kind occur in the wars of China, for which ſee CHINA.

Of the machines moved by human ſtrength, the chief was the battering-ram, which was a huge beam or beams joined together, having its extremity ſhod with iron, ſometimes caſt in the ſhape of the head of a ram; it was puſhed forwards by the united ſtrength of a number of men, in the method ſhewn in the annexed Plate; when its iron head ſtriking or butting againſt the wall, in the manner of the animal whoſe name it bore, it diſplaced the ſtones, and made a breach. The ram, though ſometimes ſupported on the ſhoulders of men, was more frequently ſuſpended to a triangle, or beam, ſo that the whole force of the men was directed to puſhing it forwards; the ram was frequently uſed in the middle of the 14th century. Dr. Deſaguliers, however, has demonſtrated, that the momentum of a battering-ram, twenty-eight inches in diameter, 180 feet long, with a head of caſt-iron of one ton and a half, the whole ram with its iron hoops weighing 41,112lb. and moved by the united ſtrength of a thouſand men, will be only equal to a ball of 36lb. ſhot point blank from a cannon. Sir Chriſtopher Wren made great uſe of the battering-ram to demoliſh and throw down the walls of the old church of St. Paul, previous to rebuilding it. He found no machine equal to it for that purpoſe, particularly in disjoining the ſtones.

The machines uſed for covering the approaches of troops employed in ſieges, were moveable towers of ſeveral ſtories, called belfreys, cats, and ſows, ſimilar to the tortoiſe, vinea, and pluteus, of the ancients: theſe were fixed on wheels, and likewiſe puſhed forward or drawn by human ſtrength, latterly ſometimes aſſiſted by the capſtern, or other mechanical contrivances. Theſe moveable towers were of an amazing magnitude. Hero diſtinguiſhes three kinds: the ſmalleſt, he ſays, were of ten ſtories; the larger were of fifteen ſtories; the greateſt, called double, were of twenty ſtages, they were largeſt at bottom, and decreaſed every ſtory. The towers or belfreys of more modern times were not ſo large; they rarely exceeded three or four ſtages or ſtories, and were covered with raw hides, to protect them from fire; in them was a bridge to let down upon the parapet, when the ramparts were to be ſtormed. The lower ſtage or ground floor was occupied by a ram, and the upper ſtories by archers and croſs-bow men, who were to attack the ramparts, and ſcale the walls, as repreſented in the Plate.

The cattus, cathouſe, gattus, or cat, was a covered ſhed, occaſionally fixed on wheels, and uſed for covering the ſoldiers employed in filling up the ditch, preparing the way for the moveable tower, or mining the wall: it was called a cat, becauſe under it ſoldiers lay in watch, like a cat for its prey. See Artillery-Plate II. Some of theſe cats had crenelles and chinks, from whence the archers could diſcharge their arrows; theſe were called caſtellated cats. Sometimes under the cover of this machine the beſiegers worked a ſmall kind of ram. The ſow was alſo a covered machine for the ſame purpoſe, and much of the ſame conſtruction, though probably leſs, as it derived its name from the ſoldiers lying under it cloſe together, like pigs under a ſow; though another reaſon is given for that appellation, namely, its being applied to digging and rooting up the earth. The former was alluded to by the counteſs who defended the caſtle of Dunbar againſt Edward III. when ſhe threatened, that, unleſs the Engliſhmen kept their ſow better, ſhe would make her caſt her pigs. Camden, who mentions this circumſtance, ſays, "The ſow is yet uſed in Ireland." Two machines, the one called the boar, and the other the ſow, were employed by the parliamentarians in the ſiege of Corfe-caſtle, Dorſetſhire. Among ſome ancient drawings of the time of Henry VIII. preſerved in the Britiſh Muſeum, are repreſentations of covered war-carts, or waggons, filled with muſketeers. The top and ſides of the waggon are pierced with loop-holes, and the horſes are placed under cover, beneath the waggon. Several of theſe waggons are there repreſented as ſtationed in the centre of a ſquare battalion of halberdiers. One of them, without its top and ſide covering, to exhibit its conſtruction, with its horſes and ſoldiers, is ſhewn at *fig.* 5, and one with its covering is ſhewn at *fig.* 6, of the Artillery-Plate I.

The Greek fire, a very deſtructive part of the ancient artillery, was, as the original Greeks pretend, invented by Callinicus, an architect of Heliopolis or Balbec, who lived in the reign of the emperor Conſtantine Pogonatus. That emperor, it is ſaid, forbade the art of making it to be communicated to any ſtrangers, or others, except his ſubjects; it was, however, at length known, and in common uſe among the nations confederated with the Byzantines; the cruſaders alſo poſſeſſed the ſecret of preparing this wonderful compoſition. Anna Commena has given an account of the ingredients of which it was compoſed: theſe were bitumen, ſulphur, and naptha. The Greek fire is much ſpoken of in all the Hiſtories of the Holy Wars, as frequently employed with ſucceſs by the Saracens againſt the Chriſtians. Procopius, in his Hiſtory of the Goths, calls it Medea's oil, conſidering it as an infernal compoſition prepared by that ſorcereſs. It is ſaid to have been known in China in 917, three hundred years after Conſtantine Pogonatus, under the name of the oil of the cruel fire, and was carried thither by the Kitan Tartars, who had it from the king of Ou. By the following deſcription of it, given by Joinville, who was eye-witneſs, it has ſomewhat the appearance of one of the iron rockets ſtill uſed in India: he ſays it was thrown from the bottom of a machine called a petrary, and that it came forwards as large as a barrel of verjuice, with a tail of fire iſſuing from it, making a noiſe like thunder, and ſeeming like a dragon flying through the air, and, from the great quantity of fire it threw out, giving ſuch a light that one might ſee in the camp as if it had been day. The fire produced by this compoſition is ſaid to have been inextinguiſhable by water. Geoffry de Vineſauf, who accompanied Richard I. to the cruſade, ſays of it, "with a pernicious ſtench and livid flame, it conſumes even flint and iron, nor could it be extinguiſhed by water; but by ſprinkling ſand upon it its violence may be abated, and vinegar poured upon it will put it out." From other deſcriptions it appears, that this compoſition was of an unctuous and viſcid nature, ſticking to the objects againſt which it was thrown; it was in land engagements and ſieges projected by the machines of the times, and at ſea by the hand, encloſed in veſſels or phials, in which it was alſo kept and tranſported; it was likewiſe ſometimes faſtened to the heads of arrows; and ſea-water, inſtead of extinguiſhing it, ſeemed to give it greater violence and activity. Father Daniel ſays, this wild-fire was not only uſed in ſieges, but even in battles, and that Philip Auguſtus king of France, having found a quantity of it ready prepared in Acre, brought it with him to France, and uſed it at the ſiege of Dieppe, for burning the Engliſh veſſels in that harbour. It was alſo uſed at ſeveral other ſieges in France, and an engineer named Gaubert, a native of Mante, acquired the art of making it, which luckily for mankind has ſince been loſt. A compoſition ſomething of the ſame nature was a few years ago invented by a chemiſt in this country, who at preſent enjoys an annual allowance ſo long as it ſhall remain a ſecret, our government being unwilling to encreaſe the deſtruction and cruelty of war; a like diſcovery was made in France or Holland, and for the like reaſon ſuppreſſed. The Greek fire was uſed long after the introduction of fire-arms, particularly in ſieges. When the biſhop of Norwich beſieged Ypres in 1383, the garriſon is ſaid by Walſingham to have defended themſelves ſo well with ſtones, arrows, lances, Greek fire, and certain engines called guns, that they obliged the Engliſh to raiſe the ſiege with ſuch precipitation, that they left behind them their great guns, which were of ineſtimable value. A great part of that army was ſoon after beſieged in the town of Barburgh by the French, who threw ſuch quantities of Greek fire into it, that they burned a third part of the town, and obliged the Engliſh to capitulate. The invention of gunpowder ſuperſeded the Greek fire; and its application to fire-arms may be ranked among the moſt important of all human diſcoveries. For its hiſtory, preparation, and ſurpriſing effects, ſee the articles GUNNERY and GUNPOWDER.

The invention of gunpowder was the introduction to all the various implements of modern artillery; as cannon, mortars, howitzers, peteraros, matchlocks, petards, partridges, bombs, carcaſes, grenades, infernals, &c. &c. Bombs appear to be among the moſt early of theſe inventions. Strada ſays, they were uſed in the year 1588, at the ſiege of Vakterdonc, a town in Guelders; but from his deſcription it appears, that what he calls a bomb was in reality a carcaſs. Nothing, ſays he, frightened the burghers more than certain hollow balls filled with powder and materials that could not be extinguiſhed; theſe balls were thrown into the air by mortars, and had a match of a certain length, in order to ſet fire to the powder. Falling on the tops of houſes, they broke through them, and, as ſoon as they had taken fire, they burſt, and ſpread out on every ſide a flame which was difficult to diſtinguiſh with water. This inſtrument, which gave origin to grenades, fire-pots, and the like machines, was invented, it is ſaid, a few days before the ſiege of Vakterdonc, by an inhabitant of Venlo, a maker of fire-works. The inhabitants of that town propoſed with this invention to divert the duke of Cleves, who was on a viſit to them, and to whom they had given a grand repaſt; they therefore were deſirous of making the firſt trial of it before him, and it ſucceeded much beyond their expectation; for the bomb falling on a houſe beat in the roof and floors, and ſet it on fire, which, communicating with the neighbouring houſes, burnt two-thirds of the town, the fire being ſo violent that it was impoſſible to extinguiſh it. I know, adds Strada, that ſome have written, that a month or two before a like experiment had been made at Bergen-op-Zoom, by an Italian deſerter from the Spaniſh troops, who had engaged with the Dutch, and had promiſed to make them ſome hollow balls of ſtone, or iron, which being thrown into a beſieged town, and burſting after their fall, would ſet every thing on fire; but, as he was preparing his compoſition, a ſpark having fallen on the powder, he was blown up, and by his death left his employers in an uncertainty, whether or not his ſecret would ſucceed. From both theſe deſcriptions it is evident the end propoſed was to burn the towns by means of theſe fire-balls. The effect of the bomb is chiefly confined to beating down buildings by its fall, or, by its exploſion and the pieces of broken iron thrown about in all directions, to break and deſtroy every thing around it. Valturinus, who is the oldeſt of the modern writers on war, the firſt edition of whoſe book was publiſhed in Latin, at Baſle, in 1472, carries the invention of bombs at leaſt a century farther back than Strada; for in book x. p. 267, of his work, there is the figure of a cannon, of the howitzer kind, deſtined to throw a brazen ball, filled with combuſtibles, or powder. Bombs ſince their firſt invention have been much improved, and they are now made of caſt iron, thickeſt at the part oppoſite the vent; by which means, that ſide being heavieſt, they fall with the fuſe uppermoſt, and thereby prevent its being broken or ſmothered: though ſome engineers think that when caſt equal they fly truer, and burſt into more pieces. Blondel points out an extraordinary method of throwing ſtones into a beſieged town without making uſe of a mortar. "The Poles (ſays he) aſſiſted by ſome auxillary troops beſieged the town of Thorne in Pruſſia, held by the Swedes, into which they frequently threw ſtones of a monſtrous ſize, great quarters of mill-ſtones, and ſquared ſtones of more than 800lbs. weight, without making uſe of mortars, but by the following eaſy method: In the firm ground, near the counterſcarp, they digged holes juſt of the ſize and figure of the ſtone they intended to throw, the bottom of which hole being flat and even was turned towards the town, with ſuch an angle of inclination as they judged by eſtimation was proper for the direction of their throw, and in the middle of this bottom they digged another hole deeper and in form of a chamber, and in ſuch ſort, that the axis of the laſt hole paſſing through the centre of gravity of the ſtone, was perpendicular to its bed, and was the ſame as the line of direction; they filled this hole with gunpowder, if the earth was ſufficiently firm, or elſe they put in a petard of a ſize proportioned to the weight of the ſtone, which reſting upon the plane of the madrier of the petard, or of the tompion of the chamber, received the full force of the powder, which was lighted by means of a thread dipped in brandy, and compoſition of artificial fire-works, and, riſing to a great height in the air, fell in the town at the deſtined place, where it cruſhed every thing it met with in its fall."

After the invention of bombs, thoſe of carcaſſes of different kinds, and grenades, naturally followed: the latter are ſaid to have been firſt uſed in 1594. Of this kind is the curious invention called partridges, repreſented at *fig.* 1, of the annexed Plate. Theſe were thrown from a mortar ſo conſtructed, that its central bore would contain a bomb or carcaſs of very large calibre; and being ſurrounded with a number of ſmall bores, of a ſize capable of containing a hand-grenade in each, the whole were fired at once, and flew together like a covey of partridges; and hence the name. A ſection of the bore of this ſpecies of mortar is alſo given in the Plate. The howitzer, which is a kind of mortar mounted like a gun on a field-carriage, its trunnions being fixed in the middle, is on particular occaſions extremely ſerviceable; they were invented by the Germans about the year 1594, and were ſometimes uſed to throw red-hot balls.

The petard was a contrivance made uſe of to burſt open gates, draw-bridges, and doors of arſenals, fortreſſes, and caſtles, attacked by ſurpriſe. It is a kind of iron mortar, of the form of a truncated cone, or of a bell, with a touchhole in the centre of the breech, and four handles for faſtening it to its madrier. Petards were of different ſizes, according to the uſes for which they were deſigned; a ſmall one, ſixteen lines thick at the breech and eight or nine at the mouth, its calibre five inches at the breech and eight at the mouth, and its length from ten inches to a foot long, weighed about ſixty pounds, and was the beſt ſize for general uſe. The manner of loading it was this: it was filled nearly full with the beſt gunpowder, and then covered with wadding, and afterwards by a wooden trencher exactly fixed to its calibre; after this it was to be driven with ſeven or eight ſtrokes of a wooden mallet, care being taken not to break the grains of the powder, and the remainder of the petard was filled with yellow wax, or Greek pitch, the whole covered over with a waxed cloth; the mouth of it was then placed in a cavity turned to receive it, in a ſtrong plank about eighteen inches ſquare, called a madrier, ſtrengthened on the oppoſite ſide with a croſs band of iron, and a ſtrong iron hook; to this madrier the petard was faſtened by ſtaples paſſing through the handles before-mentioned. When it was to be uſed, the madrier was made faſt by its hook, and by other contrivances, to the gate intended to be blown open, and fire being ſet to the fuſe, which paſſed through its vent or touchhole into the centre of the powder, the effect was generally a fracture in the gate almoſt equal to the ſize of the madrier. In the Artillery-Plate III. are ſhewn two figures of the petard, with the mode of applying them to the entrance-gates of fortified places. *Fig.* 2, repreſents the mode of fixing a petard to a gate, where the bridge which croſſed the foſſe, or moat, is drawn up; the petard is placed upon the end of a ladder, which, having its other end ſecured to the axle of a two-wheeled carriage, is let down the outer ſide of the moat till the petard touches the gate; the engineer then croſſes upon the ladder, and having fixed the petard, and introduced a cord or thread ſoaked in ſpirits of wine or brandy into the fuſe, he returned with the other end down the ladder; which, with the carriage, being now removed, the thread was lighted, and, communicating with the petard, let it off, ſo as either to fracture or blow open the gate. *Fig.* 3, ſhews the common method of fixing a petard to the gate of a fortification; and *fig.* 4, repreſents a machine of pointed javelins, or ſpears, ſo placed, that an enemy ſhould not ſally out at unawares upon the beſiegers; a centinel is placed over it, with his matchlock and reſt, to give the ſignal, when neceſſary, to the main army. This machine was alſo uſed both before and after the introduction of modern artillery, to defend an avenue, or narrow paſs. The petard, according to father Daniel, was invented in France, A. D. 1579, in which year it was uſed by Henry IV. of France, then only king of Navarre. In December 1641, Arundel caſtle was taken by the parliamentary forces under Sir William Waller and colonel Browne, who coming unexpectedly, and finding the caſtle gate ſhut, they blew it open with a petard.

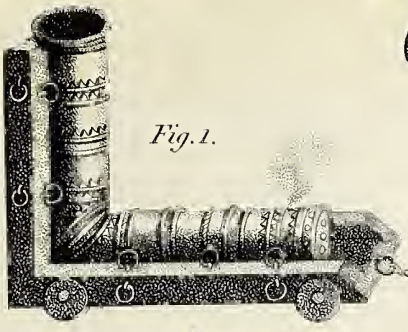
The infernals were a kind of floating mines, adapted to the ſea-ſervice, conſtructed in the hulks of ſhips or boats. The firſt inventor of them, or at leaſt the firſt who put them in practice, was Frederic Jambelli, an Italian engineer, at the ſiege of Antwerp by the Spaniards under Alexander prince of Parma, in 1585; a very particular and intereſting relation of their deſtructive effect is given by Strada, in his Hiſtory of the Belgic War. The devaſtation made by theſe cauſed ſeveral others to be tried, but none of them ſucceeded ſo well. At Dunkirk and St. Maloes they were tried by the Engliſh; at Havre-de-Grace by the Engliſh and Dutch, under king William; and one was conſtructed by the French to be ſent againſt Algiers, in 1688, but it was not made uſe of. In St. Remi's Memoirs of Artillery there is a ſection and view of the infernal uſed by the Dutch and Engliſh at St. Maloes; an elevation and ſection of which is given in the preceding Plate, *fig.* 5 and 6, deſcribed by the following references, which are applied to both figures: A, the ſection or proſile of the machine; B, bottom of the veſſel filled with ſand; C, lower deck filled with 20,000lbs. of powder, with a covering of maſonry a foot thick; D, ſecond deck furniſhed with 600 bombs and carcaſſes, having two feet of maſonry over it; E, third deck above the gaillard, furniſhed with fifty barrels, hooped with iron, filled full of all ſorts of fire-works; F, the canal or tube for conducting the fire to the powder, and to the priming; G, iron inſtruments, fifty in number, filled with combuſtibles, and armed with points, whereby they would, if they fell on wood or any ſoft ſubſtance, ſtick faſt to it. The machine or veſſel was thirty-four feet in length, eighteen in height, and drew nine feet water; the upper deck was covered with old iron cannon and langridge; it broke a great number of windows, unroofed many houſes, and produced a very unuſual ſcene of devaſtation.

At what period cannon were firſt uſed in Europe is not clearly aſcertained; if we may credit John Barbour, archdeacon of Aberdeen, king Edward III. had artillery in his firſt campaign againſt the Scots, A. D. 1327; theſe the archdeacon calls *crakys of war*. Father Daniel does not carry his claim in behalf of the French ſo high by ſome years, as he only cites a record preſerved in the chamber of accounts at Paris, to prove that the French had uſed cannon in the year 1338. Vilani, an Italian author, ſays, the Engliſh had cannon at the battle of Creſſy, in 1346; this however is not mentioned by Froiſſart, or any other of the many hiſtorians who have deſcribed that battle. Lugi Collado ſtates the introduction of cannon to have taken place in 1366; and other authors ſay, that cannon was firſt uſed by the Venetians againſt the Genoeſe, in 1378. Theſe machines, when firſt invented, were rather mortars than cannon, moſt of them having chambers; they were in general conſtructed of iron bars, ſoldered or welded together, and ſtrengthened with iron hoops; others were made of plates of iron rolled up and fortified with hoops of the ſame metal. Of the firſt kind there are ſeveral now remaining at Woolwich. Cannons, called alſo bombards, were at firſt chiefly made of hammered iron, but in proceſs of time many were caſt of the compoſition called bell or gun metal; they were alſo ſometimes made of plates of iron and copper, with lead run between them. One of this ſort of guns was taken up on the coaſt of Ireland by a fiſherman, and is ſuppoſed to have belonged to the Spaniſh armada. The ancient bombards were ſometimes very large, and chiefly uſed for diſcharging ſtone balls of a monſtrous ſize. When Mahomet II. beſieged Conſtantinople, anno 1453, he battered the walls with ſtone bullets, and his pieces were ſome of them of the calibre of 1200lbs. but then they could not be fired more than four times a-day. In Rymer, there is an order from Henry V. to the clerk of the ordnance, and John Bonet, a maſon of Maidſtone, to cut 7000 ſtone ſhot in the quarries there. Froiſſart deſcribes a very extraordinary bombard, uſed at the ſiege of Oudenarde, made by the people of Ghent under the direction of d'Arteville; "therefore (ſays he), to terrify the garriſon of Oudenarde, he cauſed to be made a marvellous great bombard, which was fifty feet long, and threw ſtones of a wonderful bigneſs; when this bombard was diſcharged, it might be heard five leagues by day, and ten at night, ſo great was the noiſe of its exploſion."

Although modern artillery ſeems to have been uſed as early as the time of Edward III. yet none of our workmen ever attempted to caſt them till the reign of Henry VIII. when, in 1521, according to Stowe, or 1535 as Camden ſays, great braſs ordnance, as cannon and culverins, were firſt caſt in England, by one John Owen. Whether this man did not ſucceed, or died before the year 1543, is not mentioned; but, in that year, according to Stowe, the king employed two aliens as his gunfounders; his words are, "the king minding wars with France made great preparations and proviſion, as well of munitions and artillery, as alſo of braſs ordnance; amongſt which, at that time, one Peter Bawd, a Frenchman born, a gun-founder or maker of great ordnance, and one other alien called Peter Van Collen, a gunſmith, both the king's freedmen, conferred together, deviſed, and cauſed to be made, certain mortar-pieces, being, at the mouth, from eleven inches unto nineteen inches wide." The duke of Burgundy alſo appears to have had ſome very large ordnance in his army; our countryman Coriat deſcribes one that he ſaw in the arſenal at Zurich; "among them I ſaw one paſſing great murdering-piece; both ends thereof were ſo exceeding wide, that a very corpulent man might eaſily enter the ſame; this alſo was wonne in the field from the ſaid duke." vol. ii. p. 193. He likewiſe mentions another large piece, termed a baſiliſk, which he ſaw in the arſenal of Milan; "alſo (ſays he) I ſaw an exceeding huge baſiliſke, which was ſo great, that it would eaſily contayne the body of a very corpulent man." About this time chambered pieces for throwing ſtones, called cannon-perriers, port-pieces, ſtock-fowlers, ſling-pieces, portingale-baſes, and murtherers, were much uſed in forts, and on ſhip-board.

From what has been ſtated it will appear, that the conſtruction and deſtination of the original cannon were very various. In the Artillery-Plate IV. we have collected together ſpecimens of the moſt curious and early pieces of ordnance, of which the following is an explanation: *Fig.* 1, is a very ſingular ſpecies of cannon, hooped, and made angular, and placed in an angular carriage; the purpoſe of it was to ſhoot at very elevated objects. *Fig.* 2, is another very curious gun, with its carriage, and method of raiſing or elevating it, ſo as to bear upon the object of attack. Both of theſe are to be ſeen at Peel Town, in the Iſle of Man. *Fig.* 3, is a cannon deſcribed by colonel Vallency, as follows: "the inſide is a tube of copper ſoldered, and covered with a tube of plated or hammered iron; and, as it could not be made to ſhut cloſe upon the copper, the interval is filled with melted lead. Over the iron tube is lead, then plated iron where neceſſary, to fortify it from the trunnions to the breech, and over all ſheathing copper, lapping over one another, as may be ſeen by the drawing. The trunnions are compoſed of iron cylinders, half an inch diameter, covered with lead; probably they were alſo covered with ſheet copper. I ſend you ſome pieces of the outſide copper, and of the lead coatings, but could not rip off a piece of the iron tube, which is about an eighth of an inch in thickneſs where I opened it, which was half way between the trunnions and the muzzle. I do not recollect this conſtruction of a cannon deſcribed by any of our old authors. This gun, which is nearly a four-pounder, was taken up in Kinſale harbour, by ſome fiſhermen in their nets." In the breech it has a chamber, where the loading was placed; and is very ſimilar to the chambers in the preſent patent fowling-pieces. *Fig.* 4, is an original howitzer, drawn and deſcribed by Valturinus; and *fig.* 5 and 6, are the kind of fiery balls it was deſtined to throw, which opened by means of hinges oppoſite the vent, for the convenience of introducing the combuſtible matter. *Fig.* 7, is a repreſentation of a *triple* cannon, which was a piece conſiſting of three bores, by which three balls were diſcharged at once. *Fig.* 8, ſhews the *twin* cannon, very ſimilar to a double-barrel gun, and by which two ſhot were fired at once. *Fig.* 9, is a correct view of one of the celebrated culverines of Nancy, which is near twenty-four feet long. *Fig.* 10, is a repreſentation of that beautiful piece of braſs ordnance, which was caſt at Utrecht in 1544, and preſented to queen Elizabeth by the States of Holland: it meaſures twenty-four feet, and is placed on the ſummit of the cliffs of Dover, in the front of the caſtle. *Fig.* 11, is a gun-cart, carrying two peteraros, or chambered pieces. Several of theſe carts were repreſented in a valuable picture of the ſiege of Bullogne, which was burnt in the unfortunate fire at Cowdry-houſe, in 1793. Theſe carts ſeem to have been an invention of the Scots; and Henry, in his Hiſtory of England, mentions them as peculiar to that nation. They appear to be the ſame as thoſe mentioned by Munro, who, ſpeaking of the invention of artillery, ſays, "and it is thought that the invention of cannon was found firſt at Nurenberg, for the ruin of man, being

Fig. 1.



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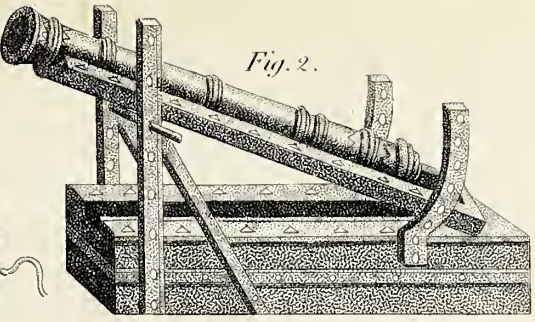

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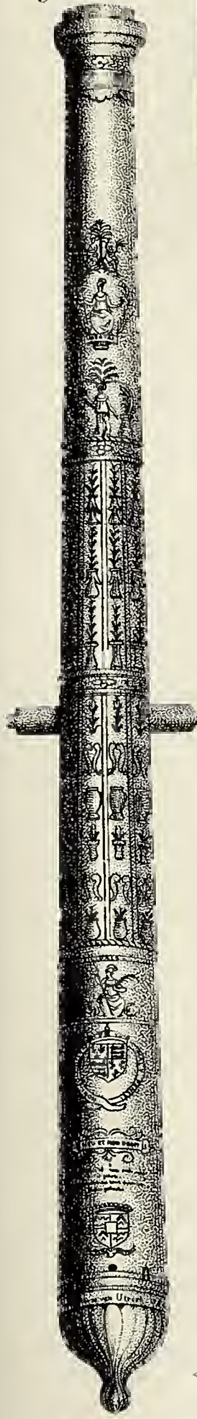

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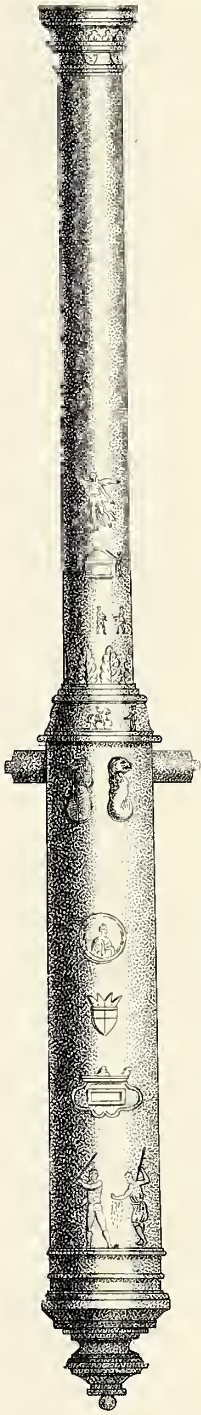

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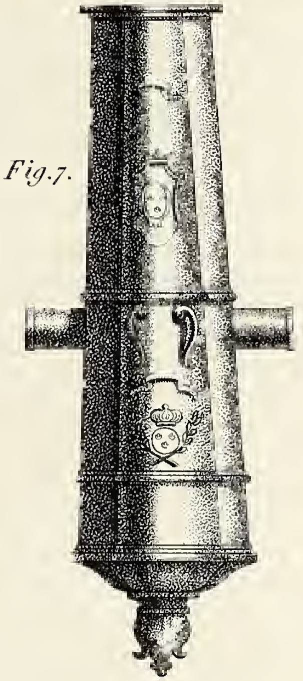

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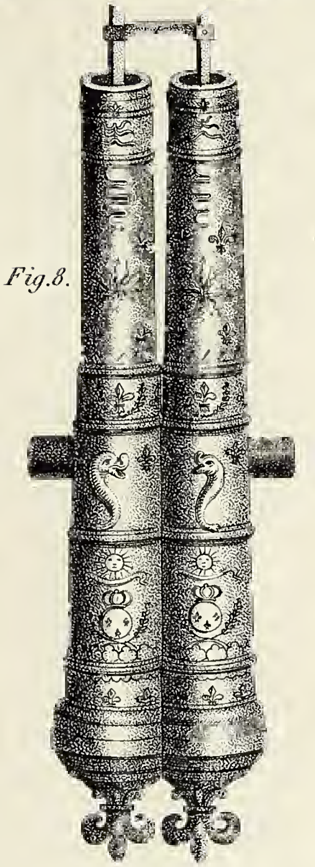

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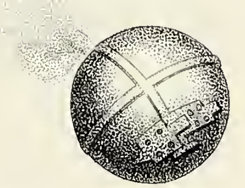

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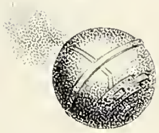


Fig. 11.

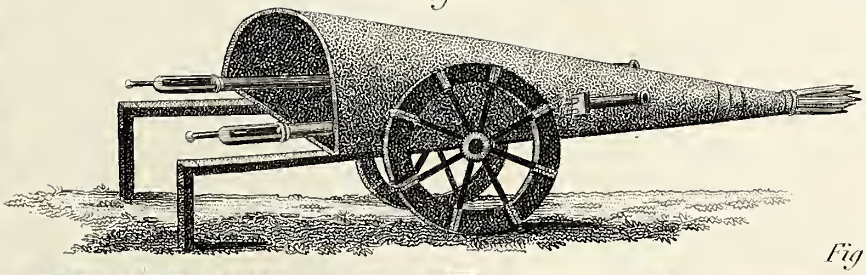
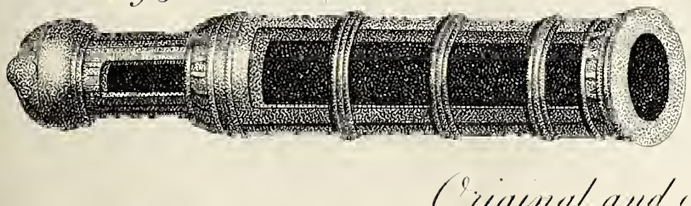


Fig. 3.



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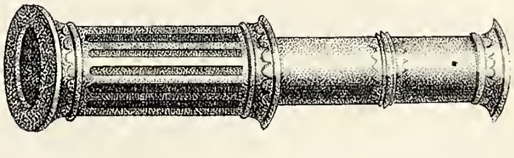


Original and curious Cannons.

London Published as the Act directs, June 30.1798 by J.Wilkes.

J. Chapman sculp.

being at firſt uſed for battering down of walles and cities, and for counter-batteries, till at laſt they were uſed in the field to break the ſquadrons and battailes of foot and horſe, ſome carrying pieces, called ſpingards, of foure foote and a halfe longe, that ſhot many bullets at once no greater than walnuts, which were carried in the fields on little chariots behinde the troopes, and how ſoone the trumpet did ſounde, the enemy was thundered on, firſt with thoſe as with ſhoures of haile ſtone, ſo that the enemies were cruelly affrighted with them, men of valour being ſuddenly taken away, who before were wont to fight valliantly and long with the ſword and launce, more for the honour of victory, than for any deſire of ſhedding of bloud; but now, men are marteryzed and cut downe, at more than half a mile of diſtance, by thoſe furious and thundring engines of great cannon, that ſometimes ſhoote fiery bullets able to burne whole cities, caſtles, houſes, or bridges, wherever they chance to light." Thus we have ſeen, that cannon were formerly made of a very great length, which rendered them exceedingly heavy, and their uſe very troubleſome and confined. But it has lately been found by experiment, that there is very little added to the force of the ball by a great length of the cannon, and therefore they have very properly been much reduced both in their length and weight, and rendered eaſily manageable upon all occaſions. They were formerly diſtinguiſhed by many hard and terriſying names, but are now only named from the weight of their ball; as a ſix pounder, a twelve pounder, a twenty-four pounder, or a forty-two pounder, which is the largeſt ſize now uſed by the Engliſh for battering. Upon the whole, it may be aſſerted, that cannon is one of the moſt ſingular diſcoveries which have been made amongſt men; and by little and little it has changed the whole art of war, and of conſequence influenced the whole ſyſtem of policy in Europe. After the introduction of the modern artillery, the Spaniards were the firſt who armed part of their foot with muſkets and harquebuſſes, and mixed them with the pikes. In this they were ſoon imitated by moſt other nations; though the Engliſh had not entirely laid aſide their favourite weapon the long-bow, and generally taken to the uſe of fire-arms, until after the reign of queen Elizabeth. The firſt muſkets were called matchlocks; they were very heavy, and could not be fired without a reſt, as ſhewn in the Artillery-Plate III. They had barrels of a wide bore, that carried a large ball and charge of powder, and did execution at a great diſtance. The muſketeers on a march carried only their reſts and ammunition, and had aſſiſtants to bear their muſkets after them, for which they were allowed great additional pay. They were very ſlow in loading, not only by reaſon of the unwieldineſs of the piece, and becauſe they carried the powder and balls ſeparate, but from the time it took to prepare and adjuſt the match; ſo that their fire was not near ſo briſk as ours is now. Afterwards a lighter kind of matchlock-muſket came into uſe; and they carried their ammunition in bandeliers, which were broad belts that came over the ſhoulder, to which were hung ſeveral little caſes of wood covered with leather, each containing a charge of powder; the balls they carried looſe in a pouch, and they had alſo a priming-horn hanging by their ſide. Matchlocks were, about the beginning of this century, univerſally diſuſed in Europe, and the troops were armed with firelocks; to which, much about the ſame time, the bayonet being added, pikes alſo were laid aſide; which latter change, whether it was for the better or not, is a point ſtill in diſpute among the beſt military writers. The old Engliſh writers call thoſe large muſkets *calivers*; the harquebuſe was a lighter piece, that could be fired without a reſt. The matchlock was fired by a match, fixed by a kind of tongs in the ſerpentine or cock, which by pulling the trigger was brought down with great quickneſs upon the priming in the pan, over which there was a ſliding cover, which was drawn back by hand, juſt at the time of firing. There was a great deal of nicety and care to fit the match properly to the cock, ſo as to come down exactly true on the priming, to blow the aſhes from the coal, and to guard the pan from the ſparks that fell from it: a great deal of time was alſo loſt in taking it out of the cock, and returning it between the fingers of the left-hand, every time the piece was fired; and wet weather often rendered the matches uſeleſs.

The firelock is ſo called, from producing fire of itſelf, by the action of the flint and ſteel. The moſt ancient invention of this ſort is the wheel-lock, which we find mentioned in Luigi Collado's Treatiſe of Artillery, printed at Venice, 1586, as then lately invented in Germany. This ſort of lock was uſed till within theſe hundred years, eſpecially for piſtols and carbines. It was compoſed of a ſolid ſteel wheel, with an axis, to which was faſtened a chain, which, by being round, it drew up a very ſtrong ſpring; on pulling the trigger, the ſpring, acting, whirled the wheel about with great velocity, and the friction of the edge of it (which was a little notched) againſt the ſtone, produced the fire; the cock was made ſo as to bring the ſtone upon the edge of the wheel, part of which was in the pan, and touched the priming; they uſed any common hard pebble for that purpoſe, which ſerved as well as flint. Theſe locks were inconvenient, took time to wind up (or ſpan, as they termed it), and ſometimes would not go off; as may be ſeen in Ludlow's Memoirs. When the firelock was invented, is not aſcertained; it is called by writers of about the middle of the laſt century, a *ſnaphane* or *ſnaphance*, which, being the Dutch word for a *firelock*, ſeems to indicate that it is a Dutch invention, and that we took it from them. The more modern writers call it a *fuſee*, from the French word *fuſil*; whence the name of fuſileers is ſtill continued to ſeveral of our regiments which were the firſt that were armed with them on the diſuſe of matchlocks.

Figuerra, in his embaſſy in 1518, relates, that the Perſians would neither make uſe of infantry nor artillery, becauſe by them the impetuoſity of attack, and the facility of retreat, were equally incumbered and retarded: in theſe expedients alone their addreſs and their glory conſiſted. This method of advancing and recalling is widely different from the preſent conduct of war, carried on by theſe ignivomous machines that mock the thunder; which, though they ſeem to be invented for the deſtruction of the human race and the ſubverſion of empires, have yet by their effects rendered war leſs ſavage and leſs ſanguinary: political alliances have been more ſucceſsfully conciliated among all nations, conqueſts are become leſs frequent and leſs rapid, and ſucceſſes in war have been more eaſily reduced to calculation. The change introduced in the military-art by the modern artillery, Dr. Smith, in his Wealth of Nations, obſerves, has enhanced greatly both the expence of exerciſing and diſciplining any particular number of ſoldiers in time of peace, and that of employing them in time of war. Both their arms and their ammunition are become more expenſive. A muſket is a more expenſive machine than a javelin or a bow and arrows; a cannon or a mortar, than a baliſta or a catapulta. The powder which is ſpent in a modern review is loſt irrecoverably, and occaſions a very conſiderable expence. The javelins and arrows which were thrown or ſhot in an ancient one, could eaſily be picked up again, and were beſides of very little value. The cannon and the mortar are not only much dearer, but much heavier machines than the baliſta or catapulta, and require a greater expence not only to prepare them for the field, but to carry them to it. As the ſuperiority of the modern artillery too over that of the ancients is very great, it has become much more difficult, and conſequently much more expenſive, to fortify a town ſo as to reſiſt, even for a few weeks, the attack of that ſuperior artillery. In modern war, the great expence of fire-arms gives an evident advantage to the nation which can beſt afford that expence; and, conſequently, to an opulent and civilized, over a poor and barbarous, nation. In ancient times, the opulent and civilized found it difficult to defend themſelves againſt the poor and barbarous nations. In modern times, the poor and barbarous find it difficult to defend themſelves againſt the opulent and civilized. The invention of fire-arms, an invention which at firſt ſight appears to be ſo pernicious, is certainly favourable both to the permanency and to the extenſion of civilization.

It has to many appeared matter of ſurpriſe, that the battles of the ancients ſhould be deſcribed with an order, perſpicuity, and circumſtantial minuteneſs, which are not to be found in the military writers of modern times. Scholars have endeavoured to explain this difference, by obſerving the immenſe diſproportion, in point of dignity and abilities, between the military hiſtorians of modern Europe and thoſe of Greece and Rome. But the difficulty will be better ſolved, Dr. Gillies thinks, by reflecting on the changes introduced into the art of war by the change of artillery; which, in military operations, form the pivot on which the whole turns. 1. From the nature of fire-arms, modern battles are involved in ſmoke and confuſion. 2. From the ſame cauſe, modern armies occupy a much greater extent of ground, and begin to act at much greater diſtances; which renders it more difficult to obſerve and aſcertain their manœuvres. 3. The immenſe train of artillery, ammunition, &c. required in the practice of modern war, gives a certain immobility to our armies, which renders it impoſſible to perform, without great danger, thoſe rapid evolutions in ſight of an enemy, which ſo often decided the battles of the ancients. With us, almoſt every thing depends on the judicious choice of ground, a matter requiring great military genius, but not admitting the embelliſhments of hiſtorical deſcription. In the battles of the Greeks and Romans, the extraordinary diſproportion between the numbers ſlain on the ſide of the victors and the vanquiſhed has been obſerved as another remarkable circumſtance. But this neceſſarily reſulted from the nature of their arms. Their principal weapons being not miſſile, but manual, armies could not begin to act till they had approached ſo nearly to each other, that the conquered found themſelves cut off from all poſſibility of retreat. In modern times ſuch conſequences ſeldom take place. The uſe of fire-arms furniſhes the defeated party with various means of retreating with conſiderable ſafety. The ſphere of military action is ſo widely extended in modern times, that before the victors can run over the ſpace which ſeparates them from the vanquiſhed, the latter may fall back, and proceed with little loſs beyond their reach; and ſhould any village, hedge, ravine, &c. be found in their way, may often check the ardour of the purſuers. Upon theſe conſiderations, the invention of modern artillery may be ſaid to have ſaved the effuſion of human blood.

Park of Artillery, is that place in a camp which is ſet apart for the artillery, or large fire-arms.

Traile or *Train of* Artillery, a number of pieces of ordnance, mounted on carriages, with all their furniture fit for marching. To this commonly belong mortars, cannon, balls, ſhells, &c. There are trains of artillery in moſt of the royal magazines; as in the Tower, at Portſmouth, Plymouth, &c. but, above all, at Woolwich, from whence the ſhips commonly receive their ordnance, and where they are all completely proved before they are received into the public ſervice. The officers and men of the artillery were formerly called alſo the train of artillery, but are now called the royal regiment of artillery; conſiſting at preſent of four battalions, beſides a battalion of invalids, and four troops of horſe or cavalry artillery.

Artillery-Company, a military ſociety of London, incorporated by charter under Henry VIII. as early as the year 1537, at which time they were called, the Royal Archers of St. George. See Archery, p. 58. From that early period to the preſent time, this ſociety has continued, an honour to itſelf and to the country, at all times patronized by the ſovereign, and by the lord-mayor and corporation of London. The arms and accoutrements of this company have of courſe changed with the times; but the ſociety itſelf has uniformly ſupported the higheſt military reputation. It is poſſeſſed of conſiderable privileges, as well as a capital eſtate for its maintenance and ſupport, and a noble parade, called the Artillery Ground; which, from its firſt inſtitution, was demiſed and granted to it. In the year 1780, the ardour of the London Aſſociation, which was principally compoſed of its members, was particularly uſeful to the metropolis in quelling the riots of that unhappy year. His preſent majeſty has been pleaſed to grant them a new charter, and to appoint his royal highneſs the prince of Wales captain-general and commandant of the company.

AR'TINGAL, one of the Pelew iſlands, in the Pacific Ocean.

AR'TISAN, *ſ.* [French.] Artiſt; profeſſor of an art.—What are the moſt judicious *artiſans*, but the mimics of nature? *Wotton.* Manufacturer; low tradeſman.—I, who had none but generals to oppoſe me, muſt have an *artiſan* for my antagoniſt. *Addiſon.*

AR'TIST, *ſ.* [*artiſte*, Fr.] The profeſſor of an art, generally of an art manual:

Rich with the ſpoils of many a conquer'd land,
All arts and *artiſts* Theſeus could command,
Who ſold for hire, or wrought for better fame:
The maſter painters and the carvers came. *Dryden.*

A ſkilful man; not a novice. Mr. Harris defines an artiſt to be, "A perſon poſſeſſing an habitual power of becoming the cauſe of ſome effect, according to a ſyſtem of various and well-approved precepts." See Art. We are told of a benefit granted at Vicenza to artiſts, ſimilar to *benefit of clergy* in England: in virtue thereof, criminals adjudged to death ſave their lives if they can prove themſelves the moſt excellent and conſummate workmen in any uſeful art. This benefit is allowed them *in favorem artis*, for the firſt offence, except in ſome particular crimes, of which coining is one; for here, the greater the artiſt, the more dangerous the perſon.

Artist, in an academical ſenſe, denotes a philoſopher or proficient in the faculty of arts. In the early ſtate of univerſities, the ſeven liberal arts completed the whole courſe of ſtudy, or philoſophy, as it was called: whence the maſters of this faculty were denominated *artiſts*. What they underſtood by the liberal arts, uſed to be ſummed up in the following Latin verſe:

Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Aſtra.

Artist is more particularly uſed by Paracelſus, and other adepts, for a chemiſt or alchemiſt. We find frequent mention, in authors of this claſs, of Elias Artiſta, or Elias the artiſt, who, according to them, is to come ſome time before the diſſolution of the world, and reſtore and make perfect all arts and ſciences.

ART'LESS, *adj.* [from *art* and *leſs*.] Unſkilful; wanting art: ſometimes with the particle *of*.

The high-ſhoed plowman, ſhould he quit the land,
Artleſs of ſtars, and *of* the moving ſand. *Dryden.*

Void of fraud; as, An *artleſs* maid. Contrived without ſkill; as, An *artleſs* tale.

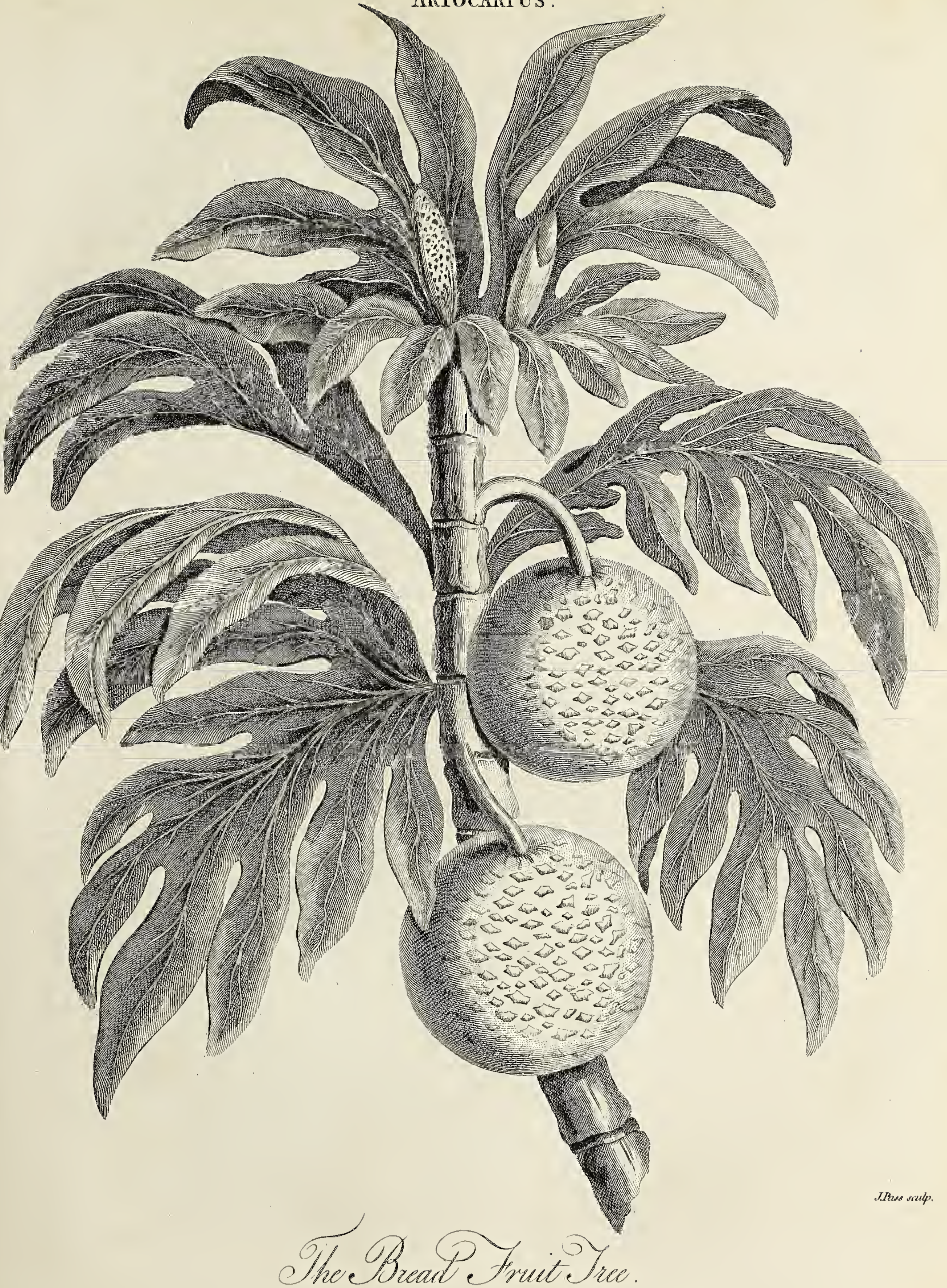
ART'LESSLY, *adv.* In an artleſs manner; without ſkill. Naturally; ſincerely; without craft.—Nature and truth, though never ſo low or vulgar, are yet pleaſing, when openly and *artleſsly* repreſented. *Pope.*

AR'TOBRIGA, anciently a town of Vindelicia, now *Altzburg*, in Bavaria, on the Danube, below Ingolſtadt; but Cluverius ſuppoſes it to be *Labenau*, on the Saltzbach, below Lauffen, in the archbiſhopric of Saltzburg.

ARTOCAR'PUS, *ſ.* [αρτος and καρπος, bread-fruit.] In botany, a genus of the monoecia monandria claſs, ranking in the natural order of urticæ. The generic characters are—I. Male flowers. Calyx: none; ament cylindrical, all covered with florets. Corolla: to each two petals, oblong, concave, blunt, villoſe. Stamina: filament ſingle within each corolla, filiform, the length of the corolla; antheræ oblong. II. Female flowers, on the ſame tree. Calyx and corolla: none. Piſtillum: germs very many, connected into a globe, hexangular; ſtyle to each filiform; ſtigma ſingle, or two, capillary, revolute. Pericarpium: fruit ovate-globular, compound, muricate. Seeds: for each germ ſolitary, oblong, covered with a pulpy aril, placed on an ovate receptacle.—*Eſſential Character*. Male. Ament. Calyx, none; corolla, two-petalled. Female: calyx and corolla, none; ſtyle, one; berries one-ſeeded, connected and forming a roundiſh muricated fruit.

Species. 1. Artocarpus inciſa, or bread-fruit tree: leaves gaſhed. The ſubject of the bread-fruit tree is ſo intereſting, and the tree itſelf ſo little known at preſent in Europe, that we ſhall collect together the ſubſtance of what moſt authors of credit have reported concerning it. The younger Linnæus has thus deſcribed this remarkable tree. It grows to the height of thirty or forty feet, with a trunk the thickneſs of the human body. Leaves alternate, petioled, oblong, deeply gaſhed, ſcabrous, two feet long. Stipules two, lanceolate, large, hirſute on the outſide, including the younger leaves, caducous. Aments on the outmoſt branches violet-coloured, peduncled, male and female on the ſame twig. The whole tree, and the fruit, before it is ripe, abound in a very tenacious milky juice, that may be drawn out into threads. Forſter's deſcription is more full in ſome particulars. This tree is the thickneſs of a man, and forty feet high, or more: the trunk is upright, the wood ſoft, ſmooth, and yellowiſh, the inner bark white, compoſed of a net of ſtiffiſh fibres, the outer bark ſmooth, but full of chinks, pale aſh-colour, with ſmall tubercles thinly ſcattered over it. Wherever the tree is wounded, it pours out a glutinous milky liquor. The branches form an ample almoſt globular head; the lower ones, which are the longeſt, ſpring from the trunk ten or twelve feet above the ground, ſpreading out almoſt horizontally, ſcattered, and in a ſort of whorl: twigs aſcending, bearing flowers and fruits at their ends. Leaves alternate, petioled, ovate, deeply divided above the middle into ſeven or nine lanceolate acute lobes, with rounded ſinuſes; they are otherwiſe quite entire, ſmooth on both ſides, even, ſpreading, bright green, paler underneath, membranaceous, a foot and a half in length, eleven inches wide, veined, having a thick nerve to each lobe diverging from the common rachis. The younger leaves, like all the more tender parts of the tree, are glutinous to the touch. Petioles roundiſh, even, aſcending, two inches in length. Stipules in pairs, involving the younger leaves, lanceolate, acuminate, concave, entire, ſmooth within, hairy on the outſide, deciduous, three inches long. Peduncles at the ends of the twigs, and in the axils of the upper leaves, ſolitary, round, upright, having a few hairs on them, and two inches in length. The male flowers are among the upper leaves; and the female flowers at the ends of the twigs. The male ament is club-ſhaped, fleſhy, upright, a ſpan long, covered with innumerable ſmall ſeſſile florets. The proper perianthium is very ſmall, two-valved, the valves equal, oblong, blunt, concave, cloſely adhering, ſhut, yellowiſh-brown; this is called the corolla in the generic character. Theſe have no ſpathes. The female flowers have bivalve ſpathes, ovate-lanceolate, compreſſed, acuminate, upright, bent in at the tip, ſoft, a ſpan in length, at firſt cloſed, then deciduous, placed at the end of the peduncle. Spadix globular, covered with very many connate germs; theſe are obconical, immerſed in the receptacle, ſomewhat convex at the top. Styles ſcarcely any. Stigmas, projecting points, withering: in ſome varieties theſe are bifid, according to Thunberg. The fruit is a globular berry, ſmoothiſh, marked with hexagons on the ſurface, pale green, when largeſt a long ſpan or nine inches in length, filled with a white, farinaceous, ſomewhat fibrous, pulp, which when the fruit is ripe becomes juicy and yellow: it is faſtened to a club-ſhaped fleſhy receptacle, which is longitudinally fibrous, and a hand in length. Thunberg deſcribes it thus: it is an upright tree, with a trunk the thickneſs of a man's body, thirty feet high. Branches faſtigiate and oppoſite, ſomewhat verticillate by fours, ſpreading. Leaves alternate, petioled, oblong, deeply gaſhed beyond the middle, nine-lobed, quite entire, villoſe and rugged, ſpreading, green on the upper ſurface with pale nerves, pale underneath; two feet long, and a foot broad; when young, plaited, and viſcid. Petioles thick, ſomewhat triangular, villoſe, an inch in length. Stipules wrapping up the younger leaves, two, ſeſſile, lanceolate, acuminate, concave, quite entire, ſmooth on the inſide, hirſute without, deciduous. Flowers at the ends of the twigs, male and female diſtinct on the ſame twig. Peduncle roundiſh, villoſe, upright, two inches long, the thickneſs of a finger. Spadix a ſpan in length, drooping, deciduous. Fruit the ſize of a child's head, ſometimes having abortive ſeeds, and ſometimes none. It flowers and produces ripe fruit twice in the year. Dampier ſays, that the bread-fruit grows on a large tree, as big and high as our largeſt apple trees. It hath a ſpreading head full of branches and dark leaves. The fruit grows on the boughs like apples: it is as big as a penny loaf when wheat is at five ſhillings the buſhel. It is of a round ſhape, and hath a thick tough rind. When the fruit is ripe it is yellow and ſoft, and the taſte is ſweet and pleaſant. The natives of Guam uſe it for bread: they gather it when full grown, while it is green and hard; then they bake it in an oven, which ſcorches the rind and makes it black; but they ſcrape off the outſide black cruſt, and there remains a tender thin cruſt, and the inſide is ſoft, tender, and white, like the crumb of a penny loaf. There is neither ſeed nor ſtone in the inſide, but all is of a pure ſubſtance like bread. It muſt be eaten new, for, if it is kept above twenty-four hours, it becomes dry and choaky, but it is very pleaſant before it is too ſtale. This fruit laſts in ſeaſon eight months in the year; during which time the natives eat no other ſort of food of bread kind. I did never ſee of this fruit any where but here; but the natives told us, that there is plenty of this fruit growing on the reſt of the Ladrone iſlands. According to the obſervation of Rumphius, this tree has a few ſpreading crooked branches, thinly covered with leaves, placed on thick ſhort foot-ſtalks, ſix or ſeven only forming a tuft, ſurrounding the extremity of the branch in form of a roſe: they are large, ſtiff, and have underneath a thick prominent nerve; they are cut on each ſide into four or five deep ſegments reſembling the leaves of an oak, but each diviſion ends in a point: they are about two ſpans long, and little leſs in width; a glutinous milky juice flows from any part of the tree when wounded. The ament ſhoots up among the upper leaves: it is about the length of one's hand, and as thick as the thumb, pliant, ſoft, and woolly; the fruit likewiſe grows up among the leaves; it is ſhaped like a heart, and increaſes to the ſize of a child's head: the rind is thick, green, and covered every where with warts, of a quadragonal or hexagonal figure, like cut diamonds, but without points. The more flat and ſmooth theſe warts are, the fewer ſeeds are contained in the fruit, and the greater is the quantity of pith, and that of a more glutinous nature. The internal part of the rind conſiſts of a fleſhy ſubſtance, full of twiſted fibres, which have the appearance of fine wool; theſe adhere to and in ſome meaſure form it. The fleſhy part becomes ſofter towards the middle, where there is a ſmall cavity formed without any nuts or ſeeds, except in one variety, which has but a ſmall number; and this ſort is not good, unleſs it be baked, or prepared ſome other way; but if the outward rind is taken off, and the fibrous fleſh dried, and afterwards boiled with meat as we do cabbage, it has then the taſte of artichoke bottoms. The inhabitants of Amboyna dreſs it in the liquor of cocoa-nuts; but they prefer it roaſted on coals, till the outward part or peel is burnt; they afterwards cut it into pieces, and eat it with the milk of the cocoa-nut. Some people make fritters of it, and fry it in oil; and others, as the Sumatrians, dry the internal ſoft part, and keep it to uſe inſtead of bread with other food. It affords a great deal of nouriſhment, and is very ſatisfying; and, being of a gently aſtringent quality, is good for perſons of a lax habit. It is more nouriſhing boiled with fat meat, than roaſted on coals. The milky juice, which diſtils from the trunk, boiled with cocoa-nut oil, makes a very ſtrong bird-lime. In captain Cook's voyage it is obſerved, that the bread-fruit tree is about the ſize of a middling oak; its leaves are frequently a foot and half long, oblong, deeply ſinuated like thoſe of the fig-tree, which they reſemble in conſiſtence and colour, and in exuding a milky juice when broken. The fruit is the ſize and ſhape of a child's head, and the ſurface is reticulated not much unlike a truffle: it is covered with a thin ſkin, and has a core about as big as the handle of a ſmall knife; the eatable part lies between the ſkin and the core; it is as white as ſnow, and ſomewhat of the conſiſtence of new bread. It muſt be roaſted before it is eaten, being firſt divided into three or four parts: its taſte is inſipid, with a ſlight ſweetneſs, ſomewhat reſembling that of the crumb of wheaten bread mixed with Jeruſalem artichoke. This fruit not being in ſeaſon at all times of the year, there is a method of ſupplying this defect, by reducing it to a ſour paſte, called *mahie*; and beſides this, cocoa-nuts, bananas, plantains, and a great variety of other fruits, come in aid to it. This tree is uſeful not only for food, but alſo for clothing; for the bark is ſtripped off the ſuckers, and formed into a kind of cloth. To procure the fruit for food coſts the inhabitants no trouble or labour but climbing a tree, which though it ſhould not indeed ſhoot up ſpontaneouſly, yet, as captain Cook obſerves, if a man plants ten trees in his life-time, he will as completely fulfil his duty to his own and future generations, as the native of our leſs temperate climate can do by ploughing in the cold winter, and reaping in the ſummer's heat, as often as theſe ſeaſons return; even if, after he has procured bread for his preſent houſehold, he ſhould convert a ſurplus into money, and lay it up for his children. But, where the trees are once introduced in a favourable ſoil and climate, ſo far from being obliged to renew them by planting, it ſeems probable that the inhabitants will rather be under the neceſſity of preventing their progreſs; for young trees ſpring abundantly from the roots of the old ones, which run along near the ſurface: accordingly they never plant the bread-fruit tree at Otaheite. The principal varieties of this tree are that in which the fruit is deſtitute of ſeeds, and that in which they are found. The latter may be conſidered as the tree in a wild ſtate; and the want of ſeeds is probably owing to cultivation: as in the barberry, and the little grape of Zant, which we commonly call currants. The natives of Otaheite reckon at leaſt eight varieties of that without ſtones, differing in the form of the leaf and fruit. One of theſe they name *uru* or *eoroo*; this has a globular, ſmooth, even, fruit, and is the moſt common. A ſecond, named *maira*, has an oval ſmooth fruit, with the leaves more deeply cut. A third, called *patea*, has the fruit oblong and rugged, as it were ſcaly. A fourth, *tatarra*, has an oval fruit, with mammillary germs muricated by the permanent ſtyle. Probably by extending the culture to diſtant countries, we ſhall hereafter find the varieties much increaſed. The parts of fructification in thoſe trees which bear fruit without ſtones are ſaid to be defective. The ament never expands; the ſtyles are likewiſe deficient. In the other variety, the fruit contains a conſiderable quantity of ſeeds, almoſt as large as cheſnuts, oblong, ſomewhat angular, produced into a point at each end, ſeparated by ſeveral little membranes or coats, formed by the abortion of ſome of the germs: they are attached to a fleſhy and very conſiderable placenta, which occupies the centre. They are farinaceous, like the cheſnut, and are eaten in ſome places by the ſavage inhabitants, either boiled or roaſted in embers. It will eaſily be ſuppoſed that this fruit, abounding leſs in pulp, and being both more fibrous and leſs juicy than that which has no ſeeds, muſt be much inferior, as an article of food: and accordingly, before the diſcovery of the South-Sea iſlands, the bread-fruit had not acquired that degree of reputation which it is now found to deſerve. It has been long known in many parts of the Eaſt Indies; but not being wanted there for food, and conſequently not having received any degree of cultivation, it has continued nearly in its natural ſtate, without receiving that improvement from the care of men which probably neceſſity at firſt urged them to exerciſe. Accordingly captain Cook remarked the great inferiority of the *ſoccum*, which he found at Batavia, to the *eoroo* of the South-Sea iſlands. This moſt uſeful tree is diſtributed very extenſively over the Eaſt-Indian continent and iſlands, as well as the innumerable iſlands of the South Seas. It was found by Dampier, as already mentioned, in the Ladrone iſlands. It is a native of Amboyna, Banda, and others of the Molucca iſlands; of Java, and others of the Maldivy iſlands; of Timor, Balega, and Madura; of Prince's iſland, &c. Monſ. Sonnerat conveyed ſome of the trees from the iſland of Luçon to the iſle of France. Monſ. Poivre naturalized them both there and in the iſle of Bourbon: and they are cultivated both in Malabar and Coromandel. In the South Seas both varieties are ſtill found in the Marian iſlands, in the New Hebrides and Friendly iſlands; but moſt abundantly in the Society, Marqueza, and Sandwich, iſlands. In Otaheite, however, and ſome others, the evident ſuperiority of the ſeedleſs variety for food has cauſed the other to be neglected, and accordingly there it is almoſt or altogether worn out. Captain King informs us, that in the Sandwich iſlands theſe trees are planted, and flouriſh with great luxuriance on riſing grounds; that they are not indeed in ſuch abundance, but that they produce double the quantity of fruit which they do on the rich plains of Otaheite; that the trees are nearly of the ſame height, but that the branches begin to ſtrike out from the trunk much lower, and with greater luxuriance; and that the climate of theſe iſlands differs very little from that of the Weſt-Indian iſlands which lie in the ſame latitude; or on the whole, perhaps, may be rather more temperate. It was this reflection, probably, which firſt ſuggeſted the idea of conveying this moſt uſeful tree to our iſlands in the Weſt Indies. However that may be, on the 23d of December, 1787, his majeſty's ſhip the Bounty ſailed for the South Seas, under the command of lieutenant William Bligh, for this purpoſe: the preparations for executing the object of the voyage being completed according to a plan given by Sir Joſeph Banks. The fatal mutiny which prevented the accompliſhment of this benevolent purpoſe, and ſubjected the commander and his friends to the moſt unheard-of hardſhips, is well known. His majeſty however, not diſcouraged by the unfortunate event of this voyage, and, fully impreſſed with the importance of ſecuring ſo valuable an article of food as bread-fruit to our Weſt-Indian iſlands, determined in the year 1791 to employ another ſhip on this buſineſs; and, in order to ſecure the ſucceſs of the voyage as much as poſſible, it was thought proper that two veſſels ſhould proceed together on this ſervice. Accordingly a ſhip of 400 tons, named the Providence, was engaged for the purpoſe, manned with 100 officers, ſeamen, and marines, and the command of her given to Mr. Bligh, who on his return had been made a poſt-captain; and a ſmall tender, called the Aſſiſtant, commanded by lieutenant Nath. Portlock, with twenty-ſeven officers, ſeamen, and marines, was engaged to accompany her: Sir Joſeph Banks, as in the former voyage, directed the equipment of the ſhip for this particular purpoſe; and captain Bligh, piqued by his former ill ſucceſs, exerted all his ſkill and zeal in the ſervice. Two ſkilful gardeners were appointed to ſuperintend the trees and plants, from their tranſplantation at Otaheite to their delivery at Jamaica; and captain Bligh ſet ſail on the 2d of Auguſt, 1791. He arrived at Teneriffe on the 28th; at St. Jago on the 13th of September; and at the Cape of Good Hope on the 6th of November. He ſailed from thence on the 19th of December; arrived at Adventure's bay on the 9th of February, 1792, and at Otaheite on the 8th or 9th of April. The buſineſs of procuring and embarking the bread-fruit trees, &c. took up three months and nine days, though the natives of Otaheite gave all poſſible aſſiſtance to captain Bligh and the gardeners. They ſailed on the 18th or

ARTOCARPUS.



J.Pass sculp.

The Bread Fruit Tree.

London, Published as the Act directs, Sept.3.1796. by J.Wilkes.

19th of July; arrived at Coupang in Timor on the 2d of October; at St. Helena the 17th of December; and at St. Vincent's on the 22d of January, 1793. Here they ſtaid ſeven days to leave a part of their cargo, according to the inſtructions; and on the 5th of February they arrived at Jamaica, and delivered the remainder. The number of plants taken on-board at Otaheite was 2634, in 1281 pots, tubs, and caſes; and of theſe 1151 were bread-fruit trees. When they arrived at Coupang 200 plants were dead, but the reſt were in good order. Here they procured 92 pots of the fruits of that country. They arrived at St. Helena with 830 fine bread-fruit trees, beſides other plants. Here they left ſome of them, with different fruits of Otaheite and Timor, beſides mountain rice and other ſeeds; and from hence the Eaſt Indies may be ſupplied with them. On their arrival at St. Vincent's they had 551 caſes, containing 678 bread-fruit trees, beſides a great number of other fruits and plants, to the number of 1245. Near half this cargo was depoſited here, under the care of Mr. Alex. Anderſon, the ſuperintendant of his majeſty's botanic garden, for the uſe of the Windward Iſlands; and the remainder, intended for the benefit of the Leeward Iſlands, was conveyed to Jamaica, and diſtributed as the governor and council of Jamaica pleaſed to direct. The exact number of bread-fruit trees brought in health to Jamaica was 352, out of which five only were reſerved for his majeſty's botanic garden at Kew. Though the principal object of this voyage was to procure the bread-fruit tree, yet it was not confined to this only; for the deſign was to furniſh the Weſt-Indian iſles with the moſt valuable productions of the South Seas and the Eaſt Indies. Accordingly the gardeners were inſtructed to procure plants of the ſweet plantain called *meia*; the Otaheitean apple or *avee*; the root called *peah*, of which the iſlanders make a kind of pudding; and the very large *yam*, which is of a better ſort than any in the Weſt Indies. They were alſo to obtain at Timor, or other places in the Eaſt Indies, ſuch plants and fruits as are uſed for food or otherwiſe by the natives; ſuch as the *lanſa*, *mangoſtan*, *durion*, *jamboo*, *nanca*, *tchampadha*, *blimbing*, *jambolan*, *boabidarra*, *ſalac*, *bleck*, *long pepper*, &c. together with ſome buſhels of dry or mountain rice, which is cultivated without being overflowed with water; and they were to make themſelves acquainted with the mode of managing it, in order to communicate the ſame to the inhabitants of the Weſt Indies. They were alſo, as a ſecondary object, and as they had opportunity, to take on-board, at the ſeveral places where they touched, curious plants for his majeſty's botanic garden at Kew, provided they did not diminiſh the ſtock of bread-fruit trees; and that they were planted only in ſuch pots or caſes in which theſe or other uſeful plants had died. And the object of their voyage being completed, they were directed to take in, both at St. Vincent's and Jamaica, ſuch plants as had been prepared for the royal botanic garden at Kew. Captain Bligh had the ſatisfaction, before he quitted Jamaica, of ſeeing the trees, which he had brought with ſo much ſucceſs, in a moſt flouriſhing ſtate; inſomuch, that no doubt remained of their growing well, and ſpeedily producing fruit. It is difficult, perhaps, to point out a more benevolent undertaking than this of tranſporting uſeful and ſalutary vegetables from one part of the earth to another where they do not exiſt. And every good man will certainly rejoice, that a humane and well-concerted plan has thus at length happily ſucceeded; and that the bread-fruit tree, with many other uſeful fruits and plants, has been eſtabliſhed in the Weſt Indies, by the kind attention of the Britiſh government, the exemplary and diſintereſted exertions of Sir Joſeph Banks, and the zealous care of captain Bligh. The bread-fruit, when perfectly ripe, is pulpy, ſweetiſh, putreſcent, and in this ſtate is ſuppoſed to be too laxative; but when green it is farinaceous, and eſteemed a very wholeſome food, either baked under the coals, or roaſted over them; the taſte is not very unlike that of wheaten bread, but with ſome reſemblance to Jeruſalem artichokes or potatoes. It was mentioned before that a ſort of cloth is made of the inner bark. But, beſides this, the wood of the tree is of uſe in building boats and houſes; the male catkins ſerve for tinder; the leaves for wrapping their food in, and for wiping their hands inſtead of towels; and the juice for making bird-lime, and a cement for filling up the cracks of their veſſels for holding water. Three trees are ſuppoſed to yield ſufficient nouriſhment for one perſon. Thunberg ſent ſeeds of the Eaſt-Indian bread-fruit from Batavia, to the botanic garden at Amſterdam, in 1775. In 1777, he ſent ſome ſmall living plants; and the year following he brought with him to Europe a great number of plants both of this and the following ſpecies. But the true ſeedleſs ſort, from the South Seas, was firſt introduced into the iſlands of St. Vincent and Jamaica, and into the botanic garden at Kew, by captain Bligh, in 1793. The bread-fruit is called in the Malay language *ſoccun*; in Java *ſouku*; in Amboyna *ſöun* or *ſune*; in Makaſſar *bakar*; in Ternate *gomo*; in Tinian *rima*. The Dutch call it *ſockuſboom*; the Germans *brodbaum*; the French *rima* or *fruit à pain*.

2. Artocarpus integrifolia, or Indian jacca tree: leaves entire. The Eaſt-Indian jacca or jack tree is about the ſame ſize as the foregoing, or larger. Branches alternate, ſpreading; the twigs hirſute with long ſtiff hairs. Leaves alternate, petioled, ovate-oblong, blunt with a blunt point, obſcurely ſerrate, undivided, nerved; bright green and very ſmooth on the upper ſurface, paler beneath and hirſute with ſtiff hairs, ſpreading, a ſpan in length: the younger leaves are evidently toothed, but the teeth diſappear afterwards; ſometimes a leaf or two may be gaſhed. The petiole is ſomewhat triangular, ſmooth, an inch in length. Stipules as in the foregoing. Flowers male and female diſtinct on the ſame ſtem or branch. Peduncle either ſimple or branched, pendulous, an inch thick, and a foot long. Pedicels three, five, or more, the length and thickneſs of a finger. The fruit weighs thirty pounds and upwards; it has within it frequently from two to three hundred ſeeds, three or four times as big as almonds; they are ovate-oblong, blunt at one end, ſharp at the other, and a little flatted on the ſides. Theſe two ſpecies of artocarpus cannot be diſtinguiſhed with certainty, either by the form of the leaves or the ſituation of the fruit: for the leaves in this are ſometimes lobed, as in that; and the ſituation of the fruit varies with the age of the tree, being firſt borne on the branches, then on the trunk, and finally on the roots. The jacca tree is a native of Malabar, and other parts of the Eaſt Indies. The fruit is ripe in December, and is then eaten, but is eſteemed difficult of digeſtion; the unripe fruit is alſo uſed pickled, or cut in ſlices and boiled, or fried in palm-oil. The nuts are eaten roaſted; and the ſkin next them is uſed inſtead of the areca nut in chewing betel. The wood of the tree ſerves for building. No leſs than thirty varieties of the fruit are enumerated in Malabar. It was introduced into the royal garden at Kew in 1778, by Sir E. Hughes, K. B.

Propagation and Culture. Thoſe varieties which bear ſeeds may be propagated by them, ſown in a pot of rich earth, and plunged in the bark-bed. Thoſe which have no ſeed in the fruit may be increaſed from ſuckers, in which they abound very much, or by layers. In hot climates they ſucceed beſt in a rich ſoil; for, though they will grow in an indifferent one, yet they by no means arrive at that magnitude, nor is their fruit ſo well flavoured, as when they are planted in a good one. In the Eaſt Indies, they thruſt a fruit of the jacca tree into the ground whole, and, when the numerous ſeeds germinate and grow up, they tie the ſtems all together with withes, and by degrees they form one ſtem, which will bear fruit in ſix or ſeven years, except it be in too watery a ſituation.

ARTOCRE'AS, *ſ.* [from αρτος, bread, and κρεας, fleſh.] A nouriſhing food made of bread and various meats boiled together.

ARTOGA'LA, *ſ.* [from αρτος, bread, and γαλα, milk.] A cooling food made of bread and milk. A poultice.

ARTOI'S, a province of France before the revolution; bounded on the north by Flanders, on the weſt and ſouth by Picardy, and on the eaſt by Hainault and the Cambreſis, being about twenty-five leagues in length, and twelve in breadth. The commerce is principally in grain, wool, coleſeed, oil, and hemp. It was one of the firſt countries conquered by the French, and was erected into a comté by St. Louis, and given to one of the princes of the blood. It is now principally included in the department of the Straits of Calais.

ARTO'LICA, anciently a town of the Salaſſii, in Gallia Ciſpadana, at the foot of the Alps; now called *la Tuile* by the inhabitants, a hamlet of Savoy, in the duchy of Aouſt, at the foot of mount St. Bernard the Leſs.

ARTOME'LI, *ſ.* [from αρτος, bread, and μελι, honey.] A cataplaſm made of bread and honey.

ARTON', a town of France, in the department of the Lower Loire, and chief place of a canton in the diſtrict of Painbœuf: ſeventeen miles ſouth-weſt of Nantes.

ARTON'NE, a town of France, in the department of Puy de Dome, and chief place of a canton, in the diſtrict of Riom, five leagues north of Clermont, and two leagues and a half north of Riom.

ARTO'TYRITES, [from αρτος, bread, and τυρω, cheeſe.] A Chriſtian ſect, in the primitive church, who celebrated the euchariſt with bread and cheeſe, ſaying, that the firſt oblations of men were not only of the fruits of the earth, but of their flocks. The Artotyrites admitted women to the prieſthood and epiſcopacy; and Epiphanius tells us, it was a common thing to ſee ſeven girls at once enter into their church, robed in white, and holding a torch in their hands; where they wept, and bewailed the wretchedneſs of human nature, and the miſeries of this life.

AR'TRO, a river of North Wales, which runs into the ſea a little below Llanbeder in Merionethſhire.

To AR'TUATE, *v. a.* [*artuatus*, Lat.] To tear limb from limb.

ARTZ'BACH, a river of Germany, a river of Germany, which runs into the Enns, four miles ſouth of Reiffling, in the duchy of Stiria.

ARTZ'BERG, a town of Germany, in the archduchy of Auſtria, near the Enns, twelve miles ſouth-eaſt of Steyr.

ARU', or AR'TOF, a ſmall iſland in the Indian Sea, between the iſland of Sumatra and the peninſula of Malacca.

ARU'A, anciently a town of Bætica, of the reſort of the Conventus Hiſipalenſis; now *Alclea*, a citadel of Andaluſia, on the Bætis, or Guadalquiver, ſeven leagues above Seville.

AR'VA, a town and caſtle of Hungary, the capital of a county, fourteen miles north of Roſenberg.

ARVA, a river of Hungary, which runs into the Waag, eleven miles north of Arva.

ARVA'LES FRA'TRES, in Roman antiquity, a college of twelve prieſts, inſtituted by Romulus, and choſen out of the moſt noble families, himſelf being one of that body: they aſſiſted in the ſacrifices of the *ambervalia* annually offered to Ceres and Bacchus for the proſperity of the fruits of the earth; when they wore on their heads crowns made of ears of corn. The origin of this inſtitution was as follows: Acca Laurentia, Romulus's nurſe, was accuſtomed once a-year to make a ſolemn ſacrifice for a bleſſing on the fields, her twelve ſons always aſſiſting her in the ſolemnity; but, at laſt loſing one of her ſons, Romulus offered himſelf to ſupply his place, and gave this ſmall ſociety the name of *Arvales fratres*. This order was in great repute at Rome: they held the dignity for life, and never loſt it upon account of impriſonment, baniſhment, or any other accident.

ARU'BA, a town of Perſia, in the province of Mecran, near a cape of the ſame name, on the Indian ocean, thirty leagues eaſt of Mecran.

ARUBA, or ORUBA, a ſmall iſland in the Weſt Indies, near the coaſt of Terra Firma, about five leagues in circumference, fourteen leagues weſt of Curaſſoa.

ARU'CI, anciently a town of the Celtici, in the north of Luſitania, called alſo *Aruci Novum*; now ſuppoſed to be *Moura*, a ſmall city of Portugal, near the confluence of the Ardila and Guadalquiver.

ARUCI VETUS, anciently a city of the Turdetani, in Bætica; now *Aroche*, a hamlet of Andaluſia, on the confines of Portugal and Eſtremadura, on the river Gama, ſeven leagues to the eaſt of Aruci Novum or Moura. From it a mountain, in its neighbourhood, takes the name *Arucitanus*. Now *la Sierra de Aroche*.

ARU'CIA, anciently a town of Illyria, in the inland parts of Liburnia; now *Bregna*, according to ſome; but *Ottoſchatz*, according to others; a citadel of Morlachia.

ARU'DY, a town of France, in the department of the Lower Pyrenees, and chief place of a canton in the diſtrict of Oleron, eleven miles ſouth of Pau.

AR'VE, or AR'VERON, a river, or torrent, that takes its riſe in the glaciers or ice-mountains of Savoy, and after a rapid winding courſe, of at leaſt a hundred miles, diſcharges itſelf into the Rhone near Geneva. It is a remarkable ſight to ſee theſe two rivers flow together, for half a mile, without mingling; the Arve keeping its grey, and the Rhone its blue, colour.

ARVER'NI, an appellation early uſed for the capital of the Arverni, according to the cuſtom of the latter ages of naming towns from the people; it was formerly called *Nemoſſus*. *Strabo*. The Arverni, a brave and ancient people, and one of the moſt powerful nations of Gaul, claimed affinity with the Romans, as deſcendants from Antenor. *Lucan*. After their conqueſt by the Romans, their ancient liberty was preſerved to them on account of their bravery. *Pliny*. Above a thouſand years ago the town was called *Clarus Mons*, from its ſituation; now *Clermont*, in Auvergne. Lat. 45. 42. N. lon. 3. 20. E.

ARVI'CITO, a town of Italy, in the kingdom of Naples, on the eaſt coaſt of Calabria Ultra, four miles ſouth of Stilo.

AR'VIL SUP'PER, *ſ.* A feaſt or entertainment made at funerals, in the north of England. *Arvil bread* is the bread delivered to the poor at funeral ſolemnities. *Cowel*. And *arvil*, *arval*, *arſal*, are uſed for the burial or funeral rites.

ARVIRA'GUS, an ancient Britiſh king, who flouriſhed in the time of the emperor Domitian. He gained a complete victory over Claudius: but, being ſoon after beſieged in the city of Wincheſter, he made a treaty with the Romans, and married the emperor's daughter Genuiſſa. This monarch lived to a good old age: he confirmed the ancient laws, enacted new ones, and liberally rewarded perſons of merit.

ARVI'SIUM, *ſ.* [from *Arviſia*, a promontory of the iſle of Chios, where it was made.] Malmſey, a rich cordial wine.

A'RUM, *ſ.* [from αρα, *noxa*, injury. Lobelius derives it from ιερον, Gr. ſacred, as being like the ſacred member of man; but it may more probably be from ירן Heb. a dart, which it exactly repreſents.] In botany, a genus of the gynandria polyandria claſs, in the natural order of piperitæ. The generic characters are—I. Male flowers on the ſame ſpadix with the females, cloſely heaped between a double row of threads. Calyx: ſpathe one-leafed, very large, oblong, convolute at the baſe, converging at the top; the belly compreſſed, coloured within; ſpadix club-ſhaped, quite ſimple, a little ſhorter than the ſpathe, coloured, fenced at bottom with germs, and ſhrivelling above them; perianthium proper none. Corolla: none; nectaries thick at the baſe, ending in threads or tendrils, in two rows, iſſuing from the middle of the ſpadix. Stamina: filament none; each anthera ſeſſile, four-cornered. II. Female flowers on the lower part of the ſpadix, cloſe to each other. Calyx: ſpathe and ſpadix common to them with the males. Piſtillum: germ each obovate; ſtyle none; ſtigma bearded, with villoſe hairs. Pericarpium: berry globular, one-celled. Seeds: ſeveral, roundiſh.—*Eſſential Character*. Spathe one-leafed, cowled; ſpadix naked above, female below, ſtamineous in the middle.

Deſcription. It was obſerved by the elder Linnæus, that the ſtructure of the flower, in this genus, is ſtrange, and without a parallel; on this account it has been a diſpute among the moſt eminent botaniſts, in what claſs it ought to be placed. The great author of the ſexual ſyſtem left it in the claſs gynandria, becauſe, although the ſtamens are not placed on the ſtyle, yet the receptacle is produced or elongated into the form of a ſtyle, and bears both piſtil and ſtamens. He obſerves at the ſame time, that this genus, together with ſome others nearly allied to it, might have been placed in other claſſes; but, that he thought it better to inſert them in the claſs gynandria, on account of the extreme difficulty, if not impoſſibility, of aſſigning a certain number of ſtamens to each piſtil. But the younger Linnæus remarks farther, that not only every floret in the compound flowers is a ſeparate flower, but that every floret in the catkins of *ſaururus*, *piper*, and *pothos*, and every anther in the ſcales of the catkins of *zamia*, is a diſtinct floret; and that, when he attends to theſe facts, to the nature of female catkins, and to the ſingular fructification of *pandanus*, he underſtands the ſtructure of arum: in which every piſtil and every anther is to be conſidered as a diſtinct floret, and conſequently that it ought to be removed to the order *monandria* of the claſs *monoecia*. This idea is adopted by Schreber and in Withering's arrangement. Thunberg and Swartz place this genus in the laſt order of the claſs *polyandria*; theſe we have followed, as ſupported by the elder Linnæus. The arums are readily diſtinguiſhed at firſt view by the large white ſpathe, and the long club-ſhaped ſpadix within it. This is the receptacle lengthened out. The arums are all perennial herbaceous plants, moſtly natives of hot climates. The roots are fleſhy, hot, and acrid, but in many ſpecies eatable. They have no proper ſtem, except a few in the laſt diviſion. The leaves, in the arums properly ſo called, are entire and ſagittate, or ſhaped like the head of an arrow; but in the *dracunculi* or dragons multifid or cloven into ſeveral parts.

Species. I. Without ſtems, leaves compound. 1. Arum crinitum, or hairy-ſheathed arum: leaves pedate, with the lateral ſegments involute; ſpathe hairy within; ſpadix ramentaceous above. The root-leaves of this are cloven into ſeven parts, which are lanceolate and nerved, the middle one largeſt, the others gradually leſs. The flower ſmells ſtrong of carrion, by which flies are enticed to enter, but, when they would retreat, the reverſed hairs prevent them, and they are ſtarved there to death. It is a native of Minorca; was introduced in 1777 by Mr. William Malcolm, and flowers here in March.

2. Arum dracunculus, or long-ſheathed arum or common dragon: leaves pedate, leaflets lanceolate quite entire, lamina ovate longer than the ſpadix. Common dragon has a large tuberous fleſhy root, which in the ſpring puts up a ſtraight ſtalk about three feet high, ſpotted like the belly of a ſnake; at the top it ſpreads out into leaves, which are cut into ſeveral narrow ſegments almoſt to the bottom; at the top of the ſtalk the flower is produced, which is in ſhape like the common arum, having a very long ſpathe of a dark purple colour, ſtanding erect, with a large ſpadix of the ſame colour, ſo that, when it is in flower, it makes no unpleaſing appearance; but the flower has ſo ſtrong a ſcent of carrion, that few perſons can endure it, for which reaſon it has been baniſhed moſt gardens; but, were it not for this, a few of the plants might merit a place for the oddneſs of the flower. It grows naturally in moſt of the ſouthern parts of Europe, and is preſerved in gardens to ſupply the markets. Gerard cultivated it in 1596. It flowers in June and July. It appears to be ſimilar in medicinal virtues, as in botanical characters, to common arum; it might be uſed therefore in the ſame caſes, but the general practice employs only the latter. So far as can be judged between ſubſtances of ſuch vehement pungency, this is rather the ſtrongeſt. Common dragon is named in French *le gouet ſerpentaire*, *la grande ſerpentaire*; in Italian, *dracunculo*, *ſerpentaria*; in Spaniſh, *dragoncillo*, *ſerpentina*; in German, *drachenwurtz*.

3. Arum dracontium, or ſhort-ſheathed arum or green dragon: leaves pedate, leaflets lanceolate, quite entire, longer than the ſpathe, which is ſhorter than the ſpadix. Green dragon grows about eight or nine inches high. Root roundiſh, ſolid, white within and without, ſmooth. It flowers with us in June; grows in moiſt places in Virginia and New England; alſo in Japan, flowering in April; and in China and Cochin-China. The root of this, as well as the former, is acrimonious and purgative; it is preſcribed as a very ſtrong emmenagogue. It was cultivated in 1759 by Mr. Miller.

4. Arum venoſum, or purple-flowered arum: leaves pedate, leaflets ſuboval quite entire, lamina lanceolate longer than the ſpadix. The native country of this ſpecies is not known. It flowers in March, and was introduced in 1774 by Mr. William Malcolm.

5. Arum pentaphyllum, or five-leaved arum: leaves quinate. Five-leaved arum grows to the height of one foot. Native of the Eaſt Indies and China. The root is accounted warm, attenuant, and deobſtruent; and is given in the epilepſy, convulſions, obſtructions of the uterus, bites of venomous animals, &c. in the eaſt.

6. Arum triphyllum, or three-leaved green-ſtalked arum: leaves ternate, lamina lanceolate acuminate, the length of the ſpadix. This is ſubcauleſcent, with the ſcape ariſing from the petiole. The Braſilian plant has the ſide leaflets lobed outwards. The Virginian plant has them only gibbous; but the ſtructure of the flower is the ſame in both. Loureiro ſays, that the plant of China and Cochin-China grows ten inches high. The root is round and white. It differs from the foregoing in having the leaflets diſtinct, not pedate; the bulb of the root ſmaller and more globular; and the medicinal qualities ſtronger. It was cultivated here in 1664, as appears by Mr. Evelyn's Calendar.

7. Arum atrorubens, or three-leaved purple-ſtalked arum: leaves ternate, lamina ovate ſhorter by half than the ſpadix. Native of Virginia, and cultivated here by Mr. Miller in 1758. It flowers in June and July.

8. Arum ternatum: leaves ternate, receptacle longer than the ſpathe. Found in Japan by Thunberg, flowering in May and June. Loureiro's plant, deſcribed under No. 6, is probably the ſame with this.

II. Without ſtems, leaves ſimple. 9. Arum colocaſia, or Egyptian arum: leaves peltate ovate repand, ſemibifid at the baſe. Egyptian arum, or colocaſia, has a tuberous, thick, large, oblong, root, rounded at the baſe. Leaves thick, ſmooth, aſh-coloured, in form and ſize reſembling thoſe of the water-lily, having thick ribs running obliquely to the edge. Native of the Levant, Egypt, Sicily, Italy near Salerno, &c. It is eſteemed a wholeſome food, and is frequently eaten in the eaſt, though not very delicate. The roots and petioles are boiled, and the leaves, when young, are ſometimes eaten raw. It was cultivated in 1690, in the royal garden at Hampton-court.

10. Arum bicolorum, or two-coloured arum: leaves peltate ſagittate, coloured on the diſk; ſpathe contracted in the middle, ſubglobular at the baſe; lamina roundiſh, acuminate, upright, ſomewhat convolute. This is cultivated in Madeira; it flowers in June and July.

11. Arum eſculentum, or eſculent arum or Indian kale: leaves peltate ovate quite entire, emarginate, or ſemibifid, at the baſe. Eſculent arum has a large, tuberous, ſubovate, brown, root, with ſmaller tubers growing by the ſide of it. Sir Hans Sloane ſays that it is little bigger than a walnut. Plant three feet in height. Leaves ſmooth, bright green. The Jamaica plant ſeems to be ſmaller than that of the eaſt; for Sloane ſays, that it only riſes a foot from the ground. He adds, that they are planted there very carefully in moſt plantations; that the roots are eaten, but that their chief uſe is for the leaves, which are boiled and eaten as coleworts, being extremely pleaſing to the taſte. Unleſs different ſpecies are confounded under the ſame name, this muſt be very extenſive, being found both in the Eaſt and Weſt Indies, on the continents, and in the iſlands. It is very frequent in China and Cochin-China,

by the ſides of rivers and marſhes, where the water is not very deep; in both thoſe kingdoms it is a very common food; the root and tender petioles being eaten boiled. The bruiſed leaves are applied to tumours, and are ſuppoſed to be of ſervice againſt poiſonous bites. It is a native alſo of Japan, is frequently cultivated there, and both roots and ſtalks are ſliced and put into their ſoups and broths. It is found in all the iſlands of the ſouthern ocean, except thoſe which are drowned or deſert; and is cultivated every where within the tropics, and even in the northern extremity of New Zealand. The natives of the South-Sea Iſlands beſtow great pains on the culture of this root: for, in the firſt months of its growth, it ſucceeds beſt when the ground is inundated, but afterwards it ſhould be laid dry, which they do by means of ditches dug round the fields. The root, which is the common food in many of the iſlands, is extremely acrid, and, when eaten raw, will excoriate the mouth; but, baked in hot aſhes, loſes its acrimonious quality, and becomes mild and well taſted; it is however heavy on a weak ſtomach, and is apt to occaſion coſtiveneſs. The leaves, which are very ſoft, glaucous, and covered with a very fine ſilky nap, are uſed by the inhabitants inſtead of plates and diſhes. In German this arum is named *eſſbare arum*, *Indianiſche kohl*, and *waſſerbrodwurzel*; in Dutch, *eetbaar kalfsvoet*, *karaibiſche kool*, and *water-kelady*; in French, *choux du breſil*, *choux caraibes*, and *chou poivré*; in Japan, *imo*, or *ſatorino*; in China, *hai yu*; in Cochin-China, *cay mon*. It is obſervable that the Java name *tallas* varies little from thoſe of Otahaite and New Zealand, *tallo* and *tarro*.

12. Arum macrorhizon, or long-rooted arum: leaves peltate cordate repand, two-parted at the baſe. This has a very large root, or rather ſubterraneous trunk, the thickneſs and length of the human arm. The leaves are very large and wide, ſhining on both ſides, ſmooth, and of a pleaſant fine green; they have very ſtrong prominent nerves, and come out many together: their very long hollowed petioles form at bottom, where they embrace each other very cloſely, a ſtem three feet long, and as thick as one's arm. The flower is white, and very ſweet. This recedes in ſome meaſure from the generic charcter in the fructification, all the florets being hermaphrodite. The berries are roundiſh and red. This ſpecies is diſtinguiſhed by its great ſize. It is a native of China and Cochin-China, the Eaſt Indies, Ceylon, and the iſlands of the ſouthern ocean; and is eaten by the natives as well as the foregoing, when the roots are deprived of their acrimony by dreſſing. In Ceylon this is called *habara*; in Chineſe, *dea veu*; in Cochin-China, *ray tlang*; in Otaheite, *apè*; in the Friendly and Sandwich iſlands, *kappe*.

13. Arum peregrinum: leaves cordate obtuſe mucronate, angles rounded. This is a native of America. Mr. Miller ſays, that he received three ſorts of arum from the Weſt Indies, by the title of *edder*; but he ſuppoſes this to be moſt commonly cultivated there for its roots.

14. Arum divaricatum: leaves cordate-haſtate divaricate. Native of Malabar and Ceylon.

15. Arum trilobatum, or three-lobed arum: leaves ſagittate-trilobate, flower ſeſſile. Root roundiſh, compreſſed, ſmooth, half an inch in diameter. Plant a foot high, upright. The flower is very fetid, like carrion, or common dragon. This ſort was brought from Ceylon in 1752, and flowered in the Chelſea garden. According to Linnæus, this is ſo nearly allied to the foregoing, that it may be doubted whether it is a diſtinct ſpecies. Native of Ceylon, Amboyna, Japan, and Cochin-China. It flowers here in May and June. The qualities of this are reputed to be the ſame with thoſe of the fifth.

16. Arum ſagittæfolium, or arrow-leaved arum: leaves ſagittate triangular, the angles divaricate acute. This grows four feet high, and is upright; leaves large, duſky green. Native of the Spaniſh Weſt Indies, China, and Cochin-China. It was cultivated here in 1731 by Mr. Miller. In Jamaica it is called *ſmaller Indian kale*, and is cultivated there by many perſons for the ſame purpoſes with the eleventh ſort. This, and ſeveral of the foregoing ſorts, ſays Mr. Miller, are eaten by the inhabitants of the hot countries, where they grow naturally, and ſome of them are cultivated in the ſugar colonies, as eſculent plants; their roots being conſtantly eaten, as alſo the leaves of ſome, particularly the eleventh. It is eſteemed a wholeſome green when boiled, and where the common European vegetables are with difficulty procured, this proves a good ſuccedaneum. The ſixteenth ſort has not been many years introduced into the ſugar iſlands; for it came originally from the Spaniſh Weſt Indies, where it grows in great plenty. Both this and the fourteenth have larger roots than the eleventh, for which reaſon they are preferred to it. Theſe ſorts are preſerved by perſons curious in exotic plants, for the variety of their leaves; their flowers having very little beauty, nor do they often appear in this country.

17. Arum maculatum, or common arum: leaves haſtate quite entire, ſpadix club-ſhaped. Of this there are three varieties: Common arum without ſpots, common ſpotted arum, and Italian arum. Common arum has a tuberous whitiſh root, about the ſize of a large nutmeg, growing tranſverſely, ſending forth on every ſide a great number of ſingle fibres, propagating itſelf by lateral tubercles. Native of moſt parts of Europe, except the moſt northern ones, in ſhady places, and on the banks of ditches; flowering in May. The berries ripen at the cloſe of ſummer. The root and leaves of arum when recent are extremely acrid; on firſt taſting them they ſeem to be merely mucilaginous and inſipid, but they ſoon affect the tongue with a pungency as if it were pricked with needles. This uneaſy ſenſation may be alleviated by milk, butter, or oil. They loſe this acrimony in drying, and the roots become farinaceous and inſipid. In this ſtate they might be uſed for food in caſe of neceſſity; and by boiling or baking would probably afford a mild and wholeſome nouriſhment, as well as thoſe ſorts which are natives of hot climates. Wedelius is of opinion, that the *chara* which Cæſar's ſoldiers found abundantly about Dyrrhachium was this plant; being reduced to great ſtraits for want of proviſions, they mixed the roots with milk, and made them into a ſort of bread. Probably this may be the third variety, which is larger than ours, and is made a diſtinct ſpecies by Mr. Miller, under the name of *arum Italicum*. The berries are devoured by birds; and Mr. Curtis thinks that even the roots are eaten by them, particularly by pheaſants. The root dried and powdered is uſed by the French as a waſh for the ſkin, and is ſold at a high price under the name of Cypreſs powder. It is a good and innocent coſmetic. Starch alſo may be made from the roots; but Parkinſon obſerves, that the hands are apt to be bliſtered in uſing it. Occaſionally they have been ſubſtituted for ſoap, and Mr. Ray mentions their being uſed about Maidſtone for that purpoſe. The root newly dried and powdered has been given as a ſtimulant, in doſes of a ſcruple and upwards; but in being reduced to powder it loſes much of its acrimony, and there is reaſon to ſuppoſe, that the compound powder, which takes its name from this plant, owes its virtues chiefly to the other ingredients. The *pulvis ari compoſitus* is therefore diſcarded from the London diſpenſatory, and inſtead of it a conſerve is inſerted, made by beating half a pound of the freſh root with a pound and a half of fine ſugar. In the medicine recommended by Sydenham againſt rheumatiſms, the acrid antiſcorbutic herbs are largely joined with it. Dr. Lewis orders the freſh root to be beaten with a little teſtaceous powder, and mixed with an equal quantity of gum arabic, and three or four times as much conſerve, and thus to be made up into an electuary; or elſe to be rubbed with a thick mucilage of gum arabic and ſpermaceti, adding any watery liquor and a little ſyrup, to form an emulſion; two parts of the root, two of gum, and one of ſpermaceti. In theſe forms he has given the freſh root, from ten grains to upwards of a ſcruple, three or four times a-day: it generally occaſioned a ſenſation of ſlight warmth, firſt about the

ſtomach, and afterwards in the remoter parts; manifeſtly promoted perſpiration, and frequently produced a plentiful ſweat. Several obſtinate rheumatic pains were removed by this medicine, which he therefore recommends to farther trial. The roots ſhould be taken up for uſe in autumn, and may be preſerved tolerably freſh in ſand for ſeveral months. Mr. Miller ſays, they are generally gathered in the ſpring, when they ſhrink, and ſoon loſe their pungent quality; but, that thoſe which are taken up in Auguſt, when the leaves decay, will continue good a whole year; and, that the not obſerving this rule, has brought them into diſrepute. This ſingular plant, having attracted much notice from the vulgar, has a variety of Engliſh names. Gerard gives us *wake-robin*, *cuckoo pint* or *pintle*, *prieſt's-pintle*, *aron*, *calf's-foot*, *rampe*, and *ſtarch-wort*; *lords and ladies* is alſo a common appellation; and in Worceſterſhire it is called *bloody men's fingers*. It has the firſt of theſe names from its acrimony; the ſecond and third from the form of the ſpadix; *aron* is from the German; *calf's-foot* from the Dutch *kalfsvoet*; the meaning of the others is evident, except *rampe*, which we do not underſtand. The French have more names than we have, as *gouet commun*, *pied-de-veau*, &c. &c. Italian arum grows naturally not only in Italy, but in Spain and Portugal, from all which countries Mr. Miller ſays that he received the ſeeds. The leaves riſe a foot and a half high, are very large, running out to a point, are of a fine ſhining green, beautifully veined with white, interſperſed with black ſpots. The flowers grow near a foot high, and have very long upright ſpathes, of a pale green, appearing at the end of April or the beginning of May, and ripening the ſeeds in Auguſt.

18. Arum Virginicum, or Virginian arum: leaves haſtate-cordate acute, angles obtuſe. This grows wild in wet places in Virginia, Carolina, Pennſylvania, &c. The ſavages boil the ſpadix with the berries, and devour it as a great dainty. The berries, when raw, have a harſh pungent taſte, which they loſe, in great meaſure, by boiling.

19. Arum proboſcideum, or Apennine arum: leaves haſtate, ſpathe declinate filiform-ſubulate. Native of the Apennines. This and the following ſort have the ſpathe ſhaped like a monk's cowl. The leaves are on very ſhort petioles.

20. Arum ariſarum, or broad-leaved hooded arum or friar's cowl: leaves cordate-oblong, aperture of the ſpathe ovate. Native of the ſouth of France, Italy, Spain, Portugal, Barbary, and Cochin-China, in woods. Ray obſerved it between Maſſa and Lucca, flowering the beginning of April; alſo near Toulon. It was cultivated in 1596 by Gerard.

21. Arum pictum, or painted arum: leaves cordate, painted with coloured veins. Root-leaves three or four, petioled, painted on their upper ſurface with white veins.

22. Arum ovatum: leaves ovate-oblong, ſpathe ſcabrous. Native of the Eaſt Indies.

23. Arum tenuifolium, or graſs-leaved arum or narrow-leaved friar's cowl: leaves lanceolate, ſpadix briſtle-ſhaped, declinate. Leaves five or ſix, ſhining, reſembling thoſe of narrow-leaved plaintain. It was cultivated, as we learn from Lobel, in 1570, and flowered in Mr. Ray's garden at Cambridge. It grows naturally about Rome, alſo about Montpellier, in Dalmatia, and the Levant.

24. Arum cannæfolium: leaves lanceolate veinleſs. Root-leaves few, petioled, two feet long, reſembling very much thoſe of canna. Scape very ſhort. Spathe rather obtuſe, red without, white within, with the edge alſo white. In the ſpadix there is no ſpace between the ſtamens and the piſtils. Native of Surinam, on trees, paraſitical.

III. Cauleſcent. 25. Arum arboreſcens, or tree arum: ſtraight, leaves ſagittate. Native of South America.

26. Arum ſeguinum, or dumb-cane arum: nearly upright, leaves lanceolate ovate. The leaves of this ſpecies are ſometimes punched with holes, as in *dracontium pertuſum*. It riſes to the height of ſix or ſeven feet, with a green jointed ſtalk as large as a walking-cane: the leaves are placed irregularly at the top of the ſtalks, growing in a cluſter; they are oblong, and of a light-green colour: from between the leaves the flowers come out on the ſide of the ſtalk, having a long ſpathe of a pale green colour, marked with white ſpots, ſitting cloſe to the ſtem of the plant; at the firſt appearance it ſtands erect, ſoon after it becomes horizontal, and in little time declines downward; the lower part is ſwelling ſo far as the flowers are ranged on the ſpadix, above which it is greatly contracted, and toward the top enlarges again, where it is a little open, ſo as to ſhew the naked part of the ſpadix, but is twiſted again at the top: all the lower part folds cloſely over the ſpadix, ſo that it is ſcarcely diſcernible, unleſs the ſpathe be opened, which can only be done on one ſide, the other adhering cloſely to the ſpadix, ſo far upward as the flowers extend, the naked part of the ſpadix only being ſeparated from the ſpathe; ſo that the female flowers and ſtamens are ranged only on one ſide of the ſpadix, in which it differs from all the other ſpecies which we have ſeen. It grows naturally in the ſugar iſlands, and other warm parts of America, chiefly in the low grounds; the whole plants abound in an acrid juice, ſo that if a leaf or a part of the ſtalk be broken, and applied to the tip of the tongue, it cauſes a very painful ſenſation, and ſuch an irritation on the ſalivary ducts, that they preſently ſwell, ſo that the perſon cannot ſpeak: from this quality, and its being jointed, they call it *dumb-cane* in Jamaica, where it is ſaid they ſometimes rub the mouths of their negroes with it, by way of puniſhment. The ſtalk is uſed for a better purpoſe, to bring ſugar to a good grain, when the juice is too viſcid, and cannot be brought to granulate rightly with lime alone. A decoction of the plant is recommended by way of fomentation in dropſies; it certainly muſt be a ſtrong reſolutive, which cannot fail to ſtrengthen and ſtimulate the relaxed fibres, in ſuch caſes.

27. Arum hederaceum, or ivy-leaved arum: radicant; leaves cordate oblong acuminate, petioles round. Native of the Weſt Indies.

28. Arum lingulatum, or tongue-leaved arum: creeping; leaves cordate-lanceolate, petioles edged with membranes. This climbs trees with great eaſe, and grows more ſucculent and luxuriant towards the top. Native of the Weſt Indies.

29. Arum auritum, or ear-leaved arum: radicant; leaves ternate, thoſe on the ſide one-lobed. This is alſo a climbing plant, ſending out ſhoots from the ſtem and branches. The leaves are large, heart-ſhaped, having three lobes or ears. The flowers are incloſed in a large ſpathe, but theſe are not fruitful in England. It is a native of the Weſt Indies; is pretty frequent in all the hills of Jamaica, and generally found climbing among the trees. It is the only ſpecies that is obſerved to be furniſhed with compound leaves in that iſland. It was cultivated in 1748 by Miller.

30. Arum Indicum, or Indian arum: nearly upright; leaves ovate, bifid at the baſe, rounded; ſpadixes axillary. Stem five feet high, as thick as the human arm, uſually upright. Native of the Eaſt Indies. Cultivated in Cochin-China, where the ſtalk is boiled and eaten.

31. Arum cucullatum, or cowled arum: upright; leaves peltate, cordate, with the ears cowled. Root fleſhy, large, round, quite ſimple. Stem upright, two feet high. The berries have four ſeeds in them. Native of the ſuburbs of Canton.

32. Arum ſpirale, or ſpiral arum: ſtemleſs; leaves lanceolate, ſpathe ſpiral ſeſſile. Root jointed, creeping. Native of Tranquebar, in the Eaſt Indies; where it was found by Koenig.

Propagation and Culture. Common dragon is very hardy, and will grow in any ſoil or ſituation. It propagates very faſt by offsets from the root. The time to tranſplant it is in autumn, when the leaves decay. Our common arum, growing naturally in woods, &c. is ſeldom admitted into gardens. The large Italian ſort propagates very faſt, as well as this, by offsets from the root, and will thrive in any ſoil or ſituation. The beſt time to tranſplant theſe is ſoon after the ſeeds are ripe, for by the end of October they will be putting out new fibres. The ariſarums flower in April, but ſeldom produce ſeeds in England; they multiply however faſt by offſets, and ſhould have a ſhady ſituation. They have little beauty to recommend them. The cauleſcent arums are propagated by cutting off the ſtalks into lengths of three or four joints, which muſt be laid to dry ſix weeks or two months; for, if the wounded part be not perfectly healed over before the cuttings are planted, they will rot and decay: they ſhould be put in ſmall pots filled with light ſandy earth, and plunged into a moderate hot-bed of tan, being careful that they have little wet, till they have made good roots; when they are well eſtabliſhed at bottom, ſome of them may be placed in a dry ſtove, and others plunged into the tan-bed in the bark-ſtove, where they will make the greateſt progreſs, and produce more flowers than the others. Theſe are tender plants, muſt be kept therefore conſtantly in the ſtove, and ſhould have very little wet in winter.

Arum Æthio'picum. See Calla.

Arum Scan'dens, &c. See Dracontium.

A'RUN, a river of England, which runs into the ſea at Little Hampton in Suſſex, lately made navigable to Petworth and Midhurſt, at the expence of the earl of Egremont.

ARUN'CUS, ſ. in botany. See Spiræa.

ARUN'DA, a town of Hiſpania Bætica, on the Annas, or Guadiana; now ſaid to be *Ronda*, in the province of Granada, on the confines of Andaluſia. Lat. 63.26. lon. 5.40. W.

A'RUNDEL, [q. d. a dale by the river Arun.] An ancient borough-town in Suſſex, governed by a mayor and twelve burgeſſes, with conſtables, portreeves, ale-conners, &c. It is pleaſantly ſituated on the declivity of a hill, the upper part of which commands a beautiful view of rich meadows, well watered by the river Arun: the ſea, at an agreeable diſtance, terminates the proſpect. The navigable river interſects a ſmall part of the town, which is united by a neat ſtone bridge of three arches, built in 1724. The town has been lately much enlarged and improved, and the principal ſtreets are well paved. The north-eaſt part of the town is flanked by that venerable caſtle, which gives title of earl without creation; its ſituation is lofty, and has adjoining an extenſive park of many hundred acres, lately laid out by the preſent noble poſſeſſor, his grace the duke of Norfolk. This caſtle was probably one of the ſtrongeſt in England, both from its ſtructure and ſituation. To the ſouth, it is guarded from approach by the ſteepneſs of the hill on which it ſtands; and on this ſide the windows command a very fine view of the vale through which the Arun beautifully winds. On the north-weſt, which is flanked by a very deep foſſe, is the citadel, erected on another and ſmaller hill, which overlooks the caſtle: many of the ancient buildings have mouldered into ruin; but there are ſtill veſtiges of a very large and elegant banquetting-hall, and the gateway is in a tolerable ſtate of preſervation.

Arundel has four fairs annually, viz. May 14, Aug. 21, September 25, and December 17, for cattle and pedlary. Markets on Thurſdays (principally for corn, which is very conſiderable) and Saturdays. It is environed by upwards of thirty villages within the diſtance of four miles, amongſt which are Little Hampton, a much-frequented watering-place, for the ſafety of its bathing, being ſituated eaſt of the harbour's mouth, and between three and four miles ſouth of Arundel; from which, paſſing north-eaſt through Ruſtington, at three miles diſtance, is Angmering, a conſiderable village, the reſidence of William Gratwicke, Eſq. and in the north part of this pariſh is a pleaſant and extenſive park belonging to Sir John Shelly, Bart. whoſe ſeat is adjoining, called Michelgrove; five miles north-eaſt of Arundel, proceeding north over a pleaſant down, (leaving Parham, the ſeat of Sir Cecil Biſhop, Bart. to the left,) is Amberly, noted for its ancient caſtle; croſſing the river Arun, is Bury, four miles north of Arundel, whoſe inhabitants have ample returns for their induſtry, by the richneſs of the ſoil; paſſing to the ſouth-eaſt over part of Houghton, is Madehurſt, on a well-choſen ſpot for extenſive proſpects; the next adjoining pariſh to the weſt, is Slindon, the reſidence of the earl of Newburgh, whoſe delightful ſeat for proſpect far ſurpaſſes every other in this part of Suſſex. Arundel is ſituated ten miles eaſt of Chicheſter, eleven ſouth of Petworth, fourteen ſouth-weſt of Steyning, fourteen weſt of Shoreham, and fifty-five from London. It has about 1800 inhabitants, and ſends two members to parliament.

Arundel, a town of North America, in the province of Main, belonging to the ſtate of Maſſachuſet.

Arundel (Thomas), archbiſhop of Canterbury in the reigns of Richard II. Henry IV. and Henry V. He was the ſecond ſon of Robert earl of Arundel and Warren, and brother of Richard earl of Arundel who was beheaded. At twenty-two years of age, from being archdeacon of Taunton he was raiſed to the biſhopric of Ely, the 6th of April, 1375. In 1386, he was appointed lord chancellor of England; two years after, he was tranſlated to the ſee of York; and, in 1396, was advanced to the archiepiſcopal ſee of Canterbury, on which he reſigned the chancellorſhip: this was the firſt inſtance of the tranſlation of an archbiſhop of York to the ſee of Canterbury. Scarcely was he fixed in this ſee, when he had a conteſt with the univerſity of Oxford about the right of viſitation. The affair was referred to king Richard, who determined it in favour of the archbiſhop. In the ſecond year of his tranſlation, the commons impeached him, together with his brother the earl of Arundel, and the duke of Glouceſter, of high treaſon. The archbiſhop was ſentenced to be baniſhed, and within forty days to depart the kingdom on pain of death. On the acceſſion of Henry IV. however, he was reſtored to his ſee; and in the firſt year of this prince's reign, Arundel ſummoned a ſynod, which ſat at St. Paul's. The next year the commons moved, that the revenues of the church might be applied to the ſervice of the public; but Arundel oppoſed the motion with ſuch vigour, that it was thrown aſide. In the year 1408, he began to exert himſelf againſt the Lollards, or Wickliffites; and his zeal for ſuppreſſing that ſect carried him to ſeveral unjuſtifiable ſeverities, particularly againſt Sir John Oldcaſtle and lord Cobham. He alſo procured a ſynodical conſtitution, which forbade the tranſlation of the Scriptures into the vulgar tongue. This prelate died at Canterbury, Feb. 20, 1413, of an inflammation in his throat, with which he was ſeized (as it was pretended) while he was pronouncing ſentence upon lord Cobham. The Lollards aſſerted this to be a judgment from God; and indeed biſhop Goodwin ſpeaks in the ſame manner, ſaying, "He who had withheld from the people the word of God, the food of the ſoul, by the juſt judgment of God had his throat ſo cloſed, that he could not ſpeak a ſingle word, nor ſwallow meat or drink, and was ſo ſtarved to death." He was buried in the cathedral of Canterbury, under a monument erected by himſelf in his life-time. To this church he was a conſiderable benefactor: he built the lantern tower and great part of the nave; and he gave a ring of five bells, called from him *Arundel's ring*; ſeveral rich veſtments, a mitre enchaſed with jewels, a ſilver gilt croſier, and two golden chalices.

Arundel (Lord Thomas), ſecond baron of Wardour, and count of the ſacred Roman empire, a nobleman very much diſtinguiſhed in the ſupport of Charles I. againſt the parliament, died at Oxford the 19th of May, 1643, aged 59, of the wounds he received at the battle of Lanſdown, in the ſervice of the king, for whom he raiſed a regiment of horſe at his own expence at the time of the uſurpation.

Arundel (Lady Blanch), was conſort to the above nobleman, and daughter of Edward Somerſet earl of Worceſter. This lady, as diſtinguiſhed for her bravery as for the ſplendour of her birth, in the abſence of her huſband bravely defended the caſtle of Wardour, with a courage above her ſex, for nine days, with a few men, againſt Sir Edward Hungerford and Edmund Ludlow and their army, and then delivered it up on honourable terms. The account of the noble defence ſhe made againſt her beſiegers is told in the "Mercurius Ruſticus," a kind of newſpaper of thoſe times in which it was written; and which, in the narrative of the behaviour of the parliamentary generals, will recall perhaps to the mind of the reader the ſcenes of ravage, deſolation, and murder, which have taken place in a neighbouring nation. "On Tueſday, May 2, 1643, Sir Edward Hungerford, a chief commander of the rebels in Wiltſhire, came with his forces before Wardour-caſtle in the ſame county, being the manſion-houſe of the lord Arundel of Wardour. But finding the caſtle ſtrong, and thoſe that were in it reſolute not to yield it up unleſs by force, called colonel Strode to his help. Both theſe joined in one made a body of 1300, or thereabout. Being come before it, by a trumpet they ſummon the caſtle to ſurrender: the reaſon pretended was, becauſe, the caſtle being a receptacle of cavaliers and malignants, both houſes of parliament had ordered it to be ſearched for men and arms; and withal by the ſame trumpeter declared, that, if they found either money or plate, they would ſeize on it for the uſe of the parliament. The lady Arundel (her huſband being then at Oxford, and ſince that dead there) refuſed to deliver up the caſtle; and bravely replied, that ſhe had a command from her lord to keep it, and ſhe would obey his command. Being denied entrance, the next day they bring up the cannon within muſquet-ſhot, and begin the battery, and continue from the Wedneſday to the Monday following, never giving any intermiſſion to the beſieged, who were but twenty-five fighting men, to make good the place againſt an army of 1300 men. In this time they ſpring two mines; the firſt in a vault, through which beer and wood and other neceſſaries were brought into the caſtle; this did not much hurt, it being without the foundation of the caſtle. The ſecond was conveyed in the ſmall vaults; which, by reaſon of the intercourſe between the ſeveral paſſages to every office, and almoſt every room in the caſtle, did much ſhake and endanger the whole fabric. The rebels had often tendered ſome unreaſonable conditions to the beſieged to ſurrender; as to give the ladies, both the mother and the daughter-in-law, and the women and children, quarter, but not the men. The ladies, both infinitely ſcorning to ſacrifice the lives of their friends and ſervants to redeem their own from the cruelty of the rebels, who had no other crime of which they could count them guilty but their fidelity and earneſt endeavours to preſerve them from violence and robbery, chooſe bravely (according to the nobleneſs of their families from which they were both extracted) rather to die together than live on ſo diſhonourable terms. But now, the caſtle brought to this diſtreſs, the defendants few, oppreſſed with number, tired out with continual watching and labour from Tueſday to Monday; now, when the rebels had brought petarrs, and applied them to the garden-doors, and balls of wild-fire to throw in at their broken windows, and all hopes of keeping the caſtle were taken away; now, and not till now, did the beſieged ſound a parley. The articles of ſurrender were theſe: That the ladies and all others in the caſtle ſhould have quarter. That the ladies and ſervants ſhould carry away all their wearing-apparel; and that ſix of the ſerving-men, whom the ladies ſhould nominate, ſhould attend upon their perſons whereſoever the rebels ſhould diſpoſe of them. That all the furniture and goods in the houſe ſhould be ſafe from plunder, and to this purpoſe one of the ſix nominated to attend the ladies was to ſtay in the caſtle, and take an inventory of all in the houſe; of which the commanders were to have one copy, and the ladies another. But, being on theſe terms maſters of the caſtle and all within it, 'tis true they obſerved the firſt article, and ſpared the lives of all the beſieged, though they had ſlain in the defence at leaſt ſixty of the rebels. But for the other two they obſerved them not in any part. As ſoon as they entered the caſtle, they firſt ſeized upon the ſeveral trunks and packs which they of the caſtle were making up, and left neither the ladies nor ſervants any other wearing-clothes but what was on their backs. There was in the caſtle, amongſt many rich ones, one extraordinary chimney-piece, valued at two thouſand pounds; this they utterly defaced, and beat down all the carved works thereof with their pole-axes. There were likewiſe rare pictures, the work of the moſt curious pencils that were known to theſe latter times of the world, and ſuch that Apelles himſelf (had he been alive) need not bluſh to own for his. Theſe in a wild fury they break and tear to pieces; a loſs that neither coſt nor art can repair. Having thus given them a taſte what performance of articles they were to expect from them, they barbarouſly lead the ladies, and the young lady's children, two ſons and a daughter, priſoners to Shafteſbury, ſome four or five miles from Wardour. While they were priſoners, to mitigate their ſorrows, in triumph they bring five cart-loads of their richeſt hangings and other furniture through Shafteſbury towards Dorcheſter; and ſince that, they plundered the whole caſtle: ſo little uſe was there of the inventory we told you of, unleſs to let the world know what lord Arundel loſt, and what the rebels gained. This havock they made within the caſtle. Without they burnt all the out-houſes; they pulled up the pales of two parks, the one of red deer, the other of fallow; what they did not kill they let looſe to the world for the next taker. In the parks they burn three tenements and two lodges; they cut down all the trees about the houſe and grounds; they dig up the heads of twelve great ponds, ſome of five or ſix acres a-piece, and deſtroy all the fiſh. They drive away and ſell their horſes, kine, and other cattle; and, having left nothing either in air or water, they dig under the earth. The caſtle was ſerved with water brought two miles by a conduit of lead; and, intending rather miſchief to the king's friends than profit to themſelves, they cut up the pipe and ſold it (as theſe men's wives in North Wiltſhire do bone-lace) at ſix-pence a-yard; making that waſte for a poor inconſiderable ſum which two thouſand pounds will not make good. Lady Arundel died Oct. 28, 1649, aged ſixty-ſix; and is buried with her lord, near the altar of the very elegant chapel at Wardour-caſtle, built by the preſent lord Arundel.

Arundel Oil, in the materia medica. At Bombay, Gambroon, and Surat, in the Eaſt Indies, there grows a tree which bears a nut incloſed in a rough huſk, which reſembles much the horſe-cheſnut; and the kernel of the nut yields an oil by expreſſion, which is of a purgative nature. A tea-ſpoonful of it is reckoned a doſe. The tree goes by the name of the *Arundel tree* at Bombay, and its oil by that of the *Arundel oil*. Mr. Sinclair, one of the ſurgeons belonging to the royal regiment of artillery, who was formerly ſurgeon to an Eaſt-India ſhip, gave Dr. Monro of London a ſmall bottle full of this oil, which he ſaid was much uſed for the cure of the dyſentery in India, and that he had given it in four recent caſes of dyſentery with ſucceſs. Dr. Monro thinks it probable that this is the oil of the purging nuts mentioned in Dale's Pharmacologia, which are got from the tree called *lignum moluccenſe, pavana dictum, fructu avellanæ*, J. B. 1. 342; and *pinus Indica, nucleo purgante*. C. B. 492; and the *palma Chriſti Indica*, Tournefort Mat. Med.

ARUNDELIAN MARBLES, Oxford Marbles, or Parian Chronicle, are tables of marble, whereon is inſcribed a chronicle of the city of Athens, engraved in the iſland of Paros, one of the Cyclades, 264 years before the birth of Chriſt. They take their firſt name from Thomas earl of Arundel, who procured them out of the Eaſt; or from Henry his grandſon, who preſented them to the univerſity of Oxford. The Arundelian marbles, in their perfect ſtate, contained a chronological detail of the principal events of Greece during a period of 1318 years, beginning with Cecrops, before Chriſt 1582 years, and ending with the archonſhip of Diognetus, before Chriſt 264. But the chronicle of the laſt ninety years is loſt; ſo that the part now remaining ends at the archonſhip of Diotimus, 354 years before the birth of Chriſt; and in this fragment the inſcription is at preſent ſo much corroded and effaced, that the ſenſe can only be ſupplied by conjecture. This chronicle, and many other relics of antiquity, were purchaſed in Aſia Minor, in Greece, or in the iſlands of the Archipelago, by Mr. William Petty, who in the year 1624 was ſent by Thomas earl of Arundel for the purpoſe of making ſuch collections for him. They were brought into England about the beginning of the year 1627, and placed in the gardens belonging to Arundel-houſe in London. Soon after their arrival they excited a general curioſity, and were viewed by many inquiſitive and learned men; among others by Sir Robert Cotton, who prevailed upon Selden to employ his abilities in explaining the Greek inſcriptions. Selden, and two of his friends, Patrick Young, or, as he ſtyled himſelf in Latin, *Patricius Junius*, and Richard James, immediately commenced their operations, by cleaning and examining the marble containing the Smyrnean and Magneſian league. The following year Selden publiſhed a ſmall volume in quarto, including about thirty-nine inſcriptions, copied from the marbles. In the turbulent reign of Charles I. and the ſubſequent uſurpation, Arundel-houſe was often deſerted by its illuſtrious owners; and, in their abſence, ſome of the marbles were defaced and broken, and others either ſtolen or uſed for the ordinary purpoſes of architecture. The chronological marble, in particular, was unfortunately broken and defaced. The upper part, containing thirty-one epochas, is ſaid to have been worked up in repairing a chimney in Arundel-houſe. In the year 1667, the honourable Henry Howard, afterwards duke of Norfolk, the grandſon of the firſt collector, preſented theſe ſuppoſed remains of antiquity to the univerſity of Oxford.

The Arundelian marbles have generally been regarded as a curious monument of antiquity. They were, however, in ſome inſtances, found to be inconſiſtent with the moſt authentic hiſtorical accounts; Sir Iſaac Newton, and ſeveral other modern philoſophers, paid little regard to them; and of late their abſolute authenticity was ſeverely queſtioned by Dr. Robertſon, in an expreſs diſſertation upon the ſubject, entitled, "The Parian Chronicle." In this diſſertation much ingenuity and learning are diſplayed; and yet the Monthly Reviewers very fairly turned moſt of this ingenious author's obſervations againſt himſelf. The arguments of Dr. Robertſon have alſo ſince been combated by Mr. Hewlett, and Mr. Gough; both of whom have defended the Arundelian marbles with ſo much reaſon and ability, that all the former objections againſt their authenticity finally appear to be done away.

ARUNDINA'CEOUS, *adj.* [*arundinaceus*, Lat.] Of or like reeds.

ARUNDI'NEOUS, *adj.* [*arundineus*, Lat.] Abounding with reeds.

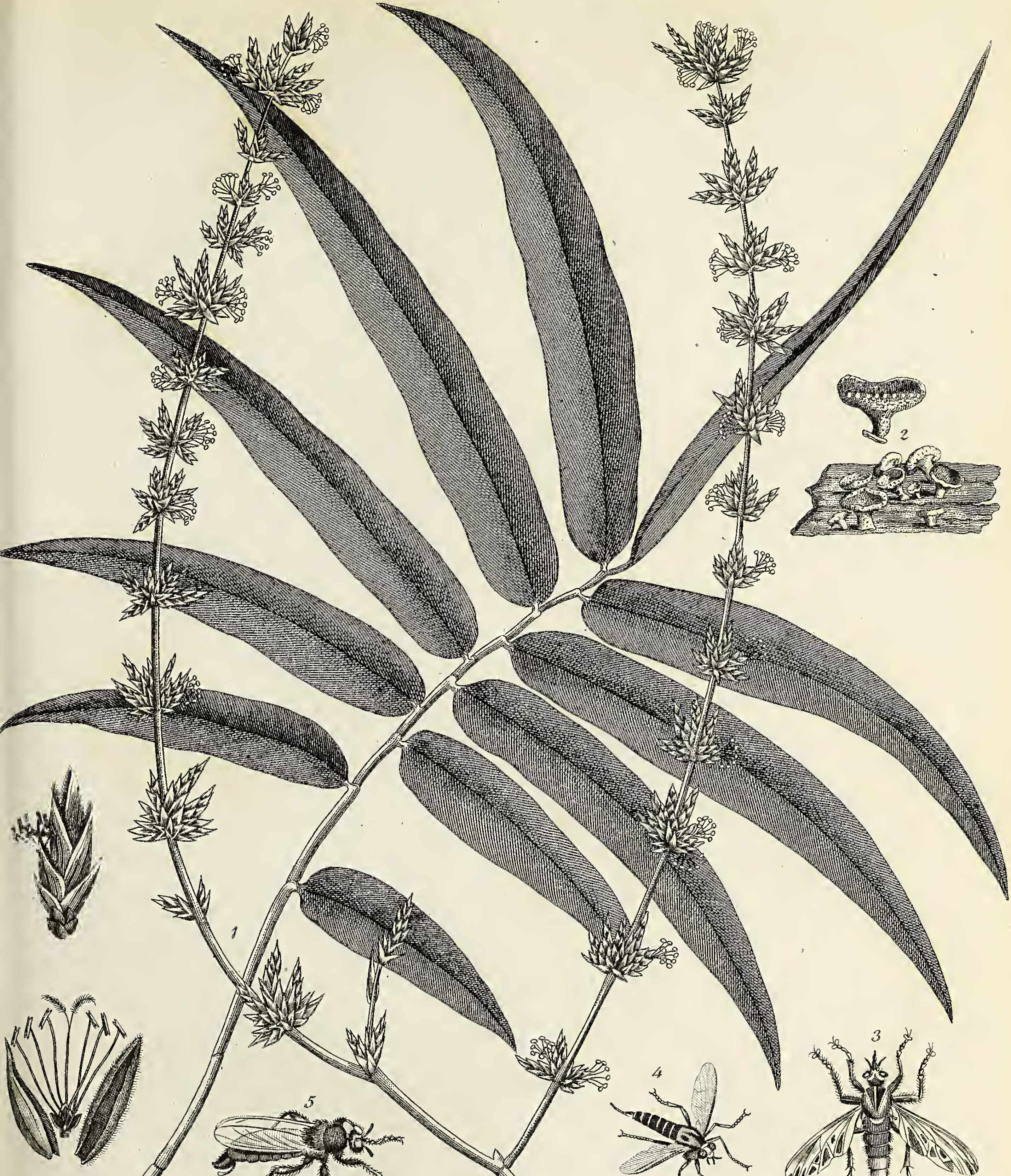
ARUNDINE'TUM, *ſ.* A ground or place where reeds grow. 1 *Inſt.* 4. And it is mentioned in the book of Domeſday.

ARUN'DO, *ſ.* [from *areo*, Lat. becauſe it ſoon becomes dry.] In botany, a genus of the triandria digynia claſs, ranking in the natural order of gramina, or graſſes. The generic characters are—Calyx: glume one or many flowered, two-valved, erect; valves oblong, acuminate, awnleſs; one ſhorter. Corolla: two-valved; valves the length of the calyx, oblong, acuminate; from their baſe ariſes a lanugo, almoſt the length of the flower; nectary two-leaved, very ſmall. Stamina: filaments three, capillary; antheræ forked at both ends. Piſtillum: germ oblong; ſtyles two, capillary, reflex, villoſe; ſtigmas ſimple. Pericarpium: none; corolla adheres to the ſeed without gaping. Seed: ſingle, oblong, acuminate at both ends, furniſhed with a long down (pappus) at the baſe.—*Eſſential Character.* Calyx, two-valved; florets heaped, ſurrounded with wool.

Species. 1. Arundo bambos, or bambu, or bamboo-cane: calyxes many-flowered, ſpikes in threes, ſeſſile. The bamboo has a woody, hollow, round, ſtrait, column, forty feet high and upwards, ſimple, and ſhining; the internodes a foot in length and circumference; ſheaths thick, hairy, rough, convolute, deciduous; branches alternate, ſlender, ſolid, ſpiny, reclining, ſpringing out from the baſe to the very top; the lower ones being uſually cut off. Rumphius was deceived in aſſerting that it branches only towards the top. Leaves ſmall, quite entire, lanceolate, roundiſh at the baſe, ſtriated, rough, on alternate round petioles. The hollow internodes of the culm are frequently found filled with a limpid liquor, which in India beyond the Ganges is not condenſed into the ſubſtance called *tabaxir* or *tabaſher*, as it is, though rarely, in Malabar. Although the bamboo be very common in Japan, Thunberg never ſaw it in flower; and, there being no accurate deſcription in any author, it is obſerved by Loureiro, that Linnæus's ſpecific character is very erroneous. He therefore, having had the opportunity of ſeeing living plants flowering in their native ſoil, has ſubſtituted the following: Flowers ſix-ſtamened; panicle diffuſed, with imbricate ſpikelets; branches of the culm ſpiny; calyxes one-flowered. Retzius, ſeeing that the bamboo has nothing in common with the reeds, would make a diſtinct genus of it. His character of the ſpecies is this: Panicle branched, divaricate, hard; ſpikes heaped alternately, unequal in number, ſeſſile. The bamboo-cane grows naturally almoſt every where within the tropical regions. Over a great part of Aſia it is very common. In China, Cochin-China, Tonquin, Cambodia, Japan, Ceylon, the peninſula of India, and the iſlands. This uſeful plant has been long ſince introduced into the Weſt-Indies; and is ſaid to flouriſh likewiſe in South Carolina. Mr. Miller cultivated it in 1730. He ſays we have plants more than twenty feet high; and if our ſtoves were high enough, they would probably riſe to twice that height. A ſtrong ſhoot from the root will grow twenty feet in five or ſix weeks. Some of the ſtems are as large as a man's wriſt, but in general they are as big as common walking-ſticks, and when dried are as fit for that purpoſe as thoſe which are imported. There is perhaps ſcarcely any plant that ſerves for ſuch a variety of domeſtic purpoſes as the bamboo. In the Eaſt Indtes great uſe is made of it in building, and the houſes of the meaner people are almoſt entirely compoſed of it. Dr. Patrick Browne mentions, that it was yet ſtrong and perfect in ſome of the houſes which had been built by the Spaniards in Jamaica above a hundred years before. Bridges are alſo made of it, maſts for their boats, boxes, cups, baſkets, mats, and a great variety of other utenſils and furniture, both domeſtic and rural. Paper is alſo made from it, by bruiſing, and ſteeping it in water, and thus forming it into a paſte. It is the common fence for gardens and fields; and is frequently uſed as pipes for conveying water. The leaves are generally put round the cheſts of tea which are ſent to Europe from China, as package, faſtened together, ſo as to form a kind of mat. The tops of the tender ſhoots are frequently pickled in the Weſt Indies. In the cavities or tubular parts of the bamboo, is found at certain ſeaſons a concrete white ſubſtance, called *tabaſheer* or *tabachir*, an article which the Arabian phyſicians hold in high eſtimation. It is commonly found in what are called the female or large bamboos. The bamboos which contain this concrete are found on ſhaking to contain a fluid, which, after ſome time, gradually leſſens, and then they are opened, in order to extract the tabaſheer. The nature of this ſubſtance is very different from what might have been expected in the product of a vegetable. Its indeſtructibility by fire, its total reſiſtance to acids; its uniting by fuſion with alkalies in certain proportions into a white opake maſs, into a tranſparent permanent glaſs; and its being again ſeparable from theſe compounds entirely unchanged by acids, &c. ſeem to afford the ſtrongeſt reaſons for conſidering it as very nearly identical with common ſiliceous earth. As to its medical virtues, though the drug be, as before obſerved, in much eſteem with the orientaliſts, yet they are not ſuch as to cauſe it to have any regard paid it in the modern practice of phyſic in Europe. Yet the virtues of the ſeveral parts of the bamboo are very conſiderable, according to Loureiro, who, in his Flora Cochinchinenſis, tells us, that the leaves, bark, buds, and root, are uſed. The leaves, he ſays, are cooling, emollient, and

reſolvent;

ARUNDO, ASCOBOLUS, AND ASILUS.



J. Paſs Sc.

1. Sprigs of the Bamboo, with its Fructification. 2. Ascobolus lignatilis. 3. Asilus crabroni formis;
4. Tipuloides; 5. Flavus; three species of the Hornet fly.

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reſolvent: their decoction is good in fevers, coughs, pains of the throat, &c. the thin bark is cooling and agglutinant, and a gentle aſtringent: it is good in feveriſh heats, hæmorrhages, nauſeas, and vomitings: the roots and buds are attenuating, and promote urine, and purify the blood; are good in difficulties of urine, wandering pains, obſtructions, and in venereal caſes: from the freſh roots mixed with tobacco-leaves and betel in equal portion, and infuſed and macerated for ſome days in oil, is prepared an ointment of great efficacy in diſcuſſing hard and ſchirrhous ſwellings. There is a variety of this, of which the Turks make their pens. It was obſerved by Tournefort in a valley near mount Athos, and on the banks of the river Jordan. There are doubtleſs many other varieties of the bamboo in the Eaſt Indies; and ſome, which we look upon as ſuch, may poſſibly prove, on more accurate examination, to be really diſtinct. Loureiro, beſides three ſpecies, mentions three principal varieties which he had obſerved. 1. Arundo maxima: the higheſt and thickeſt of all the bamboos, covered very thick with ſpines. 2. Arundo fax: the moſt hollow of any of the bamboos, and the internodes remarkably long: they fill them with oil and tow, and thus uſe them as torches in travelling, 3. Arundo tabacaria: theſe are poliſhed, and much uſed for tobacco-pipes by the natives. Many other varieties may be ſeen in Rumphius. Sloane and Browne deſcribe the bamboo of Jamaica to be only from twelve to fifteen feet in height, and about an inch and half in diameter at the bottom.

2. Arundo donax, or cultivated reed: calyxes five-flowered, panicle diffuſed, culm ſhrubby. The donax or cultivated reed, or evergreen reed, as the gardeners ſometimes call it; the great Spaniſh or Cyprus reed or cane, as it is named by Ray; the Spaniſh reed of Parkinſon; and the cypreſs cane or pole reed of Gerard; has the culm ſix feet high, or more, (to ten, fifteen, and according to ſome authors twenty or thirty feet,) hard, almoſt woody, with knots or joints and diaphragms. Above each joint a leaf, embracing the culm with a yellow hollow ſheath, two feet long, and three inches broad. The top of the culm ends in a point, the leaves rolling up in form of a cone. The panicle is a foot and half long, erect, and many-flowered. There are two flowers, and ſometimes three, in one calyx, but two only ripen. Moſt authors ſet down the calyxes as three-flowered; but in the late editions of the *Syſtema Vegetabilium* they are given as five-flowered, on the authority of Turra. It is a native of the ſouth of Europe, Siberia, Egypt, Cochin-China, &c. It flowers with us in July and Auguſt; and was cultivated in the Oxford botanic garden in 1648. The canes are brought to us from Spain and Portugal, for the uſe of our weavers, for fiſhing rods, &c. In Italy they are frequently uſed for the ſupport of their vines. They are called there *canna de giardini*; in Spain *cana lenoſa*, or ſimply *cana*; in Portugal *caneira*, or *cana ordinaria*; in France *roſeau cultivé*, *canne des jardins*, or ſimply *canne*; in Germany *zahme-rohr*, *garten-rohr*, *ſpaniſche-rohr*, &c. in Holland *hengel-riet*, *zaay-riet*, *tam-riet*, *cyperſch-riet*, *ſpaanſch-riet*; in Sweden *tragardſror*, or *ſpankſror*; in Denmark *dyrkederor*, *haugerneſror*, *ſpanſk-ror*. There is a variety with variegated leaves, called *ſtriped* or *party-coloured reed*; it never grows to a third part of the height of the other, and the leaves are narrower and much ſhorter.

3. Arundo phragmites, or common reed: calyxes five-flowered, panicle looſe. Common reed has the root perennial, creeping, commonly the height of a man, but varying from three to twelve feet, and having frequently twenty, twenty-five, or twenty-ſix, joints. Leaves flat, from five or ſix inches to a foot or a foot and half in length, and an inch, or from ten to fifteen lines, in breadth, glaucous green, ſmooth. The ſeeds are incloſed by the corolla, as Linnæus ſays, and are not ſurrounded by long hairs, as Leers has repreſented them. The reed flowers from July to September, and ripens its ſeeds in October and November. It is very common by the ſides of rivers, in ditches, and large ſtanding waters, throughout Europe, in Siberia, North America, &c. Thunberg obſerved it in Japan, with a wider panicle than ours, looſe, but not diffuſed, and an herbaceous culm. In autumn, when the leaves begin to fall, and the ſtems are changed brown, it is cut for making ſcreens in kitchen gardens, and for many other uſes: as thatching, for which it is much more durable than ſtraw, for cielings, and to lay acroſs the frame of wood-work as the foundation for plaiſter floors. The panicles are uſed by the country people in Sweden to dye wool green. The root has been recommended as a ſubſtitute for *radix chinæ*, and as anſwering the ſame purpoſes with dog's graſs, *triticum caninum*. Common reed is called in German *gemeine-rohr*, *rohrſchilf*, *buſchel-rohr*, *pfeifen-rohr*, *deck-rohr*, *teich-rohr*, *waſſer-rohr*, *weiher-rohr*, *zaunrieth*, and *waſſerfedergras*; in Dutch *gemeene-riet*, *water-riet*, and *dek-riet*; in Daniſh *geemeen-ror*; in Swediſh *ſtrand-ror*, *takvaſs*, *tak-ror*; in French *roſeau de marais*, *roſeau commun*, and *roſeau de balai*; in Italian *canna paluſtre*; in Spaniſh *cana paluſtre*, *cana de cercas*; in Portugueſe *carrico baſtardo*; in Ruſſian *kamyſch*.

4. Arundo epigejos, or ſmall reed-graſs: calyxes one-flowered, panicle erect, leaves ſmooth underneath. Root perennial, creeping far and wide. It differs from the common reed in its contracted panicle, equal on all ſides, not pointing one way. Native of many parts of Europe; flowering in July.

5. Arundo calamagroſtis, or wood reed-graſs: calyxes one-flowered, ſmooth; corollas woolly; culm branched. Root perennial, creeping. It differs from the foregoing ſpecies in having a more ſlender panicle, and the calyxes ſtraw-coloured, not drawn out into a very long point, nor blue at the edge. Scopoli removes this ſpecies to the genus *avena*, in which he is ſingular. Native of moſt parts of Europe, in moiſt woods and hedges; flowering in June and July.

6. Arundo arenaria, or ſea reed-graſs: calyxes one-flowered, leaves rolled inwards, dagger-pointed, and pungent. Sea reed-graſs has a ſtrong creeping perennial root, with many tubers at the joints the ſize of a pea. Seed not larger than canary-ſeed, but round, and rather ſharp at the upper end. Native of ſandy coaſts in Europe and America; flowering in June and July. By means of its creeping roots, it helps very much to conſolidate driving ſands, which gather about it in hills or banks, and are thus prevented from diſperſing over and impoveriſhing the adjoining fields. The Dutch have profited by a knowledge of this fact; and Mr. Woodward informs us, that it is planted about Wells in Norfolk, to aid in repelling the ſea. The country people know it by the names of *ſea matweed*, *marram* and *helme*. They cut and bleach it for making mats; and, where it is plentiful, houſes are thatched with it.

New Species. 7. Arundo conſpicula: calyxes one-flowered, panicle looſe from erect ſpreading, awn of the outer petal reflex and very long. Native of New Zealand.

8. Arundo agreſtis: flowers ſix-ſtamened, panicle ſpiked, ſpikelets heaped; lower branches of the culm very ſpiny, calyxes one-flowered. This ſpecies, being very hard, is extremely durable: on account of this quality, and the cloſeneſs of its ſpines, it is peculiarly proper to be employed in the circumvallation of fortified places. Native of Cochin-China, in mountains and dry deſert places.

9. Arundo mitis: flowers ſix-ſtamened; panicle erect, contracted; ſpikes long, imbricate; culm very even, unarmed; calyxes one-flowered. This is cultivated in Cochin-China, in the fields and hedges; and being divided into long thin pieces is uſed for weaving into hats, coffers, baſkets, and a variety of utenſils, which are very elegant.

10. Arundo multiplex: flowers ſix-ſtamened; ſpikes interrupted, ſpikelets in whorls; culm divided; calyxes one-flowered. Found in the northern provinces of Cochin-China, in cultivated places; where it is uſed as hedges for the ſeparation of gardens.

11. Arundo Bengalenſis: calyxes two-flowered; panicle erect with three-flowered pedicels. Native of Bengal; found there by Koenig.

12. Arundo piſcatoria: calyxes one-flowered, ſpike terminating, culm branched, leaves minute. Perennial, eight feet high, with leaves of a duſky green, ſmooth, and ſmaller than in any other of the Indian reeds. Native of Cochin-China. Being tough, and tapering towards the end, this cane is very fit for fiſhing-rods.

13. Arundo dioica: calyxes one-flowered; ſpikes in bundles, compound, ſpikelets linear. Native of Cochin-China, in woods.

14. Arundo colorata, or reed canary-graſs: calyxes one-flowered keeled, corollas ſmooth with two lanuginoſe pencils at the baſe, leaves flat. Root perennial, long, thick, jointed, creeping, covered with whitiſh or browniſh ſcales. Haller placed this ſpecies among the reeds; but Pollich and others refuſe to admit it into that genus, becauſe the true down or wool is wanting at the baſe of the florets, and there is only a ſhort hairineſs at the baſe of the calyx not appearing above the ſpikelet; analogy however ſeems ſufficiently to juſtify the ſituation in which we find it in Haller, and the catalogue of the royal garden at Kew. It is a native of Europe, on the banks of rivers and ditches; flowering in July and Auguſt. It is uſed to thatch ricks and cottages, for which purpoſe it is more durable than ſtraw. In the province of Scania they mow it twice a year, and their cattle eat it. The texture is ſo hard, that it ought to be cut very young, if we expect cattle to touch it. There is a cultivated variety of this graſs in our gardens with beautifully-ſtriped leaves. The ſtripes are generally green and white; but ſometimes they have a purpliſh caſt. This is called *ladies laces, painted graſs,* or *ribband graſs.*

Propagation and Culture. The bamboo muſt be preſerved in a warm ſtove, and, as the roots ſpread very wide, it ſhould be planted in a large tub, filled with rich earth; this muſt be plunged into the hot-bed in the bark-ſtove, and muſt have plenty of water. When the tub decays, if the plant be permitted to root in the tan, it will grow to a larger ſize; but then care muſt be taken, when the bed is refreſhed with new tan, to leave a ſufficient quantity of the old tan about the roots. It may be propagated by ſlips from the roots, which ſhould be taken off in the ſpring, that they may be well eſtabliſhed before winter. The cultivated reed, although native of warm countries, yet will bear the cold of our winters in the open ground, provided it be planted in a ſoil not too wet; and, if the winter ſhould prove very ſevere, a little mulch muſt be laid over the roots. It dies to the ſurface in autumn, and riſes again the ſucceeding ſpring: if it be kept ſupplied with water in dry weather, it will grow ten or twelve feet high the ſame ſummer. It is very proper to intermix with trees and ſhrubs, or with tall plants and flowers, where it will have a good effect, in adding to the variety. This is propagated by parting the roots early in the ſpring, before they begin to ſhoot, and will, in a year or two, if the ground be good, make very large ſtools, from each of which eight or ten canes are produced. It never flowers in England. The ſort with variegated leaves is much more tender than the other, and muſt be ſheltered from froſt, in order to be preſerved through the winter in England. See AGROSTIS, ANDROPOGON, CENCHRUS, MELICA, SPINIFEX, and ZIZANIA.

ARUNDO FLORIDA ET INDICA. See CANNA.

ARUNDO ROTANG. See CALAMUS.

ARUNDO SACCHARIFERA. See SACCHARUM.

ARUN'TIUS, a man who deſpiſed the rites of Bacchus, for which the god made him drink ſo much wine that he loſt his reaſon, and abuſed his own daughter Medulina, who was ſo exaſperated that ſhe killed her father for acting ſo diſhonourably to her virtue.

ARUSI'NI CAM'PI, (erroneouſly written *Tauraſini* by Cluverius,) plains in Lucania, famous for the laſt battle fought between the Romans and Pyrrhus. That prince being at Tarentum, and hearing that the two conſuls Curius Dentatus and Cornelius Lentulus had divided their forces, the one including Lucania and the other Samnium; he likewiſe divided his own army into two bodies, marching with his Epirots againſt Dentatus, in hopes of ſurpriſing him in his camp near Beneventum. But the conſul having notice of his approach, marched out of his entrenchments with a ſtrong detachment of legionaries to meet him, repulſed his vanguard, put many of the Epirots to the ſword, and took ſome of their elephants. Curius, encouraged by this ſucceſs, marched into the Aruſian fields, and drew up his army in a plain, which was wide enough for his troops, but too narrow for the Epirot phalanx to act with its full effect. Yet the king's eagerneſs to try his ſtrength and ſkill with ſo renowned a commander, ſtimulated him to engage at that great diſadvantage. Upon the firſt ſignal the action began; and one of the wings of Pyrrhus's army giving way, victory ſeemed to incline to the Romans. But that wing where the king fought in perſon repulſed the Romans, and drove them to their entrenchments. This advantage was in great part owing to the elephants; a circumſtance which Curius perceiving, he commanded a body of reſerve, which he had poſted near the camp, to advance and attack thoſe animals with burning torches; which frightened and annoyed them to ſuch a degree, that they wheeled about, broke into the phalanx, and put that body into the utmoſt diſorder. The Romans, taking advantage of this confuſion, charged with ſuch fury that the enemy were entirely broken and defeated. Pyrrhus retired to Tarentum, attended only by a ſmall body of horſe, leaving the Romans in full poſſeſſion of his camp; which they ſo much admired, that they made it a model for all their future encampments.

ARUS'PICES, or HARUS'PICES, in Roman antiquity, an order of prieſts who pretended to foretel future events by inſpecting the entrails of victims killed in ſacrifice; they were alſo conſulted on occaſion of portents and prodigies. The haruſpices were always choſen from the beſt families; and, as their employment was of the ſame nature as that of the augurs, they were as much honoured. Their college, as well as thoſe of the other religious orders, had its particular regiſters and records.

ARWAN'GEN, a town and caſtle of Swiſſerland, in the canton of Berne, ſituated on the Aar, twelve miles eaſt of Soleure.

ARX, ſ. in the ancient military art, a town, fort, or caſtle, for defence of a place. The arx in ancient Rome was a diſtinct edifice from the capitol, though ſome have confounded the two. According to Ryckius, the arx, properly ſpeaking, was a place on the higheſt part of the Capitoline Mount, ſtronger and better fortified than the reſt, with towers and pinnated walls; in which was alſo the temple of Jupiter Capitolinus.

ARX was particularly uſed for a public place in Rome, ſet apart for the operations of the augurs. In which ſenſe arx amounts to the ſame with what is otherwiſe called *auguraculum* and *auguratorium*, and in the camp *augurale*. Out of this arx it was that the *feciales*, or heralds, gathered the graſs uſed in the ceremony of making leagues, &c.

ARX BRITANNICA, a citadel of Batavia, whoſe foundation is ſeen at low water, near the old mouth of the middle Rhine: ſome imagine it the pharos or high tower of Caligula, as Suetonius calls it; a monument of Caligula's ſham conqueſt of Britain. Others, that it was built by Druſus, with an altar afterwards by Claudius, on his expedition into Britain.

A'RYS, a town of Italy, belonging to the republic of Venice, in the province of Friuli, ten miles weſt-ſouth-weſt of Palma la Nuova.

ARYS'TER, ſ. [from *αρυω*, to draw.] A veſſel or cup uſed for chemical purpoſes.

ARYTÆNOI'DES, ſ. [of *αρυω*, to drink, and *ειδος*, ſhape.] In anatomy, are two cartilages, which, with others, make up the top of the larynx, ſerving to render the voice more ſhrill or deep.

ARYTH'MUS, ſ. [of *α* priv. and *ρυθμος*, the pulſe.] A pulſe which is ſo far loſt, that it cannot be any longer felt; or an irregularity of it.

AR'ZAC, a town of France, in the department of the Lower Pyrenees, and chief place of a canton, in the diſtrict of Orthes, five leagues north of Pau.

AR'ZAMAS, a town of Ruſſia, in the government of Nize-Gorodſkoi: forty-eight miles ſouth of Niznei-Novogorod. Lat. 55. 20. N. lon. 61. 20. E. Ferro.

ARZAN'NO, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Quimperlé, five miles eaſt-north-eaſt of Quimperlé.

ARZ'BERG, a town of Germany, in Franconia, ſeven miles eaſt of Wonſiedel.

ARZENGAN', or ARZINGAN, a town of Aſiatic Turkey, in the province of Aladulia. It was taken by the Mogul Tartars in 1242; eighty miles ſouth-weſt of Erzerum.

AR'ZES, a town of the iſland of Cyprus, formerly a conſiderable city, and ſee of a Greek biſhop; but, ſince the poſſeſſion of the iſland by the Turks, it is reduced to the condition of a village.

ARZIGNA'NO, an open and populous town of Italy, ſituated at the foot of mountains, on a pleaſant ſpot, between the two rivers Chiampo and Gua or Agno.

ARZIL'LA, a ſea-port town of Africa, in the empire of Morocco, firſt built by the Romans. It was anciently ſubject to the Goths, from whom it was taken by the Mahometans, who held it till it was taken and burned by the Engliſh, at the ſolicitation of the Goths. After that it remained waſte and uninhabited for thirty years. It was re-built by the khaliffs of Cordova with greater magnificence than before. In 1470 it was taken by Alphonſo king of Portugal, but abandoned about the end of the ſixteenth century. It is five leagues ſouth of Tangiers.

AS, *conj.* [*als*, Teut.] In the ſame manner with ſomething elſe.—I live *as* I did, I think *as* I did, I love you *as* I did; but all theſe are to no purpoſe: the world will not live, think, or love, *as* I do. *Swift.*—In the manner that:

Mad *as* I was, I could not bear his fate
With ſilent grief, but loudly blam'd the ſtate. *Dryden.*

That; in a conſequential ſenſe.—The cunningeſt mariners were ſo conquered by the ſtorm, *as* they thought it beſt with ſtricken ſails to yield to be governed by it. *Sidney.*—In the ſtate of another:

Madam, were I *as* you, I'd take her counſel;
I'd ſpeak my own diſtreſs. *A. Philips.*

Under a particular conſideration; with a particular reſpect.—Dar'ſt thou be as good as thy word now?—Why, Hal, thou knoweſt, *as* thou art but a man, I dare; but, *as* thou art a prince, I fear thee, as I fear the roaring of the lion's whelp. *Shakeſpeare.*—Like; of the ſame kind with.—A ſimple idea is one uniform idea, *as* ſweet, bitter. *Watts.*—In the ſame degree with:

Well haſt thou ſpoke, the blue-ey'd maid replies,
Thou good old man, benevolent *as* wiſe. *Pope.*

As if; according to the manner that would be if.—They all contended to creep into his humour, and to do that, *as* of themſelves, which they conceived he deſired they ſhould do. *Hayward.*

Can miſery no place of ſafety know?
The noiſe purſues me whereſoe'er I go,
As fate ſought only me. *Dryden.*

According to what.—Who then is Paul, and who is Apollos, but miniſters by whom ye believed, even *as* the Lord gave to every man. 1 *Cor.*—As it were; in ſome ſort.—As for the daughters of king Edward IV. they thought king Richard had ſaid enough for them; and took them to be but *as* of the king's party, becauſe they were in his power, and at his diſpoſal. *Bacon.*—While; at the ſame time that:

So the pure limpid ſtream, when foul with ſtains
Of ruſhing torrents, and deſcending rains,
Works itſelf clear, and *as* it runs refines. *Addiſon.*

Becauſe.—He that commanded the injury to be done, is firſt bound; then he that did it; and they alſo are obliged who did ſo aſſiſt, *as* without them the thing could not have been done. *Taylor.*—Becauſe it is; becauſe they are.—The kernels draw out of the earth juice fit to nouriſh the tree, *as* thoſe that would be trees themſelves. *Bacon.*—Equally:

Before the place
A hundred doors a hundred entries grace;
As many voices iſſue, and the ſound
Of Sybil's words *as* many times rebound. *Dryden.*

How; in what manner.—Men are generally permitted to publiſh books, and contradict others, and even themſelves, *as* they pleaſe, with as little danger of being confuted, as of being underſtood. *Boyle.*—With; anſwering to *like* or *ſame*:

Siſter, well met; whither away ſo faſt?—
—Upon the like devotion *as* yourſelves,
To gratulate the gentle princes there. *Shakeſpeare.*

In a reciprocal ſenſe, anſwering to *as.*—*As* ſure *as* it is good that human nature ſhould exiſt; ſo certain it is, that the circular revolutions of the earth and planets, rather than other motions which might as poſſibly have been, do declare God. *Bentley.*—Going before *as*, in a comparative ſenſe; the firſt *as* being ſometimes underſtood:

Sempronius is *as* brave a man *as* Cato. *Addiſon.*
Bright *as* the ſun, and like the morning fair. *Granville.*

Anſwering to *ſuch.*—Is it not every man's intereſt, that there ſhould be *ſuch* a governor of the world *as* deſigns our happineſs, *as* would govern us for our advantage? *Tillotſon.*—Having *ſo* to anſwer it; in a conditional ſenſe.—*As* far *as* they carry light and conviction to any other man's underſtanding, *ſo* far, I hope, my labour may be of uſe to him. *Locke.*—*So* is ſometimes underſtood.—*As* in my ſpeculations I have endeavoured to extinguiſh paſſion and prejudice, [ſo] I am ſtill deſirous of doing ſome good in this particular. *Spectator.*—Anſwering to *ſo* conditionally:

So may th' auſpicious queen of love
To thee, O ſacred ſhip, be kind:
As thou, to whom the muſe commends
The beſt of poets and of friends,
Doſt thy committed pledge reſtore. *Dryden.*

Before *how* it is ſometimes redundant; but this is in low language.—*As* how, dear Syphax? *Addiſon.*—It ſeems to be redundant before *yet*; to this time.—Though that war continued nine years, and this hath *as* yet laſted but ſix, yet there hath been much more action in the preſent war. *Addiſon.*—In a ſenſe of compariſon, followed by *ſo*:

As when a dab-chick waddles through the copſe
On feet and wings, and flies, and wades, and hops;
So lab'ring on, with ſhoulders, hands, and head,
Wide as a windmill all his figure ſpread. *Pope.*

AS FOR, with reſpect to.—*As for* the reſt of thoſe who have written againſt me, they deſerve not the leaſt notice. *Dryden.*

AS IF, in the ſame manner that it would be if.—Anſwering their queſtions, *as if* it were a matter that needed it. *Locke.*

AS TO, with reſpect to:

I pray thee ſpeak to me *as to* thy thinkings,
As thou doſt ruminate; and give thy worſt of thoughts
The worſt of words. *Shakeſpeare.*

AS WELL AS, equally with.—Each man's mind has ſome peculiarity, *as well as* his face, that diſtinguiſhes him from all others. *Locke.*

AS THOUGH, as if.—Theſe ſhould be at firſt gently treated, *as though* we expected an impoſthumation. *Sharp.*

AS, *ſ.* [from αις, which in the Doric dialect is uſed for εις, one, q. d. an entire thing; though others will have it *as* quaſi *æs*, becauſe made of braſs.] In antiquity, a ſtandard weight, conſiſting of twelve ounces; being the ſame with *libra*, or the Roman pound. *As* was alſo the name of a Roman coin, which was of different weights and different materials in different ages of the commonwealth. Under Numa Pompilius, according to Euſebius, the Roman money was either of wood, leather, or ſhells. In the time of Tullus Hoſtilius it was of braſs; and called *as*, *libra*, *libella*, or *pondo*, becauſe actually weighing a pound, or twelve ounces. Four hundred and twenty years after, the firſt Punic war having exhauſted the treaſury, they reduced the *as* to two ounces. In the ſecond Punic war, Hannibal preſſing very hard upon them, they reduced the *as* to half its weight, viz. to one ounce. And, laſtly, by the Papirian law, they took away half an ounce more, and conſequently reduced the *as* to the diminutive weight of half an ounce: and it is generally thought that it continued the ſame during the commonwealth, and even till the reign of Veſpaſian. The *as* therefore was of four different weights in the commonwealth. Its original ſtamp was that of a ſheep, ox, or ſow: but, from the time of the emperors, it had on one ſide a Janus with two faces, and on the reverſe the roſtrum or prow of a ſhip. *As* was alſo uſed to denote any integer or whole; whence the Engliſh word *ace*. Thus *as* ſignified the whole inheritance; whence *hæres ex aſſe*, the heir to the whole eſtate.

A'SA, [אסא Heb. a healer of ſickneſs,] king of Judah, ſucceeded his father Abijam. He pulled down the altars erected to idols, reſtored the worſhip of the true God, and, with the aſſiſtance of Benhadad, king of Syria, took ſeveral towns from the king of Iſrael. He died 917 years before the Chriſtian æra, and was ſucceeded by Jehoſhaphat.

A'SA, a river of Germany, in the archduchy of Auſtria, which runs into the Danube two miles north of Efferding.

A'SA, *ſ.* [*ασα*, from אסה, to heal, Heb.] An epithet given by the ancient phyſicians to gums of a medical or healing property, as aſa-fœtida, aſa-dulcis, &c.

ASA-DULCIS, the ſame with gum Benjamin, or BENZOIN; which ſee.

ASA-FŒTIDA. See ASSA FŒTIDA and FERULA.

ASA'BRA, a river of Spain, which runs into the Arragon near Morillo.

A'SAD, a town of Perſia, in the province of Farſiſtan, forty-ſeven leagues north-eaſt of Schiras.

ASADABAD', a town of Perſia, in the province of Irak, on the frontiers of Kurdiſtan, large and well peopled, twenty-two leagues north-north-eaſt of Amaden.

A'SAHEL, [Heb. of עשה he hath wrought, and אל God; i. e. God hath wrought.] Joab's brother.

A'SAM. See ASSAM, p. 279.

A'SANCHIF, a town of Aſia, in the country of Diarbeker, ſituated on the Tigris, on the borders of Armenia.

ASANGA'RO, a juriſdiction of South America, under the biſhop of Cuſco, in Peru, fifty leagues from that city, in which are bred many cattle. In the north-eaſt part of it there are ſome ſilver mines.

A'SAPH, [אסף Heb. gathering.] A famous muſician among the Hebrews.

ASAPH (St.), a city in Flintſhire, with a biſhop's ſee. As a biſhopric, it is of great antiquity, and was founded about the year 560, by Kentigern biſhop of Glaſgow. He began the church on the banks of the river Elwy, whence it is called by the Welſh *Llan Elwy*, and in Latin *Elwenſis*. Kentigern was ſucceeded by St. Aſaph. Who was his ſucceſſor is uncertain, as there are no records that mention it; and it ſeems rather probable that the religious ſettled here had been neceſſitated to remove to ſome more peaceful abode, as the country was frequently the ſeat of war between the Engliſh and the Welſh. This ſee was formerly very wealthy; but its revenues were greatly leſſened by the profuſion of biſhop Parfew, who alienated much of the lands belonging to the biſhopric. This dioceſe doth not contain any one whole county; but conſiſts of part of Denbigh, Flint (where its church is), Montgomery, and Merionethſhires, and a ſmall part of Shropſhire; wherein are 121 pariſhes, and 131 churches and chapels, moſt of which are in the immediate patronage of the biſhop. It has but one archdeaconry, viz. that of St. Aſaph, which is united to the biſhopric, for the better maintenance thereof. This ſee is valued in the king's books at 187l. 11s. 6d. but computed to be worth annually 1500l. To the cathedral belong a biſhop, a dean, archdeacon, chancellor, &c. The city of St. Aſaph is ſmall, and of little trade; though it is neat and pleaſantly ſituated. The cathedral was repaired and beautified; and the biſhop's palace entirely re-built by Dr. Bagot, at that time biſhop.

ASAPHA'TUM, *ſ.* [from *α* neg. and *σαφης*, clear.] An inter-cutaneous itch generated in the pores, like worms with black heads; ſo called becauſe from their minuteneſs they are hardly viſible.

ASA'PHIA, or ASAPHO'DES, [Gr. from *α* neg. and *σαφης*, clear.] A defect of ſpeech, in utterance or pronunciation.

ASAP'PES, or AZA'PES, [from *ſaph*, Turkiſh, which ſignifies "rank," whence they have formed *aſphaph*, "to range in battle."] An order of ſoldiers in the Turkiſh army, who have no pay but the plunder they can get from the enemy.

A'SAR, *ſ.* A Perſian coin, valued at 6s. 8d. ſterling.

ASARABAC'CA, *ſ.* in botany. See ASARUM.

A'SAR-AD'DON, or ESAR-HADDON, the ſon of Sennacherib, ſucceeded his father about 712 years before the Chriſtian æra, and united the kingdoms of Nineveh and Babylon. He rendered himſelf maſter of Syria; ſent a colony to Samaria; and his generals took king Manaſſes, and carried him loaded with chains to Babylon. Aſar-Addon died after a reign of twelve years.

ASAR'CUS, *adj.* [from *α* priv. and *σαρξ*, fleſh.] Lean; void of fleſh.

ASARI'NA, *ſ.* in botany. See ANTIRRHINUM, and CHELONE.

ASA'RO, a town of Sicily, in the valley of Noto, eight miles ſouth of Nicoſia.

ASARO'TA, *ſ.* [from *α* and *σαιρω*, to ſweep.] A kind of painted pavements in uſe before the invention of moſaic work. The moſt celebrated was that at Pergamus, painted by Seſus, exhibiting the appearance of crumbs, as if the floor had not been ſwept after dinner, whence, according to Pliny, the denomination. Perrault ſuppoſes them to have been a black pavement of a ſpongy matter.

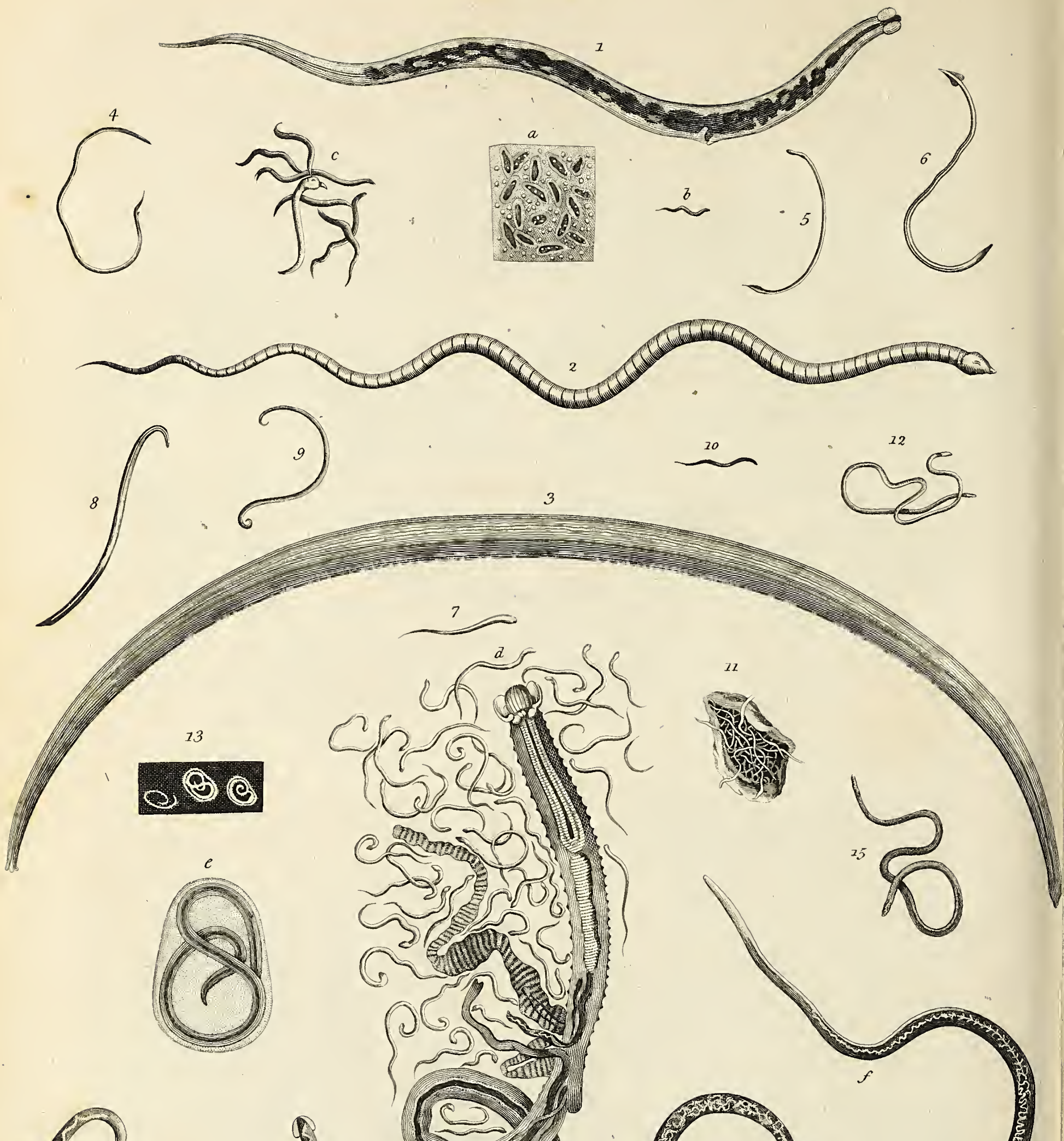
ASA'RUM, *ſ.* [from *α* and *σαιρω*, *orno*; becauſe it is unfit for ornament, or was not uſed for crowns, according to Pliny. From *α* and *σειρον*, *vinctum*, Linnæus.] In botany, the ASARABACCA, or COLT'S-FOOT, a genus of the claſs dodecandria, order monogynia, in the natural order of ſarmentaceæ. The eſſential generic characters are—Calyx: three or four cleft, placed on the germ; corolla, none; capſule, coriaceous, crowned. See the fructification delineated on Botany Plate VII. fig. 6 to 10. vol. iii.

Species. 1. Aſarum Europæum, or common aſarabacca: leaves kidney-ſhaped; roots perennial. The leaves grow ſingly on ſhort petioles, and are of a ſhining green colour. A leaf is ſhown on Botany Plate V. fig. 78. The flowers are of an herbaceous colour on the outſide, and duſky purple within. A radical ſtem ſupports two petioles, between which is a one-flowered ſcape; the former about three inches, the latter only half an inch in length. It is a native of many parts of Europe, in woods and ſhady places; flowering in April and May. With us it is a ſcarce plant, having as yet been obſerved only in Lancaſhire. The root powdered, and taken to the amount of thirty or forty grains, excites vomiting: if it be taken coarſely powdered, it is ſtrongly purgative. The powder of the leaves is the baſis of moſt cephalic ſnuffs. An infuſion of one or two drachms of the leaves in wine acts as an emetic.

2. Aſarum Canadenſe, or Canadian aſarabacca: leaves kidney-ſhaped, mucronate. The leaves of this are much larger than thoſe of the firſt ſort, and ſtand on longer foot-ſtalks; they are pointed and hairy. See Botany Plate IV. fig. 53. It is a native of Canada, and flowers from April to July.

3. Aſarum Virginicum, or ſweet-ſcented aſarabacca: leaves heart-ſhaped, blunt, ſmooth, petioled. The leaves of this are veined and ſpotted on their upper ſurface, like

ASCARIS.



J.Pass sculp

Curious Species of Ascarides.

London Published as the Act directs May 30.1807 by J.Wilkes.

thoſe of the autumnal cyclamen. The flowers are ſhaped like the others, but ſtand on longer peduncles, and are of a darker purple colour. Native of Virginia and Carolina; alſo of ſeveral provinces in China.

Propagation. Theſe plants delight in a moiſt ſhady ſituation, and may be increaſed by parting the roots in autumn. Too much wet will rot the Canadian ſort in the winter. If the third ſpecies be too much expoſed to the ſun, it ſeldom thrives well; it ſhould therefore be planted in a border where it may have only the morning ſun.

ASARUM HYPOCIS'TIS. See CYTINUS.

ASAWN'LLY, a town of Hindooſtan, in the circar of Oudipour, eighteen miles ſouth-weſt of Oudipour.

ASBANIKE'T, a town of Aſia, in Mawaralnaher Tranſ-Oxana, or Zagatai.

AS'BECK, a town of Germany, in the circle of Weſtphalia, four miles ſouth-eaſt of Ahauz.

ASBES'TINE, *adj.* Something incombuſtible, or that partakes of the nature and qualities of the *lapis aſbeſtos.*

ASBES'TUS, *ſ.* [of *α* priv. and *σϐεννυω*, to extinguiſh; that cannot be extinguiſhed.] In mineralogy, a genus of talcoſe earth, filamentous, ſilky, and of a greyiſh colour; ſometimes inclined to green, or yellowiſh. The moſt obvious characters of the aſbeſtos are, a greater or leſs degree of flexibility, and their reſiſting the fire. The amianthus is a ſpecies of it.

The induſtry of mankind has found a method of working this untoward mineral, and employing it in divers manufactures, chiefly of cloth and paper. The cloth of aſbeſtus was highly eſteemed by the ancients, and held equally precious with the richeſt pearls. Pliny ſays, he himſelf had ſeen napkins thereof, which being taken foul from the table after a feaſt, were thrown into the fire, and by that means were better ſcoured than if they had been waſhed in water. But its principal uſe, according to Pliny, was for making ſhrouds for royal funerals, to wrap up the corpſe, ſo that the aſhes might be preſerved diſtinct from thoſe of the wood whereof the funeral pile was compoſed: and the princes of Tartary, according to the Philoſophical Tranſactions, uſe it at this day in burning their dead. Some of the ancients are ſaid to have made themſelves clothes of it, particularly the brachmans among the Indians. The wicks for their perpetual lamps, according to Dr. Liſter, were alſo made of it: becauſe, the aſbeſtus not waſting, there is no occaſion for ſhifting the wick.

Although the cloth of aſbeſtus, when ſoiled, is reſtored to its primitive whiteneſs by heating in the fire, it is found, nevertheleſs, by ſeveral authentic experiments, that its weight diminiſhes by ſuch treatment. A handkerchief or pattern of this linen was long ſince preſented to the Royal Society, a foot long and half a foot broad. This gave two proofs of its reſiſting fire; though, in both experiments, it loſt above three drachms in its weight. When taken out red-hot, it did not burn a piece of white paper on which it was laid. The method of preparing the incombuſtible paper and cloth, from aſbeſtus, is thus deſcribed by Ciampini: The ſtone is laid to ſoak in warm water; then opened and divided by the hands, that the earthy matter may be waſhed out. The ablution being ſeveral times repeated, the flax-like filaments are collected and dried; and they are moſt conveniently ſpun with an addition of flax. Two or three filaments of the aſbeſtus are eaſily twiſted along with the flaxen thread, if the operator's fingers are kept oiled. The cloth alſo, when woven, is beſt preſerved by oil from breaking. On expoſure to the fire, the flax and the oil burn out, and the cloth remains pure and white. For the different ſpecies, countries where found, and peculiar properties, ſee the genus ASBESTUS, in the article MINERALOGY.

ASBROIT', a town of Sweden, in South Gothland, ſix miles north of Wardberg.

AS'BURG, a town of Germany, in the circle of Weſtphalia, and county of Meurs, two leagues eaſt of Meurs, and ſix weſt of Duiſburg.

ASCAIN', a town of France, in the department of the Lower Pyrenees, four leagues from Bayonne.

AS'CALON, an ancient city, and one of the five ſatrapies or principalities of the Philiſtines; ſituated on the Mediterranean, forty-three miles ſouth-weſt of Jeruſalem, between Azotus to the north and Gaza to the ſouth. The birth-place of Herod the Great, thence ſurnamed *Aſcalonita*; famous for its ſcallions, which take their name from this town. *Strabo.* Now SCALONA.

ASCA'NIUS, the ſon of Æneas and Creuſa, ſucceeded his father in the kingdom of the Latins, and defeated Mezentius king of the Tuſcans, who had refuſed to conclude a peace with him. At length he founded Alba Longa; and died about 1139 years before the Chriſtian æra, after a reign of thirty-eight years.

ASCA'RA, a town of Japan, in the province of Simoodſuke.

ASCARDAMYC'TES, *ſ.* [of *α* neg. and *σκαρδαμυττω*, to wink.] Having the power to keep the eyes fixed without twinkling.

ASCARI'NA, *ſ.* [from *ασκαρις*, a little worm; the antheræ having that ſhape.] In botany, a genus of the claſs dioecia, order monandria. The eſſential generic characters are—Calyx: ament filiform. Male: anthera worm-ſhaped. Female: ſtigma three-lobed.

There is but one ſpecies, Aſcarina polyſtachia, which is a native of the Society Iſles, in the South Seas.

A'SCARIS, *ſ.* [from *ασκεω*, Gr. to be in motion.] In helmintology, a genus of worms belonging to the order of inteſtina: the characters of which are: Body round, elaſtic, and tapering towards each extremity: head with three veſicles: tail obtuſe or ſubulate: inteſtines milk-white and pellucid. They are divided into five claſſes, viz.

I. Infeſting the MAMMALIA.—Of theſe there are twenty-five ſpecies: 1. The Lumbricoides: head ſlightly incurved, with a tranſverſe contraction, mouth triangular: inhabits the ſmall inteſtines of children and grown perſons. Fig. 1. in the annexed engraving, repreſents this worm greatly magnified, to ſhow the inteſtinal canal; *a*, repreſents a neſt of theſe aſcarides in their embrio or egg ſtate; *b*, one of the young juſt emerged into life; *c*, a bunch of theſe worms of the ſize uſually voided by children. 2. The Vermicularis: head ſubulate, or awl-ſhaped: ſkin at the ſides of the body finely crenate or wrinkled: inhabits the inteſtines of children and thin people, principally in the rectum. This is ſhown in the engraving at fig. 2, greatly magnified. Theſe are the only aſcarides known to infeſt the human body. The *lumbricoides* are often voided in great quantities. Dr. Hooper relates a caſe of a girl eight years old who voided upwards of 200 in the courſe of a week. When recently excluded, they are tranſparent, and appear as if they had been ſucking water tinged with blood; this colour, however, ſoon diſappears, and they become of a light opaque yellow. After being evacuated, their motion is feeble, and they ſoon die. Their motion is ſerpentine, and in no reſpect reſembles the motion of the lumbricus terreſtris, or earth-worm, which has the power of diminiſhing its length and extending itſelf again, while the length of the aſcaris lumbricoides is never diminiſhed; the head is always ſent forward by the worm curling itſelf into circles, and ſuddenly extending it with an elaſtic force to ſome diſtance. They propagate by ſexual contact; and the female lumbricoides is oviparous, and very prolific. The aſcaris *vermicularis*, called the maw or thread worm, is viviparous, about half an inch in length, and in thickneſs reſembling a piece of thread; the head, or obtuſe extremity, is divided into three veſicles or papillæ, in whoſe middle is an aperture, which is the mouth. The body is of a rugoſe, pellucid, annular fabric; the tail terminating in a fine point. Theſe worms are moſtly confined to the rectum and colon, and that principally of children; but they are often found in the cœcum and ſmall inteſtines, and even the ſtomach, and frequently get into the vagina, and even uterus, bladder, &c. See, for many curious particulars, the article HELMINTOLOGY, in our ninth volume. 3. Aſcaris Veſpertilionis: found in the inteſtines of the long-eared bat. 4. The Phocæ: found in the inteſtines of the Greenland ſeal; and exhibited in the engraving at fig. 14, of its natural ſize. 5. The Bifida: body forked behind, and curved before: found alſo in the inteſtines of the ſeal. 6. The Canis: found in the inteſtines of the dog. 7. The Viſceralis: found in the kidneys of the dog. 8. The Lupi: found in the inteſtines of the wolf. 9. The Vulpis: found in the duodenum of the wolf. 10. The Leonis: found under the ſkin of the lion. 11. The Tigridis: found in the inteſtines of the tiger. 12. The Felis: head with a greyiſh-white oblong veſicle on each ſide; inhabits the ſtomach of cats. 13. The Cati: found in the inteſtines of the cat. 14. The Martis: inhabits the inteſtines of the martin. 15. The Bronchialis: inhabits the lungs of the martin. 16. The Renalis: found in the kidneys of the martin. 17. The Mephitidis: inhabits the inteſtines of the Viverra mephitis, or ſkunk. 18. The Gulonis: inhabits the inteſtines of the Urſus gulo, or glutton. 19. The Talpæ: inhabits the ſtomach and inteſtines of the mole. 20. The Muris: inhabits the ſtomach of the mouſe. 21. The Hirci: inhabits the inteſtines of the goat. 22. The Vituli: body filiform: tail rounded: inhabits the lungs and trachea of cattle: is viviparous, and generally gregarious. This is ſhown at fig. 4, of its natural ſize. 23. The Equi: body cylindrical, very large: inhabits the inteſtines of the horſe, and is often diſcharged with the dung. It is the largeſt of the genus, meaſuring often a foot and a half long, and is as thick as a man's little finger: body elaſtic, with frequently large brown patches. This is correctly delineated, at fig. 3, in the engraving. 24. The Suis: inhabits the inteſtines of ſwine. 25. The Apri: found in the lungs of the boar: body tapering to a point at each extremity, about an inch long, and not thicker than a thread: brings forth its young alive, through an aperture in the abdomen.

II. Infeſting Birds.—Of theſe there are twenty-ſix ſpecies, viz. The Aquilæ: found in the inteſtines of the golden eagle. The Albicillæ: found in the inteſtines of the cinereous eagle. The Buteonis: found in the inteſtines of the buzzard. The Milvi: inhabits the ſtomach and inteſtines of the kite. The Subbuteonis: inhabits the inteſtines of the hobby falcon. The Hermaphrodita: found in the ſmaller inteſtines of the Amazon parrot. The Cornicis: inhabits the ſtomach of the crow. The Coraciæ: inhabits the ſkin about the throat of the roller. The Cygni: inhabits the inteſtines of the ſwan. The Anatis: found in the inteſtines of the wild duck. The Fuligulæ: inhabits the inteſtines of the Anas fuligula, or tufted duck. The Carbonis: inhabits the crop of the corvorant. The Pelecanis: inhabits the crop of the ſhag. The Lari: inhabits the inteſtines of the gull. The Ciconiæ: found in the inteſtines of the ſtork. The Tardæ: found in the crop of the buſtard. The Papilloſa: body papillous beneath: tail ending in a prickly briſtle: found in the inteſtines of the buſtard; about eight lines long, and not thicker than a horſe-hair. Fig. 7, in the engraving, repreſents the papilloſa a little magnified; *d*, the ſame greatly magnified, and diſſected, to ſhew the curious conſtruction of the ovarium, and its innumerable young iſſuing from it. The Gallopavonis: inhabits the inteſtines of the turkey. The Galli: head hooked; tail ending in a point: found in the inteſtines of cocks and hens. Fig. 9, exhibits this a little magnified. The Gallinæ: inhabits the cæcum of the hen. The Phaſiani: inhabits the inteſtines of the Phaſianus picus, or painted pheaſant. The Tetraonis: inhabits the inteſtines of grouſe. The Columbæ: found in the inteſtines of the houſe-pigeon. This is delineated at fig. 8, in the engraving, magnified. The Alaudæ: found in the inteſtines of the lark. The Sturni: found in the inteſtines of the ſtarling. The Turdi: found in the liver of the thruſh, field-fare, or redwing.

III. Infeſting Reptiles.—The Teſtudinis: inhabits the inteſtines of the round tortoiſe. The Lacertæ: inhabits the inteſtines of the newt. The Bufonis: found in the inteſtines of the toad. The Pulmonalis: inhabits the lungs of the toad; viviparous. Fig. 11, repreſents a cluſter of theſe minute aſcarides, as found by profeſſor Goeze, on opening a toad. The Rubetræ: found in the rectum of the natter-jack toad. The Trachealis: found in the lungs of the toad. The Ranæ: tail ſubulate: inteſtines clavate: found in the rectum of frogs. This is ſhown at fig. 10, in the engraving. The Inteſtinalis: found in the inteſtines of frogs. The Diſpnoos: inhabits the lungs of frogs. The Inſons: found alſo in the lungs of frogs.

IV. Infeſting Fish.—The Anguillæ: found in the inteſtines of eels. The Marina: found in the inteſtines of herrings. The Blennii: inhabits the inteſtines of the viviparous blenny. The Rhombi: found in the pearl flat fiſh. The Percæ: found in the perch. The Globicola: found in the ſtomach of the three-ſpined ſtickleback. The Lacuſtris: found in the liver of the pike. The Siluri: found in the ſiluris glanis, or ſheat-fiſh. The Farionis: found in the inteſtines of the trout. The Truttæ: found alſo in the inteſtines of the trout. The Maræнæ: found in the inteſtines of the Salmo maræna. The Acus: found in the inteſtines of the common pike. The Halecis: body filiform, ſpiral, and twiſted: found in the ſeminal veſſels and inteſtines of the herring. Three of theſe aſcarides are exhibited, at fig. 13, preciſely as they appeared on opening the fiſh: *e*, the middle one greatly magnified. The Argentinæ: found in the inteſtines of the argentine. The Gobionis: body extremely ſlender: tail truncate: found about the liver of the gudgeon. This is repreſented in the engraving, at fig. 12, a little magnified. The Rajæ: found in the ſtomach of the fuller-ray, or thornback. The Squali: found in the ſhark. The Lophii: body glabrous, and pale brown: inteſtines filiform, with variouſly twiſted milk-white veſſels: found in the gullet of the frog-fiſh. This is ſhown of its natural ſize, at fig. 15; *f*, the ſame magnified, to ſhow the convolutions of its inteſtines.

V. Infeſting Worms.—The Lumbrici: found between the ſkin and humours in the earth-worm; but is rarely to be diſcovered without the aſſiſtance of a microſcope. See the article Helmintology.

To ASCEND', *v. n.* [*aſcendo*, Lat.] To move upwards; to mount; to riſe:

Then to the heav'n of heav'ns ſhall he *aſcend*,
With victory, triumphing through the air
Over his foes and thine. *Milton.*

To proceed from one degree of good to another.—By theſe ſteps we ſhall *aſcend* to more juſt ideas of the glory of Jeſus Chriſt, who is intimately united to God, and is one with him. *Watts.*—To ſtand higher in genealogy.—The only inceſt was in the *aſcending*, not collateral, branch; as when parents and children married, this was inceſt. *Broome.*

To ASCEND, *v. a.* To climb up any thing.—They *aſcend* the mountains, they deſcend the vallies. *Delaney.*

ASCEND'ABLE, *adj.* That may be aſcended.

ASCEND'ANT, *ſ.* That part of the ecliptic at any particular time above the horizon. Height; elevation.—He was initiated, in order to gain inſtruction in ſciences that were in their higheſt *aſcendant. Temple.*—Superiority; influence.—By the *aſcendant* he had in his underſtanding, and the dexterity of his nature, he could perſuade very much. *Clarendon.*

ASCEND'ANT, *adj.* Superior; predominant; overpowering.—Chriſt outdoes Moſes, before he diſplaces him; and ſhews an *aſcendant* ſpirit above him. *South.*

ASCEND'ENCY, *ſ.* Influence; power.—Cuſtom has ſome *aſcendency* over underſtanding, and what at one time ſeemed decent, appears diſagreeable afterwards. *Watts.*

ASCEND'ING, *adj.* in aſtronomy, a term uſed to denote any ſtar, or degree, or other point of the heavens, riſing above the horizon.

Ascending Latitude, Ascending Node, Ascending Signs, &c. ſee the articles Astrology and Astronomy, in this volume.

ASCEN'SION, *ſ.* [*aſcenſio*, Lat.] The act of aſcending or riſing; frequently applied to the viſible elevation of our Saviour to heaven:

Then, riſing from his grave,
Spoil'd principalities and pow'rs, triumph'd
In open ſhew; and, with *aſcenſion* bright,
Captivity led captive through the air. *Milton.*

The thing riſing or mounting.—Men err in the theory of inebriation, conceiving the brain doth only ſuffer from vapourous *aſcenſions* from the ſtomach. *Brown.*

In aſtronomy, *aſcenſion* is either *right*, or *oblique*; for particulars of which, and the *aſcenſional difference*, ſee the article ASTRONOMY, p. 326, of this volume.

ASCEN'SION BAY, in the gulf of Honduras, on the eaſt coaſt of Yucatan. Lat. 20. 35. N. lon. 88. 55. W. Greenwich.

ASCEN'SION-DAY, the day on which the aſcenſion of our Saviour is commemorated, commonly called *Holy Thurſday*; the Thurſday but one before Whitſuntide:

Did not the prophet ſay,
That before *Aſcenſion-day* at noon
My crown I ſhould give off? *Shakeſpeare.*

ASCEN'SION ISLE, an iſland in the ocean between Africa and Braſil, diſcovered by Triſtram Acuna, in the year 1508, on Holy Thurſday, whence the name; about eighty leagues in circumference; mountainous, ſandy, and barren, few places being fit for tillage; but is chiefly valuable to the homeward-bound ſhipping, on account of its excellent harbour, and the vaſt quantities of ſea-fowl, fiſh, and turtle, which are found in it, as well as ſome goats, whoſe fleſh is not inferior to mutton in ſweetneſs and delicacy. In the crevice of a rock there is a place, called by the ſailors the *Poſt-office*, where ſhips leave letters for each other, ſhut up in a well-corked bottle, which the next that comes breaks open, and leaves another in its ſtead. Lat. 8. 0. S. lon. 14. 28. W. Greenwich.

Of this iſland, Mr. Forſter, who ſailed with Capt. Cook, gives the following account: "We landed among ſome rocks, the ſurf being always immenſely high on the great beach; which conſiſts of minute ſhell-ſand, chiefly of a ſnowy white, very deep, dry, and intolerable to the eyes when the ſun ſhines. We aſcended among heaps of black cavernous ſtone, which perfectly reſembles the moſt common lavas of Veſuvius and Iceland, and of which the broken pieces looked as if they had been accumulated by art. The lava-currents cooling very ſuddenly, may eaſily be imagined to produce ſuch an effect. Having aſcended about twelve or fifteen yards perpendicular, we found ourſelves on a great level plain of ſix or eight miles in circuit; in the different corners of which we obſerved a large hill of an exact conical ſhape, and of a reddiſh colour, ſtanding perfectly inſulated. Part of the plain between theſe conic hills was covered with great numbers of ſmaller hillocks, conſiſting of the ſame wild and ragged lava as that near the ſea, and ringing like glaſs when two pieces are knocked together. The ground between the heaps of lava was covered with a black earth, on which we walked very firmly; but, when theſe heaps did not appear, the whole was a red earth, which was ſo looſe, and in ſuch dry minute particles, that the wind raiſed clouds of duſt upon it. The conic hills conſiſted of a very different ſort of lava, which was red, ſoft, and crumbling into earth. One of theſe hills ſtands directly in front of the bay, and has a wooden croſs on its ſummit, from whence the bay is ſaid to take its name. Its ſides are very ſteep, but a path near three quarters of a mile long winds round it to the ſummit. After examining this remarkable country a little longer, we concluded, with a great degree of probability on our ſide, that the plain on which we ſtood was once the crater or ſeat of a volcano, by the accumulation of whoſe cinders and pumice-ſtones the conic hills had been gradually formed: that the currents of lava, which we now ſaw divided into many heaps, had perhaps been gradually buried in freſh cinders and aſhes; and the waters coming down from the interior mountain in the rainy ſeaſon had ſmoothed every thing in their way, and filled up by degrees the cavity of the crater."

ASCEN'SIONAL, *adj.* In aſtronomy, belonging to aſcenſion.

ASCEN'SIVE, *adj.* In a ſtate of aſcent: *not in uſe.*—The cold augments when the days begin to increaſe, though the ſun be then *aſcenſive*, and returning from the winter tropic. *Brown.*

ASCENT', *ſ.* [*aſcenſus*, Lat.] Riſe; the act of riſing; the act of mounting:

To him with ſwift *aſcent* he up return'd,
Into his bliſsful boſom reaſſum'd
In glory, as of old. *Milton.*

The way by which one aſcends. An eminence, or high place.—A wide flat cannot be pleaſant in the Elyſian fields, unleſs it be diverſified with depreſſed vallies and ſwelling *aſcents*. *Bentley.*

To ASCERTAIN', *v. a.* [from *certain.*] To make certain; to fix; to eſtabliſh.—Money differs from uncoined ſilver in this, that the quantity of ſilver in each piece is *aſcertained* by the ſtamp. *Locke.*—Sometimes accented on the middle ſyllable.—Of a ſmall time, which none *aſcértain* may. *Spenſer.*—To make confident; to take away doubt; often with *of.*—Right judgment of myſelf may give me the other certainty; that is, *aſcertain* me that I am in the number of God's children. *Hammond.*—This makes us act with a repoſe of mind and wonderful tranquillity, becauſe it *aſcertains* us of the goodneſs of our works. *Dryden.*

ASCERTAIN'ER, *ſ.* The perſon that proves or eſtabliſhes; he who gives incontrovertible evidence.

ASCERTAIN'MENT, *ſ.* A ſettled rule; an eſtabliſhed ſtandard.—For want of *aſcertainment*, how far a writer may expreſs his good wiſhes for his country, innocent intentions may be charged with crimes. *Swift.*

ASCE'SIS, *ſ.* [from ασκειν, Gr. uſed by the ancients in ſpeaking of the exerciſes of the athletæ.] Properly denotes exerciſe of the body. *Aſceſis* is alſo uſed by philoſophers, to denote an exerciſe conducive to virtue, or to the acquiring habits of virtue. This is particularly denominated the *philoſophical aſceſis*, becauſe practiſed chiefly by philoſophers, who make a more peculiar profeſſion of improving themſelves in virtue; on the model whereof, the ancient Chriſtians introduced a religious aſceſis.

ASCETE'RIUM, *ſ.* [from *aſceſis*, Lat. exerciſe.] In eccleſiaſtical writers, a term uſed for a monaſtery, or place ſet apart for the exerciſes of virtue and religion. Originally it ſignified a place where the athletæ or gladiators performed their exerciſes.

ASCET'IC, *adj.* [ασκητικος, Gr.] Employed wholly in exerciſes of devotion and mortification.—None lived ſuch long lives as monks and hermits, ſequeſtered from plenty to a conſtant *aſcetic* courſe of the ſevereſt abſtinence and devotion. *South.*

ASCET'IC, *ſ.* He that retires to devotion and mortification; a hermit.—I am far from commending thoſe *aſcetics*, that, out of a pretence of keeping themſelves unſpotted from the world, take up their quarters in deſerts. *Norris.*

ASCETIC is alſo a title of ſeveral books of ſpiritual exerciſes; as the Aſcetics, or Devout Exerciſes, of St. Baſil, archbiſhop of Cæſarea in Cappadocia.

ASCH'ACH, a town of Germany, in the circle of Franconia, and biſhopric of Würzburg; ſix miles north of Kiſſingen, and thirty-two north of Würzburg.

ASCH'AFF, a river of Germany, in the circle of the Lower Rhine, which runs into the Mayne near Stockſtadt.

ASCHAF'FENBURG, a town of Germany, ſeated on the river Mayne, in the circle of the Lower Rhine, and territory of the elector of Mentz, who had a palace there. It is memorable for being the place where the king of Great Britain took up his quarters the night before the battle of Dettingen. Lat. 49. 55. N. lon. 26. 41. E. Ferro.

AS'CHAM (Roger), an Engliſh author of diſtinguiſhed ed reputation, born at Kirby-Wiſke, near North-Allerton in Yorkſhire, in 1515. Having diſcovered very promiſing talents at an early age, he was taken under the patronage of ſir Anthony Wingfield; and, after making conſiderable progreſs in claſſical literature, was removed by his patron, in 1530, to St. John's college at Cambridge. At the age of eighteen, in 1534, he took his degree of bachelor of arts, and ſoon after in the ſame year was elected fellow of his college, though his attachment to the reformed religion raiſed ſome obſtacles in the way of this appointment. Theſe honours were conſidered by Aſcham as inducements to his unwearied application; and ſuch was his progreſs, particularly in the Greek language, that his lectures, both in the univerſity and in his own college, were received with univerſal applauſe. In 1536, at the age of twenty-one years, he took the degree of maſter of arts. At this time ſir John Cheke attempted to introduce a new mode of pronouncing Greek into the univerſity, which for ſome time was oppoſed by Aſcham; but upon more mature examination, he approved of it, and concurrred in adopting and promoting it; and it has ſince generally prevailed in the ſchools of England. The purity and elegance of his Latin ſtyle was held in ſuch eſtimation, that he was conſtantly employed in writing the public letters of the univerſity. As a relaxation amidſt his ſeverer ſtudies, he amuſed himſelf with the exerciſe of archery; and, having thus given offence to ſome perſons who were envious of his ſuperior merit, he wrote a ſmall treatiſe on the ſubject, intitled "Toxophilus," which was publiſhed in 1544. His deſign in writing this treatiſe was partly to vindicate himſelf from the aſperſions of his enemies, and partly to improve the Engliſh language, by introducing a more correct, natural, and eaſy, diction, than that which was uſed by the common writers of his age. The author's views in both theſe reſpects were fully accompliſhed. Aſcham confeſſes that he was actuated by another motive in the compoſition and publication of this treatiſe: he wiſhed to make a tour into Italy, which was then the republic of letters, and particularly the ſeat of Greek learning; and he was deſirous, by dedicating his book to king Henry VIII. to obtain his encouragement in the proſecution of his plan. In this reſpect, his wiſh was gratified; for in 1544, the king granted him a penſion, which was continued by Edward VI. and by queen Mary. At length, in 1548, he had the honour of being called from his college to direct the ſtudies of the princeſs, afterwards queen, Elizabeth. This charge he executed with equal diligence and ſucceſs; but after two years, a cauſe of diſſatisfaction occurred, and he returned from the ſervice of the princeſs to the univerſity. Notwithſtanding this circumſtance, the princeſs's regard for him continued; for in the ſame year, 1550, he was recalled to court, and appointed ſecretary to ſir Richard Moryſine, who was going out ambaſſador to the emperor Charles V. During this ſervice, which laſted three years, he had an opportunity of converſing with many learned men in various parts of Germany which he viſited; and alſo made an excurſion into Italy. One of the fruits of this tour was a work, intitled, "A Report and Diſcourſe of the Affairs and State of Germany," &c. which contains valuable information, and many judicious reflections.

On the death of Edward VI. in 1553, ſir Richard Moryſine was recalled, and Aſcham returned to his college; but with no other ſupport than his fellowſhip, and ſalary as orator to the univerſity, to which reſpectable office he had ſome time before been appointed. He was, however, ſoon recalled by the miniſtry, and made Latin ſecretary to queen Mary, with a ſalary of ten pounds a-year, and permiſſion to retain his college preferment. Aſcham by his prudence, without any ſervile forfeiture of his integrity, enjoyed the favour of the queen; and in the moſt perilous times he maintained his intereſt with Elizabeth. Indeed his learning, and the facility with which he wrote Latin, made him neceſſary at court. Upon the acceſſion of Elizabeth, he was continued in his former employment with the ſame ſtipend. He had frequent acceſs to the queen, and read with her certain portions of works in the learned languages for ſeveral hours almoſt every day; and of her proficiency under ſuch a maſter many proofs remain. Yet notwithſtanding the benefit which the queen derived from his ſervices, and the intimacy with which ſhe honoured him by permitting him to play with her at draughts and cheſs, he obtained from her no other recompence than a penſion of twenty pounds a-year, and the prebend of Weſtwang in the dioceſe of York. This poor pittance has been aſcribed by ſome to the parſimony of the queen, and by others to her knowledge of the extravagance of Aſcham. He has been charged with a propenſity diſgraceful to a man of letters and humanity, to cock-fighting. In his "Schoolmaſter," he intimates a deſign of writing a book "Of the Cockpit," which he reckons among the paſtimes fit for a gentleman. It is a ſubject, however, of regret, that whilſt the queen did not think him unworthy of her patronage, ſhe did not think proper to remunerate him for his ſervices with a liberality more ſuitable to the crown of England.

In 1563, a converſation occurred at ſir William Cecil's on the importance of ſcholaſtic education. Whilſt the ſubject was agitated, and different opinions entertained, ſir Richard Sackville was ſo much prepoſſeſſed in favour of Aſcham, by the arguments which he uſed for the mild treatment of boys, that he ſolicited his counſel and aſſiſtance with regard to the education of his ſon, and at the ſame time requeſted that he would write a treatiſe on the general ſubject of education. Thus was produced Aſcham's excellent performance, intitled, "The Schoolmaſter;" a work replete with erudition, and ſuggeſting uſeful advice on the beſt method of teaching the claſſics. Aſcham particularly recommends the method of "double tranſlation," which merits adoption in ſchools. This treatiſe was publiſhed after the author's death by his widow, in 1571; and re-printed with notes, in 8vo. at London, by Upton, in 1711. Aſcham's laſt illneſs is ſaid to have been occaſioned by too ſedulous an application to the compoſition of a poem, which he intended to preſent to the queen, on the New Year's day of 1569. He did not live to celebrate that auſpicious day, but died, at fifty-three years of age, on the twenty-third of December, 1568. His death was generally lamented, and the queen expreſſed her concern by exclaiming, "ſhe would rather have loſt 10,000l. than her tutor Aſcham." His Epiſtles, which have been much commended for the elegance of their ſtyle, and alſo for the abundance of hiſtorical matter which they contain, were publiſhed in 1577, by Grant, and dedicated to queen Elizabeth; and his miſcellaneous pieces have been ſince collected by Bennett into one volume, with a Life by Dr. Johnſon prefixed, and publiſhed in 1761, in 4to. One of his biographers, ſpeaking of his works, ſays, "His Toxophilus was a good book for young men, his Schoolmaſter for old men, and his Epiſtles for all men." Mr. Wood aſcribes another work to him, intitled, "Apologia contra Miſſam," printed in 1577, 8vo.

ASC'HAUSEN, a town of Germany, in the circle of Swabia, eight miles north of Ravenſpurg.

ASCHBARAT', a town of Turqueſtan, in the country of the Getæ, on the other ſide of the river Sihon.

ASCHBOURKAN', or ASCH-FOURKAN, a town of Perſia, in the province of Choraſan.

ASCHEI'ON, in ancient geography, a town of the Peloponneſus, in Achaia.

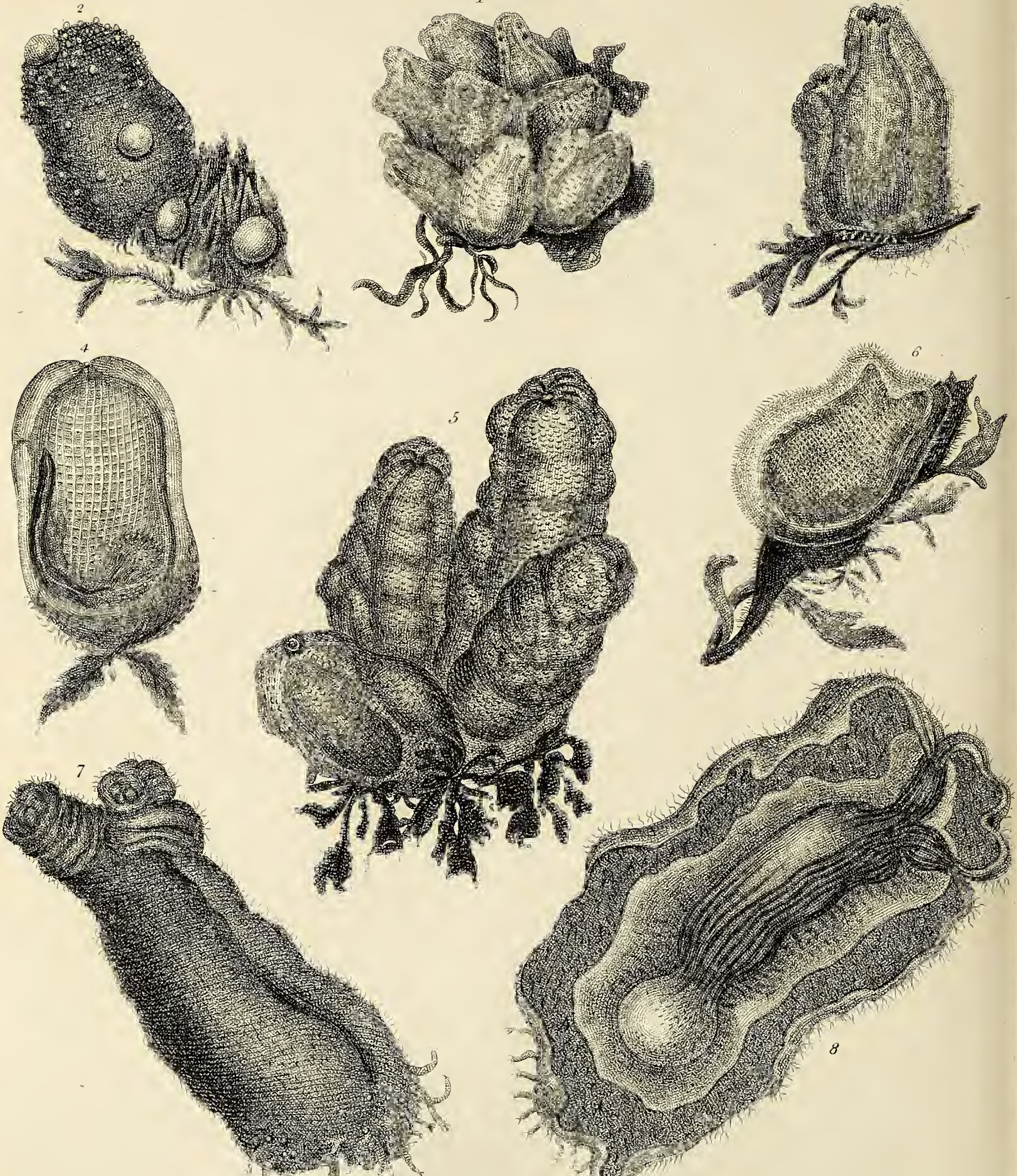
ASCHENGIN'SKOI, a fortreſs of Siberia, on the confines of China: 130 miles ſouth-ſouth-weſt of Selinginſk.

AS'CHER, a diſtrict of the fief of Aggers-Herred in the dioceſe of Chriſtiania or Aggerhuus, in Norway.

ASCHERSLE'BEN, a town of Germany, in the circle of Lower Saxony, and principality of Halberſtadt on the Eine: ſixteen miles ſouth-eaſt of Halberſtadt.

AS'CHRAFF, in ancient geography, a city of Perſia, in the province of Mazendran, near the Caſpian ſea, once the favourite reſidence of Abbas the Great, but now fallen into

ASCIDIA



Rare and curious Species of Ascidia

Chapman sc.

London. Published as the Act directs July 4th 1807 by J.Wilkes.

into decay; the ſplendid palaces and gardens being ſunk into a ruinous ſtate, ſince the commotions that followed the death of Nadir Shah. See Persia.

ASCHTIKAN', a town of Aſia, ſixteen leagues from Samarcand.

ASCHWOMSEE', a lake of Pruſſia, forty miles ſouth-eaſt of Konigſberg.

AS'CIA, *ſ.* An axe or chiſſel. A ſimple bandage ſo called from its ſhape in poſition.

ASCID'IA, [from ασκος, Gr. a bottle; which moſt of the ſpecies reſemble.] In helmintology, a genus belonging to the order of mollufca; the characters of which are: Body fixed, roundiſh, and apparently iſſuing from a ſheath or pouch: apertures or mouths two, generally placed near the upper end, one beneath the other; ſometimes one in the centre at top, and the other lateral. Theſe are found in the ſea, and adhere by their baſe to rocks, ſhells, and other ſubmarine ſubſtances: they are more or leſs gelatinous, and have the power of ſquirting out the water they take in by their orifices or mouths. Some of them are eſculent; moſt of them ſeſſile, though a few are furniſhed with a long tubular ſtem. They alternately contract and dilate themſelves, with a ſimilar power to that of the ſlug or ſnail. There are thirty-four ſpecies at preſent known, viz.

1. Aſcidia aſperſa: ſubcompreſſed; rough whitiſh ſkin; pouch ſpotted or ſtreaked with red. Inhabits the Norway Seas; repreſented at fig. 1, in the annexed engraving.

2. Aſcidia papilloſa: body covered with ſcarlet tubercles. Inhabits the Adriatic.

3. Aſcidia gelatinoſa: body ſcarlet, and ſubdiaphanous. Inhabits the Mediterranean.

4. Aſcidia inteſtinalis: body ſmooth, and membranaceous. Inhabits the European Seas.

5. Aſcidia quadridentata: ſmooth, and whitiſh. Inhabits the North Seas.

6. Aſcidia ruſtica: browniſh, with red or fleſh-colour apertures. Inhabits the European Seas, adhering to ſhells and ſea-weeds; body flat beneath, rounded at top, as repreſented in the engraving at fig. 2. In this very rare ſpecimen the young are ſeen adhering, like tubercles, to a piece of ſhell, and to the parent animal; the ſmall are yellowiſh white; the larger red.

7. Aſcidia echinata: body hæmiſphærical, with ſcarlet gaping mouths. Inhabits the North Seas.

8. Aſcidia mentula: body compreſſed, hairy, with a red pouch. Inhabits the Northern Ocean.

9. Aſcidia venoſa: ſubcompreſſed, toroſe, red; pouch the ſame colour. Inhabits the Norway Seas, adhering to fuci like a bunch of fruit, as exhibited in the engraving at fig. 5.

10. Aſcidia prunum: ovate, hyaline, with a white pouch. Inhabits the Northern Seas.

11. Aſcidia conchilega: covered with fragments of ſhells: pouch white, and gradually becoming blue. Inhabits the ſeas of Norway.

12. Aſcidia parallelogramma: white, convex, hyaline: pouch reticulate, and yellowiſh: one of the apertures yellowiſh, the other dark brown. Inhabits Norway, amongſt fuci. Body oblong, nearly ſquare, with obtuſe angles, and marked with ſcarlet lines, as delineated in the engraving at fig. 4.

13. Aſcidia Virginea: cryſtalline, with tranſverſe ſcarlet ſtreaks: pouch reddiſh. Inhabits the Norway Seas.

14. Aſcidia canina: elongated, roundiſh, flaccid, formed in the ſhape of teſtes; mouths red; as exemplified in the engraving at fig. 7. It inhabits the Atlantic and Norway Seas. Skin large, glabrous, ſubpellucid: circumference of the apertures tranſparent red; pouch reddiſh yellow, as ſhown by a longitudinal ſection of the outer ſkin at fig. 8; where the animal is expoſed in its true ſhape and form.

15. Aſcidia patula: roundiſh, yellowiſh rough ſkin, with a red pouch: orifices ſcarlet, one of them lateral: Inhabits the Norway Seas, on rock or fuci. Body pellucid: mouth reſembling a flaſk, as repreſented in the engraving at fig. 3.

16. Aſcidia ſcabra: compreſſed, pouch red, orifices the ſame colour; body roughiſh to the touch; apertures narrow, with a conic neck: outer ſkin very pellucid, gelatinous, and hardiſh. Inhabits the Norway Seas, adhering by its ſide to fuci, as ſhown in the engraving at fig. 6.

17. Aſcidia orbicularis: whitiſh, with unequal raiſed dots on the pouch. Inhabits the Norway Seas.

18. Aſcidia corrugata; elongated, glabrous, pouch cinereous, with white bands. Inhabits the Norway Seas.

19. Aſcidia lepadiformis: clavate, hyaline; with a yellow inteſtine. Inhabits the Seas of Norway.

20. Aſcidia complanata: whitiſh, with black inteſtines; orifices with fulvous dots. Inhabits the ſandy ſhores of Greenland.

21. Aſcidia tuberculum: yellowiſh, with raiſed dots of the ſame colour; orifices vertical, red. Inhabits the ſeas about Greenland.

22. Aſcidia villoſa: obovate, fixed by roots, and covered with thick whitiſh wool. Inhabits the Greenland Seas.

23. Aſcidia clavata: oval, with a long filiform ſtem; both the apertures lateral. Inhabits the Northern Ocean.

24. Aſcidia pedunculata: ſtem gradually tapering, the head or body fuſiform; both the apertures terminal. Inhabits the ſea between Aſia and North America.

25. Aſcidia mammillaris: whitiſh, apertures terminal. Inhabits the coaſt of Cornwall.

26. Aſcidia globularis: ſemipellucid; apertures ſcarcely prominent. Inhabits the ſands of the Frozen Sea.

27. Aſcidia phuſca: body red; apertures lateral. Inhabits the ſeas about Smyrna and Conſtantinople.

28. Aſcidia gelatina: white, compreſſed, ſmooth; apertures with pale dots. 29. Aſcidia cryſtallina: compreſſed, ſmooth, with red dots on the body. 30. Aſcidia octodentata: oblong; apertures ſix and eight-toothed. 31. Aſcidia patelliformis: white, the diſk red. Theſe four inhabit the Norwegian Sea.

32. Aſcidia pyura: conical, ſmooth. Doubtful if belonging to this genus.

33. Aſcidia aurantium: ſubgloboſe, reddiſh. Inhabits the ſea about the Curile iſles.

34. Aſcidia globularis: round, ſemipellucid, rough; apertures diſtant, ſcarcely prominent. Common in the North Sea; ſize of a cherry.

AS'CII, *ſ.* [ασκιος, Gr. of α priv. and σκια, a ſhadow.] Thoſe inhabitants of the globe, who, at certain times of the year, have no ſhadow. Such are the inhabitants of the torrid zone, becauſe the ſun is twice a-year vertical to them; and they have then no ſhadow.

AS'CITES, *ſ.* [from ασκος, a bottle.] In pathology, the *dropſy* of the *belly*; ſo called from the rotundity of the belly, reſembling that of a bottle; termed alſo *hydrocele peritonæi.* When water is accumulated in the cavity of the belly betwixt the peritonæum and the viſcera, or rather in the duplicature of the peritonæum, it conſtitutes this diſeaſe.—There are two kinds of dropſy; the *anaſarca*, called alſo leucophlegmacy, when the extravaſated matter ſwims in the cells of the membrana adipoſa; and the *aſcites*, when the water poſſeſſes the cavity of the abdomen. See Pathology.

ASCIT'ICAL, *adj.* Belonging to an aſcites; dropſical; hydropical.—When it is part of another tumour, it is hydropical, either anaſarcous or *aſcitical. Wiſeman.*

ASCITI'TIOUS, *adj.* [*aſcititius*, Lat.] Supplemental; additional; not inherent; not original.—Homer has been reckoned an *aſcititious* name, from ſome accident of his life. *Pope.*

AS'CIUM, *ſ.* in botany, a genus of the claſs polyandria, order monogynia. The eſſential generic characters are—Calyx: perianthium coriaceous; corolla five-petalled; berry one-celled, with very many ſeeds.

Only one ſpecies, called Aſcium norante. This is a tree, with alternate, entire, thick, leaves. The flowers grow in looſe ſpikes from the ends of the branches; they are alternate, ſubſeſſile, and have to each a long bracte, with a claw to it, reſembling the cowled bag of Marcgravia; to which genus this ſeems nearly allied. Native of Guiana.

ASCLE'PIA, *ſ.* a feſtival of Æſculapius the god of phyſic, obſerved particularly at Epidaurus, where it was attended with a conteſt between the poets and muſicians, whence it was likewiſe called ιερος αγων, the *ſacred contention.*

ASCLE'PIAD, *ſ.* [from *Aſclepias* the inventor.] A choriambic meaſure of verſe in Greek and Latin poetry: as for example, Mæcēn|ās ătă|vīs | ēdĭtĕ | rēgĭbŭs.

ASCLEPI'ADES, one of the moſt celebrated phyſicians among the ancients, was a native of Pruſa, in Bithynia; and practiſed phyſic at Rome, under Pompey, ninety-ſix years before the Chriſtian æra. He was the head of a new ſect; and, by making uſe of wine and cold water in the cure of the ſick, acquired great reputation. He wrote ſeveral books, which are frequently mentioned by Galen, Celſus, and Pliny; but they are now loſt.

ASCLE'PIAS, *ſ.* [from *Æſculapius*, the god of medicine.] In botany, the SWALLOW-WORT; a genus of the claſs pentandria, order digynia, ranking in the natural order of contortæ. The eſſential generic characters are—Calyx: perianthium five-cleft, ſharp, very ſmall, permanent. Corolla: monopetalous, flat or reflex, five-parted, contorted; nectaries five, ovate, concave, putting out a little horn.—A leaf is ſhewn on Botany Plate IV. fig. 43. vol. iii.

Species. I. Leaves oppoſite, flat. 1. Aſclepias undulata, or waved-leaved ſwallow-wort: leaves ſeſſile, oblong, lanceolate, waved, ſmooth; petals ciliate. Native of the Cape of Good Hope; and flowers here in July.

2. Aſclepias criſpa, or curled-leaved ſwallow-wort: leaves cordate-lanceolate, waved, ſcabrous, oppoſite; umbel terminal. Found at the Cape by Sparrman.

3. Aſclepias pubeſcens, or pubeſcent ſwallow-wort: leaves ovate, veined, naked; ſtem ſhrubby, peduncles villoſe. Flowers purple. Native of the Cape.

4. Aſclepias volubilis, or twining ſwallow-wort: leaves ovate, quite entire, acuminate; ſtem arboreous, twining; umbels erect. Quite ſmooth, with ſhining branches. Flowers greeniſh. Native of Malabar and Ceylon.

5. Aſclepias aſthmatica, or aſthmatic ſwallow-wort: leaves petiolate, cordate-ovate, above ſmooth, quite entire; ſtem ſhrubby, twining, hirſute; umbels few-flowered. Found in the woods of Ceylon by Kœnig. The root is eſteemed in aſthmatic caſes.

6. Aſclepias gigantea, or curled-flowered gigantic ſwallow-wort: leaves ovate-oblong; petioles very ſhort; ſegments of the corolla reflex, involute. This riſes to ſix or ſeven feet in height; leaves thick; flowers white; pods large. It is deſtructive to ſheep unaccuſtomed to it. The time of flowering is from July to September. Dr. Patrick Browne ſays, that it is common in all the ſavannas about Kingſton and Old Harbour in Jamaica; where it is known by the name of *auricula*, or French jaſmin.

7. Aſclepias Syriaca, or Syrian ſwallow-wort: leaves oval, tomentoſe underneath; ſtem ſimple; umbels nodding; ſtem upwards of four feet high; towards the top of them the flowers come out on the ſide, of a purple colour. It flowers in July, and is a native of North America. The French in Canada eat the tender ſhoots in ſpring, as we do aſparagus. The flowers are ſo fragrant as to make it very agreeable to travel in the woods, eſpecially in the evening. They make a ſugar of them in Canada, gathering them in the morning, when they are covered with dew. Many people collect the cotton from the pods, and fill their beds with it in lieu of feathers. On account of the ſilkineſs of this cotton, Parkinſon calls the plant *Virginian ſilk.*

8. Aſclepias amœna, or oval-leaved ſwallow-wort: leaves ovate, hairy underneath; ſtem ſimple; umbels and nectaries erect. The flowers are of a bright purple colour, and make a pretty appearance in July, but are not ſucceeded by pods in England. Native of North America.

9. Aſclepias purpuraſcens, or purple Virginian ſwallow-wort: leaves ovate, villoſe underneath; ſtem ſimple, umbels erect, nectaries reſupinate. The flowers differ from thoſe of the foregoing, in having the petals of a duſky herbaceous colour, the horns of the nectaries paler, and more gaping. It is a native of North America, and flowers from July to September.

10. Aſclepias variegata, or variegated ſwallow-wort or wiſank: leaves ovate, wrinkled, naked, ſtem ſimple, umbels ſubſeſſile, pedicels tomentoſe. The flowers come out on the ſide of the ſtalk, and are of an herbaceous colour. Native of North America, and flowers in July.

11. Aſclepias Curaſſavica, or Curaſſoa ſwallow-wort or baſtard ipecacuanha: leaves lanceolate, ſmooth, ſhining. Stem from a foot to two or three feet in height; the root is compoſed of equal fibres, whitiſh, and hardly ſo big as oat-ſtraws. Miller affirms, that theſe roots have been ſent to England for ipecacuanha; from which however they may be eaſily diſtinguiſhed, the true ipecacuanha having jointed fleſhy roots, which run deep into the ground. The juice of the plant, made into a ſyrup with ſugar, has been obſerved to kill and bring away worms wonderfully, even when moſt other vermifuges have failed; it is given to children in the Weſt Indies from a tea-ſpoonful to a table-ſpoonful. The root dried and reduced to powder, is frequently uſed by the negroes as an emetic; and hence its name of wild or baſtard ipecacuanha. Native of South America, the Weſt-India iſlands, and China: flowers from June to September.

12. Aſclepias nivea, or white or almond-leaved ſwallow-wort: leaves ovate lanceolate ſmoothiſh, ſtem ſimple, umbels erect, lateral, ſolitary. Stems a foot and a half or two feet high: leaves deep green above, pale beneath. Native of North America: flowers from July to September.

13. Aſclepias incarnata, or fleſh-coloured ſwallow-wort: leaves lanceolate, ſtem divided at top, umbels erect, twin. This puts out ſeveral upright ſtalks about two feet high; at the top are produced cloſe umbels of purple flowers, which appear in Auguſt. Native of America.

14. Aſclepias decumbens, or decumbent ſwallow-wort: leaves villoſe; ſtem decumbent, eighteen inches in length: leaves narrow; flowers of a bright orange-colour. Native of North America.

15. Aſclepias lactifera, or milky ſwallow-wort: leaves ovate, ſtem erect, umbels proliferous, very ſhort. Native of Ceylon.

16. Aſclepias vincetoxicum, officinal ſwallow-wort, or tame-poiſon: leaves ovate, bearded at the baſe; ſtem erect, umbels proliferous. Root very large, and much branched: it is compoſed of many ſtrong fibres, which are connected at the top, like thoſe of aſparagus. It flowers from June to Auguſt. It is a native of moſt parts of the continent of Europe, and it is ſingular, according to the remark of Linnæus, that it ſhould not have been found wild in Great Britain. It was formerly eſteemed to be an alexipharmic, and hence its name of *vincetoxicum*, tame-poiſon. It has been alſo recommended in dropſical caſes, and diſorders peculiar to women; but is diſuſed in the preſent practice. No animal, except the goat, is ſaid to touch it. Linnæus however affirms, that the horſe will crop it, after it is froſt-bitten. Our common Engliſh name, *ſwallow-wort*, is from a fancied reſemblance of the follicles or ſeeds to a ſwallow flying.

17. Aſclepias nigra, or black ſwallow-wort: leaves ovate, bearded at the baſe; ſtem twining a little at top. Black ſwallow-wort agrees with the common or officinal ſort in the ſhape of its roots, leaves, and flowers, but the ſtalks extend to a greater length, and towards their upper part twiſt round any ſticks, or other plants near them; and the flowers are black. M. Villars mentions his having obſerved a variety of the common ſwallow-wort near the Grande Chartreuſe, with ſtems twiſting at top, and ſmaller flowers of a duſky green as well as the leaves. He conjectures that this may connect theſe two ſpecies, which to him never ſeemed to be really diſtinct. This ſort is by no means ſo common as the foregoing, having been found only in the

ſouth of France, the mountains about Nice, and in Spain. It flowers at the ſame time with the other, and was cultivated in 1596 by Gerard.

II. Leaves revolute at the ſides. 18. Aſclepias arboreſcens, or arboreſcent ſwallow-wort: leaves ovate, ſtem ſhrubby, ſubvilloſe. This has the flower and fruit of the next ſpecies. Native of the Cape of Good Hope. Cultivated in 1714 by the ducheſs of Beaufort. It flowers in December.

19. Aſclepias fruticoſa, or ſhrubby or willow-leaved ſwallow-wort: leaves linear-lanceolate, ſtem ſhrubby. It is a native of the Cape, and was cultivated by the ducheſs of Beaufort in 1714. It flowers from June to September.

20. Aſclepias repanda, or repand ſwallow-wort: leaves revolute-repand hairy. Native country unknown.

21. Aſclepias Sibirica, or Siberian ſwallow-wort: leaves linear lanceolate, oppoſite, or in threes; ſtem decumbent. Native of Siberia, and flowers in July and Auguſt.

22. Aſclepias verticillata, or verticillate ſwallow-wort: leaves linear verticillate, ſtem erect. This riſes with ſlender upright ſtalks, at the top of which grow umbels of ſmall white flowers. Native of North America.

III. Leaves alternate. 23. Aſclepias rubra, or red ſwallow-wort: leaves ovate, umbels many from the ſame common peduncle. Stem upright, ſimple, annual. Leaves acuminate. Native of Virginia.

24. Aſclepias tuberoſa, or tuberous ſwallow-wort: leaves lanceolate, ſtem divaricate, hairy; flowers bright orange colour. Native of North America; and was cultivated in 1690 in the royal garden at Hampton-court.

IV. Leaves lanceolate, oblong. 25. Aſclepias filiformis, or narrow-leaved ſwallow-wort: leaves filiform, ſtem erect, umbels lateral elongate-peduncled. 26. Aſclepias grandiflora, or great-flowering ſwallow-wort: leaves petiolate oblong hairy, ſtem ſimple hirt erect, flowers axillary peduncled. Found at the Cape by Thunberg.

27. Aſclepias carnoſa, or fleſhy-leaved ſwallow-wort: leaves ovate, fleſhy, very ſmooth. Native of China.

28. Aſclepias ſcandens, or climbing ſwallow-wort: leaves oblong-lanceolate, umbels lateral; flowers of a ſulphur colour. Native of Carthagena in South America.

29. Aſclepias procera, or bell-flowered gigantic ſwallow-wort; leaves ovate-oblong, petioles very ſhort, corollas ſubcampanulate. It is a native of Perſia.

30. Aſclepias parviflora, or ſmall-flowered ſwallow-wort: leaves lanceolate, acuminate, ſmooth, oppoſite, drawn to a point at the baſe; ſtem ſuffruticoſe, upright; umbels lateral, ſolitary. Native of Carolina and Eaſt Florida.

31. Aſclepias linaria, or toadflax-leaved ſwallow-wort: leaves ſcattered, ſubulate-channelled; umbels lateral, many-flowered. It has been cultivated in the royal garden at Madrid; and flowers there from Auguſt to October.

32. Aſclepias Mexicana, or Mexican ſwallow-wort: leaves ſix together, in whorls, lanceolate; flowers umbelled. Native of Mexico; and cultivated in the royal garden at Madrid.

33. Aſclepias fuſca: ſtem creeping, leaves cordate-lanceolate, umbels axillary in pairs. Flowers purple, very ſmall. Native of Cochin-China.

34. Aſclepias viminalis: ſtem ſuffruticoſe, twining, filiform; leaves oppoſite, lanceolate, ſmooth; umbels lateral, many-flowered. This plant riſes by very ſlender weakly ſtalks, and frequently ſpreads itſelf to the diſtance of ſome yards from the main root. It has very few leaves, but many flowers diſpoſed in large umbellate groups. The whole plant is of a dark green colour, very full of milk, and common in the larger inland woods of Jamaica.

Propagation and Culture. In this numerous genus, only two ſpecies (16 and 17) are European; two or three are from South America; the reſt are natives of North America, the Eaſt and Weſt Indies, or Africa. Such as are inhabitants of North America, are, as well as the Europeans, hardy enough to bear the open air; and therefore are proper for large borders in pleaſure-grounds, and to mix with ſhrubs. The other ſpecies require the protection of the green-houſe or ſtove: and all of them are tall perennials, flowering from June to Auguſt or September, moſtly dying down to the root in autumn. They ſhould have little water, eſpecially in winter; for, as they abound with a milky juice, much wet will rot them. They may be propagated by ſeeds, where theſe can be obtained; or by cuttings. The hardy ſorts may be increaſed by parting the roots; and may be tranſplanted any time before the roots ſhoot in the ſpring. The fourteenth and twenty-fourth ſorts are propagated by ſeeds. They ſhould be ſown in pots, and plunged into a moderate hot-bed to bring up the plants, which ſhould be inured to the open air as ſoon as the weather will permit; for, if they are drawn up weak, they ſeldom recover it. When they are of a proper ſtrength to remove, they ſhould be ſhaken out of the pots, and planted in a warm border ſix inches aſunder, being careful to ſhade them from the ſun until they have taken freſh root. During the ſummer they muſt be kept clean from weeds, and, when their ſtalks decay in autumn, ſome rotten tan ſhould be laid over the ground to keep out the froſt, but it ſhould be removed in the ſpring before the plants put out new ſhoots; the following ſummer they will require no other care than before, and the next winter they muſt be covered as in the former. The ſecond ſpring the roots may be tranſplanted where they are to remain; the roots will then be ſtrong enough to flower in ſummer, and will laſt ſeveral years, eſpecially if they are covered with tan to keep out the froſt, but they ſhould not be afterwards removed; for, when the roots are large, they will not bear tranſplanting.

ASCLOS'TER, a town of Sweden, in South Gothland, twelve miles north of Wardberg.

AS'CO, a town of Spain, in Catalonia, and viguery of Tortoſa, ſituated on the Ebro: ten leagues from Tortoſa.

ASCOB'OLUS, *ſ.* in botany, a genus of the claſs cryptogamia, order fungi. Eſſential generic characters—Fungus hemiſphærical, containing oblong veſicles, ſomewhat immerſed in its diſk, which elaſtically eject the ſeeds. There are four ſpecies deſcribed in Albertini's Conſpectus Fungorum; viz.

1. Aſcobolus lignatilis, the larger wood aſcobolus: ſtipitate gregarious; colour a dirty yellow inclining to greeniſh; on the outſide whitiſh-brown, with a ſhortiſh thickiſh ſtalk, dilated into a plane marginated crown. This ſpecies is ſhown in the annexed Engraving at fig. 2. It grows upon trees. With the following it agrees as to the branny appearance of the outſide, but differs from it with reſpect to the ſtalk, ſhape, larger ſize, and place of growth. The ſtalk from one and a half to two lines in length and thickneſs, in ſix hundred ſpecimens conſtantly the ſame; obconical, the upper part dilated into a crown, either plane or ſomewhat concave; from four to ſix lines in breadth, dotted with a very great number of ſmall black capſules, prominent as in the reſt of the genus. On touching the ripe capſules, they burſt, and throw out with great elaſtic force their minute ſeeds ſo as to reſemble ſmoke, at the ſame time emitting a liquor, with which the diſc is diſcovered to be wet on removing the finger. The ſubſtance is fleſhy; the colour conſtant: it was found in the beginning of November, growing in vaſt numbers on damaged fir planks, taken out of a common ſewer, where they had been expoſed to the water running from privies.

2. Aſcobolus furfuraceus, the branny aſcobolus: ſize and colour variable. A very common ſpecies, growing throughout the year among cow-dung in the meadows and woods; it is more rarely found in ſummer among human dung.

3. Aſcobolus carneus, the fleſhy aſcobolus: this ſpecies is very clearly diſtinguiſhed; it is diſciform, convex-plane, or quite plane, ſmooth, of a dilute-wine or fleſh colour; margin ſcarcely any; ſeed-capſules numerous, ſomewhat prominent, and black after the manner of the genus. It is ſemipellucid, and about a line in breadth. Found on a dungheap in the garden of Herrnhut, on the firſt of June.

4. Aſcobolus glaber, the ſmooth aſcobolus: found among cow-dung lying in ſhady places; but is not eaſily diſcernible on account of its minuteneſs, and dark brown colour, which is nearly the ſame as that of its place of growth. When dried, it becomes quite black.

ASCODRU'TÆ, *ſ.* a ſect of heretics, in the ſecond century, who rejected the ſacraments, on this principle, That incorporeal things cannot be communicated by things corporeal, nor divine myſteries by any thing viſible.

AS'COLI, or ASCOLI DE SATRIA'NO, a town of Italy, in the kingdom of Naples, and province of Capitanata; the ſee of a biſhop, ſuffragan of Benevento. This town was almoſt deſtroyed by an earthquake in 1399: it is ſixty-five miles eaſt-north-eaſt of Naples. Lat. 41. 8. N. lon. 33. 18. E. Ferro.

AS'COLI, a town of Italy, ſituated on a mountain, near the Tronto, forty-ſix miles ſouth of Ancona.

ASCO'LIA, a feſtival celebrated by the Athenian huſbandmen in honour of Bacchus, to whom they ſacrificed a he-goat, becauſe it deſtroys the vines, *(Ovid. Faſt.* i. 357.) and, to ſhow the greater indignity to an animal hated by Bacchus, the peaſants, after having killed him, made a foot-ball of his ſkin. Virgil has beautifully deſcribed the occaſion of the ſacrifice, and manner of celebrating the feſtival. *Georg.* ii. 380.

ASCO'MA, *ſ.* [from ασκος, a bottle.] The eminence of the pubes at the years of maturity, ſo called from its ſhape.

ASCO'NA, a town of Swiſſerland, ſituated on the Locarno Lake, with a collegiate ſeminary, founded in the ſixteenth century.

ASCOPH'ORA, *ſ.* in botany, a genus of the claſs cryptogamia, order fungi. Eſſential generic characters—Fungus erect, on a ſetaceous ſtalk: head globular-oblong, inflated, opake, elaſtic, bearing the ſeeds externally.

Species. I. Cluſtered on a common convex receptacle.
1. Aſcophora limbiflora: receptacle at length depreſſed; heads globular, nodding, deciduous; ſtems capillary, lax.

2. Aſcophora diſciflora: heads long-ovate, deciduous.

3. Aſcophora articulata: browniſh-black; heads long, jointed, pointed at top.

II. Detached. 4. Aſcophora mucedo: aggregate; head ſphærical, burſting at the long ſtalk.

5. Aſcophora fragilis: crowded; head ſphærical, burſting in the middle; ſtem rather ſhort.

6. Aſcophora ſtilbum: ovate, ſhining; ſtem ſhort.

7. Aſcophora ovalis: oval, becoming rugged and opening many ways; ſtem rather long.

ASCOY'TIA, a town of Spain in the province of Guipuſcoa, on the river Urola, two leagues eaſt of Placentia.

AS'CRA, in ancient geography, a town of Greece, in Bœotia, near mount Helicon. From its having been the place where Heſiod was brought up, though he was born at Cuma in Eolis, it was called his country.

ASCRI'BABLE, *adj.* That which may be aſcribed.—The greater part have been forward to reject it, upon a miſtaken perſuaſion, that thoſe phenomena are the effects of nature's abhorrency of a vacuum, which ſeem to be more fitly *aſcribable* to the weight and ſpring of the air. *Boyle.*

To ASCRI'BE, *v. a.* [*aſcribo*, Lat.] To attribute to as a cauſe.—To this we may juſtly *aſcribe* thoſe jealouſies and encroachments, which render mankind uneaſy to one another. *Rogers.*—To attribute as a quality to perſons, or accident to ſubſtance.—Theſe perfections muſt be ſomewhere; and therefore may much better be *aſcribed* to God, in whom we ſuppoſe all other perfections to meet, than to any thing elſe. *Tillotſon.*

ASCRIP'TION, *ſ.* [*aſcriptio*, Lat.] The act of aſcribing.

ASCRIPTI'TII, *ſ.* or ADSCRIPTI'TII, under the feudal tenures, were perſons, who, coming from abroad, ſettled in the lands of ſome lord, whoſe ſubjects or ſervants they commenced, and were ſo annexed to the lands, that they were transferred or ſold with the ſame. *Aſcriptitii* is ſometimes alſo uſed in ſpeaking of aliens or foreigners newly admitted to the freedom of a city or country; and, in the military laws, for the recruits appointed to ſupply the loſſes of the legions, called alſo *accenſi.*

ASCRIPTI'TIOUS, *adj.* [*aſcriptitius*, Lat.] That which is aſcribed.

ASCRIV'IUM, anciently a town of Dalmatia, on the Sinus Rhizicus; now *Cattaro*, the capital of the territory of Cattaro, in Venetian Dalmatia.

AS'CULUM APU'LUM, anciently a town of Apulia, mentioned in the war with Pyrrhus; now called *Aſcoli*, a city of Capitanata, in the kingdom of Naples.

AS'CULUM PICE'NUM, anciently a town of the Piceni, and the capital; now *Aſcoli*, on the river Tronto.

AS'CYRUM, *ſ.* [α and σκυρος, not rough, a ſoft plant.] In botany, a genus of the claſs polyadelphia, order polyandria, in the natural order of rotaceæ. The generic characters are—Calyx: perianthium four-leaved; the outer leaflets oppoſite, very minute, linear; the inner heart-ſhaped, large, flat, erect; all permanent. Corolla: petals four, ovate; the outer oppoſite, very large; the inner leſs. Stamina: filaments numerous, briſtle-ſhaped, ſlightly united at the baſe in four parts; antheræ roundiſh. Piſtillum: germ oblong; ſtyle ſcarcely any; ſtigma ſimple. Pericarpium: capſule oblong, acuminate, one-celled, two-valved, incloſed by the larger leaves of the calyx. Seeds: numerous, ſmall, roundiſh, fixed to the edge of the valves.—*Eſſential Character.* Calyx four-leaved; petals four; filaments many, in four diviſions.

Species. 1. Aſcyrum crux Andreæ, or common aſcyrum or St. Andrew's croſs: leaves ovate, ſtem round, panicle dichotomous; ſtem no more than ſix inches high. From between the diviſions of the branches, looſe panicles of yellow flowers are produced; but, being very ſmall, they make little appearance. Native of North America. Miller cultivated it in 1759, having received it from Hugh duke of Northumberland, who procured it from America. It flowers in July and Auguſt.

2. Aſcyrum hypericoides: leaves oblong, branches ancipital. This is an elegant little ſhrub with yellow flowers. It is a native of South Carolina, Virginia, Maryland, and the cooler mountains of Jamaica.

3. Aſcyrum villoſum: leaves hirſute; ſtem about three feet high. The flowers are produced at the ends of the ſtalks, and are of the ſame ſhape and colour with common St. John's wort.

Propagation and Culture. Theſe are all perennial American plants; the ſtems decaying in autumn. Having little beauty, they are ſeldom cultivated but in botanic gardens. The firſt may be increaſed by laying down its branches in a moiſt ſoil and ſhady ſituation. The other ſorts rarely produce ſeeds in England, but may be propagated by cuttings made of the young ſhoots in May, which, if planted in pots, and plunged into a moderate hot-bed, will take root in five or ſix weeks, when they may be tranſplanted into a warm border, where they will endure the cold of our ordinary winters; but in ſevere froſts they are frequently deſtroyed, unleſs the roots are covered with tan to keep out the froſt. See HYPERICUM.

AS'DRUBAL, the name of ſeveral renowned Carthaginian generals. See the article CARTHAGE, vol. iii. p. 836.

A'SE, *ſ.* [from αδω, to nauſeate.] A nauſea, or loathing of food.

ASEERGUR', a town of Hindooſtan, in the province of Candeiſh, fifteen miles from Burhampour, and eighty-five ſouth of Indore.

ASEIAC', a town of Perſia, in the province of Chuſiſtan, thirty leagues ſouth-weſt of Iſpahan.

ASE'KI, or HASEKI, the name which the Turks give to the favourite ſultaneſſes, who have brought forth ſons. See the article CONSTANTINOPLE, vol. v. p. 119.

ASEL'LUS, *ſ.* in entomology. See ONISCUS.

ASE'MOS, *ſ.* [from α neg. and σημα, a ſign.] An epithet applied to events that fall out contrary to all appearance, and without any manifeſt cauſe.

AS'ENATH, [Heb. peril.] The name of a woman.

ASEP'TA, *ſ.* [from α neg. and *σηπω*, to putrefy.] Any thing unputrified, or unconcocted.

A'SER, a town of Aſia, in the Arabian Irak, ſituated on the Tigris, eight miles north-north-weſt of Baſſora.

ASFA'CA, a town of Perſia, in the province of Mecran, fifty-two leagues north-weſt of Mecran.

AS'FELD LA VIL'LE, a town of France, in the department of the Ardennes, and chief place of a canton, in the diſtrict of Rethel: thirteen miles north of Rheims.

AS'FUN, a town of Egypt, four miles north of Erment.

AS'GILL (John), a humorous writer, who was bred to the law, and practiſed in Ireland with great ſucceſs. He was there elected a member of the houſe of commons, but was expelled for writing a treatiſe on the poſſibility of avoiding death; and, being afterwards choſen a member for the borough of Bramber in Suſſex, he was alſo on the ſame account expelled the parliament of England. After this, he continued thirty years a priſoner in the Mint, Fleet, and King's-bench; during which time he publiſhed a multitude of ſmall political pamphlets, ſeveral of which were in defence of the ſucceſſion of the houſe of Hanover, and againſt the pretender. He died in the King's-bench, in 1738, aged fourſcore years.

ASH, (Common, Flowering, and Manna,) *ſ.* in botany, ſee Fraxinus. Ash (Mountain), ſee Sorbus. Ash (Poiſon), ſee Rhus.

ASH-COLOURED, *adj.* Coloured between brown and grey, like the bark of an aſhen branch.—Clay, *aſh-coloured*, was part of a ſtratum which lay above the ſtrata of ſtone. *Woodward.*

ASH'-HOLE or Ash-pit, *ſ.* among chemiſts, the loweſt part of a furnace, conſtructed ſo as to receive the aſhes falling from the fire, and to give a paſſage to the air which is to be introduced into the furnace, to keep up the combuſtion.

ASH-WED'NESDAY, the firſt day of Lent; ſo called from a cuſtom in the Romiſh church, of ſprinkling aſhes that day on the heads of penitents then admitted to penance. See Lent.

ASH'-WEED, *ſ.* in botany. See Ægopodium.

A'SHA, a town of Germany, in the archduchy of Auſtria, four miles north of Efferding.

ASHA'MED, *adj.* [from *ſhame.*] Touched with ſhame; generally with *of* before the cauſe of ſhame if a noun, and *to* if a verb.—Profeſs publicly the doctrine of Jeſus Chriſt, not being *aſhamed of* the word of God, or *of* any practices enjoined by it. *Taylor.*

> One would have thought ſhe would have ſtirr'd; but ſtrove
> With modeſty, and was *aſham'd to* move. *Dryden.*

ASHAU', a river of Germany, in the circle of Lower Saxony, which runs into the Lechte, near Zell.

ASH'BORNE, a town of Derbyſhire, ſeated on the eaſt ſide of the river Dove, ten miles from Derby, and 139 from London. Its chief trade is in the great quantities of cheeſe ſent from it up and down the Trent. It has a ſtone bridge over the Dove; is large and populous; and it had a handſome church, but the ſteeple was deſtroyed by a ſtorm in July 1782. Its fairs are February 13, April 3, July 5, May 21, Auguſt 15, October 20, and Nov. 29. Market on Saturdays. Lat. 53. 0. N. lon. 1. 35. W.

At a ſmall diſtance from Aſhborne is a beautiful valley called Dove-dale, which is a narrow winding glen among a variety of hills and rocks, through which the river Dove takes its courſe for about two miles. It is bounded in a very romantic manner by hills, rocks, and hanging woods, which are extremely various, and the hills in particular are of a bold and ſtriking character. They ſpread on all ſides in vaſt ſweeps, and are inexpreſſibly magnificent. The rocks are in ſome places very abrupt, riſing in various ſhapes of hill and wood, and forming a wild aſſemblage of romantic objects. The courſe of the river is various, from a gentle current to a great rapidity over broken rocks, and in ſome places falls; which, with fragments of rocks, and branches of wood growing from among them, affords a ſcene truly pictureſque.

ASH'BURNHAM, a town of the American States in Worceſter county, Maſſachuſets, thirty miles north of Worceſter, and fifty-four from Boſton; incorporated in 1765, and contains 951 inhabitants.

ASH'BURTON, a town in Devonſhire, ſituated in a valley, encompaſſed by hills, except on the eaſt and weſt ſides. It is an ancient borough by preſcription, governed by a port-reeve, who is choſen yearly at the court leet and baron of the lords of the manor, and is the returning-officer of the members to parliament. This is one of the four ſtannary towns of Devonſhire, (the other three are Taviſtock, Plympton, and Chegford,) and is remarkable for its mines of tin and copper, and manufacture of ſerge, the latter of which returns upwards of 100,000l. per annum. The market on Tueſday is principally for wool and yarn, and that on Saturday for proviſions. It has four fairs, the firſt Thurſday in March and June, Auguſt 10, and November 11. The town is a great thoroughfare on the road from Plymouth to London, being about half-way between Exeter and Plymouth. There is a handſome church, more like a collegiate than a parochial one; and a chapel, which was anciently a chantry; but is now uſed for a ſchool. This town gives the title of baron to lord Aſhburton, whoſe ſeat is at Spitchweek, diſtant about four miles. Aſhburton is diſtant from Newton-Abbot ſeven miles, Totneſs eight, Plymouth twenty-three, and London 193.

ASH'BY, a town of the American States, in Middleſex county, Maſſachuſets, fifty miles north-weſt from Boſton; containing 751 inhabitants.

ASH'BY-DE-LA-ZOU'CH, a town in Leiceſterſhire, ſo called from the family of De la Zouch, who were the owners of its caſtle, and reſided in it for many generations. It is 116 miles diſtant from London, pleaſantly ſituated in a fertile vale on the ſkirts of Derbyſhire, by the ſide of a ſmall river called Gilwiſkaw, over which is a handſome ſtone bridge. Near this place is a noted mineral water called Griffydam. Aſhby carries on a conſiderable trade in making malt. Its fairs are noted for horſes of a large breed, and are held on Eaſter Monday and Tueſday, Whit-Tueſday, St. Bartholomew, and St. Simon and Jude, old ſtile. The church is a Gothic ſtructure dedicated to St. Helen; and here is a good free grammar-ſchool, and two charity-ſchools, where fifty-one poor boys are clothed and educated; alſo a large manufactory, which employs a great number of hands, in jerſies, combing, ſpinning, worſted-making, and framework-knitting. Felt-making likewiſe is carried on here. Lat. 52. 40. N. lon. 1. 20. W.

ASH'CUTNEY, a mountain of North America, in Vermont, ſituate partly in the townſhips of Windſor and Weathersfield, and oppoſite Claremont, on Sugar-river, in the ſtate of New Hampſhire. It is 2031 feet above the ſea, and 1732 feet above high water in Connecticut river, which runs beneath its eaſtern ſide.

ASH'DOD, a city of the Philiſtines, the ſame with Azotus. See Azotus.

ASH'DOTH-PISGAH, [אשדות Heb. well-watered places.] A city in the tribe of Reuben, ſituated at the foot of mount Piſgah; whence its name.

ASH'DOWN, [called *Aſſandum*, q. d. an hill for aſſes.] A place in Eſſex famous for the great overthrow given there to Edmund Ironſide, by Canute the Dane.

ASH'EN, *adj.* Made of aſh wood:

> At once he ſaid, and threw
> His *aſhen* ſpear, which quiver'd as it flew. *Dryden.*

ASHENAGU'R, a province of India, correſponding with the country of the Aſſacani, in which Alexander warred, on the weſt of the Indus, ſituate at or near the conflux of the Penje-koreh and Sewad rivers, and two marches from Bijore. The preſent Sewad is part of the ancient province of Aſhenagur.

ASH'ER, [Heb. bleſſedneſs.] A ſon of Jacob by Zilpah, who gave name to one of the twelve tribes of Iſrael.

ASH'ER, a city of Paleſtine between Scythopolis and

Shechem.—Alſo, according to Euſebius, a large town between Azoth and Aſcalon.

ASH'ES, *ſ. wants the ſingular.* [*aſca*, Sax. *aſche*, Dut.] The remains of any thing burnt.—Some relics would be left of it, as when *aſhes* remain of burned bodies. *Digby.*—*Aſhes* contain a very fertile ſalt, and are the beſt manure for cold lands. *Mortimer.*—The remains of the body; often uſed in poetry for the carcaſe, from the ancient practice of burning the dead.

Vegetable aſhes contain alkali, which may be waſhed out with water; and the inſoluble part is found to conſiſt of a calcareous earth, ſome clay, and a ſmall portion of magneſia. All theſe products vary in the different kinds of vegetables. Moſt plants afford likewiſe iron and manganeſe; and Mr. Sage, by experiments which have been verified by other chemiſts, has proved that gold is a very common ingredient, though in ſo ſmall a quantity as not to pay the charge of extracting it.

Several religious ceremonies formerly depended upon the uſe of aſhes. St. Jerome relates, that the Jews rolled themſelves in aſhes, as a ſign of mourning. *To repent in ſackcloth and aſhes*, is a frequent expreſſion in Scripture for mourning, and being afflicted for our ſins. There was a ſort of luſtral water made with the aſhes of an heifer ſacrificed upon the great day of expiation; the aſhes whereof were diſtributed to the people, and this water was uſed in purifications, as often as any touched a dead body, or was preſent at funerals. *Numb.* xix. 17. Tamar, after the injury received from her brother Amnon, covered her head with aſhes. 2 *Sam.* xiii. 19. The ancient Perſians had a ſort of puniſhment for ſome great criminals, which conſiſted in executing them in aſhes. The criminal was thrown headlong from a tower fifty cubits high, which was filled with aſhes to a particular height. 2 *Mac.* xiii. 5, 6. The motion which the criminal uſed to diſengage himſelf from this place, plunged him ſtill deeper into it; and this agitation was further increaſed by a wheel which ſtirred the aſhes continually about him till he was ſuffocated.

ASH'FIELD (Edmund), an Engliſh artiſt, who firſt found out the method of multiplying the number and variety of tints in crayons, and thereby to imitate oil-painting: this he performed on paper, and practiſed ſeveral years with deſerved applauſe. This manner has been ſince ſo much improved by the Engliſh, that there is no ſubject which can be expreſſed by oil, but the crayons can effect it with almoſt equal beauty, but with leſs duration.

ASH'FIELD, a townſhip of America, in Hampſhire county, Maſſachuſets, fifteen miles north-weſt of Northampton, and 117 weſt from Boſton; containing 1459 inhabitants.

ASH'FORD, a town in Kent, ſituated upon the river Stour. Its church is large, and was formerly collegiate; and it has a free grammar-ſchool founded by the Knatchbull family. A cattle-market is held the firſt Tueſday in every month for all ſorts of fat and lean ſtock, which is plentifully ſupplied: alſo, a corn-market on Saturdays. It has three fairs in the year, on the 17th of May, 9th of September, and 23d of October, for all ſorts of cattle. It is twenty-ſeven miles from Rocheſter, and fifty-ſeven from London. Lat. 51. 15. N. lon. 0. 45. E.

ASH'FORD, a town of the American States in Windham county, Connecticut, incorporated in 1710; diſtant thirty-eight miles north-eaſt from Hartford, and ſeventy-ſix ſouth-weſt from Boſton.

ASH'FORD (New), a town of the American States, in Berkſhire county, Maſſachuſets, 155 miles weſt from Boſton; containing by the cenſus 460 inhabitants.

ASHI'MA, [Heb. a crime.] The name of an idol, 2 *Kings*, xvii. 13.

ASH'KENAZ, one of the ſons of Gomer, ſuppoſed to have ſettled near Armenia, in the eaſtern part of Aſia Minor.

ASHKO'KO, *ſ.* in zoology, the Syrian hare; for the natural hiſtory of which, ſee the article HYRAX.

ASH'LAR, *ſ.* a term among builders, for common or free ſtones, as they come out of the quarry, of different lengths and thickneſſes.

ASH'LERING, *ſ.* with builders, quartering for garrets, two feet and a half or three feet high, perpendicular to the floor, and reaching to the under ſide of the rafters.

ASH'LEY, a river of America, which runs into the ſea on the ſouth-weſt ſide of Charleſtown, in South Carolina.

ASH'MOLE (Elias), a great antiquary, founder of the Aſhmolean muſeum at Oxford, born at Litchfield in Staffordſhire in 1617. In the early part of his life he practiſed the law; and in the civil war had a captain's commiſſion under the king, and was alſo comptroller of the ordnance. He married lady Mainwaring, in 1649, and ſettled in London; where his houſe was frequented by all the learned and ingenious men of his time. Mr. Aſhmole was a diligent collector of manuſcripts. In 1650, he publiſhed a treatiſe written by Dr. Arthur Dee, relating to the philoſopher's ſtone; he was alſo engaged in preparing for the preſs a collection of the works of the Engliſh chemiſts. This undertaking coſt him great labour; and the work appeared at the cloſe of the year 1652. He next applied himſelf to the ſtudy of antiquity and records: he was at great pains to trace the Roman way, which in Antoninus's Itinerary is called *Bennevanna*, from Weedon to Litchfield, of which he gave Mr. Dugdale an ingenious account. Upon the reſtoration of Charles II. Mr. Aſhmole was introduced to his majeſty, who beſtowed on him the office of Windſor herald. He was alſo admitted a fellow of the Royal Society; and, on the 19th of July 1669, the univerſity of Oxford created him doctor of phyſic by diploma. On the 8th of May, 1672, he preſented his "Inſtitution, Laws, and Ceremonies, of the moſt noble Order of the Garter," to the king; who, as a mark of his approbation, granted him a privy ſeal for 400l. out of the cuſtom of paper. On the 26th of January, 1679, a fire broke out in the Middle Temple, in the next chamber to Mr. Aſhmole's, by which he loſt a noble library, with a collection of 9000 coins, ancient and modern, and a vaſt repoſitory of ſeals, charters, and other antiquities and curioſities; but his manuſcripts and his moſt valuable gold medals were luckily at his houſe at Lambeth. In 1683, the univerſity of Oxford having finiſhed a magnificent repoſitory near the theatre, Mr. Aſhmole ſent thither his curious collection of rarities; which benefaction was conſiderably augmented by the addition of his manuſcripts and library at his death, which happened the 18th of May, 1692, in the 76th year of his age. He was interred in the church of Great Lambeth, in Surrey.

ASH'MUNEIN, or ASEBMOU'NEIM, a town of Egypt, the ancient Latopolis, 118 miles ſouth of Cairo.

ASH'MUN-TA'NAH, a town of Egypt, on a canal, between the Nile and the lake of Tennis, twelve miles eaſt of Manſora, and twenty ſouth of Damietta.

ASHO'RE, *adv.* [from *a* and *ſhore.*] On ſhore; on the land.—The poor Engliſhman riding in the road, having all that he brought thither *aſhore*, would have been undone. *Raleigh.*—To the ſhore; to the land:

We may as bootleſs ſpend our vain command,
As ſend our precepts to the leviathan
To come *aſhore*. *Shakeſpeare.*

ASH'TAROTH. See ASTAROTH.

ASH'TON, or LONG ASHTON, a conſiderable village in the county of Somerſet, three miles weſt-ſouth-weſt from Briſtol, ſituate in a delightful vale, which lies between Dundry-hill and Leigh-down. This vale is a continued gentle ſlope, for a conſiderable diſtance towards Dundry, and faces the ſouth. The land is remarkably rich and fertile, and is every-where in the higheſt ſtate of culture. Here are a vaſt number of neat cottages, with gardens wherein the inhabitants raiſe flowers, fruits, and vegetables, early, and in the greateſt perfection; theſe they carry to Briſtol, Clifton, the Hotwell, &c. for ſale. Near this village are the ſeat and park of ſir John Smith, bart. The houſe is of conſiderable extent in front, and very elegant; the celebrated Inigo Jones was the architect. The park is large, and adjoins to Leigh-down. Upon the hill is Leigh-wood, in which is a large Roman camp, ſuppoſed to be the work of the ſoldiers under Oſterius: this directly faces a camp, on the other ſide of the Avon, at the windmill, on Clifton-hill.

ASHTON-UNDER-HILL, a noted village in Glouceſterſhire, near which place, in February, 1764, a large tract of land, near ſixteen acres, ſlipped from the ſide of Bredon-hill, and entirely covered ſeveral paſture-grounds and a conſiderable ſpace of the common field at the bottom of the hill. Some ſtiles that were in the foot-way from Grafton to Aſhton, and left ſtanding, were ſeventy paces diſtant from the paths they belonged to. The ground that thus quitted its natural poſition, preſerved its own ſurface almoſt entire, except in a few places, where chaſms ſeveral feet deep opened. The tops of trees twenty feet high, which grew at the lower part of the hill, were ſcarcely two feet above ground; from whence it is thought the moving earth was near twenty feet in depth. This extraordinary accident is attributed to the inceſſant rains, as the ſoil now uppermoſt is of a boggy nature. A very ſingular inſtance of animal ſagacity is related upon this occaſion: A gentleman's ſervant was riding that way the day preceding this accident; but, as ſoon as the horſe came to the ſpot from whence the ground has ſince receded, he ſtopped ſhort, nor could the man by any means get him a ſtep further, and was obliged to take another route. This the fellow was more ſurprized at, as no apparent obſtacle could be then diſcovered.

ASHUELOT', or Ashwillet, a river of North America, having many branches, whoſe moſt remote ſource is at the north end of the Sunapee mountains, in New Hampſhire. It runs ſouth-weſterly through part of Cheſhire county; below Wincheſter, its courſe is weſt by north, and it diſcharges itſelf into Connecticut river at Hinſdale.

ASH'UR, the ſecond ſon of Shem, who occupied the country called after his name, and by the Greeks Aſſyria; at preſent Curdiſtan, or the country of the Curd Tartars.

AS'HY, *adj.* [from *aſh.*] Aſh-coloured; pale; inclining to a whitiſh grey:

Oft have I ſeen a timely parted ghoſt
Of *aſhy* ſemblance, meagre, pale, and bloodleſs. *Shakeſpeare.*

Of aſhes.—Some of their ſepulchres are at this day no where to be diſcerned, neither their bones or *aſhy* remains in any place to be gathered. *Weever.*

A'SIA, one of the quarters of the world, inferior in ſize only to America, but ſurpaſſing in extent both Europe and Africa taken together, and lies to the eaſt of Europe. It was ſo called, if we are to believe the Greeks, curious in ſearching after the etymology of words, from *Aſia*, daughter of Oceanus and Tethys; others ſay that it derived its name from *Aſius*, the ſon of Atys, king of Lydia; while Bochart is of opinion, that it took its name from the Phœnician word *Aſi*, ſignifying the middle: but all this is mere conjecture. As Aſia exceeds Europe and Africa in extent of territory, it is alſo ſuperior to them in ſerenity of air, fertility of ſoil, the deliciouſneſs of its fruits, the fragrancy and balſamic quality of its plants, ſpices, and gums; the ſalubrity of its drugs; the quantity, variety, beauty, and value, of its gems; the richneſs of its metals, and the fineneſs of its ſilks and cottons. It was in Aſia, according to the ſacred records, that the all-wiſe Creator planted the garden of Eden, in which he formed the firſt man and firſt woman, from whom the race of mankind was to ſpring. Aſia became again the nurſery of the world after the deluge, whence the deſcendants of Noah diſperſed their various colonies into all the other parts of the globe. It was in Aſia that God placed his once-favourite people, the Hebrews, whom he enlightened by revelations delivered by the prophets, and to whom he gave the oracles of truth. It was here that the great and merciful work of our redemption was accompliſhed by his divine Son; and it was from hence that the light of his glorious goſpel was carried with amazing rapidity into all nations of the world, by his diſciples and followers. Here the firſt Chriſtian churches were founded, and the Chriſtian faith miraculouſly propagated and cheriſhed even with the blood of innumerable martyrs. It was in Aſia that the firſt edifices were reared, and the firſt empires founded, while the other parts of the globe were inhabited only by wild animals. On all theſe accounts, this quarter of the globe claims a ſuperiority over the reſt; but it muſt be owned, that a great change hath happened in that part of it called Turkey, which has loſt much of its ancient ſplendour. The other parts of Aſia continue much in their former condition, the ſoil being as remarkable for its fertility, as moſt of the inhabitants for their indolence, effeminacy, and luxury. This effeminacy is chiefly owing to the warmth of the climate, though in ſome meaſure heightened by cuſtom and education; and the ſymptoms of it are more or leſs viſible, as the ſeveral nations are ſeated nearer or farther from the north. Hence the Tartars, who live near the ſame latitudes with us, are as brave, hardy, ſtrong, and vigorous, as any European nation. What is wanting in the robuſt frame of their bodies among the Chineſe, Mogul Indians, and all the inhabitants of the more ſouthern regions, is in a great meaſure made up to them by the vivacity of their minds, and ingenuity in various kinds of workmanſhip, which our moſt ſkilful mechanics have in vain endeavoured to imitate.

This vaſt extent of territory was ſucceſſively governed in paſt times by the Aſſyrians, the Medes, the Perſians, and the Greeks; but the immenſe regions of India and China were ſcarcely known to Alexander, or the conquerors of the ancient world. Upon the decline of thoſe empires, great part of Aſia ſubmitted to the Roman arms; and afterwards, in the middle ages, the ſucceſſors of Mahomet, or, as they are uſually called, Saracens, founded in Aſia, in Africa, and in Europe, a more extenſive empire than that of Cyrus, Alexander, or even the Romans, when in its height of power. The Saracen greatneſs ended with the death of Tamerlane; and the Turks, conquerors on every ſide, took poſſeſſion of the middle regions of Aſia, which they ſtill enjoy. Beſides the countries poſſeſſed by the Turks and Ruſſians, Aſia contains at preſent three large empires, the Chineſe, the Mogul, and the Perſian, upon which the ſmaller kingdoms and ſovereignties depend. The prevailing form of government in this diviſion of the globe is abſolute monarchy. If any of them can be ſaid to enjoy liberty, it is the wandering tribes, as the Tartars and Arabs. Many of the Aſiatic nations, when the Dutch firſt came among them, could not conceive how it was poſſible for people to live under any other form of government than that of a deſpotic monarchy. Turkey, Arabia, Perſia, part of Tartary, and part of India, profeſs Mahometaniſm. The Perſian and Indian Mahometans are of the ſect of Ali, and the Turks of that of Omar; but both own Mahomet for their law-giver, and the Alcoran for their rule of faith and life. In the other parts of Tartary, India, China, Japan, and the Aſiatic iſlands, they are generally heathens and idolaters. Jews are to be found every where in Aſia. Chriſtianity, though planted here with wonderful rapidity by the apoſtles and primitive fathers, ſuffered an almoſt total eclipſe by the conqueſts of the Saracens, and afterwards of the Turks. Incredible indeed have been the hazards, perils, and ſufferings, of the miſſionaries, ſent to propagate their doctrines in the moſt diſtant regions, and among the groſſeſt idolaters; but their labours have hitherto failed of ſucceſs, owing in a great meaſure to their own avarice, and the cruelty and injuſtice of the Europeans, who reſort thither in ſearch of wealth and dominion.

The continent of Aſia is ſituated between 25 and 180 degrees of eaſt longitude, and between the equator and 80 degrees of north latitude. It is about 4740 miles in length, from the Dardanelles on the weſt, to the eaſtern ſhore of Tartary; and about 4380 miles in breadth, from the

the moſt ſouthern part of Malacca, to the moſt northern cape of Nova Zembla. It is bounded by the Frozen Ocean on the north; on the weſt it is ſeparated from Africa by the Red Sea, and from Europe by the Levant or Mediterranean, the Archipelago, the Helleſpont, the ſea of Marmora, the Boſphorus, the Black Sea, the river Don, and a line drawn from it to the river Tobol, and from thence to the river Oby, which falls into the Frozen Ocean. On the eaſt it is bounded by the Pacific Ocean, or South Sea, which ſeparates it from America; and on the ſouth by the Indian Ocean: ſo that it is almoſt ſurrounded by the ſea.

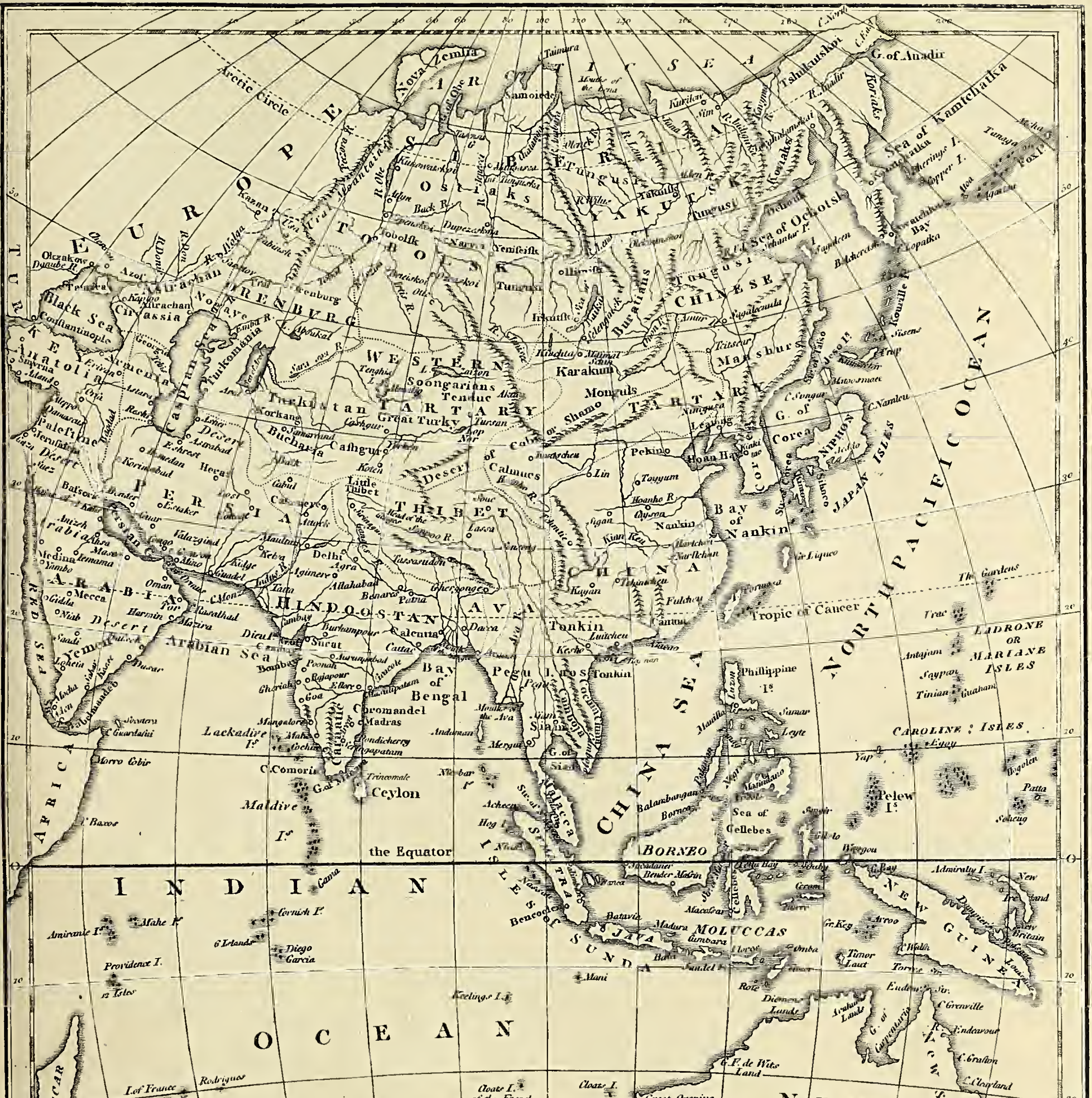
Aſia may be divided into the following parts: Turkey in Aſia, Arabia, Perſia, the Mogul's Empire, with the two peninſulas of the Indies; Tibet, China, and Korea; Great and Little Buckharia, with Koraſan; Tartary, Siberia, and the iſlands. The principal languages ſpoken in Aſia are, the modern Greek, the Turkiſh, the Ruſſian, the Tartarian, the Perſian, the Arabic, the Malayan, the Chineſe, and the Japaneſe. The European languages are alſo ſpoken upon the coaſts of India and China. The chief rivers of Aſia are, the Euphrates and Tigris, in Turkey; the Indus, Ganges, and Burrampooter, in India; the Kiang and Hoang-ho, in China; the Sir Amu and Wolga, in Weſtern Tartary; the Saghalia Ula or Amur, in Eaſtern Tartary; the Irtiſh, Oby, Jeniſea, and Lena, in Siberia. The lakes are, that prodigious one called the Caſpian Sea; and near that another very large one, but lately known to us, called Aral, or the Lake of Eagles. The Baikal is in Siberia; the Kokonor near Tibet; and the Tong Ping in China. The chief mountains are, the Taurus, in Turkey and Perſia; the Imaus, between India and Tibet; and the Altaic chain, in Tartary. The Aſiatic iſlands are very numerous, inſomuch that ſome reckon 150,000; but of this there is no certainty. However, they may be divided into thoſe of the eaſt, weſt, ſouth, and ſouth-eaſt. Thoſe that lie on the eaſt of Aſia are, the iſlands of Jeſſo or Yedſo, and Japan, with ſeveral ſmall ones on the coaſt of Korea, the iſland of Formoſa, and the Philippines. Thoſe on the weſt are, the iſland of Cyprus, in the Mediterranean; Scanderoon, off Natolia; and the iſle of Rhodes, off Phiſchio, on the ſame coaſt. Thoſe on the ſouth are, the iſles of the Maldives, in the Indian Sea; the iſle of Ceylon, off Cape Comorin; with a great many ſmall ones in the gulf of Bengal. Thoſe on the ſouth-eaſt are, the iſles of Sundi, as Sumatra, the iſles of Java, Borneo, &c. the Moluccas, the iſles of Cambaya, Timor, &c. Alſo the Kurile iſles, and of thoſe in the ſea of Kamſchatka, lately diſcovered by the Ruſſians. For the hiſtory and particulars of all which, ſee under their reſpective heads; ſee alſo the article GEOGRAPHY, vol. viii. p. 383—393, and 399—404.

With reſpect to the territory or extent of country meant in the New Teſtament by the word *Aſia*, numberleſs doubts and difficulties have ariſen, becauſe it is ſaid, "that *all they* which dwelt in Aſia heard the word, &c." Acts xix. 10. To which, with great reaſon it has been objected, that, Aſia being ſo very extenſive, it was impoſſible, in ſo ſhort a period, that the goſpel diſpenſation could have been promulgated through it. The learned authors of the Univerſal Hiſtory, and the accurate Cellarius, have endeavoured to explain this ſubject, which being of ſome importance, we ſhall give their obſervations in their own words.

" In reading the ancient hiſtorians or geographers, we frequently meet with the following terms, viz. the Greater and Leſſer Aſia, Aſia Proper, or Aſia properly ſo called, the Lydian Aſia, the Proconſular Aſia, the Aſiatic Dioceſe. That vaſt continent which was known to the Greeks and Romans under the name of Aſia, was divided by the ancient geographers, firſt, into the Greater and Leſſer Aſia. The Leſſer, commonly called Aſia Minor, comprehended a great many provinces; but that which included Phrygia, Myſia, Caria, and Lydia, was named Aſia Propria, or Aſia properly ſo called.' Tully, in enumerating the regions contained in Aſia Propria, makes no mention of Æolis or Ionia, though undoubtedly parts of Aſia Propria, becauſe they were comprehended partly in Lydia and partly in Myſia. Beſides, the inland country, commonly known by that name, contained alſo the adjoining countries, both of Ionia, lying on the ſea-ſide, between the rivers Hermus and Mæander, and of Æolis, extending from Hermus to the river Caicus, according to Ptolemy; or, according to Strabo, to the promontory of Lectum, the ancient boundary between Troas and the ſea-coaſt of the Greater Myſia. The remaining parts of Æolis and Ionia, are by Pliny, Strabo, Hellanicus, and Scylax, placed in Myſia; nay, Myſia itſelf, after the Æolians poſſeſſed themſelves of it, was commonly called Æolis; which Stephanus not being aware of, makes Aſſos of Æolis a different city from Aſſos of Myſia near Antandrus. From what we have ſaid it is plain, that Aſia Propria comprehended Phrygia, Myſia, Lydia, Caria, Æolis, and Ionia. This tract was bounded, according to Ptolemy, on the north by Bithynia and Pontus, extending from Galatia to Propontis; on the eaſt by Galatia, Pamphylia, and Lycia; on the ſouth by part of Lycia and the Rhodian ſea; on the weſt by the Helleſpont, by the Ægean, Icarian, and Myrtoan, ſeas. It lies between the thirty-fifth and forty-firſt degree of north latitude, and extends in longitude from fifty-five to ſixty-two degrees.

" As Aſia Propria is but a part of Aſia Minor, ſo the Lydian Aſia is only a part of Aſia Propria. Aſia, in this acceptation, comprehends Lydia, Æolis, and Ionia, according to the deſcription we have already given of it, and is that Aſia whereof mention is made in the Acts and St. John's Revelation. In the former, we read the following account of St. Paul's journey: 'When they had gone throughout Phrygia, and the region of Galatia, and were forbidden of the Holy Ghoſt to preach the word in Aſia, after they were come to Myſia they aſſayed to go into Bithynia, but the ſpirit ſuffered them not. And they paſſing by Myſia came down to Troas.' Where it is to be obſerved, that the Greater Phrygia, through which they paſſed into Galatia, Myſia Olympena bordering upon Bithynia, and Helleſpont, where Troas was ſituate, though provinces of Aſia properly ſo called, are yet in expreſs terms diſtinguiſhed from the proper Aſia of the Romans, as is likewiſe Caria. As theſe cities and countries did not belong to the Lydian Aſia, ſo what remains of Aſia Propria, together with the ſeven churches mentioned in the Revelation, were properly Lydia, or the Lydian Aſia. In the firſt place, Pergamus is placed by Xenophon in Lydia, and alſo by Ariſtotle; who tells us, that Smyrna was at firſt poſſeſſed by the Lydians, and Scylax Coryandenſis reckons it among the cities of Lydia, as alſo Epheſus, wherein he agrees with Herodotus. Sardis and Philadelphia are reckoned by Ptolemy among the cities of Lydia, as is Laodicea by Stephanus.

" The Proconſular Aſia, (ſo called becauſe it was governed by a proconſul,) according to the diſtribution of the provinces of the empire made by Auguſtus, comprehended the following countries, viz. Lydia, Ionia, Caria, Myſia, Phrygia, and the proconſular Helleſpont. And this is Ptolemy's Aſia Propria. By the ſame emperor, Pontus and Bithynia were made a prætorian province, and Aſia conſular, containing all that part of Aſia which lay on this ſide the river Halys and mount Taurus. In the time of Conſtantine the Great, the Proconſular Aſia was much abridged, and a diſtinction brought in between the Proconſular Aſia and the Aſiatic Dioceſe; the one being governed by the proconſul of Aſia, and the other by the vicarius or lieutenant of Aſia. The Proconſular Aſia, according to the deſcription which Euſebius gives of it, ſeems to have been much the ſame with the Lydian Aſia above-mentioned. In the reign of Theodoſius the Elder, who ſucceeded Valens, the Conſular Helleſpont was taken from the vicarius of Aſia, and added to the Proconſular Aſia; but, under Arcadius, the Proconſular Aſia was abridged of all the inland part of Lydia. And this is the reaſon why Palladius makes a diſtinction between the biſhops of Lydia and thoſe of Aſia. However, the ſouthern



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Neele sc. 352 Strand.

ASIA.

part of Lydia, lying between the Mæander and Cayſter, and the maritime provinces from Epheſus to Aſia, and the promontory Lectum, were left to the Proconſular Aſia.

“The Aſiatic Dioceſe is ſometimes taken in a more ſtrict ſenſe, as diſtinct from the Proconſular Aſia, and the provinces under the juriſdiction of the proconſul, and ſometimes in a more extenſive ſenſe, as comprehending alſo the Proconſular Aſia. According to this acceptation, all Aſia, in the reign of Theodoſius the Younger, conſiſted of eleven provinces, three whereof were under the juriſdiction of the proconſul of Aſia, viz. the Proconſular Proper, which he governed by himſelf; the Conſular Helleſpont, and that of Rhodes, with the other iſlands called Cyclades, which were firſt made a province by Veſpaſian, and placed under a preſident: eight were under the vicarius or lieutenant of Aſia, viz. Lydia, Caria, Phrygia Salutaris, Phrygia Pacatiana, Pamphylia, Lycia, Lycaonia, and Piſidia; theſe eight made up what was properly called the Aſiatic Dioceſe. Theſe are the terms we moſt commonly meet with in reading the ancient hiſtorians and geographers, for the explanation of which we are chiefly indebted to the learned biſhop Uſher, who thought it well worth his while to examine the various acceptations of Aſia Proper in a particular treatiſe.”

Asia is repreſented in painting and ſculpture by an elegant female, attired in a rich and embroidered garment, crowned with a garland of flowers and fruits; holding in her right hand ſprigs of the ſundry ſpices it affords, and in her left a cenſer ſmoking with them: at her feet a camel. The garland denotes, that Aſia produces delightful things neceſſary for human life; her garments the great plenty of thoſe rich materials; the ſprigs of ſpices, that ſhe diſtributes them to other parts of the world; the cenſer ſignifies the odoriferous gums and ſpices it produces. The camel is proper to Aſia.

A'SIA MI'NOR, or Lesser Asia. See Natolia.

ASIA'NO, a town of Italy, in the principality of Piedmont, and lordſhip of Vercelli, four miles ſouth of Vercelli.

ASIAN'TE, a country of Africa, eaſtward of the Gold Coaſt, ſituated about lat. 5. 35. N. lon. 17. 45. E. Ferro.

ASIAT'IC, *adj.* and *ſ.* Belonging to Aſia.

ASIAT'IC SOCIETY. See Society.

ASI'DE, *adv.* [from *a* and *ſide.*] To one ſide; out of the perpendicular direction:

The ſtorm ruſh'd in, and Arcite ſtood aghaſt;
The flames were blown *aſide*, yet ſhone they bright,
Fann'd by the wind, and gave a ruffled light. *Dryden.*

To another part; out of the true direction.—He had no brother; which though it be a comfortable thing for kings to have, yet it draweth the ſubjects eyes a little *aſide*. *Bacon.*—From the company; as, to ſpeak *aſide*.—He took him *aſide* from the multitude. *Mark* vii. 33.

AS'IGRUM, *ſ.* in botany. See Hypericum.

AS'ILUS, *ſ.* [*ab aſſiliendo pecora*, from its attacking cattle.] The Horned Fly; in entomology, a genus belonging to the order of diptera: the characters of which are: roſtrum horny, porrected, ſtraight, and bivalved; body oblong and conic. Theſe inſects are generally found in ſwampy meadow ground, where they prove very troubleſome to cattle. They are armed with a ſting, which inflicts a painful wound. The proboſcis, though ſharp enough to penetrate the thickeſt ſkin, is nevertheleſs perforated, and ſupplies the place of a pump, in ſucking out the blood of animals. There are ſeventy-two ſpecies now aſcertained.

1. Aſilus crabroniformis, the ferruginous aſilus: thorax gibbous; abdomen oval, ſlender, and tapering; the three firſt ſegments of the abdomen are black, the reſt yellow; the feet and wings are of an iron colour. The graziers imagine, and perhaps with juſtice, that of all the inſect tribe, this is the moſt noxious to black cattle; the very noiſe of their wings ſets them a running; and, before they ſtop, they generally make their eſcape into a river, if any is near. Inhabits Europe. This is ſhown on the annexed engraving, at fig. 3.

2. Aſilus tipuloides: naked, cinereous; legs ferruginous, laſt joint black; three black lines on the thorax. Inhabits Europe. See the engraving, at fig. 4.

3. Aſilus flavus: hairy, black; thorax cinereous behind; abdomen above hairy, fulvous; beard white. Inhabits Europe. See the engraving, fig. 5.

The other ſpecies are very little known, and do not require a particular deſcription.

ASINA'RA, a ſmall iſland in the Mediterranean, near the north-weſt coaſt of Sardinia, about ten leagues in circumference, fertile and populous. In the mountains are great numbers of wild boars, deers, buffaloes, and falcons. Lat. 41. 5. N. lon. 26. 9. E. Ferro.

AS'INARY, *adj.* [*aſinarius*, Lat.] Belonging to an aſs.

ASINE'GO, *ſ.* [Portugueſe, a little aſs.] A fooliſh fellow.—They apparelled me as you ſee, made a fool, or an *aſinego*, of me. *Marm. Antiquary.*

A'SINES, *adj.* [Gr. from α neg. and σινω, to hurt.] Innocent, not injurious to health.

ASINEL'LA, a river of Italy, in the kingdom of Naples, which runs into the Adriatic, near Penac, in the Abruzzo Citra.

AS'ININE, *adj.* [*aſinus*, Lat.] Belonging to an aſs.

ASIN'IUS (Pollio), conſul and Roman orator, diſtinguiſhed himſelf under Auguſtus by his exploits and literary works. He is frequently commended by Horace and Virgil, and is ſaid to have collected the firſt library at Rome. He died at Freſcati, when eighty years of age.

ASI'NUS, in natural hiſtory, the Aſs; for which ſee the article Equus, vol. vi. p. 888.

ASIREF', a town of Perſia, on the ſouth coaſt of the Caſpian Sea, in the province of Taberiſtan, eleven leagues eaſt of Ferabad.

To ASK, *v. a.* [*aſcian*, Saxon.] To petition; to beg: ſometimes with an *accuſative* only; ſometimes with *for*:

When thou doſt *aſk* me *bleſſing*, I'll kneel down,
And *aſk* of thee *forgiveneſs*. *Shakeſpeare.*

In long journies, *aſk* your maſter *leave* to give ale to the horſes. *Swift.*—To demand; to claim: as, To *aſk* a price for goods.—*Aſk* me never ſo much dowry and gift, and I will give according as ye ſhall ſay unto me: but give me the damſel to wife. *Gen.* xxxiv. 12.—To queſtion.—O inhabitant of Aroer, ſtand by the way and eſpy; *aſk* him that fleeth, and her that eſcapeth, and ſay, What is done? *Jer.* xlviii. 19.—To enquire; with *after* before the thing.—He ſaid, Wherefore is it that thou doſt *aſk after* my name? And he bleſſed him there. *Gen.* xxxii. 29.—To require, as phyſically neceſſary.—The adminiſtration paſſes into different hands at the end of two months, which contributes to diſpatch: but any exigence of ſtate *aſks* a much longer time to conduct any deſign to its maturity. *Addiſon.*

To ASK, *v. n.* To petition; to beg: with *for* before the thing.—My ſon, haſt thou ſinned? do ſo no more, but *aſk* pardon *for* thy former ſins. *Ecclus.* xxi. 1.—To make enquiry; with *for* or *of* before the thing. To enquire.—Stand ye in the ways, and ſee, and *aſk for* the old paths, where is the good way, and walk therein, and ye ſhall find reſt for your ſouls. *Jer.* vi. 16.

ASK, *ſ.* The water-newt. See Lacerta *paluſtris*.

ASKA'NCE, or Askaun'ce, *adv.* Sideways; obliquely:

Some ſay he bid his angels turn *aſkance*
The poles of earth, twice ten degrees, and more,
From the ſun's axle; they with labour puſh'd
Oblique the centric globe. *Milton.*

ASKAU'NT, *adv.* Obliquely; on one ſide:

Since the ſpace, that lies on either ſide
The ſolar orb, is without limits wide,
Grant that the ſun had happen'd to prefer
A ſeat *aſkaunt*, but one diameter:
Loſt to the light by that unhappy place,
This globe had lain a frozen loneſome maſs. *Blackmore.*

AS'KELON [Heb. a balance.] A city in the land of Canaan.

AS'KER, *ſ.* [from *aſk.*] A petitioner; an enquirer.—Every *aſker* being ſatisfied, we may conclude, that all their conceptions of being in a place are the ſame. *Digby.*

AS'KER-MO'KREM, a town of Aſia, on the eaſtern bank of the Tigris, in the Arabian Irak; called alſo Sermenrai.

AS'KERON, a noted village, five miles from Doncaſter, and ſeven from Pontefract, famous for a ſulphur ſpring, which is now incloſed, and falls into a fine baſon. The virtues of the waters were firſt diſcovered by farriers and farmers, who drove their horſes and cattle thither in the moſt ſtubborn maladies; and theſe waters are now famous for curing the moſt inveterate ſtrumous ſores by bathing. Near this place is Coniſborough-caſtle, called in Britiſh *Car Conan*, ſituate on a rock, where Matthew of Weſtminſter ſays, that Aurelius Ambroſius, a Britiſh prince, vanquiſhed Hengiſt, the Saxon general, and took him priſoner; where, in revenge of his barbarous murder of the Britiſh nobility in cold blood, near Stonehenge in Wiltſhire, he cut off his head. Before the gate is an agger, ſaid to be the burying-place of Hengiſt.

ASKERSUND', a town of Sweden, in the province of Nericia, on the Wetter Sea, five miles from Orebro.

ASKEW', *adv.* Aſide; with contempt:

For when ye mildly look with lovely hue,
 Then is my ſoul with life and love inſpir'd:
But when ye lowre, or look on me *aſkew*,
 Then do I die. *Spenſer.*

ASKEY'TON, a town of the county of Limeric, in Ireland, ſeated on the river Deel, near its junction with the Shannon; famous for its caſtle built by the earl of Deſmond, and for one of the moſt beautiful and perfect abbeys in Ireland. Diſtance from Dublin, 110½ miles.

ASK'RIG, a town in the north riding of Yorkſhire. It has a weekly market on Tueſday: forty miles north-weſt of Boroughbridge, and 243 north of London.

AS'LA, a river of Spain on the northern coaſt, which falls into the ſea in the bay of Biſcay, where it forms a good harbour, to the eaſt of cape Pinas.

To ASLA'KE, *v. a.* [from *ſlack.*] To remit; to mitigate; to ſlacken. *Obſolete.*

But this continual, cruel, civil war,
No ſkill can ſtint, nor reaſon can *aſlake.* *Spenſer.*

ASLA'NI, *ſ.* a ſilver coin, worth from 115 to 120 aſpers.

ASLA'NT, *adv.* Obliquely; not perpendicularly:

 He fell; the ſhaft
Drove through his neck *aſlant*; he ſpurns the ground,
And the ſoul iſſues through the weazon's wound. *Dryden.*

ASLAPATH', a town of Aſia, in Armenia, near Nacſchivan, on the banks of the Aras.

ASLEE'P, *adv.* Sleeping; at reſt: to ſleep.—There is no difference between a perſon *aſleep*, and in an apoplexy, but that the one can be awaked, and the other cannot. *Arbuthnot.*

How many thouſands of my pooreſt ſubjects
Are at this hour *aſleep!* O gentle ſleep,
Nature's ſoft nurſe, how have I frighted thee! *Shakeſpeare.*

AS'LING, or JES'SENIZE, a town of Germany, in Carniola, ſixteen miles ſouth-ſouth-weſt of Clagenfurt.

ASLO'PE, *adv.* With declivity; obliquely; not perpendicularly.—Set them not upright, but *aſlope*, a reaſonable depth under the ground. *Bacon.*

ASMATOG'RAPHER, *ſ.* [Gr. of *ασμα*, a ſong, and *γραφω*, to write.] A compoſer of ſongs.

AS'MER, a ſmall town of Hindooſtan, in the ſtates of the Mogul, ſouth-weſt of Agra, and in the extremity of the province of Bando; called alſo Aſmer.

ASMATO'GRAPHY, *ſ.* The art of compoſing ſongs.

ASMODE'US, an evil ſpirit. *Tob.* iii. 8.

ASMONE'US, or ASSAMONEUS, the father of Simon, and chief of the Aſmoneans, a family that reigned over the Jews during 126 years, under the title of Maccabees.

AS'NA, or ES'NEH, a town of Upper Egypt, ſituated ſo near the cataracts of the Nile, that they may be diſtinctly heard from thence. It contains ſeveral monuments of antiquity; and the inhabitants are rich in corn and cattle. They trade into Lower Egypt and Nubia, by means of the Nile, and alſo by the caravans that paſs over the deſert. The inhabitants are moſtly Arabs, except about 200 Copts, the ancient inhabitants. They are under the government of the Turks, who have a cadi, and the Arabs have two ſheiks of their own nation: diſtant 304 miles ſouth of Cairo. Lat. 25. 0. N. lon. 40. 29. E. Ferro.—See the article EGYPT, vol. vi. p. 352.

AS'NEN, a lake of Sweden, in the province of Smoland. Lat. 56. 36. N. lon. 14. 48. E.

ASNAP'PAR [Heb. misfortune.] A man's name.

AS'NID, a town of Aſia, in the kingdom of Candahar, twenty-three leagues north of Salem.

ASNIE'RES, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diſtrict of Bellac, ten miles north-weſt of Bellac.

A'SO, a town of Japan, in the province of Simoodſuke.

ASO'LA, a town of Benaco, Italy, ſituated on the Chieſe; a frontier-town, with 4000 ſouls; it has a pawn-office, and an academy of ſciences called *De' Rinovati.*

ASO'LO, a beautiful and pleaſant town of Italy, built on a charming hill, near the river Muſone. It is ſurrounded with walls and gates, and upon the top of the hill ſtands a ſpacious citadel, which affords a delightful proſpect. Aſolo was a municipal town under the Romans, and mentioned by Ptolemy and by Pliny. It came afterwards under the dominion of the emperors of Germany, who cauſed it to be governed by vicars of the empire; but their oppreſſive conduct induced the inhabitants to ſubject themſelves, in 1337, to the republic of Venice. Upon the diſſolution of the Venetian ſtates, it became part of Maritime Auſtria, but is now included in the kingdom of Italy.

ASO'MATOUS, *adj.* [from *α* priv. and *σωμα*, a body.] Incorporeal, or without a body.

ASO'NA, a river of Italy, which riſes in the Apennines, and runs into the ſea ten miles ſouth-eaſt of Fermo, in the marquiſate of Ancona.

A'SOPH. See AZOPH.

ASO'PUS, a river of Phrygia Major, which, together with the Lycus, waſhes Laodicea. *Pliny.*—Another of Bœotia, which, running from mount Cithæron, and watering the territory of Thebes, ſeparates it from the territory of Platæa, and falls with an eaſtern courſe into the Euripus at Tanagra. On this river Adraſtus king of Sicyon built a temple to Nemeſis, thence called *Adraſteia.* From this river Thebae came to be ſurnamed *Aſopides. Strabo.* It is now called *Aſopo.*—A third Aſopus, a river of Peloponneſus, which runs by Sicyon, and with a north-weſt courſe falls into the Sinus Corinthiacus, to the weſt of Corinth.—A fourth, a ſmall river of the Locri Epicnemidii, on the borders of Theſſaly, riſing in mount Oeta, and falling into the Sinus Maliacus.—A fifth, anciently a town of Laconic, on the Sinus Laconicus, with a port in a peninſula, between Boæ to the eaſt, and the mouth of the Eurotas to the weſt. The citadel only remains ſtanding, now called by the ſailors *Caſtel Rampano.*

ASO'PUS, a ſon of Oceanus and Tethys, three of whoſe daughters are particularly celebrated, Ægina, Salamis, and Iſmene. He was changed into a river by Jupiter, whom he deſigned to make war againſt, becauſe that god had abuſed his daughter Ægina.

A'SOR, or HAZOR, a town of the tribe of Judah, to the ſouth-weſt, on the borders of Aſcalon (*Joſhua*); as alſo Haſor-Hadata, tranſlated by the Seventy Ασωρη Εαινη.—Another Aſor, Aſorus, or Hazor, a town of Galilee; called the capital of all the kingdoms to the north of Paleſtine.

leſtine. It was taken by Joſhua; the inhabitants were put to the ſword, and their houſes burnt. It was afterwards rebuilt; *(Judges, 1 Sam.)* but remained ſtill in the hands of the Canaanites, though in the lot of the tribe of Naphthali. It lay to the north of the Lacus Samachonites, called in Scripture the *Waters of Merom.*

ASOUPAS', a town of Perſia, in the province of Farſiſtan, twenty-three leagues north of Schiras.

ASOW', a celebrated fortreſs of Ruſſia, once a place of conſiderable trade, but now demoliſhed. It was ſituated in the diſtrict of Bachmut, near the city of Tanais, which was very famous for its trade, and underwent many viciſſitudes. The Genoeſe, who ſettled a trade with Ruſſia ſoon after the diſcovery of Archangel by captain Chancellor, became maſters of this place, and gave it the name of *Tana* or *Catana*: but the Tartars ſeem to have been in poſſeſſion of it long before; for, as Buſching informs us, there are Aſow coins yet extant, on which is the name of *Taktamyſs-Kan.* From the Genoeſe it fell into the hands of the Turks, and became an inconſiderable town. In 1637, it was taken by the Coſſacks, who defended it againſt the Turks in 1641, and next year ſet fire to it, and blew it up. The Turks rebuilt it with ſtrong fortifications. The Ruſſians laid claim to it in 1672, and took it in 1696; but, by the treaty of Pruth, in 1711, it was reſtored to the Turks. In 1736, the Ruſſians became maſters of Aſow; but by the treaty of Belgrade they were obliged to relinquiſh it, and entirely deſtroy the place.

ASP, *ſ.* [from ασπις, Gr. a ſhield: it is ſaid to be thus denominated, in regard to the manner of its lying convolved in a circle, in the centre of which is the head, which it exerts, or raiſes, like the umbo or umbilicus of a buckler.] A ſmall poiſonous kind of ſerpent, whoſe bite gives a ſpeedy but eaſy kind of death. This ſpecies of ſerpent is very frequently mentioned; but ſo careleſsly deſcribed, that it is not eaſy to determine which, if any of the ſpecies known at preſent, may properly be called by this name. It is ſaid to be common in Africa, and about the banks of the Nile; and Bellonius mentions a ſmall ſpecies of ſerpent which he had met with in Italy, and which had a ſort of callous excreſcence on the forehead, which he takes to have been the aſpis of the ancients. It is with the aſp that Cleopatra is ſaid to have diſpatched herſelf, and prevented the deſigns of Auguſtus, who intended to have carried her captive to adorn his triumphal entry into Rome. But the fact is conteſted: Brown places it among his vulgar errors. The indications of that queen's having uſed the miniſtry of the aſp, were only two almoſt inſenſible perforations found in her arm; and Plutarch ſays it is unknown what ſhe died of. At the ſame time, it muſt be obſerved, that the ſlightneſs of the perforations found in her arm furniſhes no preſumption againſt the fact; for no more than the point of a needle dipt in the poiſon, was neceſſary for the purpoſe. See the article SERPENT.

Lord Bacon makes the aſp the leaſt painful of all the inſtruments of death. He ſuppoſes it to have an affinity to opium, but to be leſs diſagreeable in its operation; and his opinion ſeems to correſpond with the accounts of moſt writers, as well as with the effects deſcribed to have been produced upon Cleopatra; for which ſee the article already referred to. The ancients had a plaſter called δι ασπιδων, made of this terrible animal, of great efficacy as a diſcutient of ſtrumæ and other indurations, and uſed likewiſe againſt pains of the gout. The fleſh and ſkin, or exuviæ, of the creature, had alſo their ſhare in the ancient materia medica.

ASP, or AS'PEN-TREE, *ſ.* in botany. See POPULUS.

AS'PA, anciently a town of Parthia, now *Iſpahan.*

AS'PAH, a town of Germany, in the archduchy of Auſtria, twelve miles eaſt of Steyr.

ASPA'LATHUS, *ſ.* [the name of a thorny ſhrub in Dioſcorides, from α and σπαω, becauſe the thorns were not eaſily drawn out of the wounds they made.] In botany, a genus of the diadelphia decandria claſs, ranking in the natural order of papilionaceæ or leguminoſæ. The generic characters are—Calyx: perianthium one-leafed, five-cleft: diviſions acuminate, equal, except that the upper is larger. Corolla: papilionaceous; banner compreſſed, aſcending, obovate, generally hirſute on the outſide, obtuſe with a point; wings lunulate, obtuſe, ſpreading, ſhorter than the banner; keel bifid, conformable with the wings. Stamina: filaments ten, united into a ſheath gaping longitudinally at top, aſcending; antheræ oblong. Piſtillum: germ ovate; ſtyle ſimple, aſcending; ſtigma ſharp. Pericarpium: legume ovate, awnleſs. Seeds: generally two, kidney-ſhaped.—*Eſſential Character.* Calyx, five-cleft; the upper diviſion largeſt: legume ovate, awnleſs, with about two ſeeds.

Species. 1. Aſpalathus ſpinoſa, or thorny aſpalathus: leaves faſcicled, linear, naked, ſurrounding a gemmaceous ſpine. Flowers lateral, ſcarcely longer than the leaves; one or two whitiſh ſeeds, one kidney-ſhaped, compreſſed a little, the other ſubglobular, flattiſh, or angular, on the ſide where they touch.

2. Aſpalathus verrucoſa, or warted aſpalathus: leaves faſcicled, filiform; buds warted, tomentoſe naked. This is a woody ſhrub, two feet high, with large buds or warts. Leaves fleſhy, ſmooth, ſharpiſh, an inch long.

3. Aſpalathus capitata, or headed aſpalathus: leaves faſcicled, linear, ſharp; flowers headed, bractes naked. Leaves pubeſcent; flowers covered with ferruginous down.

4. Aſpalathus glomerata, or glomerate aſpalathus: leaves faſcicled, linear, ſharp, villoſe, bent inward; flowers headed; diviſions of the calyx ovate, corollas ſmooth. This differs from the laſt, which it reſembles very much, in having the leaves bent inwards, the calyxes ovate, the corollas ſmooth.

5. Aſpalathus aſtroites, or ſtarry aſpalathus: leaves faſcicled, ſubulate, mucronate, ſmooth; ſtem villoſe, flowers ſcattered. This has the appearance of juniper. It branches very much; and the twigs are covered with a hoary down, and are loaded with ſuch an abundance of flowers, that the whole plant ſeems almoſt covered with them.

6. Aſpalathus chenopoda: leaves faſcicled, ſubulate, mucronate, rough with hairs; flowers headed very hirſute. This is about three feet high, with ſlender branches, at the ends of which the flowers come out; they are yellow, collected in woolly heads, and are rarely ſucceeded by pods in England. The leaves are ſharp and prickly at the end, reſembling thoſe of juniper. Cultivated by Mr. Miller, in 1759.

7. Aſpalathus albens, or white aſpalathus: leaves faſcicled, ſubulate, ſilky, ſpreading at top, bunches of flowers ſcattered. Stem ſhrubby, upright, with a brown bark full of chinks; leaves five together, ſharp, and ſpreading a little at the tip, of a ſilky whiteneſs. Bunches of flowers ſilky-white, ſmall. Introduced in 1774, by Mr. Maſſon. It flowers here in July.

8. Aſpalathus thymifolia, or thyme-leaved aſpalathus: leaves faſcicled, ſubulate, unarmed, ſmooth, very ſhort; flowers alternate. This is a very ſmall ſhrub. The leaves are crowded together and ſhining; they reſemble thoſe of thyme.

9. Aſpalathus ericifolia, or heath-leaved aſpalathus: leaves faſcicled, linear, unarmed, hirſute; flowers alternate; calyxes linear. 10. Aſpalathus nigra, or black aſpalathus: leaves faſcicled, linear, rather obtuſe; flowers headed-ſpiked, pubeſcent. 11. Aſpalathus carnoſa, or fleſhy aſpalathus: leaves faſcicled, almoſt columnar, obtuſe; calyxes ſubpubeſcent, ſharp; corollas ſmooth. 12. Aſpalathus ciliaris, or ciliate-leaved aſpalathus: leaves faſcicled, filiform, ſcabrous; flowers terminal, ſeſſile, banners pubeſcent. Theſe four ſhrubs ſeldom exceed three feet in height.

13. Aſpalathus geniſtoides, or broom-like aſpalathus: leaves faſcicled, filiform, poliſhed; calyxes ſubracemed, pendulous, they and the corollas ſmooth. Stems ſhrubby, nine feet high, upright, ſimply branching, with a netted

bark, and white villoſe buds. Leaves roundiſh, half an inch long. Flowers terminating, three or four, pendulous.

14. Aſpalathus hyſtrix, or porcupine aſpalathus: leaves faſcicled, filiform, rigid, ſpiny, ſilky; flowers lateral, ſeſſile, ſolitary; corollas villoſe. This ſhrub is diſtinct from the others, by its leaves reſembling ſilky white ſpines.

15. Aſpalathus galioides: leaves faſcicled, linear, poliſhed; peduncles two-flowered, elongate, leafy at the end. Stem two feet high, decumbent, branching, ſmooth: leaves reſembling thoſe of aſparagus; with two ſeſſile flowers.

16. Aſpalathus retroflexa: leaves faſcicled, ſubulate, ſmooth, very ſmall; branches filiform, very ſpreading; flowers ſolitary, terminal. 17. Aſpalathus uniflora, or one-flowered aſpalathus: leaves faſcicled, linear, unarmed, ſmooth; ſtipules ſharp, permanent; flowers ſolitary, diviſions of the calyxes boat-ſhaped. 18. Aſpalathus araneoſa: leaves faſcicled, briſtle-ſhaped, unarmed, hiſpid; flowers headed. 19. Aſpalathus aſparagoides: leaves faſcicled, ſetaceous, rather hairy; calyxes leaf-ſhaped, the length of the corolla, ſolitary. 20. Aſpalathus ſericea, or ſilky aſpalathus: leaves faſcicled, lanceolate, ſilky; peduncles terminal, two-flowered, banner almoſt naked. 21. Aſpalathus caneſcens, or hoary aſpalathus: leaves faſcicled, ſubulate, tomentoſe-ſilky; flowers lateral, banners pubeſcent. 22. Aſpalathus heterophylla, or various-leaved aſpalathus: leaves of the branches faſcicled, of the branchlets ternate, linear, rough with hairs; ſpikes terminal, calyx and corollas villoſe. This is ſingular in having the lower leaves in bunches, the upper ternate; flowers yellow. The rudiments of the twigs make bunches of leaves on the branches themſelves. This, and all the foregoing ſpecies, are natives of the Cape of Good Hope.

23. Aſpalathus indica, or ſmall-flowered aſpalathus: leaves quinate ſeſſile, peduncles one-flowered. This is a ſhrub with ſlender hard round twigs; branches alternate, ſhort. Leaves alternate; leaflets oblong, obtuſe, ſeſſile, broader towards the end, bluntiſh, ſmooth, the ſide ones a little ſhorter. It grows about five feet high. The flowers are of a pale red colour; they appear in Auguſt, but are ſeldom ſucceeded by pods here. It is a native of the Eaſt-Indies, and was cultivated by Mr. Miller, in 1759.

24. Aſpalathus cretica, or evergreen aſpalathus: leaves trine wedge-ſhaped, ſmooth, the lateral ones ſhorter; ſtipules obſolete; flowers headed. Height four feet and a half. Trunk three or four inches thick, branching from top to bottom: branches very flexible, divided and ſubdivided. Leaves very many, ſmall, narrow, oblong, thick, evergreen, reflex at the edge, and in a point which is hard but not prickly, and have ſometimes two ears at the baſe; flowers in two rows, two, three, and four, together, yellow, very ſmall, with a pleaſant ſmell; a ſingle round, flat, ſhining, ſeed. 25. Aſpalathus quinquefolia, or five-leaved aſpalathus: leaves in fives, ſeſſile; peduncles ſpiked. 26. Aſpalathus tridentata, or three-toothed aſpalathus: leaves trine-lanceolate, ſmooth; ſtipules three-toothed, mucronate; flowers headed. This, the two ſpecies immediately foregoing, and thoſe which follow, except the thirty-ſecond, are natives of the Cape of Good Hope.

27. Aſpalathus piloſa, or hairy aſpalathus: leaves tern-linear, villoſe; heads terminal, very hairy; corollas pubeſcent. 28. Aſpalathus anthylloides: leaves trine-lanceolate, equal, ſubpubeſcent; ſtipules none; heads terminal. 29. Aſpalathus laxata, or looſe-leaved aſpalathus: leaves tern-linear, villoſe; flowers in bunches of five; calyxes woolly; ſtems proſtrate, round.

30. Aſpalathus argentea, or ſilvery aſpalathus: leaves trine-linear ſilky, ſtipules ſimple mucronate, flowers ſcattered tomentoſe. This riſes about four feet high, with a ſhrubby ſtalk dividing into ſlender branches. The flowers are purple, downy, and grow thinly on the branches; they come out late in the ſummer. The leaves are in threes, or in bunches, lanceolate, ſilky, as is the whole plant. Flowers in ſpikes, or elſe ſcattered, lateral, villoſe. It has the figure of cytiſus. Mr. Miller cultivated it in 1759. It flowers in July and Auguſt.

31. Aſpalathus calloſa, or callous aſpalathus: leaves trine ſubulate equal, ſtipules roundiſh callous, flowers ſpiked ſmooth. This is an underſhrub, having the branches covered with round calluſes, occaſioned by the falling of the leaves, which are ſeſſile, with a callous baſe, like thoſe of juniper, ſharp, ſmooth, flat, but convex beneath.

32. Aſpalathus orientalis, or Levant aſpalathus: leaves ternate lanceolate, pubeſcent, flowers in bunches of five, calyxes pubeſcent, ſtems erect angular, a foot long. Found by Tournefort in the Levant.

33. Aſpalathus mucronata: leaves tern poliſhed, branches acuminate, flowers in racemes. Stem ſmooth, with remote branches not warted; they draw gradually to a point, and are, as it were, ſpiny.

34. Aſpalathus pinnata, or pinnate-leaved aſpalathus: leaves pinnate-quinate obcordate, peduncles headed. This is allied to No. 25.

35. Aſpalathus pedunculata, or ſmall-leaved aſpalathus: leaves faſcicled ſubulate ſmooth, peduncles filiform twice the length of the leaf. This was found at the Cape by Maſſon, and was introduced into the royal garden at Kew in 1775. It flowers in Auguſt.

36. Aſpalathus candicans, or fair aſpalathus: leaves trine and faſcicled filiform ſilky, flowers ſublateral, banners naked. This alſo was found at the Cape by Maſſon, was introduced in 1774, and flowers in June and July.

37. Aſpalathus arborea, or tree aſpalathus: leaves pinnate-quinate, racemes terminating. This is a middle-ſized tree, with a ſtraight trunk, but weak reclining branches. It differs from No. 23, for that has one-flowered axillary peduncles, and never riſes to a tree.

Propagation and Culture. Few of theſe ſhrubs have hitherto been cultivated in Europe; they are moſtly natives of the Cape of Good Hope. They are to be propagated by ſeeds, which muſt be obtained from the country where they grow naturally, and ſhould be ſown in pots filled with light earth as ſoon as they arrive: if this happens in the autumn, the pots ſhould be plunged into an old tan-bed whoſe heat is ſpent, where they may remain till ſpring, when they ſhould be removed into a moderate hot-bed, which will bring up the plants. But, when the ſeeds arrive in the ſpring, the pots in which the ſeeds are ſown ſhould be then plunged into a moderate hot-bed; and in warm weather the glaſſes muſt be ſhaded in the middle of the day, and the pots frequently refreſhed with water. Thoſe ſeeds which are ſown in the ſpring ſeldom grow the ſame year, therefore in the autumn the pots ſhould be put into an old tan-bed, as was directed for thoſe ſown in autumn, and afterward put in a hot-bed the following ſpring. When the plants come up, and are ſtrong enough to remove, they ſhould be each planted into a ſeparate ſmall pot filled with light earth, and plunged into a moderate hot-bed, to encourage their rooting again; and ſo ſoon as they are eſtabliſhed in the pots, they ſhould by degrees be inured to the open air, into which they ſhould be removed in ſummer, placing them in a ſheltered ſituation, where they may remain till autumn, when they muſt be carried into the green-houſe, and in winter ſhould have but little water. See ROBINIA and SPARTIUM.

ASPALATHUS EBENUS. See AMERIMNUM.

ASPANG', a town of Germany, in the archduchy of Auſtria, ſeventeen miles ſouth of Ebenfurth.

ASPA'RAGUS, *ſ.* [*ασπαραγος*, a young ſhoot, before it unfolds its leaves.] In botany, a genus of the hexandria monogynia claſs, ranking in the natural order of ſarmentaceæ. The generic characters are—Calyx: none. Corolla: petals ſix, cohering by the claws, oblong, erected into a tube; three alternately interior, reflex at the end, permanent. Stamina: filaments ſix, filiform, inſerted into the petals, erect, ſhorter than the corolla; antheræ roundiſh. Piſtillum: germ turbinate, three-cornered; ſtyle very ſhort; ſtigma a prominent point. Pericarpium: berry globular, umbilicated with a point, three-celled. Seeds: two, round, angular on the inſide, ſmooth.—*Eſſential Character.* Corolla ſix-parted, erect; the three inner petals reflected at the end; berry three-celled, two-ſeeded.

Deſcription. The genus of aſparagus is allied to convallaria, as may eaſily be ſeen, if we have recourſe to thoſe ſpecies which have lanceolate leaves, for theſe approach very near to convallaria racemoſa. It may however readily be diſtinguiſhed by the general appearance of the ſpecies. The ſtem is commonly branched, in ſome herbaceous, in others ſhrubby. The leaves in general are linear or briſtle-ſhaped, and produced in bundles. The flowers uſually ſolitary and axillary. There is a two-valved ſpathe, and ſometimes a ſpine, under each twig and bundle of leaves. The corolla is hexapetalous, but cloſed in form of a campanulate flower, as if it were monopetalous. Some of the ſpecies are prickly, and others not. Some alſo are dioecous, or have male and female flowers on diſtinct individuals.

Species. 1. Aſparagus officinalis, or common aſparagus or ſperage: ſtem herbaceous round erect, leaves ſetaceous, ſtipules alike. Root perennial, large, compoſed of many ſucculent round bulbs, forming a kind of tranſverſe tuber, whence ſpring numerous ſtems, which are round, ſmooth, green, ſtiff, branched, in the wild plant a foot and half high or more, but in the garden plant much higher; branches alternate, thinly ſubdivided into alternate twigs, with a few leaves between them: at their baſe is a ſingle ſtipule, which is membranaceous, browniſh, triangular-ovate, tapering to a point, the baſe alſo running down into a pointed prominence; there is alſo a ſtipule at the baſe of each bundle of leaves, which is cordate-ovate, pointed, ragged at the edge and often cracking at the ſides, its baſe incloſing the whole bundle. Linnæus mentions two ſmaller ſtipules within this. Leaves three, four, or five, in a bundle, ſometimes from ten to thirteen, according to ſome, of different ſizes, linear or briſtle-ſhaped, green with a white point, ſmooth, four or five lines in length. Peduncles axillary, pendulous, ſolitary or two together, one-flowered, ſometimes two-flowered; they have a tubercle or joint above the middle, and are protected at the baſe by the ſtipule of the twigs. Corolla yellowiſh green. Berries red, with the remains of the corolla at the baſe. Authors differ much reſpecting the ſex of the flowers in this ſpecies. Pollich affirms, that the flowers are always hermaphrodite, as far as he has obſerved; Leers, on the contrary, always remarked male and female flowers on ſeparate plants, both in the wild and garden ſort. Hudſon obſerved male, female, and hermaphrodite, flowers. Gerard, in his *Flora Gallo-Provincialis* ſays that it is dioecous; and Gouan, that it is ſo at leaſt in the wild varieties. According to Linnæus, the garden aſparagus is certainly not ſo: with us, however, there are barren and fertile plants. Dr. Stokes, who examined the fructification in cultivated plants, thus deſcribes it. Pollen and ſeed produced on different plants. Flowers of the plants producing pollen nearly as large again: ſtamens nearly as long as the petals; filaments adhering to the petals for half their length; antheræ oblong, upright, orange; pollen orange; germ half as long as the filaments, and as large as the other at the ſame ſtage of growth; ſtyle none. Flowers of the plants producing ſeeds not ſo conſpicuous, of a greener and browner hue; ſtamens not half ſo long as the petals, with whitiſh, membranaceous, barren, antheræ, and no pollen. Seeds generally two, but ſometimes three; and, according to Mr. Hudſon, one in each cell. Miller mentions a variety which grows naturally in Wales, and alſo near Briſtol; ſeeds from the iſland of Portland have ſucceeded in the Chelſea garden, by which we are convinced it is a different ſpecies from the garden aſparagus; and alſo from the wild ſort which grows naturally at Gibraltar, and alſo near Montpellier. Mr. Magnol, of Montpellier, was alſo of opinion, that it is a different ſpecies; for, he ſays, the common wild aſparagus and this grew near each other in the neighbourhood of Montpellier, and the young ſhoots of the former were ſweet, whereas thoſe of the latter were bitter. The ſame has been confirmed by ſeveral gentlemen who have reſided many years at Gibraltar and Minorca, where this grows naturally in plenty. There is another variety, with a ſoft ſpine at the baſe. The leaves are briſtle ſhaped at the top; the branches are angular and ſtreaked, whereas in the garden aſparagus they are round and ſmooth. According to Monſ. Villars, the wild differs from the cultivated aſparagus, in having the leaves much finer, and ſtanding out wide from the twig; in being ſhorter, ſtraighter, and of a higher green. Situation may very well produce theſe differences.

Mr. Miller is of opinion, that the common aſparagus, which is cultivated for the uſe of the table, may have probably been brought by culture to the perfection it now is, from the wild ſort, which grows naturally in the fens of Lincolnſhire, where the ſhoots are no larger than ſtraws; but, if ſo, it muſt have been from very long culture and good management; for, a friend of mine, ſays he, procured ſome ſeeds of the wild ſort, which he cultivated with great care, in very rich ground, yet could not bring the roots to produce ſhoots more than half the ſize of the garden kind, which grew on the ſame ground; but he always found the wild ſort came up a week or ten days earlier in the ſpring, and the ſhoots were exceeding ſweet. I have lately had ſome doubt, adds Mr. Miller, whether the ſort of aſparagus which grows naturally in England, was the ſame with that mentioned by Caſpar Bauhin, becauſe Tournefort and Vaillant both aſſert, that they had cultivated that wild ſort in the royal garden at Paris ſeveral years, and it had never altered, therefore I procured ſpecimens of that, which I find to be extremely different from the Engliſh ſort. The leaves are much finer and ſhorter, and are produced in much larger cluſters; the branches grow much cloſer together, and the foot-ſtalks of the flowers are longer; therefore I believe it to be a diſtinct ſpecies from our wild ſort, which appears to be undoubtedly the ſame as the garden aſparagus. It is a native of moſt parts of Europe, and alſo of Japan. With us it occurs on many parts of the coaſt, as at the Lizard point, Harwich, below Briſtol, in the iſle of Portland, &c. flowering in July. The young ſhoots are generally eſteemed in the ſpring, and are cultivated for the table, eſpecially near London, in great abundance. According to Dr. Withering they are nutritious; but Lewis on the contrary ſays, they are ſuppoſed to promote appetite, but afford little nouriſhment. What is more certain is, that they impart a very ſtrong ſmell to the urine, in a very little time after being eaten, and for this reaſon they are accounted by ſome an uſeful diuretic; by others however they are ſuppoſed to be injurious to the kidnies. It does not appear from common experience that they poſſeſs either of theſe qualities in any conſiderable degree. Many have an opinion of them for removing obſtructions, in dropſical and calculous caſes; but their qualities appear to be too mild to expect much from them as a medicine: others regard them as bad in gouty habits. The roots are ſuppoſed to be more aperient and diuretic than the young ſhoots; but neither the roots, nor the ſtalks, when grown up ſo as to part into branches, give any ill ſmell to the urine. The largeneſs and tenderneſs of the ſhoots are probably the circumſtances that have brought them into general uſe for the table. Pliny mentions, that about Ravenna ſome of them were ſo large, that three weighed a pound. I do not recollect to have heard of any with us, which were more than half that weight. Our old Engliſh writers call it *aſparagus* and *ſperage*; when theſe names were vilely corrupted into *ſparrowgraſs*, and thence fritted down into *graſs*, I am unable to ſay. In German it is called *ſpargel*; in Dutch *aſpergie*; in Daniſh *aſpargis* or *aſparris*; in Swediſh *ſparis* or *ſpargel*; in French *aſperge commune*; in Italian *ſparagio*; in Spaniſh *aſparrago*; in Portugueſe *eſpargo*; in Ruſſian *ſparſa* or *ſparſch*: all evidently from the ſame origin.

2. Aſparagus declinatus, or long-leaved aſparagus: ſtem unarmed round, branches declined, leaves ſetaceous. This reſembles the common ſort, but is higher; it has more

leaves, and they are twice as long. The ſtem is annual. Native of the Cape of Good Hope.

3. Aſparagus falcatus, or ſickle-leaved aſparagus: prickles ſolitary reverſed, branches round, leaves enſiform falcated. Stem round, branching. Leaves linear or ſword-ſhaped, ſharp, narrow at the baſe, ſmooth. At the baſe of the leaves is a ſmall recurved prickle. Native of Ceylon.

4. Aſparagus retrofractus, or larch-leaved aſparagus: prickles ſolitary; branches round, reflected, and retrofracted; leaves ſetaceous, faſcicled. Branches round, dichotomous, warted at the diviſions, with a minute nodding prickle. It has very crooked irregular ſtalks, ſhrubby, and riſing eight or ten feet high, putting out ſeveral weak ſide branches, having long narrow leaves on them, coming out in cluſters, like thoſe of the larch-tree; under each of theſe cluſters is placed a ſingle ſharp thorn. The ſtalks continue ſeveral years, and the leaves keep green all the winter. It is a native of the Cape of Good Hope, and flowers in Auguſt and September.

5. Aſparagus Æthiopicus: prickles ſolitary reverſed, branches angular, leaves lanceolate-linear. Native alſo of the Cape of Good Hope.

6. Aſparagus Aſiaticus, or ſlender-ſtalked aſparagus: prickles ſolitary, ſtem erect, branches filiform, leaves faſcicled ſetaceous. This ſends up many weak ſhoots growing in cluſters, and armed with ſharp ſpines, both on the ſides and at the ends of the ſhoots; the leaves come out in ſmall cluſters, and continue green all the year. It is a native of Aſia, and was cultivated in 1768 by Miller.

7. Aſparagus albus, or white aſparagus: prickles ſolitary; branches angular, flexuoſe; leaves faſcicled, triquetrous, awnleſs, deciduous. Stems ſhrubby, three or four feet high, with very white bark, and armed with thorns which are ſingle, coming out juſt below each tuft of leaves. The ſtems continue ſeveral years, and put out many branches, with ſhort narrow leaves. Theſe continue green all the winter, if the plants are ſcreened from ſevere froſt. The ſpines are ſtraight, ſpreading, or reflex. It was cultivated in 1640; and is a native of Spain and Portugal.

8. Aſparagus acutifolius, or acute-leaved aſparagus: ſtem unarmed, angular, ſhrubby; leaves needle-ſhaped, rather rigid, perennial, mucronate, equal. This has white crooked ſhrubby ſtalks, which riſe four or five feet high, but have no ſpines on them; the leaves come out in cluſters like thoſe of the larch-tree; they are very ſhort, and end in ſharp prickles, ſo that they are troubleſome to handle. Native of Spain, Portugal, and the Levant.

9. Aſparagus horridus, or thorny aſparagus: leaflets ſhrubby, five-cornered; prickles four-cornered, compreſſed, ſtriated. The ſpines of this are a finger's length. It is a native of Spain.

10. Aſparagus aphyllus, or prickly aſparagus: ſtem unarmed, angular, ſhrubby; leaves ſubulate, ſtriated, unequal, diverging. This ſends up many weak irregular ſhoots, which have no leaves, but inſtead thereof they are armed with ſhort ſtiff thorns, coming out four or five together, and ſpreading from each other every way. The flowers are ſmall, and of an herbaceous colour; the berries are larger than thoſe of the common ſort, and are black when ripe. Native of the ſouth of Europe.

11. Aſparagus Capenſis, or Cape aſparagus: ſpines in fours, branches aggregate round, leaves ſetaceous. Native of the Cape of Good Hope. Cultivated in 1691 in the royal garden at Hampton-court.

12. Aſparagus ſarmentoſus, or linear-leaved aſparagus: leaves ſolitary linear-lanceolate, ſtem flexuoſe, prickles recurved. This ſends out from the root many weak climbing branches, which riſe five or ſix feet high; the ſhoots are armed with ſhort crooked ſpines, which are ſo cloſely ſet on, that it is difficult to touch the branches. Roots long, many, whitiſh, fleſhy, of a ſweetiſh pleaſant flavour. Hence ariſe very long twigs, divided into many axils, with ſhort ſharp prickles, either upwards or downwards, climbing up the neighbouring trees. Leaves broader, longer, and ſtouter, than in the reſt of this genus: from which come out ſmall pale flowers, on ſlender peduncles; theſe are ſucceeded by red berries, in which are generally three angular ſeeds. The roots are eaten in Ceylon, where it grows naturally, with broth or milk; and the inhabitants are very fond of them.

13. Aſparagus verticillaris, or whorl-leaved aſparagus: leaves verticillate. Found by Tournefort in the Levant, about Derbent and elſewhere.

Propagation and Culture. The garden aſparagus is propagated by ſeeds, in the procuring of which, there ſhould be particular care to get it from a perſon of ſkill, who may be depended upon for his choice of the ſhoots, and integrity in ſupplying with his beſt ſeeds. But, where a perſon is in poſſeſſion of ſome good beds of aſparagus, it is much the beſt way to ſave it himſelf; in order to which, a ſufficient number of the faireſt buds ſhould be marked early in the ſpring, and permitted to run up for ſeeds; becauſe thoſe which run up after the ſeaſon for cutting the aſparagus is over, are generally ſo backward, as not to ripen the ſeeds, unleſs the ſummer is warm and the autumn very favourable. In the choice of the buds to be left for ſeeds, there muſt be great regard had to their ſize and roundneſs, never leaving any that are inclinable to be flat, or that ſoon grow open-headed, always chooſing the roundeſt, and ſuch as have the cloſeſt tops. But, as ſeveral of theſe produce only male flowers, a greater number of buds ſhould be left than might be neceſſary, if there could be a certainty of their being all fruitful. When the buds are left, it will be proper to thruſt a ſtick down by each, but there muſt be care had in doing this not to injure the crown of the root. Theſe ſticks will ſerve as marks to diſtinguiſh them from the others when they are all run up. Toward the end of September the berries will be fully ripe, when the ſtalks ſhould be cut off, and the berries ſtripped into a tub, in which they may remain three weeks or a month to ſweat, by which means the outer huſks will be rotten; then fill the tub with water, and break all the huſks by ſqueezing them between your hands. Theſe huſks will all ſwim upon the water, but the ſeeds will ſink to the bottom; ſo that, by pouring off the water gently, the huſks will be carried along with it, and, by putting freſh water two or three times, and ſtirring your ſeed about, you will make it entirely clean: then ſpread the ſeed upon a mat or cloth, and expoſe it to the ſun and air in dry weather, until it is perfectly dry, when it may be put into a bag, and hung up in a dry place till February, or the beginning of March, which is the proper ſeaſon for ſowing it; at that time you muſt prepare a bed of good rich earth made very level, whereon you muſt ſow your ſeeds broadcaſt, but not too thick, which will cauſe the plants to come up quite ſmall; then tread the bed all over to bury the ſeed in the ground, and rake it over ſmooth. The following ſummer keep the ground diligently cleared from weeds, which will greatly add to the ſtrength of the plants; and, toward the latter end of October, when the haulm is quite withered, you may ſpread a little rotten dung over the ſurface of the ground, about two inches thick, which will preſerve the young buds from being hurt with the froſts, &c.

The ſpring following the plants will be fit to plant out for good, for plants of more than one year's growth are unfit to remove; and young plants will produce finer roots. You muſt therefore prepare your ground by trenching it well, burying therein a good quantity of rotten dung at the bottom of each trench, that it may lie at leaſt ſix inches below the ſurface of the ground; then level the whole plot very exactly, taking out all large ſtones: but this ſhould not be done long before you intend to plant your aſparagus, in which you muſt be governed according to the nature of your ſoil or the ſeaſon; for, if your ſoil be dry, and the ſeaſon forward, you may plant early in March; but, in a wet ſoil, it is better to wait till the end of that month, or the beginning of April, which is about the ſeaſon that the plants are beginning to ſhoot. Many people have adviſed the planting of aſparagus at Michaelmas, but this we have experienced to be very wrong; for, in two different years, large quantities were obliged to be tranſplanted at that ſeaſon, but the plants had better have been thrown away; for, upon examination in the ſpring, moſt of the roots were grown mouldy, and decaying, and not one in five of them ſucceeded, and thoſe which did were ſo weak, as not to be worth their ſtanding. The ſeaſon being come for planting, you muſt, with a narrow-pronged dung-fork, carefully fork up the roots, ſhaking them out of the earth, and ſeparating them from each other, obſerving to lay their heads even, for the more convenient planting them, which muſt be performed in this manner: The plot of ground being levelled, you muſt begin at one ſide thereof, ranging a line very tight acroſs the piece, throwing out a trench exactly ſtraight by the line about ſix inches deep, being careful not to turn up the dung; into which trench you may lay your roots, ſpreading them with your fingers, and placing them upright againſt the back of the trench, that the buds may ſtand forward, and be about two inches below the ſurface of the ground, and at twelve inches diſtance from each other; then, with a rake, draw the earth into the trench again, laying it very level, which will preſerve the roots in their right poſition; then remove the line a foot farther back, and make another trench in the like manner, laying therein your plants as before directed, and continuing the ſame diſtance row from row, only obſerving between every four rows to leave a diſtance of two feet four inches for an alley to go between the beds to cut the aſparagus, &c. The plot of the ground being finiſhed and levelled, you may ſow thereon a ſmall crop of onions, which will not hurt the aſparagus, provided the onions are not too cloſe, and tread in the ſeeds, raking the ground level. There are ſome perſons who plant the ſeeds of aſparagus in the place where the roots are to remain, which is a very good method, if it is performed with care. The way is this: after the ground has been well trenched and dunged, lay it level, and draw a line acroſs the ground in the ſame manner as is practiſed for planting the young plants; then with a dibble make holes at a foot diſtance, into each of which drop two ſeeds, for fear one ſhould miſcarry; theſe holes ſhould not be more than half an inch deep; then cover the ſeeds, by ſtriking the earth in upon it, and go on, removing the line a foot back for another row; and, after four rows are finiſhed, leave a ſpace for an alley between the beds, if it is deſigned to ſtand for the natural ſeaſon of cutting; but, if it is to be taken up for hot-beds, there may be ſix rows planted in each bed, and the diſtance in the rows need not be more than nine inches. This ſhould be performed by the middle of February, becauſe the ſeeds lie long in the ground; but, if onions are intended to be ſown upon the ground, that may be performed a fortnight or three weeks after, provided the ground is not ſtirred ſo deep as to diſturb the aſparagus-ſeeds, in raking the onion-ſeeds into the ground. As the roots of aſparagus always ſend forth many long fibres which run deep into the ground, ſo, when the ſeeds are ſown where they are to remain, the roots will not be broken or injured, as thoſe muſt be which are tranſplanted, therefore will ſhoot deeper into the ground, make much greater progreſs, and the fibres will puſh out on every ſide, which will cauſe the crown of the root to be in the centre; whereas, in tranſplanting, the roots are made flat againſt the ſide of the trench.

When the aſparagus is come up, and the onions have raiſed their ſeed-leaves upright (which will be in ſix weeks after planting), you muſt with a ſmall hoe cut up all the weeds, and thin the crop of onions where they may have come up in bunches; but this muſt be done carefully, and in dry weather, that the weeds may die as faſt as they are cut up, being careful not to injure the young ſhoots of aſparagus, as alſo to cut up the onions which grow near the ſhoots. This work muſt be repeated about three times, which, if well done, and the ſeaſon not too wet, will keep the ground clear from weeds until the onions are fit to be pulled up, which is commonly in Auguſt, and is known when their greens fall down and begin to wither. When you have drawn off the onions, it will be neceſſary to clean the ground well from weeds, which will keep it clean till the alleys are dug to earth the beds, which muſt be done in October, when the haulm is decayed; for, if you cut off the haulm while green, the roots will ſhoot freſh again, which will greatly weaken them. This young haulm ſhould be cut off with a knife, leaving the ſtems two inches above ground, which will be a guide for you to diſtinguiſh the beds from the alleys; then with a hoe clear off the weeds into the alleys, and dig up the alleys, burying the weeds in the bottom, and throw the earth upon the beds, ſo that the beds may be about four or five inches above the level of the alleys: then a row of coleworts may be planted in the middle of the alleys, but never ſow or plant any thing upon the beds, which would greatly weaken the roots; nor would we ever adviſe the planting of beans in the alleys, as is the practice of many, for that greatly damages the two outſide rows of aſparagus. In this manner it muſt remain till ſpring, when, ſome time in March, the beds ſhould be hoed over, to deſtroy all young weeds; then rake them ſmooth, and obſerve all the ſucceeding ſummer to keep them clear from weeds, and in October dig up the alleys again, as was before directed, earthing the beds, &c. If you wiſh to ſave a year, you may purchaſe year-old plants from the nurſerymen or kitchen-gardeners at 1s. or 1s. 6d. the hundred.

The ſecond ſpring after planting, ſome perſons begin to cut ſome of the buds of aſparagus for uſe, though it would be much better to ſtay until the third year; therefore now the beds ſhould be forked with a flat-pronged fork made on purpoſe, commonly called an aſparagus-fork: this muſt be done before the buds begin to ſhoot in the ſpring, and ſhould be performed with care, leſt you fork too deep, and bruiſe the head of the root; then rake the beds over ſmooth, juſt before the buds appear above ground, which will deſtroy all young weeds, and keep your beds clean much longer than if left unraked, or if done ſo ſoon as forked. When the buds appear about four inches above ground, you may then cut them; but it ſhould be done ſparingly, only taking the large buds, and ſuffering the ſmall to run up to ſtrengthen the roots; for, the more you cut, the greater will be the increaſe of buds, but they will be ſmaller and the roots ſooner decay. In cutting the buds, you muſt open the ground with your knife (which ſhould be very narrow-pointed, long in the blade, and filed with teeth like a ſaw), to ſee whether any more young buds are coming up cloſe by it, which might be either broken or bruiſed in cutting the other, then with a knife ſaw it off about two inches under ground. This may appear a very troubleſome affair to people unacquainted with the practical part; but thoſe who are employed in cutting aſparagus, will perform a great deal of this work in a ſhort time, though care in doing it is abſolutely neceſſary to be obſerved by all who cut aſparagus. The manner of dreſſing the aſparagus-beds is every year the ſame as directed for the ſecond, viz. keeping them clean from weeds in ſummer, digging the alleys in October, and forking the beds toward the end of March, &c. only obſerve every other year to lay ſome rotten dung (from a melon or cucumber bed) all over the beds, burying ſome in the alleys alſo, at the time for digging them up. This will preſerve the ground in heart to maintain the roots in vigour; and by this management a plot of good aſparagus may be continued for ten or twelve years in cutting, and will produce good buds, eſpecially if it is not cut too long each ſeaſon; for, when it is not left to run up pretty early in June, the roots will be greatly weakened, and the buds will be ſmaller: therefore, in thoſe families where aſparagus is required late in the ſeaſon, a few beds ſhould be ſet apart for that purpoſe, which will be much better than to injure the whole plantation, by cutting it too long.

We cannot help taking notice of a common error that has long prevailed with many people, which is, that of not dunging the ground for aſparagus, believing that the dung communicates a ſtrong rank taſte to the aſparagus, which is a great miſtake, for the ſweeteſt aſparagus is that which grows upon the richeſt ground; for poor land occaſions that rank taſte ſo often complained of, the ſweetneſs of aſparagus being occaſioned by the quickneſs of its growth, which is always proportionable to the goodneſs of the ground, and the warmth of the ſeaſon. In order to prove this, two beds of aſparagus were planted, upon ground which had dung laid a foot thick; and theſe beds were every year dunged extremely thick, and the aſparagus produced from them was much ſweeter than any that could be procured, though they were boiled together in the ſame water.

The quantity of ground neceſſary to be planted with aſparagus, to ſupply a ſmall family, ſhould be at leaſt eight rods; leſs than that will not do: for, if you cannot cut a hundred at a time, it will ſcarcely be worth while, for you muſt be obliged to keep it after it is cut two or three days, eſpecially in cold ſeaſons, to furniſh enough for one meſs; but, for a larger family, ſixteen rods of ground ſhould be planted, which, if a good crop, will furniſh two or three hundred each day in the height of the ſeaſon.

But, as there are ſeveral people who delight in having early aſparagus, which is become a very great trade in the kitchen gardens near London, we ſhall give proper directions for the obtaining it any time in winter. You muſt firſt be provided with a quantity of good roots, (either of your own raiſing, or purchaſed from ſuch gardeners as plant for ſale,) ſuch as have been two or three years planted out from the ſeed-bed; and, having fixed upon the time you would willingly have your aſparagus fit to cut, about ſix weeks before, you ſhould prepare a quantity of new ſtable horſe-dung, which ſhould be thrown in a heap for ten days or more, to ferment, mixing ſome ſea-coal aſhes with it; then it ſhould be turned over into a heap, where it muſt lie another week, when it will be fit for uſe. Then dig out a trench in the ground, where you intend to make the bed, one foot and a half deep, the width of the frames that are deſigned to cover it, and the length in proportion to the quantity you intend to have: if deſigned only to ſupply a ſmall family, three or four lights at a time will be ſufficient, but, for a larger family, ſix or eight lights will not be too much: then lay down your dung into the trench, working it very regularly, and beat it down very tight with a fork, laying it at leaſt three feet in thickneſs, or more, when the beds are made in December; then put your earth thereon about ſix inches thick, breaking the clods, and laying it level; and, at one end, begin laying your roots againſt a little ridge of earth, raiſed about four inches high: your roots muſt be laid as cloſe as poſſible one to the other, in rows, with their buds ſtanding upright: and between every row lay a ſmall quantity of fine mould, obſerving to keep the crown of the roots exactly level. When you have finiſhed laying your bed with roots, you muſt lay ſome ſtiff earth up to the roots, on the outſides of the bed, which are bare, to keep them from drying; and thruſt two or three ſharp-pointed ſticks, about two feet long, down between the roots, in the middle of the bed, at a diſtance from each other. The uſe of theſe ſticks is to inform you what temper of heat the bed is in, which you may find by drawing up the ſticks, and feeling the lower part; and if, after the bed has been made a week, you find it does not heat, you may lay a little ſtraw or litter round the ſides, and alſo upon the top, which will greatly help it; or, if you find it very hot, ſo as to endanger ſcorching the roots, it will be adviſeable to let it remain wholly uncovered, and to thruſt a large ſtick into the dung, on each ſide of the bed in two or three places, to make holes for the great ſteam of the bed to paſs off, which in a ſhort time will reduce the bed to a moderate heat. After the bed has been made a fortnight, you muſt cover the crowns of the roots with fine earth, about two inches thick; and, when the buds begin to appear above ground through that earth, you muſt again lay on a freſh quantity, about three inches thick; ſo that in the whole, it may be five inches above the crowns of the root, which will be ſufficient. Then you muſt make a band of ſtraw (or long litter) about four inches thick, which muſt be faſtened round the ſides of the bed, that the upper part may be level with the ſurface of the ground: this muſt be faſtened with ſtraight ſticks about two feet long, ſharpened at the points, to run into the bed; and upon this band you muſt ſet your frames, and put your glaſſes thereon; but if, after your bed has been made three weeks, you find the heat decline, you muſt lay a good lining of freſh hot dung round the ſides of the bed, which will add a freſh heat thereto; and, in bad weather, as alſo every night, keep the glaſſes covered with mats and ſtraw; but, in the day-time, let it be all taken off, eſpecially whenever the ſun appears; which, ſhining through the glaſſes, will give a good colour to the aſparagus. A bed thus made, if it works kindly, will begin to produce buds for cutting in about five or ſix weeks, and will hold about three weeks in cutting: if rightly planted with good roots, it will produce in that time about three hundred buds in each light; ſo that, where it is propoſed to be continued until the ſeaſon of natural aſparagus, a freſh bed ſhould be made every three weeks, until the beginning of March, from the time of the firſt bed being made; but, if the laſt bed is made about a week in March, it will laſt till the ſeaſon of natural aſparagus; for the laſt beds will come a fortnight ſooner to cut after making, than thoſe made about Chriſtmas, and the buds will be larger, and better coloured, as they will then enjoy a greater ſhare of the ſun. Where this method of forcing early aſparagus is intended, there ſhould be every year ſuch a quantity planted as you ſhall judge neceſſary, unleſs you intend to buy the roots from ſome other garden. The quantity of roots neceſſary to plant one light, is commonly known by the meaſure of the ground where they grow; for, where there is a good crop, and few roots are miſſing, one rod of ground will furniſh enough for a light; but this calculation is made from the ground planted with roots, which are deſigned to be taken up after two or three years growth in forcing, in which there are ſix rows in a bed, at but ten inches diſtance, and the plants eight or nine inches aſunder in the rows; but, where there is a greater ſpace between the rows, and fewer rows in a bed, then there muſt be a greater quantity of ground allotted for each light. Moſt of the kitchen-gardeners about London take up their aſparagus-roots after two years growth from planting; but, where the land is not very good, it will be better to let it have three or even four years growth, for, if the roots are weak, the buds of aſparagus will be very ſmall, and not worth the trouble of forcing. The beſt ground for planting aſparagus, to have large roots for hot-beds, is a moiſt rich ſoil; but, for thoſe that are to remain for a natural produce, a middling ſoil, neither too wet nor too dry; but a freſh ſandy loam, when well dunged, is preferable to any other.

Of the other ſpecies, which have a place among exotic plants in botanic gardens, thoſe which are natives of the ſouthern parts of Europe (No. 7, 8, 9, 10) may be propagated by ſeeds, in the ſame manner with the common ſort: but, being more tender, ſome plants ſhould be ſet in pots, that they may be ſheltered in winter, and the reſt in a warm ſituation, where they may be occaſionally protected. The ſpecies from the Cape, &c. rarely producing ſeeds in England, may be increaſed by parting the roots in April. They muſt be planted in pots, and removed into the green-houſe or dry ſtove in the autumn. The third and twelfth ſorts muſt be placed in a moderate ſtove.

Asparagus Draco. See Dracæna.

Asparagus Scandens. See Medeola.

ASPARN', a town of Germany, in the archduchy of Auſtria, ten miles ſouth-eaſt of Laab.

ASPA'SIA of Miletus, a courteſan who ſettled at Athens under the adminiſtration of Pericles, and one of the moſt noted ladies of antiquity. She was of admirable beauty: yet her wit and eloquence, ſtill more enchanting than her beauty, gained her extraordinary reputation among all ranks in the republic. In eloquence ſhe ſurpaſſed all her cotemporaries; and her converſation was ſo entertaining and inſtructive, that, notwithſtanding the diſhonourable commerce ſhe carried on, perſons of the firſt diſtinction, male and female, reſorted to her houſe as to an academy: ſhe even numbered Socrates among her hearers and admirers. She captivated Pericles in ſuch a manner, that he diſmiſſed his own wife in order to eſpouſe her; and, by her univerſal knowledge, irreſiſtible elocution, and intriguing genius, ſhe in a great meaſure influenced the adminiſtration of Athens. She was accuſed of having excited, from motives of perſonal reſentment, the war of Peloponneſus; yet, calamitous as that long and obſtinate conflict proved to Greece, and particularly to Athens, it may be ſuſpected that Aſpaſia occaſioned ſtill more incurable evils to both. Her example, and ſtill more her inſtructions, formed a ſchool at Athens, by which her dangerous profeſſion was reduced into ſyſtem. The companions of Aſpaſia ſerved as models for painting and ſtatuary, and themes for poetry and panegyric. Nor were they merely the objects, but the authors, of many literary works, in which they eſtabliſhed rules for the behaviour of their lovers, particularly at table; and explained the art of gaining the heart and captivating the affections. The dreſs, behaviour, and artifices, of this claſs of women, became continually more ſeductive and dangerous; and Athens thenceforth remained the chief ſchool of vice and pleaſure, as well as of literature and philoſophy.

Aspasia, [from *α* for *αμα*, together, and *σπαω*, to draw.] A conſtrictive medicine for the pudendum muliebre.

ASPAS'TICUM, *ſ.* [from *ασπαζομαι*, to ſalute.] A place, or apartment, adjoining to the ancient churches, wherein the biſhop and preſbyters ſat, to receive the ſalutations of the perſons who came to viſit them, deſire their bleſſing, or conſult them on buſineſs. This is alſo called *aſpaticum diaconicum*, *receptorium*, *metatorium*, or *meſatorium*, and *ſalutatorium*: in Engliſh, "greeting-houſe."

AS'PE, a town of Spain, in Valencia, ſituated on the Elda, four leagues weſt of Alicant.

Aspe Vie'jo, a town of Spain, in Valencia, three leagues and a half weſt of Alicant.

AS'PECT, *ſ.* [*aſpectus*, Lat. It appears anciently to have been pronounced with the accent on the laſt ſyllable, which is now placed on the firſt.] Look; air; appearance.—I have preſented the tongue under a double *aſpect*, ſuch as may juſtify the definition, that it is the beſt and worſt part. *Government of the Tongue.*—Countenance; look; glance; view; act of beholding.—When an envious or an amorous *aſpect* doth infect the ſpirits of another, there is joined both affection and imagination. *Bacon.*—Direction towards any point; view; poſition. Diſpoſition of any thing to ſomething elſe; relation.—The light got from the oppoſite arguings of men of parts, ſhewing the different ſides of things, and their various *aſpects* and probabilities, would be quite loſt, if every one were obliged to ſay after the ſpeaker. *Locke.*—Planetary motion:

To the blank moon
Her office they preſcrib'd: to th' other five
Their planetary motions, and *aſpects*,
In ſextile, ſquare, and trine, and oppoſite. *Milton.*

Aspect, in aſtronomy, is the ſituation of the ſtars and planets in reſpect of each other. Or, in aſtrology, it denotes a certain configuration and mutual relation between the planets, ariſing from their ſituations in the zodiac, by which it is ſuppoſed that their powers are mutually either increaſed or diminiſhed, as they happen to agree or diſagree in their active or paſſive qualities. Though ſuch configurations may be varied and combined a thouſand ways, yet only a few of them are conſidered. Hence, Wolfius more accurately defines aſpect to be, the meeting of luminous rays emitted from two planets to the earth, either poſited in the ſame right line, or including an angle which is an aliquot part, or ſome number of aliquot parts, of four right angles, or of 360 degrees. The doctrine of aſpects was introduced by the aſtrologers, as the foundation of their predictions. And hence Kepler defines them to be, an angle formed by the rays of two planets meeting on the earth, capable of exciting ſome natural power or influence. See Astrology.

To Aspect', *v. a.* [*aſpicio*, Lat.] To behold: *not uſed.*

Happy in their miſtake, thoſe people whom
The northern pole *aſpects*; whom fear of death
(The greateſt of all human fears) ne'er moves. *Temple.*

ASPECT'ABLE, *adj.* [*aſpectabilis*, Lat.] Viſible; being the object of ſight.—To this uſe of informing us what is in this *aſpectable* world, we ſhall find the eye well fitted. *Ray.*

ASPEC'TION, *ſ.* Beholding; view.—A Mooriſh queen, upon *aſpection* of the picture of Andromeda, conceived and brought forth a fair one. *Brown.*

AS'PEN, *adj.* Belonging to the aſp tree:

Oh! had the monſter ſeen thoſe lily hands
Tremble like *aſpen* leaves upon a lute. *Shakeſpeare.*

AS'PER, *ſ.* in grammar, an accent peculiar to the Greek language, marked thus (῾); and importing, that the letters over which it is placed ought to be ſtrongly aſpirated, or pronounced as if an *h* were joined with them.

Asper, a Turkiſh coin, three of which make a Medine.

AS'PERA ARTE'RIA, in anatomy, the ſame with the windpipe or trachea. See Anatomy.

To AS'PERATE, *v. a.* [*aſpero*, Lat.] To roughen; to make rough or uneven.—Thoſe corpuſcles of colour, inſinuating themſelves into all the pores of the body to be dyed, may *aſperate* its ſuperficies, according to the bigneſs and texture of the corpuſcles. *Boyle.*

ASPERA'TION, *ſ.* A making rough.

ASPE'REN, a town in the State of Holland, ſituated on the Linge, famous for a long ſiege which it held out againſt the Gueldrians, under the conduct of Cha. d'Egmont, the laſt duke of Gueldres, in 1517. The ſtout and long reſiſtance made by the beſieged, ſo enraged the duke, that, when he had made himſelf maſter of the town, he put every inhabitant to the ſword, without regard to age or ſex. It is two leagues north-eaſt from Gorcum, five ſouth from Utrecht, and four north-weſt from Bommel.

ASPERIFO'LIOUS, *adj.* [from *aſper*, rough, and *folium*, Lat. a leaf.] Among botaniſts, ſuch plants as are rough-leaved, having their leaves placed alternately on their ſtalks, and a monopetalous flower divided into five parts. They conſtitute an order of plants in the Fragmenta Methodi Naturalis of Linnæus. In the preſent ſyſtem they are among the pentandria monogynia.

ASPERIFO'LIÆ PLANTÆ, rough-leaved plants. The name of a claſs in Hermannus, Boerhaave, and Ray's, methods, conſiſting of plants which have four naked ſeeds, and whoſe leaves are rough to the touch. In Tournefort's Syſtem, theſe plants conſtitute the third ſection or order of the ſecond claſs; and, in Linnæus's Sexual Method, they make a part of the pentandria monogynia.

ASPE'RITY, *ſ.* [*aſperitas*, Lat.] Unevenneſs; roughneſs of ſurface. From the teſtimony of ſome blind perſons, it has been ſuppoſed that every colour hath its particular degree of aſperity. See the article Blind.—Roughneſs of ſound; harſhneſs of pronunciation. Roughneſs or ruggedneſs of temper; moroſeneſs; ſourneſs; crabbedneſs.—The charity of the one, like kindly exhalations, will deſcend in ſhowers of bleſſings; but the rigour and *aſperity* of the other, is a ſevere doom upon ourſelves. *Government of the Tongue.*

ASPERNA'TION, *ſ.* [*aſpernatio*, Lat.] Neglect; diſregard.

ASPERO'SA, a town of Turkey, in Europe; it is a biſhop's ſee, ſituated on the coaſt of the Archipelago. Lat. 40. 58. N. lon. 25. 20. E.

AS'PEROUS, *adj.* [*aſper*, Lat.] Rough; uneven.—Black and white are the moſt *aſperous* and unequal of colours; ſo like, that it is hard to diſtinguiſh them: black is the moſt rough. *Boyle.*

To ASPER'SE, *v. a.* [*aſpergo*, Lat.] To cenſure, or calumniate:

Curb that impetuous tongue, nor raſhly vain,
And ſingly mad, *aſperſe* the ſov'reign reign. *Pope.*

ASPER'SION, *ſ.* [*aſperſio*, Lat.] A ſprinkling:

If thou doſt break her virgin knot before
All ſanctimonious ceremonies,
No ſweet *aſperſions* ſhall the heav'ns let fall,
To make this contract grow. *Shakeſpeare.*

Calumny; cenſure.—The ſame *aſperſions* of the king, and the ſame grounds of a rebellion. *Dryden.*

AS'PERSKIRCH, a town of Germany, in the archduchy of Auſtria, five miles ſouth-eaſt of Peyrbach.

AS'PERSTORF, a town of Germany, in the archduchy of Auſtria, two miles north-eaſt of Sonneberg.

ASPERU'GO, *ſ.* [*ab aſperitate*; from its roughneſs, a quality common to it with ſeveral other genera appertaining to the ſame natural order; and from which all theſe plants are called *aſperifoliæ.*] In botany, a genus of the pentandria monogynia claſs, ranking in the natural order of aſperifoliæ. The generic characters are—Calyx: perianthium one-leafed, five-cleft, erect with unequal toothlets, permanent. Corolla: one-petalled, funnel-ſhaped; tube cylindrical, very ſhort; border ſemiquinquefid, obtuſe, ſmall; throat cloſed, with five convex, prominent, converging, little ſcales. Stamina: filaments five, in the throat, very ſhort; antheræ oblongiſh, covered. Piſtillum: germs four, compreſſed; ſtyle filiform, ſhort; ſtigma obtuſe. Pericarpium: none; calyx very large, erect, compreſſed; lamellas flat-parallel, ſinuate. Seeds: four, oblong, compreſſed, diſtant by pairs.—*Eſſential Character.* Calyx of the fruit compreſſed; lamellas flat-parallel, ſinuated.

Species. 1. Aſperugo procumbens, or procumbent aſperugo: calyxes of the fruit compreſſed. Root annual. When the plant is young, the flowers are crowded on the top of the ſtalks; when old, they are ſingle from the axillas, on very ſhort peduncles. Calyx of the fruit appears very different from that of the flower, as if compoſed of two diſtinct valves, though in reality of one leaf. Fruits on ſhort peduncles, bowed down in a direction oppoſite to that of the leaves. It is found in roads and among rubbiſh, at Newmarket, Boxley in Suſſex, Holy Iſland, and near Purfleet. Flowers in April and May. Horſes, goats, ſheep, and ſwine, eat it; but cows are not fond of it. It is called by our old Engliſh writers, ſmall wild bugloſs or borage, great gooſe-graſs, or German madwort.

2. Aſperugo Ægyptiaca, or Egyptian aſperugo: calyxes of the fruit ſwelling. Root annual, columnar, the thickneſs of a quill, red. Stem half a foot high or more, branched from the bottom. Flowers void of ſcent, all directed the ſame way, coming out ſucceſſively on thick peduncles on the branches produced. Native of Egypt, and flowers from June to Auguſt.

Propagation and Culture. The common ſort may eaſily be propagated by ſeeds ſown in autumn; or, if they be permitted to ſcatter, the plants will come up of themſelves. The Egyptian ſort may alſo be raiſed from ſeeds, but they muſt be ſown in a moderate hot-bed. The plants will flower in the open air in ſummer, but they muſt be houſed in winter.

ASPE'RULA, *ſ.* [*aſper*, Lat. rough; the ſeeds being roughiſh.] In botany, a genus of the tetrandria monogynia claſs, in the natural order of ſtellatæ. The generic characters are—Calyx: perianthium ſmall, four-toothed, ſuperior. Corolla: one-petalled, funnel-ſhaped; tube cylindric, long; border four-parted; diviſions oblong, obtuſe, reflex. Stamina: filaments four, at the top of the tube; antheræ ſimple. Piſtillum: germ twin, roundiſh, inferior; ſtyle filiform, bifid at top; ſtigmas headed. Pericarpium: two dry globular united berries. Seed: ſolitary, roundiſh, large.—*Eſſential Character.* Calyx one-petalled, funnel-ſhaped; ſeeds two, globular.

Species. 1. Aſperula odorata, or ſweet-ſcented woodroof: leaves eight in a whorl, lanceolate; flowers in bunches, peduncled. Root perennial, ſlender, jointed, yellowiſh, creeping a little below the ſurface, and ſending out many ſmall fibres. Stem upright, about a ſhort ſpan in height, commonly ſimple, four-cornered with a groove on each ſide, ſmooth. Leaves ſmooth, a little rolled back at the ſides; the edges and nerves ſet with little ſoft ſpines; the lower ones obtuſe, the upper pointed. Native of many parts of Europe, in woods and ſhady places; flowering in May, ſometimes in April. The ſcent is pleaſant, and when dried this plant diffuſes an odour like that of vernal-graſs (anthoxanthum odoratum). It is ſaid to give a grateful flavour to wine; and, when kept among clothes, not only to impart an agreeable perfume to them, but to preſerve them from inſects. Cows, horſes, ſheep, and goats, are reported to eat it. Since it contains an acid principle, with much fixed alkaline ſalt, it is thought by ſome that it may be uſeful in obſtructions of the liver and biliary ducts; modern practice however rejects it. The Engliſh name is not derived from any foreign language, and the orthography of it is various. It ſeems at firſt, that the names are derived from the place of growth, and the roughneſs of the ſeeds; but the learned Turner has given us another and more probable derivation, in theſe words: "It is a ſhort herbe of a ſpan long, fourſquare and ſmal, about the which growe certaine orders of leaves, certayne ſpaces goynge betwene, repreſenting ſome kindes of *rowelles* of ſporres, whereof it hath the name in Engliſh." The corruption from *woodrowel* to *woodroof* through *woodrowe* is eaſy.

2. Aſperula arvenſis, or blue or field woodroof: leaves ſix in a whorl, flowers ſeſſile terminal aggregate. Root annual, ſlender, with a yellow bark. Stem upright, a foot high. It flowers in July. Native of France, Germany, Switzerland, Auſtria, Carniola, Savoy, Piedmont. The roots dye a fine red.

3. Aſperula taurina, or broad-leaved woodroof: leaves four in a whorl, ovate-lanceolate; flowers in terminal bunches. Roots perennial, woody, red, branching, intertwined. Stems upright, a foot high, with alternate branches. Leaves a little hairy, with nerves like plantain. It is a native of mountains of Switzerland, Italy, &c. and flowers from April to June.

4. Aſperula craſſifolia, or thick-leaved woodroof: leaves four in a whorl, oblong, lateral, revolute, bluntiſh, pubeſcent. Native of Crete and the Levant, and flowers in June.

5. Aſperula Calabrica, or Calabrian woodroof: leaves four in a whorl, oblong, obtuſe, ſmooth, and even. This is an underſhrub, about a cubit high, proſtrate, and extremely fetid in all its parts. Stem branched, diffuſed, ſomewhat woody, with an aſh-coloured bark; branches oppoſite, ſpreading, procumbent, round, ſomewhat rugged, red. It reſembles the foregoing ſpecies, but is ſmooth. Native of Syria between Aleppo and Antioch, Calabria, and Sicily. It flowers during moſt of the ſummer, and ſome part of the autumn. The ſhrubby ſtalks, leaves in pairs, and fetid ſmell, ſufficiently diſtinguiſh this ſpecies.

6. Aſperula tinctoria, or narrow-leaved woodroof: leaves linear, (the lower ſix, the middle four, in a whorl;) ſtem flaccid; moſt of the flowers trifid. The whole plant is green and ſmooth The roots are uſed in Gothland inſtead of madder, for dying wool of a red colour. Native of Sweden, Germany, Switzerland, France, Carniola, Siberia.

7. Aſperula Pyrenaica, or Pyrenean woodroof: leaves four in a whorl, lanceolate-linear, ſtem erect, flowers generally trifid. Roots perennial. Stems ſix or ſeven inches high. Flowers red. Native of the Pyrenees, and about Baſil.

8. Aſperula cynanchica, or ſquinancy-wort: leaves four in a whorl linear, the upper ones oppoſite; ſtem erect; flowers quadrifid. Roots perennial. Stems from four inches to a foot and a half in length, proſtrate, hard, numerous, branching dichotomouſly. Leaves generally in fours, rarely five in a whorl, very unequal in length, commonly two

longer and two ſhorter, the upper ones generally conjugate, but ſometimes two very ſmall leaves appear beſides; they are all entire, roughiſh, and ſeſſile, blunt but tipped with a ſharp point. The flowers grow on erect branches, from the axils of the leaves; they are long and divided, forming thin faſtigiate umbels, and they have a ſweet ſmell, rarely perceived, like thoſe of the woodroof. Native of France, Germany, Switzerland, Carniola, Italy, and the Levant. Abundant in many parts of England, on chalk downs; as about Dartford in Kent, on Epſom-downs, Hertfordſhire, Gogmagog-hills, Newmarket-heath, Swaffham in Norfolk, Armingale-wood by Norwich, the Suſſex downs, &c. flowering from June to Auguſt.

9. Aſperula ariſtata, or awn-flowered woodroof: leaves linear, rather fleſhy, the lower ones four in a whorl; flowers ſubtern awned. Stem upright. Flowers pale, yellowiſh, placed parallel, with the diviſions bluntly awned. Native of the ſouth of Europe.

10. Aſperula lævigata, or ſhining woodroof: leaves four in a whorl, elliptic, nerveleſs, ſmoothiſh; peduncles divaricate, trichotomous; ſeeds ſcabrous. Stems ſimple, ſmooth, ſpreading. Flowers uſually in threes, peduncled, white. Native of the ſouth of Europe. Introduced in 1775 by M. Thouin, and flowers in June and July.

11. Aſperula hexaphylla, or ſix-leaved woodroof: leaves ſix in a whorl, linear; flowers umbelled terminal, ſubſeſſile. Root perennial. Stems ſometimes branching at the baſe, but generally ſimple. The whole plant is ſmooth. It grows in the fiſſures of the rocks near Tende.

Propagation and Culture. All theſe plants being perennial, except the ſecond, may be increaſed by the roots, as well as by ſeeds. The firſt ſort will proſper under the ſhade of ſhrubs in wilderneſs quarters. The fifth muſt have the protection of a greenhouſe, and does not continue many years, but it may be increaſed both by ſeeds and cuttings. The eighth, growing naturally in chalk, and moſt of the others being natives of rocks, muſt have a dry open ſituation.

AS'PET, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of St. Gaudens, two leagues ſouth-eaſt of St. Gaudens.

ASPEY'TIA, a town of Spain, in the province of Guipuſcoa, ſeven leagues from St. Sebaſtian.

ASPHAL'TITES (Lake of), [ſo called from the great quantity of bitumen it produces; called alſo the *Dead Sea*, and, from its ſituation, the *Eaſt Sea*; the *Salt Sea*, the *Sea of Sodom*, the *Sea of the Deſert*, and the *Sea of the Plain*, by the ſacred writings.] A lake of Judea. Many things have been ſaid and written of this famed lake; ſuch as that it aroſe from the ſubmerſion of the vale of Siddim, where once ſtood, as is commonly reported, the three cities which periſhed in the conflagration of Sodom and Gomorrah, for their unnatural and deteſtable wickedneſs: on this account this lake has been conſidered as a laſting monument of the judgment of God, to deter mankind from ſuch abominations. Hence it is added, that the waters are ſo impregnated with ſalt, ſulphur, and other bituminous matters, that nothing will ſink or live in it; and, that it caſts ſuch a ſtench and ſmoke, that the birds die in attempting to fly over it. The deſcription likewiſe of the apples that grew about it, fair without, but only aſhes and bitterneſs within, were looked upon as a farther monument of God's anger. So likewiſe the deſcription which many travellers give not only of the lake, but of all the country round about, of the whole appearing dreadful to behold, all ſulphureous, bituminous, ſtinking, and ſuffocating: and, laſtly, what hath been farther affirmed of the ruins of the five cities being ſtill to be ſeen in clear weather, and having been actually ſeen in theſe latter times; all theſe ſurpriſing things, and ill-grounded notions, though commonly, and ſo long, received among Chriſtians, have been of late ſo much exploded, not only by the teſtimony of very credible witneſſes, but even by arguments drawn from Scripture, that we muſt give them up as inventions, unleſs we will ſuppoſe the face and nature of all theſe things to have been entirely changed. Thoſe, in particular, of bodies not ſinking in the water, and of birds being ſtifled by the exhalations of it, appear now falſe in fact. It is true, the quantity of ſalt, alum, and ſulphur, with which it is impregnated, renders it ſo much ſpecifically heavier (Dr. Pococke ſays one-fifth) than freſh water, that bodies will not ſo eaſily ſink: yet that author, and others, aſſure us, they have ſwam and dived in it; and, as to the birds, we are told likewiſe, that they will fly over it without any harm. To reconcile theſe things with the experiments which Pliny tells us had been made by Veſpaſian, is impoſſible, without ſuppoſing that thoſe ingredients have been ſince much exhauſted, which is not at all improbable; ſuch quantities of them, that is, of the bitumen and ſalt, having been all along, and being ſtill, taken off, and ſuch ſtreams of freſh water continually pouring into it, as may reaſonably be ſuppoſed to have conſiderably diminiſhed its gravity and denſeneſs. For, with reſpect to its ſalt, we are told, the Arabs made quantities of it from that lake, in large pits about the ſhore, which they fill with that water, and leave to be cryſtallized by the ſun. This ſalt is in ſome caſes much commended by Galen, as very wholeſome, and a ſtrengthener of the ſtomach, &c. on account of its unpleaſant bitterneſs.

What likewiſe relates to the conſtant ſmoke aſcending from the lake, its changing the colour of its water three times a-day, ſo confidently affirmed by Joſephus and other ancients, and confirmed by prince Radziville and other moderns, who pretend to have been eye-witneſſes of it, is all now in the ſame manner exploded by others of more modern date, and of at leaſt equal candour. The unhealthineſs of the air about the lake was affirmed by Joſephus and Pliny, eſpecially on the weſt: the monks that live in the neighbourhood confirm the ſame, and would have diſſuaded Dr. Pococke from going to it on that account; and, as he ventured to go and bathe in it, and was, two days after, ſeized with a dizzineſs, and violent pain in the ſtomach which laſted near three weeks, they made no doubt but it was occaſioned by it; and he doth not ſeem to contradict them. As to the water, it is, though clear, ſo impregnated with ſalt, that thoſe who dive into it come out covered with a kind of ſaline matter. There is one remarkable thing relating to this lake, generally agreed on by all travellers and geographers, viz. that it receives the waters of Jordan, a conſiderable river, the brooks of Jabbok, Kiſhon, Arnon, and other ſprings, which flow into it from the adjacent mountains, and yet never overflows, though there is no viſible way to be found by which it diſcharges that great influx. Some naturaliſts have been greatly embarraſſed to find a diſcharge for theſe waters; and have therefore been inclined to ſuſpect the lake had a communication with the Mediterranean. But, beſides that we know of no gulph to corroborate this ſuppoſition, it has been demonſtrated by accurate calculations, that evaporation is more than ſufficient to carry off the waters brought by the river. It is, in fact, very conſiderable; and frequently becomes ſenſible to the eye, by the fogs with which the lake is covered at the riſing of the ſun, and which are afterwards diſperſed by the heat. It is encloſed on the eaſt and weſt with exceeding high mountains, many of them craggy and dreadful to behold. On the north it has the plain of Jericho; or, if we take in both ſides of the Jordan, it has the Great Plain, properly ſo called, on the ſouth; which is open, and extends beyond the reach of the eye. Joſephus gives this lake 580 furlongs in length, from the mouth of the Jordan to the town of Segor, on the oppoſite end, that is about twenty-two leagues; and about 150 furlongs, or five leagues, in its largeſt breadth; but our modern accounts commonly give it twenty-four leagues in length, and ſix or ſeven in breadth. On the weſt ſide is a kind of promontory, where they pretend to ſhew the remains of Lot's wife. Joſephus ſays it was ſtill ſtanding in his time; but, when prince Radziville enquired after it, they told him there was no ſuch ſalt pillar or ſtatue to be found. However, about a century after him, they pretended to ſhew Mr. Maundrell a block or ſtump of ſalt, which they ſaid was the real remains of this monument of the divine vengeance.

It is to be obſerved, that the name of the *Dead Sea* is not to be found in the ſacred writings; but hath been given to this lake becauſe no creature will live in it, on account of its exceſſive ſaltneſs, or rather bituminous quality. However, ſome late travellers have found cauſe to ſuſpect the common report of its breeding no living creature; one of them having obſerved on the ſhore two or three ſhells of fiſh like thoſe of an oiſter, and which he ſuppoſes to have been thrown up by the waves, at two miles diſtance from the mouth of the Jordan, which he there takes notice of, leſt they ſhould be ſuſpected to have been brought into the lake by that way. And Dr. Pococke, though he neither ſaw fiſh nor ſhells, tells us, on the authority of a monk, that ſome ſort of fiſh had been caught in it; and gives us his opinion, that, as ſo many ſorts live in ſalt-water, ſome kind may be ſo formed as to live in a bituminous one. Mr. Volney, however, affirms, that it contains neither animal nor vegetable life. We ſee no verdure on its banks, nor are fiſh to be found within its waters. But he adds, that it is not true that its exhalations are peſtiferous, ſo as to deſtroy birds flying over it. "It is very common (ſays he) to ſee ſwallows ſkimming its ſurface, and dipping for the water neceſſary to build their neſts. The real cauſe which deprives it of vegetables and animals is the extreme ſaltneſs of the water, which is infinitely ſtronger than that of the ſea. The ſoil around it, equally impregnated with this ſalt, produces no plants; and the air itſelf, which becomes loaded with it from evaporation, and which receives alſo the ſulphureous and bituminous vapours, cannot be favourable to vegetation: hence the deadly aſpect which reigns around this lake. In other reſpects, the ground about it is not marſhy; and its waters are limpid and incorruptible, as muſt be the caſe with a diſſolution of ſalt. The origin of this mineral is eaſy to be diſcovered; for, on the ſouth-weſt ſhore are mines of foſſil ſalt, of which I have brought away ſeveral ſpecimens. They are ſituated in the ſide of the mountains which extend along that border; and, for time immemorial, have ſupplied the neighbouring Arabs, and even the city of Jeruſalem. We find alſo on this ſhore fragments of ſulphur and bitumen, which the Arabs convert into an article of commerce; as alſo hot fountains, and deep crevices, which are diſcovered at a diſtance by little pyramids built on the brink of them. We likewiſe find a ſort of ſtone, which, on rubbing, emits a noxious ſmell, burns like bitumen, receives a poliſh like white alabaſter, and is uſed for the paving of court-yards."

It is on account of this bitumen that it hath had the name of the *Aſphaltite Lake*, it being reported to have thrown up great quantities of that drug, which was much in uſe among the Egyptians, for embalming their dead bodies. Joſephus aſſures us, that in his days it roſe in lumps as big as an ox, and ſome even larger. But, whatever it may have formerly done, we are aſſured by Mr. Maundrell, that it is now to be found but in ſmall quantities along the ſhore, though in much greater near the mountains on both ſides the lake. But the contrary is ſince affirmed in Pococke's and Shaw's Travels; the firſt of which ſtate, that it is obſerved to float on the ſurface of the water, and to come on ſhore, after windy weather, where the Arabians gather it, and put it to all the uſes that common pitch is uſed for, even in the compoſition of ſome medicines: and, from the other we learn, that it was raiſed at certain times from the bottom, in large hemiſpheres, which, as ſoon as they touch the ſurface, and are acted upon by the external air, burſt at once, with great noiſe and ſmoke, like the *pulvis fulminans* of the chemiſts, diſperſing themſelves about in a thouſand pieces. From both theſe judicious authors we may conclude the reaſon of Mr. Maundrell's miſtake, both as to the lake's throwing it up only on certain ſeaſons (that reverend gentleman might chance to be there at the wrong time); and likewiſe as to his not obſerving it about the ſhores, ſeeing the Arabs are there ready to gather it as ſoon as thrown up: all of them deſcribe it as reſembling our black pitch, ſo as not to be diſtinguiſhed from it but by its ſulphureous ſmoke and ſtench when ſet on fire; and it hath been commonly thought to be the ſame with that which our druggiſts ſell under the name of *bitumen Judaicum*, or *Jewiſh pitch*, though we have reaſon to think that this laſt is factitious, and that there is now none of the right aſphaltum brought from Judea. It hath, moreover, been confounded with a ſort of blackiſh combuſtible, called by ſome *Moſes's ſtone*, which, being held in the flame of a candle, will burn, and caſt a ſmoke and intolerable ſtench: but with this extraordinary property, that though it loſes much of its weight and colour, by becoming whiter, yet it loſes nothing of its bulk. Theſe ſtones, Dr. Pococke tells us, are found about two or three leagues from the ſhore; and he concludes, that a ſtratum of that ſtone under the lake is probably one part of the matter that feeds the ſubterraneous fire, and cauſes the bitumen to boil up out of it.

ASPHAL'TUM, *ſ.* [ασφαλτος, bitumen.] This ſubſtance, likewiſe called *bitumen Judaicum*, or Jews pitch, is a ſmooth, hard, brittle, black or brown ſubſtance, which breaks with a poliſh, melts eaſily when heated, and when pure burns without leaving any aſhes. It is found in a ſoft or liquid ſtate on the ſurface of the Dead Sea abovementioned, but by age grows dry and hard. The ſame kind of bitumen is likewiſe found in the earth in other parts of the world; in China, America, and ſome parts of Europe; as the Carpathian hills, France, Neufchatel, &c. Its ſpecific gravity, according to Boyle, is 1400. Ardent ſpirit and ether act upon it but very ſlightly and partially. Water does not alter it; neither is it ſoluble in olive oil, or the eſſential oils of aniſeed or turpentine. According to Neumann, the aſphaltum of the ſhops is a very different compound from the native bitumen; and varies, of courſe, in its properties, according to the nature of the ingredients made uſe of in forming it. On this account, and probably from other reaſons, the uſe of aſphaltum, as an article of the materia medica, is almoſt totally laid aſide. Moſt naturaliſts now conſider it as amber decompoſed by fire. By diſtillation it affords an oil reſembling petroleum. The Indians and Arabs uſe it inſtead of tar, and it is a component part of the varniſh of the Chineſe. Some writers relate, that the walls of Babylon, and the temple of Jeruſalem, were cemented with bitumen inſtead of mortar. This much is certain, that a true natural bitumen, for inſtance, ſuch as is found in the diſtrict of Neufchatel, proves an excellent cement for walls, pavements, and other purpoſes, uncommonly firm, very durable in the air, and not penetrable by water. The watch and clock makers uſe a compoſition of aſphaltum, fine lamp black, and oil of ſpike or turpentine, for drawing the black figures on dial-plates of clocks and watches.

ASPHO'DELUS, *ſ.* [from α, and σφαλλω, *ſubplanto*; or σποδελον, from σποδος, aſhes; aſphodel being planted with the mallow on graves.] In botany, a genus of the hexandria monogynia claſs, in the natural order of coronariæ. The generic characters are—Calyx: none. Corolla: one-petalled, ſix-parted; diviſions lanceolate, flat, ſpreading; nectary, ſix very ſmall valves, converging into a globe, inſerted into the baſe of the corolla. Stamina: filaments ſix, ſubulate, inſerted into the valves of the nectary, bowed, alternately ſhorter; antheræ oblong, incumbent, riſing. Piſtillum: germ roundiſh, within the nectary; ſtyle ſubulate, in the ſame ſituation with the ſtamens; ſtigma truncate. Pericarpium: capſule globular, fleſhy, three-lobed, three-celled. Seeds: ſeveral, triangular, gibbous on one ſide.—*Eſſential Character.* Corolla, ſix-parted; nectary, ſix valves covering the germ.

Species. 1. Aſphodelus luteus, or yellow aſphodel or king's ſpear: ſtem leafy, leaves three-ſided ſtriated. The roots of yellow aſphodel are compoſed of many thick, fleſhy, yellow, tubers, joined into a head at the top; whence ariſe ſtrong, round, ſingle ſtalks, near three feet high, covered their whole length with long, three-cornered, boat-ſhaped, leaves, of a ſea-green colour; the upper part of the ſtalk is adorned half way with yellow ſtar-ſhaped flowers, which begin to open at bottom, ſo that on the ſame ſpike there is often a ſucceſſion of flowers during a full month from the time of its beginning to flower, which is in June, or towards the end of May. It is a native of Sicily, where it was found by Ray.

2. Aſphodelus ramoſus, or branched aſphodel or king's ſpear: ſtem naked, leaves enſiform keeled ſmooth. This ſpecies has roots compoſed of many thick fleſhy fibres, to each of which is faſtened an oblong tuber, as large as a ſmall potatoe; the leaves are long and flexible, having acute edges, they grow in irregular cluſters from the crown of the root; among theſe come out the ſtalks, which riſe more than three feet high, ſending out ſeveral ſide branches, which are naked; the upper parts of theſe are adorned with many ſtar-ſhaped flowers, which are white, with a purple line running longitudinally along the outſide of each ſegment. They grow in long ſpikes, flowering ſucceſſively from the bottom upwards. They appear the beginning of June, and the ſeeds ripen in autumn, Mr. Miller makes the unbranched white aſphodel to be a diſtinct ſpecies. The roots, he ſays, are the ſame; but the leaves are longer and narrower; the ſtalks are ſingle, never putting out any ſide branches; the flowers are of a purer white, and grow in longer ſpikes. Native of the ſouth of Europe. Immenſe tracts of land in Apulia are covered with it, and it affords very good nouriſhment for ſheep.

3. Aſphodelus fiſtuloſus, or onion-leaved aſphodel: ſtem naked, leaves ſtiff fubulate ſtriated ſubfiſtuloſe. This is an annual plant. The roots are compoſed of many fleſhy yellow fibres. The leaves are ſpread out from the crown of the root, cloſe to the ground, in a large cluſter; they are convex on their under ſide, but flat above, and hollow. The flower-ſtalks riſe immediately from the root, and grow about two feet high, dividing upwards into three or four branches, which are adorned with white ſtarry flowers, having purple lines on the outſide: theſe come out in July and Auguſt, and their ſeeds ripen in October, ſoon after which the plants decay. It grows naturally in the ſouth of France, Spain, and the iſland of Crete. Theſe three aſphodels were all cultivated by Gerard, in 1596.

Scopoli has deſcribed and figured another ſpecies, under the name of *aſphodelus liburnicus*. It has a round ſtem a foot high, and a line in thickneſs. Flowers pendulous, yellow, looſe, an inch long, ſtreaked with five browniſh lines. It was found in Iſtria, by Mygind.

Propagation and Culture. The yellow aſphodel multiplies very faſt by roots, and will ſoon overſpread a large border, if ſuffered to remain unremoved, or if the ſide ſhoots are not taken off. The ſecond does not increaſe very faſt by roots, nor ſhould it be often tranſplanted, for that will weaken it, ſo that the flower-ſtems will not riſe ſo tall, or produce ſo many flowers, as when left undiſturbed for ſome years; therefore the beſt way is to propagate it by ſeeds. Theſe aſphodels are pretty ornaments for a flower-garden; and, requiring very little trouble to cultivate them, are rendered more acceptable. They may be propagated by ſeeds, which ſhould be ſown ſoon after they are ripe, on a warm border of light freſh earth: in the ſpring the plants will appear, when you ſhould carefully clear them from weeds, and in dry weather they muſt be frequently watered: if this be duly obſerved, the plants will have acquired ſtrength enough to be tranſplanted by the Michaelmas following; at which time you muſt prepare a bed of freſh earth in the flower nurſery, into which you ſhould plant the roots, at about ſix inches diſtance every way; obſerving to plant them ſo low, as that the top of the roots may be three or four inches under the ſurface of the bed; and ſome old tan, or dung, ſhould be ſpread over the ſurface of the ground, to keep out the froſt: in this bed they may remain one year, during which time, they ſhould be kept clear from weeds; by which time, the roots having acquired ſtrength enough to produce flowers the following year, they ſhould, in autumn, when their leaves are decayed, be carefully taken up, and tranſplanted into the flower-garden, obſerving to place them in the middle of the borders, amongſt other hardy kinds of flowers, where, being properly intermixed, they will make an agreeable variety, and continue a long time in flower. The third ſort is an annual plant, and is only propagated by ſeeds; theſe ſhould be ſown in the autumn, when they will more certainly grow than if ſown in the ſpring: when the plants are up, they will require no other trouble but to keep them clean from weeds, until they have put out four or five leaves, when they ſhould be carefully removed to the places where they are to remain. If the ſeeds of this plant are permitted to ſcatter, the plants will come up without care, and thoſe which are not removed will be the ſtrongeſt plants, and produce a greater number of flowers.

ASPHURELA'TA, *ſ.* in natural hiſtory, are ſemi-metallic foſſils, fuſible by fire, and not malleable in their pureſt ſtate, being in their native ſtate intimately mixed with ſulphur and other adventitious matter, and reduced to what are called *ores*. Of this ſeries of foſſils there are only five bodies, each of which makes a diſtinct genus; viz. antimony, biſmuth, cobalt, zinc, or quickſilver.

ASPHYX'IA, *ſ.* [from α neg. and σφυγμος, a pulſe; from σφυζω, to leap, or beat, like an artery.] It is ſo named, becauſe the pulſe is not perceptible to the touch; but the characteriſtic ſigns of this diſeaſe are, the ſymptoms of apparent death, for the moſt part, ſuddenly coming on. If a patient, gradually growing worſe, at length dies, that ſtate is not an aſphyxy, becauſe it never has yet been obſerved that any one recovered from ſuch a ſtate; but it not unfrequently happens, that people have appeared to die ſuddenly, indeed ſome of them have been buried, who certainly might either recover by the help of art, or ſpontaneouſly. This ſtate indeed, whether it ariſes from the brain, the heart, or lungs, powerfully affected, is called *aſphyxy*; the moſt obſcure kind of diſeaſe, and requires the moſt diligent inveſtigation of phyſicians. Moſt inſtances of aſphyxy are varieties of apoplexy; the reſt are inſtances of ſyncope, for the moſt part, if not all.

AS'PIC, *ſ.* An oil extracted from a ſpecies of wild lavender, which grows in plenty in Languedoc, in Provence, and eſpecially one mountain of St. Baume, in France. This oil is uſed by painters, farriers, and other artificers; and likewiſe in medicine, being employed in ſeveral Galenical compoſitions. It is very inflammable, and when once on fire it is almoſt impoſſible to extinguiſh it. The true oil of aſpic is white, and of an aromatic ſcent. It is the only diſſolvent of ſandarac; by which means it may be eaſily diſtinguiſhed from that which is counterfeited, and which is nothing but oil of turpentine mixed with a little oil of petroleum. In this article, which is taken from Poſtlethwaite, the author refers to Savary as his authority, who affirms, that as ſandarac, or gum ſandarac, is very ſoluble in ſpirit of wine, he concludes that Mr. Savary is miſtaken, and muſt have meant karabé, or yellow amber. In fact, gum ſandarac, though it differs from reſins in ſeveral eſſential reſpects, particularly in not being ſoluble in olive oil, agrees with them nevertheleſs in this particular, that alcohol diſſolves it.

ASPICUE'TA (Martin de), commonly called the Doctor of Navarre, or *Doctor Navarrus*, was deſcended of a noble family, and born the 13th of December, 1491, at Varaſyn, a ſmall city of Navarre. He entered into the monaſtery of regular canons at Roncevaux, where he took the habit, which he continued to wear after he left the convent. He ſtudied claſſical learning, natural and moral philoſophy, and divinity, at Alcala, in New Caſtile, adopting chiefly the ſyſtem of Petrus Lombardus, commonly called the *Maſter of the Sentences*. He applied to the ſtudy of the law at Ferrara, and taught it with applauſe at Toulouſe and Cahors. After being firſt profeſſor of canon law at Salamanca for fourteen years, he quitted that place to be profeſſor of law at Coimbra, with a large ſalary. The duties of this office he diſcharged for twenty years, and then reſigned it to retire into his own country. Having made a journey to Rome, to plead the cauſe of Bartholomeo de Caranza, archbiſhop of Toledo, who had been accuſed of hereſy before the tribunal of the inquiſition in Spain, and whoſe cauſe was, by the pope's order, to be tried in that city, Aſpicueta's writings, which were well known, procured him a moſt honourable reception. Pope Pius V. made him aſſiſtant to cardinal Francis Aciat, his vice-penitentiary; and Gregory XIII. never paſſed by his door without calling. His name became ſo famous, that even in his life-time the higheſt encomium on a learned man was to call him *a Navarrus*. He was conſulted as an oracle. By temperance he prolonged his life to a great length. His economy enabled him to give ſubſtantial proofs of his charity. Being very old, he uſed to ride on a mule through the city, and relieved all the poor he met; to which his mule was ſo accuſtomed, that it ſtopped of its own accord at the ſight of every poor man till its maſter had relieved him. He refuſed ſeveral honourable poſts in church and ſtate, that he might have leiſure to correct and improve the works he had already written, and compoſe others. He died at the age of ninety-four, on the 21ſt of June, 1586. He wrote a vaſt number of treatiſes on morality and the canon law.

ASPIRAN', a town of France, in the department of Herault, and chief place of a canton, in the diſtrict of Lodeve, two leagues north of Pezenas.

To AS'PIRATE, *v. a.* [*aſpiro*, Lat.] To pronounce with aſpiration, or full breath; as we aſpirate *horſe*, *houſe*, and *hog*.

To Aspirate, *v. n.* [*aſpiro*, Lat.] To be pronounced with full breath.—Where a vowel ends a word, the next begins either with a conſonant, or what is its equivalent; for our *w* and *h aſpirate*. *Dryden*.

Aspirate, *adj.* [*aſpiratus*, Lat.] Pronounced with full breath.—For their being pervious, you may call them, if you pleaſe, perſpirate; but yet they are not *aſpirate*, i. e. with ſuch an aſpiration as *h*. *Holder*.

Aspirate, in grammar, denotes words marked with the ſpiritus aſper. See Asper.

ASPIRA'TION, *ſ.* [*aſpiratio*, Lat.] A breathing after; an ardent wiſh; uſed generally of a wiſh for ſpiritual bleſſings.—A ſoul inſpired with the warmeſt *aſpirations* after celeſtial beatitude, keeps its powers attentive. *Watts*.—The act of aſpiring, or deſiring ſomething high and great:

'Tis he; I ken the manner of his gait;
He riſes on his toe; that ſpirit of his
In *aſpiration* lifts him from the earth. *Shakeſpeare.*

The pronunciation of a vowel with full breath.—*H* is only a guttural *aſpiration*, i. e. a more forcible impulſe of the breath from the lungs. *Holder*.

To ASPI'RE, *v. n.* [*aſpiro*, Lat.] To deſire with eagerneſs; to pant after ſomething higher: ſometimes with the particle *to*.—Moſt excellent lady, no expectation in others, nor hope in himſelf, could *aſpire to* a higher mark, than to be thought worthy to be praiſed by you. *Sidney*.

Aſpiring to be gods, if angels fell,
Aſpiring to be angels, men rebel. *Pope.*

Sometimes with *after*.—Thoſe are raiſed above ſenſe, and *aſpire after* immortality, who believe the perpetual duration of their ſouls. *Tillotſon*.—To riſe; to tower:

There is betwixt that ſmile we would *aſpire to*,
That ſweet aſpect of princes and our ruin,
More pangs and fears than war or women have. *Shakeſpeare.*

ASPI'RER, *ſ.* One that ambitiouſly ſtrives to be greater than he is:

They ween'd
To win the mount of God; and on his throne
To ſet the envier of his ſtate, the proud
Aſpirer: but their thoughts prov'd fond and vain. *Milton.*

ASPLE'NIUM, *ſ.* [from *α*, and *σπλην*, becauſe it was ſuppoſed to dry up the ſpleen.] In botany, a genus of the cryptogamia filices, or claſs of ferns. The generic characters are—Fructifications diſpoſed in right lines along the under diſk of the frond.

Species. I. Frond ſimple. 1. Aſplenium rhizophyllum, or root-leaved ſpleenwort: fronds cordate-enſiform undivided, top filiform rooting. Root fibroſe. Fronds triangular, acuminate, point long, linear. Fructifications irregularly diſperſed over the whole diſk of the leaf in oblong ſpots. The ends of the fronds bend down to the ground, and there throw out roots, by which means this ſpecies of fern propagates itſelf. It was ſent to Moriſon from Virginia, by Baniſter, in 1680, and is found in other parts of North America. According to the catalogue of the royal botanic garden at Kew, it was introduced about 1764, by Mr. John Bartram. Probably Moriſon had only dry ſpecimens, and not the living plant.

2. Aſplenium hemionitis, or mule's tongue, mule's fern, or ſpleenwort: fronds ſimple cordate-haſtate five-lobed quite entire, ſtipes ſmooth and even. Mule's fern is very nearly allied to hart's tongue, No. 3; but the longitudinal diameter of the frond ſcarcely exceeds the tranſverſe one. It is a low fern, not above ſix inches in height, with a fibrous root. Native of the ſouth of Europe, and Madeira. Introduced in 1779, by Mr. Francis Maſſon.

3. Aſplenium ſcolopendrium, or hart's tongue ſpleenwort: fronds ſimple cordate-lingulate quite entire, ſtipes hirſute. Root black, hard, covered with ſcales, and emitting numerous ſtrong black fibres. Fronds from five inches to a foot in length, and from an inch to an inch and half in breadth, lanceolate, rounded and hollowed at the baſe, of a tough and firm texture, of a dark ſhining green above, paler underneath, having numerous parallel veins running obliquely from the midrib to the margin; which is uſually more or leſs waved: but the fronds are much ſubject to vary; and hence ſeveral varieties have been mentioned by authors, as the curled, waved, cluſtered, and branching, hart's tongue. Fructifications in parallel lines, oblique to the midrib, commonly in one row on each ſide of it, but ſometimes there is a double row, thoſe of the inner row much larger than the outer; the lower part of the frond is often barren: the lines are narrow at firſt, and covered with a pale membranaceous pellucid involucre, which burſts when the capſules ſwell, and then they are much wider, and the capſules are globular and brown, each ſurrounded with a jointed elaſtic ring; when the ſeeds are ripe, the capſule is forced open by this, and they are diſperſed to a conſiderable diſtance. The ſeeds are very numerous, and ſcarcely viſible to the naked eye; when magnified, they appear roundiſh, and full of little projecting points. Native of moſt parts of Europe, in ſhady lanes, on walls and rocks, in wells and damp caverns. Common in many parts of England, eſpecially in the north. It is in full ſeed from September to November. The officinal names are *lingua cervina*, *phyllitis*, and *ſcolopendrium*. It is called *hart's tongue*, from the form of the leaf, in all the northern languages, with very little variation. The leaves were recommended as aperients and corroborants, in obſtructions of the viſcera, &c. They have been chiefly uſed in apozems and infuſions. Ray recommends the plant, from his own experience, as a good medicine againſt convulſive diſorders; but it is diſcarded from the preſent practice. The common people indeed ſtill uſe an ointment made with the leaves of this, as alſo of ophiogloſſum, or adder's tongue, in burns and ſcalds.

4. Aſplenium nidus, or bird's-neſt ſpleenwort: fronds ſimple lanceolate quite entire ſmooth. The leaves of this are two feet long, and ſix or ſeven inches wide, firm and thick, ſmooth, and ſtreaked at an acute angle. The lines of fructification between the nerves or parallel ſtreaks are ſhort, ſcarcely extending one-third of the breadth of the leaf. It roots into the tops of trees. The leaves come out in a circle, are erect, and form a kind of umbel, in the middle of which birds make their neſts. Native of Java, and the Society iſles.

5. Aſplenium ſerratum, or ſerrate-leaved ſpleenwort:

fronds ſimple lanceolate ſerrate ſubſeſſile. The root conſiſts of brown fibres, ſending up eight or nine fronds, three inches long, three quarters of an inch broad where broadeſt, yellowiſh green, narrow at the beginning, increaſing to near the end, and then decreaſing to a blunt point. Native of woods in the inland parts of Jamaica.

6. Aſplenium plantagineum, or plaintain-leaved ſpleenwort: fronds ſimple ovate-lanceolate ſubcrenate, ſtipe four-cornered. This ſeldom riſes above ten or twelve inches; the fronds riſe from a thick fibrous root, which generally runs into the ground, whereas the foregoing ſometimes grows upon trees. Native of Jamaica.

7. Aſplenium lanceum, or lance-leaved ſpleenwort: fronds ſimple elliptic entire ſmooth, ſtipe round ſcaly. Native of Japan.

8. Aſplenium bifolium, or double-leaved ſpleenwort: fronds pinnate; leaflets lanceolate ſubſinuate connate. Root compoſed of many thickiſh branching black fibres; fronds all double, or compoſed of two equal ſimilar leaflets united at the baſe by a common membrane. Native of South America.

II. Frond pinnatifid. 9. Aſplenium ceterach, or common ſpleenwort or miltwaſte: fronds pinnatifid; lobes alternate confluent obtuſe. The root conſiſts of many fibres adhering to a ſhort ſhapeleſs head, which is ſurrounded thickly by the ſtumps of decayed leaves, and is of a dark-brown colour. Fronds many, from three to ſix inches in length, the hollows between the lobes nearly of the ſame ſize and ſhape as the lobes themſelves: there are about twenty pairs of theſe lobes in a frond; they are ſhort, broad, roundiſh, entire, but waved on the edge, largeſt in the middle of the frond, diminiſhing gradually both to the end and the baſe; they are of a dark ſhining green on the upper ſide; and when the plant is old the edges are rolled backwards. The ſtipe is ſhort and brown. Linnæus remarks, that the leaves are ſo ſcaly underneath, that the fructifications are not diſtinguiſhable; but this is only when the fronds are old, and is occaſioned by the involucres of the fructification being very large: for when they are young the lines are ſufficiently diſtinct; they are three or four, and ſometimes five, ſix, and even ſeven, in number, placed obliquely near the midrib on each ſide; at firſt they are pale-coloured; but, as the plant advances in growth, the ſeed-veſſels enlarge, turn brown, and when they burſt run together, and cover the whole lower diſk. Native of moſt parts of Europe, on old walls and in the clefts of moiſt rocks; as about Briſtol, Bury in Suffolk, Heydon in Norfolk, Aſheridge in Hertfordſhire, near Malham Tarn, and many other places in the northern countries. It is in ſeed from May to October. It has been recommended as a pectoral, and as an aperient in obſtructions of the viſcera: and an infuſion of the leaves has been given againſt the gravel. It was recommended by the ancients for the various diſorders of the ſpleen, but it is entirely a ſtranger to modern practice.

10. Aſplenium obtuſifolium, or blunt-leaved ſpleenwort: fronds ſubpinnate; pinnas obtuſe ſinuate, decurrent, alternate. Native of South America.

III. Frond pinnate. 11. Aſplenium nodoſum, or knotted-ſtalked ſpleenwort: fronds pinnate; pinnas oppoſite lanceolate and quite entire. Height a foot and a half, (Browne ſays three or four feet,) upright, ſmooth. Native of the Weſt Indies and Cochin-China.

12. Aſplenium ſalicifolium, or willow-leaved ſpleenwort: fronds pinnate; pinnas ſickle-lanceolate crenate from the baſe upwards, angular. Height a foot and half. Native of Jamaica and the Antilles.

13. Aſplenium trichomanes, or common maidenhair: fronds pinnate; pinnas roundiſh crenate. Roots ſmall, conſiſting of brown capillary fibres. Fronds five or ſix inches in length, ſometimes ſhorter and ſometimes longer, lanceolate. The leaflets vary ſometimes in figure, and manner of notching about the edge. Native of Europe, in the crevices of rocks and walls, and in ſhady places among ſtones. It is in ſeed from May to October. The country people ſometimes give a tea or ſyrup of it for coughs and other complaints of the thorax. A little of the ſyrup mixed with water makes a very pleaſant draught. That which is brought from abroad has orange-flower water in it. But ſeveral different ferns are made uſe of for ſyrup of capillaire.

14. Aſplenium viride, or green ſpleenwort: fronds pinnate; pinnas roundiſh crenate truncate at the baſe. The ſtipe of this is more tender, and frequently of a pale green colour, but ſometimes browniſh towards the root; in ſome ſpecimens they are brown and gloſſy, as in the foregoing. Native of moiſt rocks on the mountains of Yorkſhire, Weſtmoreland, and North Wales.

15. Aſplenium ebeneum, or ivory-ſtiped ſpleenwort: frond pinnate; pinnas lanceolate ſubfalcate ferrate eared at the baſe, ſtipe very gloſſy ſimple. Native of North America.

16. Aſplenium dentatum, or tooth-leaved ſpleenwort: fronds pinnate; pinnas wedge-ſhaped obtuſe crenate-emarginate. Native of South America and the Weſt Indies.

17. Aſplenium marinum, or ſea maidenhair or ſpleenwort, or dwarf ſea-fern: frond pinnate; pinnas obovate ſerrate gibbous above, obtuſe, wedged at the baſe. Sea ſpleenwort has fronds from three inches to a foot in length, but commonly about five or ſix inches. Stipes ſmooth, generally reddiſh brown. Native of Suſſex, Devonſhire, Cornwall, Cumberland, Lancaſhire, Scotland, and Wales, on rocks of the ſea coaſt.

18. Aſplenium cultrifolium, or ſickle-leaved ſpleenwort: fronds pinnate; pinnas ſickle-lanceolate, gaſh-ſerrate, from the baſe downwards angular. Native of the iſland of Martinico.

19. Aſplenium rhizophorum: fronds pinnate, rooting at top; pinnas ovate repand ſomewhat eared; very ſmall ones remote quite entire. This ſeldom grows above ten or twelve inches in length, and is always found with the top bending towards the ground. The young plant is ſimply pinnate, but when farther advanced it is bipinnate. Native of Jamaica.

20. Aſplenium monanthemum, or one-flowered ſpleenwort: fronds pinnate; pinnas trapeziumed obtuſe ſerrate entire behind; one line of fructification. Fronds numerous, aſcending, a foot high, frequently twiſted, linear-lanceolate, acute, very ſmooth. Native of the Cape of Good Hope.

21. Aſplenium ruta muraria, or wall-rue, tentwort, or white ſpleenwort: fronds alternately decompound; leaflets wedge-ſhaped crenulate. Fronds many from one root, three or four inches high, furniſhed at the end with three (ſometimes only two) pinnas, placed alternately; they are ſhort, broad, either rhomboidal or trapezium ſhaped, very dark green above, paler underneath; the two ſides next the baſe entire, the two others finely crenate. The fructifications firſt appear in two or three longiſh white oblique dots on each ſide the nerve; when the ſeeds are ripe the veſſels burſt, and cover the whole diſk of the frond except the edge. Native of Europe, in the fiſſures of walls and rocks. In ſeed from June to October. This alſo was formerly uſed in coughs and obſtructions, but is now entirely out of repute.

22. Aſplenium alternifolium, or alternate-leaved ſpleenwort: fronds ſimply pinnate; leaflets alternate, wedge-ſhaped, gaſhed above. This differs from our common wall-rue in having the ſtems more ſimple, black at the baſe, with one or two ſhort diviſions only, having three leaves lobed and two-lobed; the other leaves are ſolitary, the firſt cut with four toothlets at moſt; the upper ones ſimple, with the tip ſhortly cut. In the lower part of the leaf are two or three lines, ſeldom four, of a longiſh form. Linnæus perſiſted in regarding this as a variety only of the foregoing. Native of Switzerland and Auſtria.

23. Aſplenium adiantum nigrum, or black maidenhair: fronds ſubtripinnate, leaflets alternate, pinnas lanceolate gaſh-ſerrate. Black maidenhair has the fronds commonly eight or nine inches high, ſometimes a little more or leſs;

their outline is triangular. Stipes gloſſy, black or very dark red. The fructifications appear at firſt in oblique whitiſh lines (three to ſeven), which afterwards become brown, and when they burſt cover the diſk of the leaflet except the edge. Native of Europe, in the fiſſures of rocks and old walls, and among ſtones in ſhady places. In ſeed from April to October. There are varieties in the leafing of this fern.

24. Aſplenium trichomanes ramoſum, or branched maidenhair: fronds doubly-pinnate, pinnas obovate crenate, lower leaflets ſmaller. Mr. Bolton looks upon this as a variety of the preceding ſpecies.

25. Aſplenium marginatum, or margined ſpleenwort: fronds pinnate; pinnas oppoſite cordate-lanceolate ſubmarginate quite entire. 26. Aſplenium ſquamoſum, or ſcaly-ſtiped ſpleenwort: fronds pinnate; pinnas acuminate gaſhed, ſtipe ſcaly. 27. Aſplenium ſtriatum, or ſtriated ſpleenwort: fronds pinnate; pinnas pinnatifid obtuſe crenate, the terminal one acuminate. Natives of South America.

28. Aſplenium eroſum, or lacerated ſpleenwort: fronds pinnate; pinnas trapeze-oblong, ſtriated, eroſe, eared at the baſe. Height from fourteen to eighteen inches. Native of Jamaica.

29. Aſplenium Japonicum, or Japoneſe ſpleenwort: fronds pinnate; pinnas acute gaſh-pinnatifid ſerrulate; ſtipe ſcaly, two feet high. Native of Japan.

30. Aſplenium reſectum, or half-leaved ſpleenwort: fronds pinnate; pinnas trapezium-ſhaped acuminate gaſh-crenate entire behind. Frond a foot high, lanceolate, acute, ſmooth. Found by Commerſon in the iſland of Bourbon.

31. Aſplenium bulboſum, or bulbous-rooted ſpleenwort: fronds pinnate; pinnas lanceolate ſlightly crenate; root bulbous. Height one foot. Native of the mountains of Cochin-China, where the root is eaten.

Species from Swartz. 32. Aſplenium proliferum: fronds ſubſeſſile broad-lanceolate, the firſt leaves obovate, rooting at the end. Root ſmall, ſcaly, black, with many long dark-brown fibres. Leaves many, of different ſizes, the largeſt two inches and a half long, and about half an inch broad near the middle. They end in a point, which bows down to the ground, takes root, and ſends out rounder leaves, in time growing longer, and with their ends taking root. The ſeed lies in round ſpots on each ſide of the middle rib underneath. Native of Jamaica.

33. Aſplenium pumilum: frond ternate, leaflets three-parted gaſhed. Fronds ſeveral, upright, about four inches high. Native of Jamaica and Martinico.

34. Aſplenium dimidiatum: fronds pinnate, pinnas trapeze-oblong acuminate, angular upwards, entire and flat downwards. 35. Aſplenium fragrans: fronds ſubtripinnate, leaflets alternate, pinnas lanceolate broadiſh, ſerrate at the tip. 36. Aſplenium grandiflorum: fronds pinnate, pinnas alternate lanceolate ſubſerrate, at the baſe rectangular above, rounded below. 37. Aſplenium diſſectum: fronds pinnate, pinnas lanceolate gaſh-ſerrate, tailed at the tip. 38. Aſplenium præmorſum: frond tripinnatifid, pinnas ſomewhat wedge-ſhaped, pinnules eroſe-toothed at the tip. 39. Aſplenium cicutarium: frond tripinnate very ſmooth, the upper ones pinnatifid, leaflets lanceolate entire. Natives of Jamaica. The laſt has a ſolid black root, covered with a black hairy moſs towards its top, whence riſe nine or ten leaves about three inches high. Stipes dark green, at an inch from the ground, dividing into ſeveral alternate twigs, thoſe in the middle being largeſt, about three quarters of an inch long, made up of alternate ſmall roundiſh pinnules, deeply cut in at the edge, of a pale green colour above, and underneath having very many ferruginous ſpots.

Species from Forſter. 40. Aſplenium flaccidum: fronds pinnate, leaflets alternate remote pinnatifid, linear ſtiff. 41. Aſplenium lucidum: fronds pinnate, leaflets oppoſite oblong-ovate acuminate ferrulate. 42. Aſplenium polyodon: fronds pinnate, leaflets trapezoid acuminate acute doubly-ſerrate. 43. Aſplenium obliquum: fronds pinnate; ſtipes ſcaly; leaflets oblong oppoſite acuminate ſerrate, the outer margin ſhorter. 44. Aſplenium obtuſatum: fronds pinnate, leaflets oppoſite oblong obtuſe ſerrate. 45. Aſplenium tenerum: fronds pinnate, leaflets rhomb-oblong obtuſe gaſh-ſerrate. 46. Aſplenium caudatum: fronds pinnate; leaflets pinnatifid, linear, briſtle-ſhaped at the tip; ſegments blunt, gaſh-ſerrate at the tip; ſtipe rough with hairs. 47. Aſplenium bulbiferum: fronds ſub-bipinnate; leaflets decurrent, oblong, obtuſe, pinnatifid; fructifications proliferous. Natives of New Zealand.

Propagation and Culture. Whoever is deſirous of cultivating any of theſe ferns muſt have walls, rocks, or heaps of ſtones, to ſet the hardy ſpecies in; or pots may be filled with loamy undunged earth, or ſand, gravel, and lime-rubbiſh, for that purpoſe, placing them in the ſhade. Hart's tongue has been raiſed from ſeed; but all the ſorts may be increaſed by parting the roots. Some of the foreign ones muſt be placed under a common frame in winter; and it is evident, that ſuch as are natives of the Weſt Indies, and other hot climates, require the protection of a ſtove. See Acrostichum and Meniscium.

ASPO'E, a ſmall iſland of Sweden, in the Baltic, two miles ſouth-weſt of Carlſcroon.

ASPORTA'TION, *ſ.* [*aſportatio*, Lat.] A carrying away.

ASPREL'LA, *ſ.* in botany. See Leersia.

ASPREMONT', a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of St. Michel, four miles ſouth-eaſt of St. Michel.

AS'PRES LES VAY'NES, a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Serres, fifteen miles weſt of Gap.

AS'PRO, a river of European Turkey, which runs into the ſea, twenty-eight miles weſt of Lepanto.

ASPROSPI'ZIA, a town of European Turkey, ten miles ſouth-ſouth-weſt of Livadia.

ASQUINT', *adv.* [from *a* and *ſquint.*] Obliquely; not in the ſtraight line of viſion.—A ſingle guide may direct the way better than five hundred, who have contrary views, or look *aſquint*, or ſhut their eyes. *Swift.*

ASS, *ſ.* [*aſinus*, Lat.] An animal of burden, remarkable for ſluggiſhneſs, patience, hardineſs, coarſeneſs of food, and long life. See Equus. A ſtupid, heavy, dull, fellow; a dolt.—I do begin to perceive that I am made an *aſs. Shakeſpeare.*

Coronation of the Ass, in antiquity, was a part of the ceremony of the feaſt of Veſta, wherein the bakers put bread-crowns on the heads of theſe quadrupeds; *Ecce coronatis panis dependet aſellis.* Hence, in an ancient calendar, the ides of June are thus denoted; *Feſtum eſt Veſtæ: aſinus coronatur!* This honour, it ſeems was done the beaſt, becauſe, by its braying, it had ſaved Veſta from being raviſhed by the Lamſacan god. Hence the formula, *Veſtæ delicium eſt aſinus.*

AS'SA, a town of European Turkey, in the iſland of Cephalonia, ſixteen miles north-north-weſt of Cephalonia.

Assa-foetida, *ſ.* in botany. See Ferula.

ASSACH', or Assath, *ſ.* was a cuſtom of purgation uſed of old in Wales, by which the party accuſed was obliged to clear himſelf by the oaths of 300 men. It is mentioned in ancient MSS. and prevailed till the time of Henry V. when it was abrogated. 1 Hen. V. c. 6.

ASSA'I, a town of Japan, in the province of Oomi, or Omi.

To ASSAIL', *v. a.* [*aſſailler*, Fr.] To attack in a hoſtile manner; to aſſault; to fall upon; to invade. To attack with argument; cenſure; or motives applied to the paſſions:

How have I fear'd your fate! but fear'd it moſt,
When love *aſſail'd* you on the Libyan coaſt. *Dryden.*

ASSAIL'ABLE, *adj.* That which may be attacked:

Banquo, and his Fleance, live.——
—But in them nature's copy's not eternal.—
—There's comfort yet, they are *aſſailable.* *Shakeſpeare.*

ASSAIL'ANT, *ſ.* [*aſſailant*, Fr.] He that attacks; in oppoſition to *defendant*.—The ſame was ſo well encountered by the defendants, that the obſtinacy of the *aſſailants* did but increaſe the loſs. *Hayward.*

Assailant, *adj.* Attacking; invading.

ASSAIL'ER, *ſ.* One who attacks another.

ASSAM', a country of Aſia, bounded on the north by Thibet, on the eaſt by Hindoſtan, on the ſouth by Mecley; the eaſtern boundaries are not known.

ASSAN', a town of Aſia, in the province of Diarbekir, forty miles from Diarbek.

ASSANCALEE', a ſtrong town in Armenia, near the river Arras, in the road between Erzerum and Erivan, and noted for its hot-baths. It ſtands on a high hill; the walls are built in a ſpiral line all round the rock, and are ſtrengthened with ſquare towers. The ditches are about two fathoms over, cut out of hard rock. Lat. 39. 46. N. lon. 41. 30. E.

ASSAPA'NIC, *ſ.* The Virginian flying-ſquirrel.

ASSA'RIUM, *ſ.* a ſmall copper coin, being a part or diminutive of the *as.* The word ασσαριον is uſed by Suidas indifferently with οϐολος and νομισμα, to denote a ſmall piece of money; in which he is followed by Cujacius, who defines ασσαριον by *minimus æris nummus.* We find mention of the aſſarion in the goſpel of St. Matthew, chap. x. verſe 29.

ASSARLI', a town of Eupopean Turkey, in the province of Romania, forty-four miles eaſt-ſouth-eaſt of Filippopoli.

AS'SARON, or Omer, *ſ.* a meaſure of capacity, in uſe among the Hebrews, containing five pints. It was the meaſure of manna which God appointed for every Iſraelite.

ASSART', *ſ.* [*aſſartum*, Lat. from *aſſartir*, Fr. to make plain. *Aſſartum* eſt quod redactum eſt ad culturam. *Fleta*, lib. iv. c. 21. And the word *aſſartum* is by Spelman derived from *exertum*, to pull up by the roots: for ſometimes it is wrote *eſſart*. Others derive it from *exaratum*, or *exartum*, which ſignifies to plow or cut up.] Manwood, in his Foreſt Laws, ſays, it is an offence committed in the foreſt, by pulling up the woods by the roots, that are thickets and coverts for the deer, and making the ground plain as arable land; this is eſteemed the greateſt treſpaſs that can be done in the foreſt to vert or veniſon, as it contains in it waſte and more; for, whereas waſte of the foreſt is but the felling down the coverts which may grow up again, aſſart is a plucking them up by the roots, and utterly deſtroying them, ſo that they can never afterwards ſpring up again. But this is no offence if done with licence; and a man may, by writ of *ad quod damnum*, ſue out a licence to aſſart ground in the foreſt, and fit it for tillage. *Reg. Orig.* 257. Hence are lands called aſſarted: and formerly aſſart rents were paid to the crown for foreſt lands aſſarted. See ſtat. 22 Car. II. c. 6.

ASSAS'SIN, *ſ.* [*aſſaſſin*, Fr.] A murderer; one that kills by treachery, or ſudden violence:

Here hir'd *aſſaſſins* for their gain invade,
And treach'rous poiſ'ners urge their fatal trade. *Creech.*

The word *aſſaſſin* is ſaid to have been brought from the Levant, where it took its riſe from a prince of the family of the *Arſacidæ*, popularly called *Aſſaſſins*, living in a caſtle between Antioch and Damaſcus, and bringing up a number of armed vaſſals, ready to pay every obedience to his commands. Theſe he employed in murdering the princes with whom he was at enmity. But, according to Mr. Volney, the word *haſſaſſin* (from the root *haſs*, "to kill, to aſſaſſinate, to liſten, to ſurpriſe") in the vulgar Arabic ſignifies "robbers of the night," perſons who lie in ambuſh to kill; and is univerſally underſtood in this ſenſe at Cairo, and in Syria. Hence it was applied to the *Batenians*, who ſlew by ſurpriſe. There was a certain law of nations, an opinion received in all the republics of Greece and Italy, whereby he that aſſaſſinated an uſurper of the ſupreme power was declared a virtuous man. At Rome eſpecially, after the expulſion of the kings, the law was formal and ſolemn, and inſtances of it admitted. The commonwealth armed the hand of any citizen, and created him magiſtrate for that moment.

Assassins, a tribe or clan in Syria, called alſo *Iſmaelians*, and *Bataniſts* or *Batenians*. Theſe people probably owed their origin to the Karmatians, a famous heretical ſect among the Mahometans, who ſettled in Perſia about the year 1090; whence, in proceſs of time, they ſent a colony into Syria, where they became poſſeſſed of a conſiderable tract of land among the mountains of Lebanon, extending itſelf from the neighbourhood of Antioch to Damaſcus. The firſt chief and legiſlator of this remarkable tribe appears to have been Haſſan Sabah, who by his artifices made fanatical and implicit ſlaves of his ſubjects. Their religion was compounded of that of the Magi, the Jews, the Chriſtians, and the Mahometans; but the capital article of their creed was to believe that the Holy Ghoſt reſided in their chief; that his orders proceeded from God himſelf, and were real declarations of his divine pleaſure. To this monarch the orientals gave the name of *ſcheik*; a dignity which, inſtead of being hereditary, was confirmed by election.

This chief, from his exalted reſidence on the ſummit of mount Lebanon, was called the *Old Man of the Mountain*; who, like a vindictive deity, with the thunderbolt in his hand, ſent inevitable death to all quarters; ſo that khaliffs, emperors, ſultans, kings, princes, Chriſtians, Mahometans, and Jews, execrated and dreaded his ſanguinary power, from the ſtrokes of which there was no ſecurity. At the leaſt ſuggeſtion that this man had threatened the death of any potentate, all immediately doubled their guards, and took every other precaution in their power. It is known that Philip Auguſtus king of France, on a premature advice that the ſcheik intended to have him aſſaſſinated, inſtituted a new body-guard of men diſtinguiſhed for their activity and courage, called *ſergens d'armes*, with braſs clubs, bows, and arrows; and he himſelf never appeared without a club, fortified either with iron or gold. Moſt ſovereigns paid ſecretly a penſion to the ſcheik, however ſcandalous and derogatory it might be to the luſtre of majeſty, for the ſafety of their perſons. The knights templars alone dared to defy his ſecret machinations and open force.

This ſavage prince was furniſhed with reſources unknown to all other monarchs, even to the moſt deſpotic tyrant. His ſubjects would proſtrate themſelves at the foot of his throne, requeſting to die by his hand, or order, as a favour by which they were ſure of paſſing into paradiſe. On them if danger made any impreſſion, it was an emulation to preſs forward; and, if taken in any enterpriſe, they went to the place of execution with a magnanimity unknown to others. Henry count of Champaigne, who married Iſabella daughter of Amaury king of Jeruſalem, paſſing over part of the territory of the Aſſaſſins in his way to Syria, and talking highly of his power, their chief came to meet him: "Are your ſubjects (ſaid the Old Man of the Mountain) as ready in their ſubmiſſion as mine?" and, without ſtaying for an anſwer, made a ſign with his hand, when ten young men in white, who were ſtanding on an adjacent tower, inſtantly threw themſelves down. On another occaſion, ſultan Malek-Shah ſummoning the ſcheik to ſubmit himſelf to his government, and threatening him with the power of his arms, ſhould he heſitate to comply; the latter, very compoſedly turning himſelf towards his guards, ſaid to one of them, "Draw your dagger, and plunge it into your breaſt;" and to another, "Throw yourſelf headlong from yonder rock." His orders were no ſooner uttered than they were obeyed: and all the anſwer he deigned to give the ſultan's envoy was, "Away, ſycophant, to thy maſter, and let him know I have many thouſand ſubjects of the ſame diſpoſition." Men ſo ready to deſtroy themſelves, were equally alert and reſolute in being the miniſters of death to others. At the command of their ſovereign, they made no difficulty of ſtabbing any prince, even on his throne; and, being well verſed in the different dialects, they conformed to the dreſs and even the external religion of the country, that they might with leſs difficulty ſtrike the fatal blow required by their chief. With the Saracens they were Mahometans; with the Franks, Chriſtians: in one place they joined with the Mamaluks; in another, with the eccleſiaſtics or religious; and under this diſguiſe ſeized the firſt opportunity of executing their ſanguinary commiſſion. Of this we meet with an inſtance in the hiſtory of Saladin, while he was beſieging Manbedge, the celebrated Hieropolis of antiquity. Being one day, with a few attendants, and they at ſome diſtance, reconnoitering the place for the better diſpoſition of an attack, a man ruſhed on him with a dagger in his hand, and wounded him in the head; but the ſultan, wreſting the dagger from him, laid him dead at his feet. Before the ſultan had well recovered himſelf, a ſecond encountered him to finiſh the treachery of the former, but he met with the ſame fate: he was then attacked by a third, who alſo fell by the hand of that magnanimous prince whom he was ſent to aſſaſſinate. And it was obſerved, that theſe wretches dealt about their fruitleſs blows even in the agonies of death. With ſuch rapidity was this attempt tranſacted, that it was over before Saladin's guards could come to his aſſiſtance. He retired to his tent, and, in great perturbation throwing himſelf on his ſopha, ordered his ſervants to take a ſtrict view of his houſehold, and to caſhier all ſuſpected perſons; at the ſame time aſking with great earneſtneſs, "Of whom have I deſerved ſuch treacherous uſage?" But it afterwards appeared, that theſe villains had been ſent by the Old Man of the Mountain; of whom the vizier Kamſchlegin had purchaſed the murder of Saladin, to free himſelf from ſo great a warrior, whom he durſt not meet in the field. To animate them in their frantic obedience, the ſcheik, before their departure on ſuch attempts, uſually indulged them with a foretaſte of the delights which he aſſured them would be their recompenſe in paradiſe. Delicious ſoporific drinks were given them; and, while they lay aſleep, they were carried into beautiful gardens, where awaking, as it were in paradiſe, every allurement invited their ſenſes to the moſt exquiſite gratifications. From theſe ſeats of voluptuouſneſs, inflamed with liquor and enthuſiaſtic views of perpetual enjoyments, they ſallied forth to perform aſſaſſinations of the blackeſt dye.

This people once had, or at leaſt they feigned to have, an intention of embracing the Chriſtian religion. They reigned a long time in Perſia, and on mount Lebanon. Hulaku, a khan of the Mogul Tartars, in the year 655 of the Hegira, or 1254 of the Chriſtian era, entered their country and diſpoſſeſſed them of ſeveral places; but it was not till the year 1272 that they were totally conquered. This atchievement was owing to the conduct and intrepidity of the Egyptian forces ſent againſt them by the ſultan Bibaris. It has, however, been thought, that the Druſes, who ſtill reſide among the eminences of mount Lebanon, and whoſe religion and cuſtoms are ſo little known, are a remnant of this ſingular race of barbarians.

ASSAS'SINATE, *ſ.* The crime of an aſſaſſin; murder.

To Assassinate, *v. a.* To murder by violence. To way-lay; to take by treachery: this meaning is perhaps peculiar to Milton:

Such uſage as your honourable lords
Afford me, *aſſaſſinated* and betray'd,
Who durſt not, with your whole united pow'rs,
In fight withſtand one ſingle and unarm'd. *Milton.*

ASSASSINA'TION, *ſ.* The act of aſſaſſinating; murder by violence.

ASSASSINA'TOR, *ſ.* Murderer; man-killer; the perſon that kills another by violence.

ASSA'TION, *ſ.* [*aſſatus*, Lat. roaſted.] Roaſting.—The egg expiring leſs in the elixation or boiling; whereas, in the *aſſation* or roaſting, it will ſometimes abate a drachm. *Brown.*

ASSAULT', *ſ.* [*aſſultus*, Lat. from *aſſaylir*, Fr.] Attack; hoſtile onſet: oppoſed to *defence.*—Her ſpirit had been invincible againſt all *aſſaults* of affection. *Shakeſpeare.*

Not to be ſhook thyſelf, but all *aſſaults*
Baffling, like thy hoar cliffs the loud ſea wave. *Thomſon.*

Storm: oppoſed to *ſap* or *ſiege.*—Jaſon took at leaſt a thouſand men, and ſuddenly made an *aſſault upon* the city. 2 *Mac.* v. 5.—Hoſtile violence:

Themſelves at diſcord fell,
And cruel combat join'd in middle ſpace,
With horrible *aſſault* and fury fell. *Spenſer.*

Invaſion; hoſtility; attack.—Theories, built upon narrow foundations, are very hard to be ſupported againſt the *aſſaults* of oppoſition. *Locke.*—It has *upon* before the thing aſſaulted.

Assault, in law, an attempt or offer, with force and violence, to do a corporal hurt to another; as by ſtriking at him, with or without a weapon. But no words whatſoever, be they ever ſo provoking, can amount to an aſſault, notwithſtanding the many ancient opinions to the contrary. 1 *Hawk. P. C.* c. 62.

Aſſault does not always neceſſarily imply a hitting, or blow; becauſe, in treſpaſs for aſſault and battery, a man may be found guilty of the aſſault, and excuſed of the battery. But every battery includes an aſſault; therefore, if the aſſault be ill laid, and the battery good, it is ſufficient. 1 *Hawk. P. C.* 263. If a perſon in anger lift up or ſtretch forth his arm, and offer to ſtrike another; or menace any one with any ſtaff or weapon, it is treſpaſs and aſſault in law: and if a man threaten to beat another perſon, or lie in wait to do it, if the other is hindered in his buſineſs, and receives loſs thereby, action lies for the injury. *Lamb.* lib. 1. 22 *Aſſ. pl.* 60. Any injury whatſoever, be it ever ſo ſmall, being actually done to the perſon of a man, in an angry or revengeful, or rude or inſolent, manner, as by ſpitting in his face, or any way touching him in anger, or violently joſtling him, are batteries in the eye of the law. 1 *Hawk. P. C.* 263, 4.

In many caſes a man may juſtify an aſſault; thus, to lay hands gently upon another, not in anger, is no foundation of an action of treſpaſs and aſſault; the defendant may juſtify *molliter manus impoſuit* in defence of his perſon, or goods; or of his wife, father, mother, or maſter; or for the maintenance of juſtice. *Bract.* 9 Eliz. c. 4. 35 Hen. VI. c. 51. A ſervant, &c. may juſtify an aſſault in defence of a maſter, &c. but not *è contra. Ld. Raym.*

If an officer, having a warrant againſt one who will not ſuffer himſelf to be arreſted, beat or wound him in the attempt to take him, he may juſtify it; ſo, if a parent in a reaſonable manner chaſtiſe his child, or maſter his ſervant, being actually in his ſervice at that time, or a ſchoolmaſter his ſcholar, or a gaoler his priſoner, or even a huſband his wife (for reaſonable and proper cauſe); or if one confine a friend who is mad, and bind and beat him, &c. in ſuch manner as is proper in his circumſtances; or if a man force a ſword from one who offers to kill another; or if a man gently lays his hand on another, and thereby ſtay him from inciting a dog againſt a third perſon; if I beat one (without wounding him, or throwing at him a dangerous weapon) who wrongfully endeavours with violence to diſpoſſeſs me of my lands or goods, or the goods of another delivered to me to be kept for him, and who will not deſiſt upon my laying my hand gently on him and diſturbing him; or if a man beat, wound, or maim, one who makes an aſſault upon his perſon, or that of his wife, parent, child, or maſter; or if a man fight with, or beat, one who attempts to kill any ſtranger; if the beating was actually neceſſary to obtain the good end propoſed, or rendered neceſſary in ſelf-defence, in all theſe caſes the party may juſtify the aſſault and battery, 1 *Hawk. P. C.* 259. And on an indictment the party may plead Not guilty, and give the ſpecial matter in evidence; but in an action he muſt plead it ſpecially. 6 *Mod.* 172: ſuppoſing it matter of *juſtification.* If of *excuſe*, it is ſaid it may be given in evidence, on the general iſſue, *Bull. N. P.* 17. Alſo in caſes of aſſault, for the aſſault of the wife, child, or ſervant, the huſband, father, and maſter, may have action of treſpaſs, *per quod ſervitium amiſit.* In caſe of a wife, huſband and wife ſhould join in the action for the perſonal abuſe of the wife, (the huſband not having ſuſtained any damage.) If the huſband has been damnified, as by tearing her clothes, &c. or loſs of her aſſiſtance, &c. in his domeſtic concerns, for that peculiar injury to himſelf he alone muſt ſue. As to parent and child, maſter and ſervant, unleſs injury accrues to the parent or maſter, the child or ſervant may ſue. For an aſſault, the wrong-doer is ſubject both to an action at the ſuit of the party, wherein he ſhall render damages; and alſo to an indictment at the ſuit of the king, wherein he ſhall be fined according to the heinouſneſs of the offence. 1 *Hawk.* 263. But if both are depending at one time, unleſs in very particular caſes, the attorney general will, on application, grant a *nolle proſequi*, if the party will not diſcontinue his action. Stat. 8 & 9 Will. III. c. 11. enacts, That where there are ſeveral defendants to any action of aſſault, &c. and one or more acquitted, the perſon ſo acquitted ſhall recover coſts of ſuit; unleſs the judge certify that there was a reaſonable cauſe for making ſuch perſon a defendant or defendants to ſuch action.

If any perſon aſſault a privy counſellor, in the execution of his office, it is felony, by ſtat. 9 Anne, c. 16. Stat. 6 Geo. I. c. 23, if any perſon ſhall wilfully and maliciouſly aſſault any perſon in the public ſtreets or highways, with an intent to tear, ſpoil, cut, burn, or deface, and ſhall tear, ſpoil, cut, burn, or deface, the garments, &c. of ſuch perſon, it is felony; and the offender may be tranſported for ſeven years. Aſſaulting perſons in a forcible manner, with intent to commit robbery, is made felony and tranſportation, by ſtat. 7 Geo. II. c. 21. And aſſaulting or threatening a counſellor at law, or attorney employed in a cauſe againſt a man; or a juror giving verdict againſt him; his adverſary, for ſuing him, &c. is puniſhable on an indictment, by fine and impriſonment, for the contempt. 1 *Hawk.* 58. There are other aſſaults puniſhable in a peculiar manner, viz. ſtat. 5 Hen. IV. c. 6, & 11 Hen. VI. c. 11, render aſſaults on members of parliament more than uſually penal, upon non-ſurrender on proclamation. Stat. 9 Eliz. 2. ſtat. 1. c. 3, gives a double criminal proceſs againſt thoſe who aſſault clergymen, indictment for the temporal offence, and proceſs in the eccleſiaſtical court, for the ſpiritual one. By ſtat. 5 Eliz. c. 4, ſervants aſſaulting their maſter, miſtreſs, or overſeer, may be impriſoned twelve months on conviction before two juſtices. By ſtat. 9 Anne, c. 14, to aſſault, beat, or challenge, another on account of money won by gaming, incurs the forfeiture of goods and two years impriſonment. By ſtat. 9 Geo. I. c. 22, to aſſault another by wilfully ſhooting at him is felony without clergy. By ſtat. 12 Geo. I. c. 34, aſſaulting a maſter woolcomber or weaver, &c. for not complying with the demands of workmen, is felony and tranſportation for ſeven years.

To Assault, *v. a.* To attack; to invade; to fall upon with violence:

New curſed ſteel, and more accurſed gold,
Gave miſchief birth, and made that miſchief bold:
And double death did wretched man invade,
By ſteel *aſſaulted*, and by gold betray'd. *Dryden.*

ASSAULT'ER, *ſ.* One who violently aſſaults another.—Neither liking their eloquence, nor fearing their might, we eſteemed few ſwords, in a juſt defence, able to reſiſt many unjuſt *aſſaulters. Sidney.*

ASSAY', *ſ.* [*eſſaye*, Fr. from which the ancient writers borrowed *aſſay*, according to the ſound, and the latter *eſſay*, according to the writing; but, the ſenſes now differing, they may be conſidered as two words.] Examination; trial:

This cannot be
By no *aſſay* of reaſon. 'Tis a pageant,
To keep us in falſe gaze. *Shakeſpeare.*

The firſt entrance upon any thing. Trial by danger or diſtreſs; difficulty; hardſhip:

Be ſure to find
What I foretel thee, many a hard *aſſay*
Of dangers, and adverſities, and pains,
Ere thou of Iſrael's ſceptre get faſt hold. *Milton.*

Assay, in metallurgy, or chemiſtry, is an operation which conſiſts in determining the quantity of valuable or precious metal contained in any mineral or metallic mixture, by analyſing a ſmall part thereof. The practical difference between the analyſis and the aſſay of an ore, conſiſts in this: the analyſis, if properly made, determines the nature and quantities of all the parts of the compound; whereas the object of the aſſay conſiſts in aſcertaining how much of the particular metal in queſtion may be contained in a certain determinate quantity of the material under examination. Thus, in the aſſay of gold or ſilver, the baſer metals are conſidered as of no value or conſequence; and the problem to be reſolved is ſimply, how much of each is contained in the ingot or piece of metal intended to be aſſayed. The French government has from time to time cauſed various experimental enquiries to be made reſpecting the art of aſſaying gold, which have thrown much light on this ſubject, and greatly tend to produce uniformity in the reſults of the operation. Theſe experiments, and the whole proceſs of aſſaying, is given under the article Chemistry.

Assay, in muſic, is a word which is always joined with ſome other word to leſſen or weaken the ſtrength or ſignification of the words it is joined with; as, for example, when it is joined to either of the words *adagio*, *grave*, or *largo*, all which denote a ſlow movement, it ſignifies, that the muſic muſt not be performed ſo ſlow as each of thoſe words would require, if alone; but, if it be joined with either of theſe words that follow, *vivace*, *allegro*, or *preſto*, all which three denote a quick movement, then it denotes that the muſic muſt not be performed quite ſo briſk or quick as each of thoſe words, if alone, does require.

Assay of Weights and Measures, in law, is the examination of weights and meaſures, by clerks of markets, &c.

To Assay, *v. a.* [*eſſayer*, Fr.] To make trial of; to make experiment of:

One that to bounty never caſt his mind,
Ne thought of honour ever did *aſſay*
His baſer breaſt. *Spenſer.*

To apply to, as the touchſtone in *aſſaying* metals:

Whom thus afflicted when ſad Eve beheld,
Deſolate where ſhe ſat, approaching nigh,
Soft words to his fierce paſſion ſhe *aſſay'd*. *Milton.*

To try; to endeavour.—David girded his ſword upon his armour, and he *aſſayed* to go, for he had not proved it. 1 *Sam.* xvii. 39.

Assay-balance. See Balance.

ASSAY'ER, *ſ.* An officer of the mint, for the due trial of ſilver, appointed indifferently between the maſter of the mint and the merchants that bring ſilver thither for exchange. An aſſayer is alſo appointed to the goldſmiths' company, who is a ſort of aſſiſtant warden, called a *touch-warden*, appointed to ſurvey, aſſay, and mark, all the ſilver-work, &c. committed to him. There are alſo aſſay-maſters appointed by ſtatute at York, Exeter, Briſtol, Cheſter, Norwich, Newcaſtle, and Birmingham, for aſſaying wrought plate. The aſſay-maſter is to retain eight grains of every pound troy of ſilver brought to him; four whereof are to be put in the pix, or box of deal, to be re-aſſayed the next year, and the other four to be allowed him for his waſte and ſpillings.

ASSECTA'TION, *ſ.* [*aſſectatio*, Lat.] Attendance, or waiting upon.

ASSECU'TION, *ſ.* [from *aſſequor, aſſecutum*, Lat. to obtain.] Acquirement; the act of obtaining.—By the canon-law, a perſon, after he has been in full poſſeſſion of a ſecond benefice, cannot return again to his firſt; becauſe it is immediately void by his *aſſecution* of a ſecond. *Ayliffe.*

AS'SE LE BERANGER', a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Evron, one league eaſt of Evron.

Asse le Boi'vre, a town of France, in the department of the Sarte, and chief place of a canton, in the diſtrict of Frenay le Viſcomte, eight miles ſouth-ſouth-weſt of Alençon.

ASSE'LO, a town of Perſia, in the province of Farſiſtan, on the north coaſt of the Perſian gulf, forty-ſeven leagues ſouth of Schiras.

AS'SELYN (John), a famous Dutch painter, was born in Holland, and became the diſciple of Vandevelde, the battle-painter. He diſtinguiſhed himſelf in hiſtory-paintings, battles, landſcapes, animals, and particularly horſes. He travelled into France and Italy; and was ſo pleaſed with the manner of Bambochio, that he always followed it. He painted many pictures at Lyons, where he married the daughter of a merchant at Antwerp, and returned with her to Holland. Here he firſt diſcovered to his countrymen a new manner of painting landſcapes like Claude Lorraine; upon which all the painters imitated his ſtyle, and reformed the dark brown they had hitherto followed. Aſſelyn's pictures were ſo much admired at Amſterdam, that they ſold at a high price. He died in that city in 1660. Twenty-four pieces of landſcapes and ruins, which he painted in Italy, have been engraved by Perelle.

ASSEM'BLAGE, *ſ.* [*aſſemblage*, Fr.] A collection; a number of individuals brought together. It differs from *aſſembly*, by being applied only, or chiefly, to things; *aſſembly* being uſed only, or generally, of perſons.—All that we amaſs together in our thoughts is poſitive, and the *aſſemblage* of a great number of poſitive ideas of ſpace or duration. *Locke.*—The ſtate of being aſſembled:

O Hartford, fitted or to ſhine in courts
With unaffected grace, or walk the plains
With innocence and meditation join'd
In ſoft *aſſemblage*, liſten to my ſong! *Thomſon.*

To ASSEM'BLE, *v. a.* [*aſſembler*, Fr.] To bring together into one place. It is uſed both of perſons and things.—And he ſhall ſet up an enſign for the nations, and ſhall *aſſemble* the outcaſts of Iſrael, and gather together the diſperſed of Judah. *Iſaiah*, xi. 12.

To Assemble, *v. n.* To meet together.—Theſe men *aſſembled*, and found Daniel praying. *Daniel.*

ASSEM'BLY, *ſ.* [*aſſemblée*, Fr.] A company met together; a dance; a rout; a ball:

They had heard, by fame,
Of this ſo noble and ſo fair *aſſembly*,
This night to meet here. *Shakeſpeare.*

Assembly, in law, is, when three perſons or more aſſemble themſelves together, with intent mutually to aſſiſt each other, againſt any who ſhall oppoſe them, in the execution of ſome enterpriſe of a private nature, with force or violence, againſt the peace, or to the terror of the people, whether the act intended was of itſelf lawful or unlawful. If, after their meeting, they ſhall move forward towards the execution of any ſuch act, whether they put it in execution or not, it is then a *rout*; and, if they execute ſuch a thing in deed, then it is a *riot*. 1 *Hawk.* 155. See Riot.

Assembly, in the military art, the ſecond beating of a drum before a march; at which the ſoldiers ſtrike their tents, roll them up, and ſtand to their arms.

ASSENE'DE, a town of Flanders, one mile ſouth-weſt of Sas de Ghent.

AS'SENHEIM, a town of Germany, in the circle of the Upper Rhine, and county of Solms Rodelheim, at the conflux of the Wetter and the Nidda, eleven miles north-eaſt of Frankfort on the Mayne, and twenty-eight eaſt-north-eaſt of Mentz. Lat. 50. 11. N. lon. 26. 36. E. Ferro.

AS'SENS, a ſea-port town of Denmark, on the weſt coaſt of the iſland of Funen, with a good harbour in the Little Belt. Lat. 55. 20. N. lon. 27. 40. E. Ferro.

ASSENT', *ſ.* [*aſſenſus*, Lat.] The act of agreeing to any thing.—All the arguments on both ſides muſt be laid in balance, and, upon the whole, the underſtanding determine its *aſſent*. *Locke.*—Conſent; agreement.—To urge any thing upon the church requiring thereunto that religious *aſſent* of Chriſtian belief, wherewith the words of the holy prophets are received, and not to ſhew it in ſcripture; this did the fathers evermore think unlawful, impious, and execrable. *Hooker.*

To Assent, *v. n.* [*aſſentire*, Lat.] To concede; to yield to, or agree to.—And the Jews alſo *aſſented*, ſaying, that theſe things were ſo. *Acts*, xxiv. 9.

ASSENTA'TION, *ſ.* [*aſſentatio*, Lat.] Compliance with the opinion of another out of flattery or diſſimulation.

ASSENT'MENT, *ſ.* Conſent.—Their arguments are but precarious, and ſubſiſt upon the charity of our *aſſentments*. *Brown.*

AS'SER, (John), or Asse'rius Meneven'sis, that is, "Aſſer of St. David's," biſhop of Shirburn in the reign of Alfred the Great. He was born in Pembrokeſhire, and educated in the monaſtery of St. David's by the archbiſhop Aſſerius, who, according to Leland, was his kinſman. In this monaſtery he became a monk, and by his aſſiduous application ſoon acquired great learning and abilities. Alfred, the munificent patron of genius, about the year 880, ſent for him to court. The king was then at Dean in Wiltſhire. He was ſo charmed with Aſſer, that he made him his preceptor and companion. As a reward for his ſervices, he appointed him abbot of different monaſteries; and at laſt promoted him to the epiſcopal ſee of Shirburn, where he died and was buried in the year 910. He was, ſays Pits, a man of genius, modeſty, learning, and integrity of life. He is ſaid to have been principally inſtrumental in perſuading the king to reſtore the univerſity of Oxford to its priſtine dignity and luſtre. He wrote, De Vita et rebus Geſtis Alfredi, &c. Lond. 1574, publiſhed by archbiſhop Parker, in the old Saxon character, at the end of Walſinghami Hiſt. Francf. 1602, fol. Oxf. 1722, 8vo. Many other works are aſcribed to him, but all doubtful.

ASSERA'DOES, a ſmall iſland near the weſt coaſt of North America, at the mouth of the bay of Realejo, in the province of Nicaragua.

ASSE'RIA, a town of Liburnia. See Asisia.

ASSERI'GO, a town of Italy, in the kingdom of Naples, and province of Abruzzo Ultra, ſeven miles north-eaſt of Aquila.

To ASSERT', *v. a.* [*aſſero*, Lat.] To maintain; to defend either by words or actions.—Your forefathers have *aſſerted* the party which they choſe till death, and died for its defence. *Dryden.*—To affirm; to declare poſitively. To claim; to vindicate a title to:

Nor can the groveling mind,
In the dark dungeon of the limbs confin'd,
Aſſert the native ſkies, or own its heav'nly kind. *Dryden.*

ASSER'TION, *ſ.* The act of aſſerting. Poſition advanced.

ASSERT'IVE, *adj.* Poſitive; dogmatical; peremptory.—He was not ſo fond of the principles he undertook to illuſtrate, as to boaſt their certainty; propoſing them not in a confident and *aſſertive* form, but as probabilities and hypotheſes. *Glanville.*

ASSERT'OR, *ſ.* Maintainer; vindicator; ſupporter; affirmer:

Among th' *aſſertors* of free reaſon's claim,
Our nation's not the leaſt in worth or fame. *Dryden.*

To ASSER'VE, *v. a.* [*aſſervio*, Lat.] To ſerve, help, or ſecond.

To ASSESS', *v. a.* [from *aſſeſtare*, Ital. to make an equilibrium, or balance.] To charge with any certain ſum.—Before the receipt of them in this office, they were *aſſeſſed* by the affidavit from the time of the inquiſition found. *Bacon.*

ASSES'SION, *ſ.* [*aſſeſſio*, Lat.] A ſitting down by one, to give aſſiſtance or advice.

ASSESS'MENT, *ſ.* The ſum levied on certain property. The act of aſſeſſing.—What greater immunity and happineſs can there be to a people, than to be liable to no laws, but what they make themſelves? To be ſubject to no contribution, *aſſeſſment*, or any pecuniary levy whatſoever, but what they vote and voluntarily yield unto themſelves? *Howel.*

ASSES'SOR, *ſ.* [*aſſeſſor*, Lat.] The perſon that ſits by another: generally uſed of thoſe who aſſiſt the judge:

Minos, the ſtrict inquiſitor, appears;
And lives and crimes, with his *aſſeſſors*, hears:
Round in his urn the blended balls he rolls,
Abſolves the juſt, and dooms the guilty, ſouls. *Dryden.*

He that ſits by another as next in dignity. He that lays taxes: derived from *aſſeſs*.

ASSETS, *ſ. without the ſingular.* [from *aſſez*, Fr. enough.] In law, is of two kinds; the one aſſets *by deſcent*, the other aſſets *in hand*. Aſſets by deſcent is, where a man is bound in an obligation, and dies ſeiſed of lands in fee ſimple, which deſcend to his heir, then this land ſhall be called aſſets, that is, *enough*, or ſufficient to pay the ſame debt; whether he remains in poſſeſſion of the land, or hath aliened it before action brought; therefore, if a man covenants for himſelf and his heirs, to keep my houſe in repair, I can then (and then only) compel his heir to perform this covenant, when he hath an eſtate ſufficient for this purpoſe, or aſſets, by deſcent from the covenantor; for, though the covenant deſcends to the heir whether he inherits any eſtate or not, it lies dormant, and is not compulſatory, until he hath aſſets by deſcent. 2 *Blackſt.* 243. Aſſets in hand is, when a man in like manner indebted makes executors, and leaves them ſufficient to pay; or ſome commodity or profit is come unto them in right of their teſtator; this is called aſſets in their hands. *T. L.* There is alſo another diviſion of aſſets, into *legal* and *equitable* aſſets: legal aſſets are ſuch as are liable to debts and legacies by the courſe of law; equitable aſſets are ſuch as are only liable by the help of a court of equity. So alſo there are *real* and *perſonal* aſſets: real aſſets are ſuch as concern the land; perſonal are ſuch as concern the perſonal eſtate only.

As to aſſets by deſcent, it is to be obſerved, that by the common law, if an heir had ſold or aliened the lands which were aſſets, before the obligation of his anceſtor was put in ſuit, he was to be diſcharged, and the debt was loſt: but by the ſtatute, 3 Will. & Mary, c. 14, made perpetual by 6 Will. III. c. 14, the heir is made liable to the value of the land by him ſold, in action of debt brought againſt him by the obligee, who ſhall recover to the value of the ſaid land, as if the debt was the proper debt of the heir; but the land which is ſold or aliened *bonâ fide* before the action brought, ſhall not be liable to execution upon a judgment recovered againſt the heir in any ſuch action. And by ſtat. 29 Car. II. c. 3, land of *ceſtuy que truſt* ſhall be aſſets by deſcent; and, by the ſame ſtatute, eſtates *pur autre vie* ſhall be aſſets in the hands of the heir, if it come to him by reaſon of a ſpecial occupancy; and, where there is no ſpecial occupant, it ſhall go to the executors or adminiſtrators of the party that had the eſtate thereof by virtue of the grant, and ſhall be aſſets in their hands. Where a man binds himſelf and his heirs in a bond, and dies, leaving iſſue two ſons; if the eldeſt ſon enters on the lands by deſcent as heir to the father, and die without iſſue, and then the youngeſt ſon enters, he ſhall be charged with aſſets as heir to the father. *Dyer*, 368. Lands which come to the heir by purchaſe ſhall not be aſſets; for it is only lands by deſcent that are aſſets. 1 *Danv. Abr.* 577. A reverſion in fee, depending upon an eſtate-tail, is not aſſets; becauſe it lies in the will of the tenant in tail to dock and bar it by fine, &c. 6 *Rep.* 56. But, after the tail is ſpent, it is aſſets. 3 *Mod.* 257. And a reverſion on an eſtate for life or years ſhall be aſſets. A reverſion expectant upon the determination of an eſtate for life is aſſets, and ought to be pleaded ſpecially by the heir; and the plaintiff in ſuch caſe may take judgment of it *cum acciderit*. *Dyer*, 371. *Carthew*, 129. An advowſon is aſſets; but not a preſentation to a church actually void, which may not be ſold. *Co. Lit.* 374. And lands by deſcent in ancient demeſne will be aſſets in debt. But a copyhold eſtate deſcending to an heir is not aſſets; nor is any right to an eſtate aſſets, without poſſeſſion, &c. till recovered and reduced into poſſeſſion. *Danv.* 577. An annuity is no aſſets, for it is only a *choſe en action*. Equity of redemption of an eſtate mortgaged, and a term for years to attend the inheritance are aſſets. 3 *Leon.* 32. An heir may plead *riens per deſcent*, but the plaintiff may reply that he had lands from his anceſtor; and ſpecial matter may be given in evidence, &c. 5 *Rep.* 60. A ſpecial judgment againſt aſſets ſhall only have relation to, and bind, the land from the time of filing the original writ or bill. *Carth.* 245.

It is a rule in equity, that perſonal aſſets muſt be firſt applied to ſatisfy the ſpecialty debt; and, if deficient, the heir ſhall be charged for the real aſſets deſcended to him; and, if theſe are deficient, then the deviſee of an eſtate deviſed to him by the deceaſed is liable. 2 *Atk.* 434.

To ASSE'VER, or ASSE'VERATE, *v. a.* [*aſſevero*, Lat.] To affirm with great ſolemnity, as upon oath.

ASSEVERA'TION, *ſ.* Solemn affirmation, as upon oath.—Another abuſe of the tongue I might add; vehement *aſſeverations* upon ſlight and trivial occaſions. *Ray.*

ASS'HEAD, *ſ.* [from *aſs* and *head*.] One ſlow of apprehenſion; a blockhead.—Will you help an *aſshead*, and a coxcomb, and a knave, a thin-faced knave, a gull? *Shak.*

ASSHE'TON (William), an eminent divine, born in 1641, and educated at Oxford. After entering into orders, he became chaplain to the duke of Ormond, and was admitted doctor of divinity in 1673. Soon after, he was nominated to a prebend in the church of York, preſented to the living of St. Antholin, London, and to the rectory of Beckenham in Kent. He was the firſt projector of the ſcheme for providing for clergymens widows, and others, by a jointure payable out of the mercers company. He wrote ſeveral pieces againſt the Papiſts and diſſenters, and ſome devotional tracts. He died at Beckenham in September in 1711, in the 70th year of his age.

ASSIDE'ANS, or CHASIDÆANS, [from חסידים Heb. merciful, pious.] Thoſe Jews who reſorted to Mattathias to fight for the law of God and the liberties of their country. They were men of great valour and zeal, having voluntarily devoted themſelves to a more ſtrict obſervation of the law than other men. For, after the return of the Jews from the Babyloniſh captivity, there were two ſorts of men in their church; thoſe who contented themſelves with that obedience only which was preſcribed by the law of Moſes, and who were called *Zadikim*, i. e. the "righteous;" and thoſe who, over and above the law, ſuperadded the conſtitutions and traditions of the elders, and other rigorous obſervances: theſe latter were called *Chaſidim*, i. e. the "pious." From the former ſprung the Samaritans, Sadducees, and Caraites; from the latter, the Phariſees and the Eſſenes.

AS'SIDENT SIGNS, in medicine, are ſymptoms which uſually attend a diſeaſe, but not always; hence differing from *pathognomic* ſigns, which are inſeparable from the diſeaſe; e. gr. in the pleuriſy, a pungent pain in the ſide: in an acute fever, difficulty of breathing, &c. collectively taken, are pathognomic ſigns; but that the pain extends to the hypochondrium or clavicle, or that the patient lies with more eaſe on one ſide than on the other, are *aſſident* ſigns.

ASSIDU'ITY, *ſ.* [*aſſiduité*, Fr. *aſſiduitas*, Lat.] Diligence; cloſeneſs of application.—I have, with much pains and *aſſiduity*, qualified myſelf for a nomenclator. *Addiſon.*

"*Aſſiduity* makes all things eaſy." *Aſſiduità genera facilta*, Ital. The Latins ſay, *Gutta cavat lapidem*: a drop can hollow a ſtone in time. The Germans, *Mit gemach gehem kimmt man auch weit*: fair and ſoftly goes far. There is hardly any thing, though at firſt appearance it may ſeem ever ſo difficult, but what time and application will overcome; witneſs innumerable particulars in the ſciences, as well as in the common occurrences of life, now made eaſy, which have been formerly thought impracticable.

Assiduity is emblematically deſcribed by an elderly woman, holding an hour-glaſs in both hands, and ſtanding by a rock encompaſſed with ivy. Her age denotes, that time and labour are continually deſtroying us; and therefore ſhe holds an hour-glaſs, which requires her diligence in turning and often moving it, leſt it ſtop.

ASSI'DUOUS, *adj.* [*aſiduus*, Lat.] Conſtant in application.—In ſummer, you ſee the hen giving herſelf greater freedoms, and quitting her care for above two hours together; but, in winter, when the rigour of the ſeaſon would chill the principles of life, and deſtroy the young one, ſhe grows more *aſſiduous* in her attendance, and ſtays away but half the time. *Addiſon.*

ASSI'DUOUSLY, *adv.* Diligently; continually.—The habitable earth may have been perpetually the drier, ſeeing it is *aſſiduouſly* drained and exhauſted by the ſeas. *Bentley.*

ASSI'DUUS, or Adsiduus, *ſ.* among the Romans, denoted a rich or wealthy perſon. The word in this ſenſe is derived from *as aſſis*, q. d. a monied man. Hence we meet with *aſſiduous* ſureties, *aſſidui fidejuſſores*; anſwering to what the French call city ſureties or ſecurities, *cautions bourgeois.* When Servius Tullius divided the Roman people into five claſſes, according as they were aſſeſſed or taxed to the public, the richer ſort who contributed aſſes were denominated *aſſidui*; and, as theſe were the chief people of buſineſs who attended all the public concerns, thoſe who were diligent in attendances came to be denominated *aſſidui.*

To ASSIE'GE, *v. a.* [*aſſieger*, Fr.] To beſiege. *Obſolete.*

ASSIEN'TO, *ſ.* A Spaniſh word ſignifying a "farm," in commerce, is uſed for a bargain between the king of Spain and other powers, for importing negroes into the Spaniſh dominions in America, and particularly to Buenos Ayres. The firſt aſſiento was made with the French Guinea company; and, by the treaty of Utrecht, transferred to the Engliſh, who were to furniſh 4800 negroes annually.

To ASSIGN', *v. a.* [*aſſigner*, Fr. *aſſigno*, Lat.] To mark or ſet out; to appoint.—He *aſſigned* Uriah unto a place where he knew that valiant men were. 2 *Sam.* xi. 16.—True quality is neglected, virtue is oppreſſed, and vice triumphant. The laſt day will *aſſign* to every one a ſtation ſuitable to his character. *Addiſon.*—To fix with regard to quantity or value.—There is no ſuch intrinſic, natural, ſettled, value in any thing, as to make any *aſſigned* quantity of it conſtantly worth any *aſſigned* quantity of another. *Locke.*

To Assign, in law, is to ſet over a right to another, or appoint a deputy, &c. another ſpecial, to ſet forth or point at; as to aſſign error, aſſign falſe judgment, waſte, &c. And in aſſigning of error, it muſt be ſhewn where the error is committed; in falſe judgment, wherein the judgment is unjuſt; in waſte, wherein eſpecially the waſte is done. *Reg. Orig.* 72. Alſo juſtices are ſaid to be aſſigned to take aſſizes. Stat. 11 Hen. VI. c. 2.

ASSIGN'ABLE, *adj.* That which may be marked out, or fixed.—Ariſtotle held that it ſtreamed by connatural reſult and emanation from God; ſo that there was no inſtant *aſſignable* of God's eternal exiſtence, in which the world did not alſo co-exiſt. *South.*

ASSIGNAT', *ſ.* [from *aſſigner*, Fr. to aſſign over.] A ſpecies of paper-money iſſued by the convention of France, in order to raiſe a fund for the purpoſe of carrying on the revolutionary war. The ſtability of this fund was to ariſe out of the ſale of the church and crown lands, and the confiſcated eſtates of the emigrants, all of which were ſeiſed by the convention, and held in truſt for the public. When aſſignats were firſt iſſued, they maintained their credit pretty well, as long as it was underſtood that there was landed property in the hands of the public equal in value to the ſum for which they were put into circulation; but, when the emiſſion was multiplied to many hundred millions of livres beyond the poſſible value of all the above reſources, and many millions of forged aſſignats were alſo in circulation, a moſt aſtoniſhing depreciation took place. The convention, with a view to retrieve the falling credit of this paper-money, paſſed decrees for making it penal in any one to pay away an aſſignat for leſs than its nominal value; and they alſo eſtabliſhed what was called the *maximum*, for fixing a price on all ſorts of goods, beyond which no buyer was to give, nor the ſeller to refuſe, the ſum in aſſignats. This decree, however, had but a partial effect; for the depreciation afterwards became ſo conſiderable, that 1125 livres in aſſignats, were commonly paid for a dinner of two removes, which would coſt only eighteen livres in money. And the watermen, at a particular paſſage over the Seine, who had uſually charged a hundred livres for a veſſel to croſs the river, abſolutely refuſed the hire, unleſs they were paid 40,000 livres in aſſignats! This may be thought a matter of ſurpriſe; and yet we ſee an almoſt ſimilar event in the fluctuation of the Engliſh funds, in which the nominal ſum of 100l. has been worth no more than 48l. in ſpecie. All this, however, is accounted for very naturally. Under a permanent and peaceful government, the eſtates and ſecurities which form the fund generally maintain their value; and ſo of courſe does the paper which is the ſign or repreſentative of thoſe eſtates or ſecurities, as we ſee in the bank-notes of England. But ſo ſoon as the land, or the thing repreſented, ſhall be deemed a bad ſecurity, and be rendered ſtill more precarious by the expenſive and unforeſeen events of a deſtructive war, can there be any cauſe for ſurpriſe that the thing which repreſents it ſhould not ſtand high in public eſtimation?

ASSIGNA'TION, *ſ.* [*aſſignation.* Fr.] An appointment to meet: uſed generally of love appointments.—The lovers expected the return of this ſtated hour with as much impatience as if it had been a real *aſſignation. Spectator.*—A making over a thing to another.

ASSIGNEE', *ſ.* [*aſſignatus*, Lat.] A perſon who is deputed or appointed by the act of the party, or the operation of law, to do any act, or enjoy any benefit, on their own accounts and riſks: an aſſignee being one that poſſeſſes a thing in his own right; but a deputy, he that acts in right of another. *Perkins.* Aſſignee by deed is, when a leſſee of a term, &c. ſells and aſſigns the ſame to another, that other is his aſſignee by deed. Aſſignee in law is he whom the law ſo makes, without any appointment of the perſon; as an executor is aſſignee in law to the teſtator. *Dyer* 6. But, if there be aſſignee in deed, aſſignee in law is not allowed. If one covenant to do a thing to J. S. or his aſſigns by a day, and before that day he dies; if before the day he name any aſſignee, the thing muſt be done to his aſſignee named; otherwiſe to his executor or adminiſtrator, who is aſſignee in law. 27 Hen. VIII. 2. He is called aſſignee, who hath the whole of the eſtate of the aſſignor; and an aſſignee, though not named in a condition, may pay the money to ſave the land; but he ſhall not receive any money, unleſs he be named. *Co. Lit.* 215. Aſſignees may take advantage of forfeitures on conditions, when they are incident to the reverſion, as for rent, &c. 1 *And.* 82. What covenants affect or benefit aſſignees. See Covenant.

Under the word *aſſigns*, ſhall be included the aſſignee of an aſſignee *in perpetuum*, the heir of an aſſignee, or the aſſignee of an heir. *Co. Lit.* 384 b. So the aſſignee of an aſſignee's executor. 2 *Show.* 57. And a deviſee. 2 *Show.* 39. But if an obligation be, to pay ſuch perſons as he ſhall name by his will, or writing; there muſt be an expreſs nomination, and his executor ſhall not take as aſſignee. *Mo.* 855. An adminiſtrator is an aſſignee. *Moor*, 44.

ASSIGN'ER, *ſ.* He that appoints.—The goſpel is at once the *aſſigner* of our taſks, and the magazine of our ſtrength. *Decay of Piety.*

ASSIGN'MENT, *ſ.* Appropriation of one thing to another thing or perſon.—The only thing which maketh any place public, is the public *aſſignment* thereof unto ſuch duties. *Hooker.*

Assignment, in law, is the ſetting over or transferring the intereſt a man hath in any thing to another. Aſſignments may be made of lands in fee, for life, or years;

of an annuity, rent-charge, judgment, ſtatute, &c. but as to lands they are uſually of leaſes and eſtates for years, &c. And by the ſtatute of frauds, ſtat. 29 Car. II. c. 3, no eſtate of freehold, or term for years, ſhall be aſſigned but by deed in writing ſigned by the parties; except by operation of law. A poſſibility, right of entry, title for condition broken, a truſt, or thing in action, cannot be granted or aſſigned over. *Co. Litt.* 214. But though a bond, being a *choſe in action*, cannot be aſſigned over ſo as to enable the aſſignee to ſue in his own name, yet he has by the aſſignment ſuch a title to the paper and wax, that he may keep or cancel it. *Co. Lit.* 232. And in the aſſignment of bonds, &c. is always contained a power of attorney to receive and ſue in the aſſigner's name. Alſo in equity a bond is aſſignable for a valuable conſideration paid, and the aſſignee alone becomes entitled to the money; ſo that, if the obligor, after notice of the aſſignment, pays the money to the obligee, he will be compelled to pay it over again. 2 *Vern.* 595. In the caſe of a policy of inſurance, the court of K. B. will ſo far take notice of an aſſignment, as to permit an action to be brought in the name of the aſſigner. 1 *Term Rep.* 26. And the aſſigner who has become a bankrupt may ſue the debtor for the benefit of the aſſignee. *Id.* 619.

Though a poſſibility or contingent intereſt be not grantable at law, yet (whether in real or perſonal eſtate) it is tranſmiſſible and deviſeable. *Cro. Jac.* 509. The caſes in the books, 1 *C. R.* 18, 2 *P. Wms.* 608, abundantly prove, that intereſts in contingency, reſpecting perſonal eſtates, are aſſignable in equity; but, it may be material to obſerve, that in the caſe of aſſignments of ſuch intereſts, equity requires the aſſignee to ſhew that he gave a valuable conſideration for the intereſt aſſigned; and therefore will not interpoſe to aſſiſt volunteers. But courts of equity will eſtabliſh aſſignments of contingent intereſts againſt executors, adminiſtrators, or heirs at law, even where ſuch aſſignments are made, not for conſideration of money, but in conſideration of love and affection, and advancement of children. 1 *Vez.* 409. *Fonblanque's Treatiſe of Equity*, i. 203.

An aſſignee muſt take the ſecurity aſſigned, ſubject to the ſame equity that it was in the hands of the obligee; as if on a marriage treaty the intended huſband enters into a marriage-brokage bond, which is afterwards aſſigned to creditors, yet it ſtill remains liable to the ſame equity, and is not to be carried into execution againſt the obligor. 2 *Vern.* 428. Where there is a bond for the performance of the covenants in a leaſe, if the leſſee aſſigns the leaſe, he may likewiſe aſſign the bond; but this muſt before any of the covenants are broken; but, if any of the covenants are broken, and the leſſee afterwards aſſigns the leaſe and bond, and the aſſignee puts the bond in ſuit, for thoſe breaches, it is maintenance. *Godb.* 81.

It is enacted by the ſtatute 7 Jac. I. c. 15, "That a debtor to the king ſhall not aſſign any debts to him, but ſuch as did originally grow due to the debtor;" afterwards there was a debtor to the huſband in 2000l. by a ſtatute; the huſband made his wife executrix, and died; ſhe married again one G. D. who was indebted to the king, and then the huſband and wife aſſigned this ſtatute to the king in ſatisfaction of the debt due to him; adjudged, that the aſſignment was good, for, though the ſecond huſband had the ſtatute in right of his wife, and by conſequence the debt was not originally due to him, yet, becauſe he might releaſe the ſtatute, it is the ſame thing as if it had been originally taken in his name. 2 *Cro.* 324.

An office of truſt is not grantable or aſſignable to another; and therefore it was adjudged, that the office of a *filazer*, which was an office of truſt, could not be aſſigned; nor could it be extended upon a ſtatute. *Dyer*, 7. A bare power is not aſſignable, but where it is coupled with an intereſt it may be aſſigned. 2 *Jon.* 206, 2 *Mod.* 317. Arrears of rent, &c. is a *choſe in action*, and not aſſignable. *Skin.* 6. It hath been doubted if a leaſe for years, before entry and poſſeſſion, be aſſignable. *Show.* 291. A leſſee out of poſſeſſion cannot make any aſſignment of his term off the land, but muſt firſt enter, and re-continue his poſſeſſion; or ſeal and deliver the deed upon the land, which puts the aſſignee into actual poſſeſſion. *Daliſ.* 81. But it has been adjudged that where leſſee for years of the crown is put out of his eſtate by a ſtranger, yet he may aſſign the term, though he is not in poſſeſſion; becauſe, the reverſion being in the crown, he cannot lawfully be put out of poſſeſſion, but at his own will. *Cro. Eliz.* 275.

If leſſee for years aſſign all his term in his leaſe to another, he cannot reſerve a right in the aſſignment, for he hath no intereſt in the thing by reaſon of which the rent reſerved ſhould be paid; and where there is no reverſion there can be no diſtreſs: but debt may lie upon it, as on a contract. 1 *Lill. Abr.* 99. Where the executor of a leſſee aſſigns the term, debt will not lie againſt him for rent incurred after the aſſignment; becauſe there is neither privity of contract nor eſtate between the leſſor and the executor: but, if the leſſee himſelf aſſigns his leaſe, the privity of contract remains between him and the leſſor, altho' the privity of eſtate is gone by the aſſignment, and he ſhall be chargeable during his life; but, after his death, the privity of contract is likewiſe determined. 3 *Rep.* 14, 24. Although a leſſee make an aſſignment over of his term, yet debt lies againſt him by the leſſor or his heir, (not having accepted rent from the aſſignee;) but, where a leſſee aſſigns his term, and the leſſor his reverſion, the privity is determined, and debt doth lie for the reverſioner againſt the firſt leſſee. *Moor*, 472. Vide Barker *v.* Dormer. 1 *Sho.* 191.

A man made a leaſe, provided that the leſſee or his aſſigns ſhould not alien the premiſes without licence of the leſſor, &c. who after gave licence to the leſſee to alien; by this the leſſee or his aſſigns may alien *in infinitum*. 4 *Rep.* 119. Adjudged, that ſome things in reſpect of their nature are not aſſignable, or to be granted over; as, for inſtance, if the donee in tail holdeth of the donor by fealty, he cannot aſſign it over to another, becauſe fealty is incident to, and inſeparable from, the reverſion; ſo if the founder of a college grant his foundation, though it be to the king, the grant is void, becauſe it is inſeparable from his blood. 11 *Rep.* 66 b, in Magdalen College's caſe.

Several things are aſſignable by acts of parliament, which ſeem not aſſignable in their own nature; as promiſſory notes and bills of exchange by ſtat. 3 & 4 Ann. c. 9; bail-bonds by the ſheriff, by 4 & 5 Anne, c. 16; a judge's certificate for taking and proſecuting a felon to conviction, by 10 & 11 Will. III. c. 23; a bankrupt's effects by the ſeveral ſtatutes of bankruptcy. A leaſe was made for years of lands, excepting woods; the leſſor grants the trees to the leſſee, and he aſſigns the land over to another; the trees do not paſs by this aſſignment to the aſſignee. *Goldſb.* 188. Where tenant for years aſſigns his eſtate, no conſideration is neceſſary; for the tenant being ſubject to payment of rent, &c. is ſufficient to veſt an eſtate in the aſſignees: in other caſes ſome conſideration muſt be paid. 1 *Mod.* 263. The words required in aſſignments are, *grant*, *aſſign*, and *ſet over*; which may amount to a grant, feoffment, leaſe, releaſe, confirmation, &c. 1 *Inſt.* 301. In theſe deeds the aſſigner is to covenant to ſave harmleſs from former grants, &c. That he is owner of the land, and hath power to aſſign; that the aſſignee ſhall quietly enjoy, and to make further aſſurance; and the aſſignee covenants to pay the rent, and perform the covenants, &c.

ASSIM'ILABLE, *adj.* [from *aſſimilate.*] That which may be converted to the ſame nature with ſomething elſe.

To ASSI'MILATE, *v. n.* [*aſſimilo*, Lat.] To perform the act of converting food to nouriſhment.—Birds *aſſimilate* leſs, and excern more, than beaſts; for their excrements are ever liquid, and their fleſh generally more dry. *Bacon.*

To ASSIMILATE, *v. a.* To bring to a likeneſs, or reſemblance.—A ferine and neceſſitous kind of life would eaſily *aſſimilate* at leaſt the next generation to barbariſm and ferineneſs. *Hale.*—To turn to its own nature by digeſtion.—Hence alſo animals and vegetables may *aſſimilate* their nouriſhment; moiſt nouriſhment eaſily changing its texture, till it becomes like the denſe earth. *Newton.*

ASSI'MILATENESS, *ſ.* Likeneſs.

ASSIMILA'TION, *ſ.* The act of converting any thing to the nature of another. The ſtate of being aſſimilated, or becoming like ſomething elſe.—It is as well the inſtinct as duty of our nature, to aſpire to an *aſſimilation* with God; even the moſt laudable and generous ambition. *Decay of Piety.*

ASSIMILATION, in phyſics, is that motion by which bodies convert other bodies related to them, or at leaſt ſuch as are prepared to be converted, into their own ſubſtance and nature. Thus, flame multiplies itſelf upon oily bodies, and generates new flame; air upon water, and produces new air; and all the parts, as well ſimilar as organical, in vegetables and animals, firſt attract with ſome election or choice, nearly the ſame common or not very different juices for aliment, and afterwards aſſimilate or convert them to their own nature.

To ASSI'MULATE, *v. a.* [*aſſimulo*, Lat.] To feign; to counterfeit.

ASSIMULA'TION, *ſ.* [*aſſimulatio*, Lat.] A diſſembling; a counterfeiting.

ASSI'SA CADE'RE, in law, ſignifies to be non-ſuited; as, when there is ſuch a plain and legal inſufficiency in a ſuit, that the complainant can proceed no further on it. *Fleta*, lib. iv. c. 15. *Bracton*, lib. ii. c. 7.

ASSISA CA'DIT IN JURA'TAM, is where a thing in controverſy is ſo doubtful, that it muſt neceſſarily be tried by a jury. *Fleta*, lib. iv. c. 15. See ATTAINT.

ASSISA CONTINUAN'DA, a writ directed to the juſtices of aſſiſe for the continuation of a cauſe, when certain records alleged cannot be produced in time by the party that has occaſion to uſe them. *Reg. Orig.* 217.

ASSISA PROROGAN'DA, is a writ directed to the juſtices aſſigned to take aſſiſes, for the ſtay of proceedings, by reaſon of the party's being employed in the king's buſineſs. *Reg. Orig.* 208.

ASSI'SE, *ſ.* [*aſſis*, Fr. The word is properly derived from *aſſideo*, Lat. to ſit together.] According to our ancient books, aſſiſe is defined to be an aſſembly of knights, and other ſubſtantial men, with the juſtice, in a certain place, and at a certain time appointed. *Cuſtum. Normand.* cap. 24. It is alſo taken for the court, place, and time, when and where the writs and proceſſes of aſſiſe are handled or taken. And in this ſignification aſſiſe is general; as, when the juſtices go their ſeveral circuits with commiſſion to take all aſſiſes; or ſpecial, where a ſpecial commiſſion is granted to certain perſons (formerly oftentimes done) for taking an aſſiſe upon one or two diſſeiſins only. *Bract.* lib. iii.

Concerning the general aſſiſe, all the counties of England are divided into ſix circuits; and two judges are aſſigned by the king's commiſſion to every circuit, who hold their aſſiſes twice a-year in every county, (except Middleſex, where the king's courts of record do ſit, and where his courts for his counties palatine are held;) and theſe judges have five ſeveral commiſſions. 1. Of oyer and terminer, directed to them and many other gentlemen of the county, by which they are empowered to try treaſons, felonies, &c. and this is the largeſt commiſſion. 2. Of gaol delivery, directed to the judges and the clerk of aſſiſe aſſociate, which gives them power to try every priſoner in the gaol committed for any offence whatſoever, but none but priſoners in the gaol; ſo that one way or other they rid the gaol of all the priſoners in it. 3. Of aſſiſe, directed to themſelves only, and the clerk of aſſiſe, to take aſſiſes, and do right upon writs of aſſiſe brought before them by ſuch as are wrongfully thruſt out of their lands and poſſeſſions; which writs were heretofore frequent, but now men's poſſeſſions are ſooner recovered by ejectments, &c. 4. Of *niſi prius*, directed to the judges and clerk of aſſiſe, by which civil cauſes grown to iſſue in the courts above, are tried in the vacation by a jury of twelve men of the county where the cauſe of action ariſes; and, on return of the verdict of the jury to the court above, the judges there give judgment. Theſe cauſes by the courſe of the courts are uſually appointed to be tried at Weſtminſter in ſome Eaſter or Michaelmas term, by a jury returned from the county wherein the cauſe of action ariſes; but with this proviſo, niſi prius, unleſs before the day prefixed, the judges of aſſize come into the county in queſtion. This they are ſure to do in the preceding vacation. 5. A commiſſion of the peace, in every county of the circuits; and all juſtices of the peace of the county are bound to be preſent at the aſſiſes; and ſheriffs are alſo to give their attendance on the judges, or they ſhall be fined. *Bacon's Elem.* 15, 16, &c. 3 *Comm.* 60, 269.

There is a commiſſion of the peace, oyer and terminer and goal delivery of Newgate, held eight times in a year, for the city of London and county of Middleſex, at Juſtice-hall in the Old Bailey, where the lord mayor is the chief judge. In Wales there are but two circuits, North and South Wales; for each of which the king appoints two perſons learned in the laws to be judges. Stat. 18 Eliz. c. 8. If juſtices ſit by force of a commiſſion, and do not adjourn the commiſſion, it is determined. 4 *Inſt.* 265.

The conſtitution of the juſtices of aſſiſe was begun by Hen. II. though ſomewhat different from what they now are: and by Magna Charta juſtices ſhall be ſent through every county once a year, who, with the knights of the reſpective ſhires, ſhall take aſſiſes of novel diſſeiſin, &c. in their proper ſhires, and what cannot be determined there ſhall be ended by them in ſome other place in their circuit; and, if it be too difficult for them, it ſhall be referred to the juſtices of the bench, there to be ended. 9 Hen. III. c. 12.

ASSISE, is likewiſe uſed for a jury, where aſſiſes of novel diſſeiſin are tried: the panels of aſſiſes ſhall be arrayed, and a copy indented delivered by the ſheriff, &c. to the plaintiffs and defendants ſix days before the ſeſſions, &c. if demanded, on pain of 40l. by ſtat. 6 Hen. VI. c. 2. And aſſiſe is taken for a writ for recovery of poſſeſſion of things immoveable, whereof any one and his anceſtors have been diſſeiſed. Likewiſe, in another ſenſe, it ſignifies an ordinance or ſtatute as *aſſiſa panis et cerviſiæ*. *Reg. Orig.* 279.

ASSISE of NO'VEL DISSEI'SIN, [*aſſiſa novæ diſſeiſinæ*, Lat.] An aſſiſe of novel diſſeiſin is a remedy *maximè feſtinum*, for the recovery of lands and tenements, of which the party was diſſeiſed. 2 *Inſt.* 410. And it is called novel diſſeiſin, becauſe the juſtices in *eyre* went their circuits from ſeven years to ſeven years; and no aſſiſe was allowed before them, which commenced before the laſt circuit, which was called an *ancient* aſſiſe; and that which was upon a diſſeiſin ſince the laſt circuit, and aſſiſe of *novel diſſeiſin*. *Co. Lit.* 153 b.

An aſſiſe is called *feſtinum remedium*. It lies where tenant in fee-ſimple, fee-tail, or for term of life, is put out and diſſeiſed of his lands, or tenements, rents, common of paſture, common way, or of an office, toll, &c. *Glanv.* lib. x. *Reg. Orig.* 197. Aſſiſe muſt be of an actual freehold in lands, &c. and not a freehold in law: it lieth of common of paſture, where the commoner hath a freehold in it, and the lord or other perſons feed it ſo hard, that all the graſs is eat up; but then the plaintiff muſt count and ſet forth how long the land was fed, and allege *per quod proficuum ſuum ibidem amiſit, &c.*, 9 *Rep.* 113. One may have an aſſiſe of land and rent, or of ſeveral rents, and offices and profits in his ſoil, all in one writ; and, if it be of a rent-charge, or rent-ſeck, it ſhall be general *de libero tenemento* in ſuch a place, and all the lands and tenements of the tenants charged ought to be named in the writ; but in aſſiſe for rent-ſervice it is otherwiſe. *Dyer*, 31. An aſſiſe may be brought for an office held for life; but then it muſt be an office of profit, not of charge only: of the toll of a mill, or market, aſſiſe lieth; though it may not be brought of ſuit to a mill. 8 *Rep.* 46, 47.

An aſſiſe was brought of the office of a filazer of the court of Common Pleas, and the demandant counted *de libero tenemento*, and alleged ſeiſin, by taking money for a *capias*, and the poſt was put in view where the officer ſat. *Dyer*, 114. An aſſiſe lieth of the office of regiſter of the admiralty, and the demandant laid a preſcription to it, viz.

quod quilibet hujuſmodi perſona, who ſhould be named by the admiral, ſhould be regiſter of the admiralty for life. *Dyer*, 153. It lieth of offices of woodward, park-keeper, and keeper of chaſes, warrener, &c. but theſe are not at common law; but, by the ſtat. of Weſt. ii. c. 25, becauſe they are of profits to be taken in *alieno ſolo*: it likewiſe lieth of all other offices and bailiwicks in fee. 8 *Rep.* 47. In an aſſiſe of a new office, it ought to be ſhewed what profits belong to it; but it is otherwiſe of an ancient office, becauſe it is preſumed, that the profit thereof is ſufficiently known. 8 *Rep.* 45, 49. Tenants in common ſhall each have a ſeveral aſſiſe for his moiety, or part, becauſe they are ſeiſed by ſeveral titles; but twenty jointenants ſhall have but one aſſiſe in all their names, becauſe they have but one joint title; ſo, if there are three jointenants, and one of them releaſeth all his right to one of his companions, and then the other two are diſſeiſed of the whole, they ſhall have but one aſſiſe in both their names, for the two parts, becauſe they had a joint title to it at the time of the diſſeiſin, and he to whom the releaſe was given ſhall have an aſſiſe in his own name, becauſe of that part he is tenant in common. *Co. Lit.* 196. If leſſee for years, or tenant at will, be ouſted, the leſſor, or he in remainder, may have aſſiſe, becauſe the freehold was in him at the time of the diſſeiſin. *Kel.* 109. Aſſiſe lies for tithes, by ſtat. 32 Hen. VIII. c. 7. *Cro. Eliz.* 559. But not for an annuity, penſion, &c. In ſome caſes an aſſiſe will lie, where ejectment will not. Ejectment will not lie *de piſcariâ*, by reaſon the ſheriff cannot deliver poſſeſſion of it; but an aſſiſe will lie for it, as it may be viewed by the recognitors. *Cro. Car.* 534. Aſſize will ſometimes lie where treſpaſs *vi & armis* doth not. 8 *Rep.* 47, 1 *Nelſ. Abr.* 276.

By Magna Charta, 9 Hen. III. c. 12, aſſiſes of novel diſſeiſin, &c. ſhall be taken in the proper counties, by the king's juſtices: and, for eſtovers of wood, profit taken in woods, corn to be received yearly in a certain place; and for toll, tonnage, &c. and of offices in fee, an aſſiſe ſhall be; alſo for common of turbary, and of fiſhing, appendant to freehold, &c. In an aſſiſe, the plaintiff muſt prove his title, then his ſeiſin and diſſeiſin: but ſeiſin of part of a rent is ſufficient to have aſſiſe of the whole; and if a man who hath title to enter ſet his foot upon the land and is ouſted, that is a ſufficient ſeiſin. As the writ of aſſiſe reſtores the party to the actual ſeiſin of his freehold, for ſo are the words of the writ, viz. *facias tenementum illud ſeiſiri, &c.* conſequently the party that brings the writ muſt found it upon an actual ſeiſin, which he has been diveſted of, for otherwiſe this remedy is not commenſurate to his caſe. 2 *Rol. Abr.* 463. Therefore if there be lord and tenant by rent-ſervice, and the lord grants the ſervices to another, and the tenant *attorns* by a penny, this, being given by way of attornment, is not ſufficient ſeiſin to ground an aſſiſe on; *ſecus* if the penny had been given by way of ſeiſin of the rent. *Lit ſect.* 565, *Co. Lit.* 315.

The firſt proceſs in this action is an original writ iſſued out of chancery, directed to the ſheriff, commanding him to return a jury, who are called the recognitors of the aſſiſe. An aſſiſe is to be arraigned on the day the writ is returnable, on which day the defendant is to count, and the tenant is to appear and plead inſtantly. *Style Reg.* 88. If in an aſſiſe no tenant of the freehold be mentioned, the defendant may plead it; and, where one defendant pleads, no tenant of the freehold named in the writ, if this is found, the writ ſhall abate *quead* all. *Dyer*, 207. On ſuch a plea of the defendant, the plaintiff ſays that he hath made a feoffment to perſons unknown, and he himſelf hath continually taken the profits; if then they are at iſſue upon the taking the profits, and it be found againſt the defendant, it ſhall not be inquired of the points of the aſſiſe, for the diſſeiſin is acknowledged. 1 *Danv. Abr.* 584. And if the deed of the anceſtor of the plaintiff be pleaded in bar, and this is denied, and found for the plaintiff; the aſſiſe ſhall not inquire of the points of the writ, but only of the damages. *Ibid.* 585. In this ſuit, if the defendant fail to make good the exception which he pleads, he ſhall be adjudged a diſſeiſor, without taking the aſſiſe; and ſhall pay the plaintiff double damages, and be impriſoned a year, by ſtatute 13 Edw. I. c. 25. In aſſiſe the tenant pleads in bar, and the plaintiff makes title, but the tenant doth neither anſwer nor traverſe the title; in this caſe the aſſize ſhall be awarded at large. *Cro. Eliz.* 559. And, if any other title is found for the plaintiff, he ſhall recover. *Bro. Aſſi.* 281. If a tenant pleads in abatement in an aſſiſe, he muſt at the ſame time plead over in bar; and no imparlance ſhall be allowed, without good cauſe: and where there are ſeveral defendants, and any of them do not appear the firſt day, the aſſiſe ſhall be taken againſt them by default. *Paſch.* 5 *W.* 3.

The court of Common Pleas or King's Bench may hold plea of aſſiſes of land in the county of Middleſex, by writ out of chancery. 1 *Lill. Abr.* 105. And in cities and corporations an aſſiſe of freſh force lies for recovery of poſſeſſion of lands, within forty days after the diſſeiſin, as the ordinary aſſiſe in the county.

Assise of Mort d'Ancestor, [*aſſiſa mortis anteceſſoris*, Lat.] Is a writ that lay where a man's father, mother, brother, ſiſter, uncle, aunt, &c. died ſeiſed of lands, tenements, rents, &c. that were held in fee, and after their death a ſtranger abated. *Reg. Orig.* 223. It is good as well againſt the abator, as any other in poſſeſſion of the land; but it lies not againſt brothers or ſiſters, &c. where there is privity of blood between the perſon proſecuting and them. *Co. Lit.* 242. And it muſt be brought within the time limited by the ſtatute of limitations, (50 years, 3 *Comm.* 189,) or the right may be loſt by negligence.

If tenant by the curteſy alien his wife's inheritance, and dieth, the heir of the wife ſhall have an aſſiſe of mort d'anceſtor, if he have not aſſets by deſcent from the tenant by the curteſy; and the ſame ſhall be as well where the wife was not ſeiſed of land the day of her death, as where ſhe was ſeiſed thereof. *New Nat. Br.* 489. A warden of a college, &c. ſhall have aſſiſe of mort d'anceſtor of rent where his predeceſſor was ſeiſed. And a man may have aſſiſe of mort d'anceſtor of rents, againſt ſeveral perſons in ſeveral counties; having in the end of the writ ſeveral ſummons againſt the tenants: and the proceſs in this writ is ſummons againſt the party; and, if he makes default at the day of the aſſiſe returned, then the plaintiff ought to ſue out a reſummons; and, if he makes default again, the aſſiſe ſhall be taken, &c. *Bro. Aſſiſ.* 88. In a mort d'anceſtor, if the tenant ſays the plaintiff is not next heir, and this is found againſt him, the points of the writ ſhall be inquired of: and, in this caſe, the aſſiſe may find, that though the plaintiff be the next heir, yet he is not next heir as to this land; for this is in regard of their inquiry at large. *Br. Mort d'An.* 47, 1 *Danv. Abr.* 584. Damages ſhall be recovered in the aſſiſe of mort d'anceſtor; but it lieth not of an eſtate-tail, only where the anceſtor was ſeiſed in demeſne as of fee. *Bro. Aſſiſ.* If a man be barred in aſſiſe of novel diſſeiſin, upon ſhewing a diſcent, or other ſpecial matter, he may have mort d'anceſtor, or writ of *entry ſur diſſeiſin*, &c. 4 *Rep.* 43. If the abatement happened on the death of one's grandfather or grandmother, then an aſſiſe of mort d'anceſtor no longer lies, but a writ of *ayle*, or *de avo*; if on the death of the great grandfather, or great grandmother, then a writ of *beſayle*, or *de proavo*; but, if it mounts one degree higher, to the *treſayle*, or grandfather's grandfather; or, if the abatement happened upon the death of any collateral relation, other than thoſe before-mentioned; the writ is called a writ of *coſinage*, or *de conſanguineo*. *Finch L.* 266, 267. And the ſame points ſhall be inquired of, in all theſe actions *anceſtrel*, as in an aſſiſe of mort d'anceſtor, they being of the very ſame nature.

It was always held to be law, that where lands were deviſable in a man's laſt will by the cuſtom of the place, there an aſſiſe of mort d'anceſtor did not lie. For, where lands were ſo deviſable, the right of poſſeſſion could never be determined by a proceſs, which inquired only of theſe two points, the ſeiſin of the anceſtor, and the heirſhip of the demandant. And hence it may be reaſonable to conclude, that when the ſtatute of wills, 32 Hen. VIII. c. 1, made all ſocage lands deviſable, an aſſiſe of mort d'anceſtor could no longer be brought of lands held in ſocage, ſee 1 *Leon.* 267; and that now, ſince the ſtat. 12 Car. II. c. 24, (which converts all tenures, a few only excepted, into free and common ſocage,) no aſſiſe of mort d'anceſtor can be brought of any lands in the kingdom; but that, in caſe of abatements, recourſe muſt be properly had to the writs of entry. 3 *Comm.* 187. It is to be obſerved, moreover, that theſe writs are now almoſt obſolete, being in a great meaſure ſuperſeded by the action of ejectment, which anſwers almoſt all the purpoſes of real actions; except in ſome very peculiar caſes.

Assise of the Forest, [*aſſia de foreſta*, Lat.] Is a ſtatute touching orders to be obſerved in the king's foreſt. *Manwood*, 35. The ſtatute of view of frank pledge, anno 18 Edw. II. is alſo called the aſſiſe of the king; and the ſtatute of bread and ale, 51 Hen. III. is termed the aſſiſe of bread and ale. And theſe are ſo called, becauſe they ſet down and appoint a certain meaſure, or order, in the things they contain. There is further an aſſiſe of nuſance, *aſſiſa nocumenti*, where a man maketh a nuſance to the freehold of another, to redreſs the ſame. And beſides Littleton's diviſion of aſſiſes, there are others mentioned by other writers, viz. aſſiſe at large, brought by an infant to enquire of a diſſeiſin, and whether his anceſtor were of full age, good memory, &c. when he made the deed pleaded, whereby he claims his right.

ASSI'SER, *ſ.* [from *aſſiſe.*] An officer who has the care and overſight of weights and meaſures.

ASSI'SI, a town of Italy, belonging to the States of the Church, in the duchy of Spoleto, the ſee of a biſhop, fifteen miles weſt of Nocera.

To ASSIST', *v. a.* [*aſſiſter*, Fr. *aſſiſto*, Lat.] To help.—Receive her in the Lord, as becometh ſaints, and *aſſiſt* her in whatſoever buſineſs ſhe hath need. *Rom.* xvi. 2.—Acquaintance with method will *aſſiſt* one in ranging human affairs. *Watts.*

ASSIST'ANCE, *ſ.* [*aſſiſtance*, Fr.] Help; furtherance.—You have abundance *aſſiſtances* for knowledge, in excellent books. *Wake.*

Assistance has been deſcribed by an elderly man clothed in white, with a mantle of purple, crowned with rays, a heart hanging at a chain of gold round his neck; his right hand ſtretched out, and open; on his left ſide a vine ſupported by a ſtake, and at his right a ſtork. His age is an emblem of prudence, as his white raiment and purple mantle are of ſincerity and power. His chaplet of olive ſhews his tendency to peace, the rays it is environed with, the aſſiſtance of the ſupreme Being, and the poſture of his arm and hand, his readineſs; the vine ſupported by a ſtake is his antitype, and the ſtork an emblem as well of paternal as filial duty and affection.

ASSIST'ANT, *ſ.* A perſon engaged in an affair, not as principal, but as auxiliary or miniſterial. Sometimes it is perhaps only a ſofter word for an attendant:

The pale *aſſiſtants* on each other ſtar'd,
With gaping mouths for iſſuing words prepar'd. *Dryden.*

Assistant, *adj.* Helping; lending aid.—For the performance of this work, a vital or directive principle ſeemeth to be *aſſiſtant* to the corporeal. *Grew.*

ASSISTEN'TES, *ſ.* [from *ad* and *ſiſto*, Lat. to ſtand near.] A name of the proſtate glands; ſo called becauſe they are near the bladder.

ASSI'SUS, *adj.* Rented or farmed out for ſuch an aſſize, or certain aſſeſſed rent in money or proviſions. *Terra aſſiſa* was commonly oppoſed to *terra dominica*; this laſt being held in domain, and occupied by the lord, the other let out to inferior tenants. And hence comes the word to aſſeſs or allot the proportion and rates in taxes and payments by aſſeſſors.

ASSITH'MENT, *ſ.* A wiregild or compenſation, by a pecuniary mulct; from the prepoſition *ad*, and the Saxon *ſithe, vicè*; *quod vicè ſupplicii ad expiandum delictum ſolvitur.*

AS'SIUS, *ſ.* [ασσιος, from Ασσος, a town of Troas, where it is found.] A ſtone whoſe powder is uſed to conſume ſpongy fleſh.

AS'SO, or As'sos, a ſea-port of Aſiatic Turkey, in Natolia, in the gulf of the Ægean Sea, to which it gives name, eleven leagues weſt of Adramiti. Lat. 39.38. N. lon. 43.47. E. Ferro.

ASSO'CIABLE, *adj.* [*aſſociabilis*, Lat.] That which may be joined to another.

To ASSO'CIATE, *v. a.* [*aſſocier*, Fr. *aſſocio*, Lat.] To unite with another as a confederate. To adopt as a friend upon equal terms. To accompany; to keep company with another.—Friends ſhould *aſſociate* friends in grief and woe. *Shakeſpeare.*—To unite; to join. It has generally the particle *with*; as, He *aſſociated with* his maſter's enemies.

To Associate, *v. n.* To unite himſelf; to join himſelf.

Associate, *adj.* Confederate; joined in intereſt or purpoſe.

Associate, *ſ.* A perſon joined with another; a partner. A confederate, in a good or neutral ſenſe; an accomplice in ill. A companion; implying ſome kind of equality:

Sole Eve, *aſſociate* ſole, to me, beyond
Compare, above all living creatures dear. *Milton.*

ASSOCIA'TION, *ſ.* [from *aſſociate.*] Union; conjunction; ſociety.—The church, being a ſociety, hath the ſelf-ſame original grounds which other politic ſocieties have; the natural inclination which all men have unto ſociable life, and conſent to ſome certain bond of *aſſociation*; which bond is the law that appointeth what kind of order they ſhould be *aſſociated* in. *Hooker.*—Confederacy; union for particular purpoſes, good or ill.—Partnerſhip.—Self-denial is a kind of holy *aſſociation* with God; and, by making you his partner, intereſts you in all his happineſs. *Boyle.*—Connection. Appoſition; union of matter.—The changes of corporeal things are to be placed only in the various ſeparations, and new *aſſociations* and motions, of theſe permanent particles. *Newton.*

Association of Ideas, is where two or more ideas conſtantly and immediately follow or ſucceed one another in the mind, ſo that one ſhall almoſt infallibly produce the other, whether there be any natural relation between them or not. See Metaphysics. Where there is a real affinity or connection in ideas, it is the excellency of the mind, to be able to collect, compare, and range them in order, in its inquiries: but where there is none, nor any cauſe to be aſſigned for their accompanying each other, but what is owing to mere accident or habit; this unnatural aſſociation becomes a greater imperfection, and is, generally ſpeaking, a main cauſe of error, or wrong deductions in reaſoning. Thus the ideas of goblins and ſprights, it has been obſerved, has really no more affinity with darkneſs than with light; and yet let theſe ideas be inculcated on the mind of a child, and raiſe them there together, it is poſſible he ſhould never be able to ſeparate them again ſo long as he lives, but darkneſs ſhall ever bring with it thoſe frightful imaginations.

Such an erroneous combination of ideas, Mr. Locke ſhews, is the great cauſe of the irreconcileable oppoſition between the different ſects of philoſophy and religion; for we cannot imagine, that all who hold tenets different from, and ſometimes even contradictory to, one another, ſhould wilfully and knowingly impoſe upon themſelves, and refuſe truth offered by plain reaſon: but ſome looſe and independent ideas are, by education, cuſtom, and the conſtant din of their party, ſo coupled in their minds, that they always occur together: theſe they can no more ſeparate in their thoughts, than if they were but one idea, and they operate as if they were ſo. This is the foundation of the greateſt, and almoſt of all the errors in the world.

Aſſociation forms a principal part of Dr. Hartley's mechanical theory of the mind. He diſtinguiſhes it into ſynchronous and ſucceſſive; and aſcribes our ſimple and complex ideas to the influence of this principle or habit. Particular ſenſations reſult from previous vibrations conveyed through the nerves to the medullary ſubſtance of the brain; and theſe are ſo intimately aſſociated together, that any one of them, when impreſſed alone, ſhall be able to excite in the mind the ideas of all the reſt. Thus we derive the ideas of natural bodies from the aſſociation of the ſeveral ſenſible qualities with the names that expreſs them, and with each other. The ſight of part of a large building ſuggeſts the idea of the reſt inſtantaneouſly, by a ſynchronous aſſociation of the parts; and the ſound of the words, which begin a familiar ſentence, brings to remembrance the remaining parts, in order, by ſucceſſive aſſociation. Dr. Hartley maintains, that ſimple ideas run into complex ones by aſſociation; and apprehends, that by purſuing and perfecting this doctrine, we may ſome time or other be enabled to analyſe thoſe complex ideas, that are commonly called the *ideas of reflection*, or *intellectual ideas*, into their ſeveral component parts, i. e. into the ſimple ideas of ſenſation of which they conſiſt; and that this doctrine may be of conſiderable uſe in the art of logic, and in explaining the various phenomena of the human mind.

Association, in law, is a writ or patent ſent by the king, either at his own motion or at the ſuit of a party plaintiff, to the juſtices appointed to take aſſiſes, or of oyer and terminer, &c. to have others aſſociated unto them. And this is uſual where a juſtice of aſſiſe dies; and a writ is iſſued to the juſtices alive to admit the perſon aſſociated: alſo where a juſtice is diſabled, this is practiſed. *Reg. Orig.* 201, 206, 223. The clerk of the aſſiſe is uſually aſſociate of courſe; in other caſes, ſome learned ſerjeants at law are appointed. It hath been holden, that an aſſociation after another aſſociation allowed and admitted, doth not lie; nor are the juſtices then to admit other aſſociation in that writ afterwards, ſo long as that writ and commiſſion ſtand in force. *Br. Aſſiſ.* 386.

Association of Parliament. In the reign of William III. the parliament entered into a ſolemn aſſociation to defend his majeſty's perſon and government againſt all plots and conſpiracies; and all perſons bearing offices civil or military, were enjoined to ſubſcribe the aſſociation to ſtand by king William, on pain of forfeitures and penalties, &c. by ſtat. 7 and 8 Will. III. c. 27.

ASSO'DES, *ſ.* [from ασαομαι, to nauſeate.] A continual fever, attended with a loathing of food.

ASSOI'LE, [*abſolvere*, Lat.] In law, to deliver from excommunication. *Staundf. Pl. Cr.* 72. In ſtat. 1 Hen. IV. c. 10. mention being made of king Edward III. it is added, whom God *aſſoile*.

AS'SOLEN, a town of Germany, in the circle of Weſtphalia, nine miles ſouth-eaſt of Paderburn.

AS'SOM, a town of Africa, in the country of Whidah, on the Slave Coaſt.

AS'SONANCE, *ſ.* in rhetoric and poetry, a term uſed where the words of a phraſe or a verſe have the ſame ſound or termination, and yet make no proper rhyme. Theſe are uſually accounted vicious in Engliſh; though the Romans ſometimes uſed them with elegance: as, *Militem comparavit, exercitum ordinavit, aciem luſtravit.*

AS'SONANT RHYMES, is a term particularly applied to a kind of verſes common among the Spaniards, where a reſemblance of ſound ſerves inſtead of a natural rhyme. Thus *ligera*, *cubierta*, *tierra*, *meſa*, may anſwer each other in a kind of aſſonant rhyme, having each an *e* in the penult ſyllable, and an *a* in the laſt.

ASSO'NIA, *ſ.* [ſo named in honour of Ignatius de Aſſo, a Spaniſh botaniſt.] In botany, a genus of the monadelphia dodecandria claſs, ranking in the natural order of columniferæ. The generic characters are—Calyx: perianthium double; outer three-leaved, unilateral, deciduous; inner one-leafed, five-parted; parts lanceolate, acute, reflex. Corolla: petals five, roundiſh, narrowed at the baſe, ſpreading, withering, affixed to the pitcher of the ſtamens. Stamina: filaments fifteen, filiform, upright, ſhorter than the corolla, conjoined at the baſe into the form of a pitcher; antheræ oblong-ſubſagittate, erect; five linear-lanceolate, ſomewhat erect, coloured, petal-formed ſtraps between the ſtamens, proceeding from the pitcher. Piſtillum: germ roundiſh, five-furrowed; ſtyle ſimple, longer than the ſtamens, permanent; ſtigmas five, recurved. Pericarpium: capſule ſubgloboſe or turbinate, five-celled; cells ſeparable, bivalve. Seeds: ſolitary or in pairs, ſubovate.—*Eſſential Character.* Calyx, double; outer one-leafed or three-leaved, inner one-leafed. Corolla, five-petalled, without any tube, affixed to the pitcher of ſtamens. Filaments, connected in form of a pitcher, with petal-ſhaped ſtraps between them; ſtyle one or five; capſule five-celled; ſeeds not winged.

Species. 1. Aſſonia populnea: leaves cordate ovate-acuminate, flowers corymbed. This is a middle-ſized tree, reſembling hibiſcus populneus; the wood is ſweet-ſcented, and blue in the centre; whence the French in the iſle of Bourbon call it *bois de ſenteur bleu ou galeux*; when it is of a certain age it becomes very hard. Leaves alternately ſcattered, large, generally quite entire, but ſometimes having a few teeth and being waved, acuminate, and hanging down obliquely. Native of the iſle of Bourbon, in hilly woods; flowering there in May.

2. Aſſonia palmata: leaves cordate palmate ſmoothiſh, lobes ſeven acute, ſerrate-crenate, flowers corymbed. Stem arboreous branched. Leaves alternate, on long petioles, but yet longer than they. Native of the iſle of Bourbon; flowering there in May and June. The natives call it *mahot-tantan*, on account of the reſemblance which the leaves bear to thoſe of *ricinus palma chriſti*, which is there named *tantan*.

3. Aſſonia acutangula: leaves cordate roundiſh-three-cuſped crenate, at firſt tomentoſe; flowers racemed. Fruit ſhaped like a pear, tomentoſe, and having one ſeed in each cell or capſule. Native of the iſle of Bourbon.

4. Aſſonia angulata: leaves cordate roundiſh, angular at top, ſerrate-toothed, tomentoſe; umbels numerous; common peduncles ſhorter than the petiole. Fruit globular, tomentoſe, with two ſeeds in each cell or capſule. Native of the iſle of Bourbon.

5. Aſſonia tiliæfolia: leaves cordate roundiſh-acute crenate; flowers raceme-corymbed. Native of the iſle of Bourbon.

6. Aſſonia tomentoſa: leaves cordate roundiſh crenate tomentoſe, with almoſt circular veins; flowers umbelled. Native of Madagaſcar.

7. Aſſonia punctata: leaves ovate-lanceolate long quite entire, tomentoſe underneath, rugged with dots in the upper ſurface. This is a tree with the trunk growing to the thickneſs of the human leg or thigh, with a very dark-brown bark. Native of the iſle of Bourbon.

8. Aſſonia decanthera: leaves ovate acuminate repand-crenate ſmooth; ſtamens five two-anthered; flowers ſmall umbelled. Native of Madagaſcar.

9. Aſſonia umbellata: leaves cordate ovate-oblong, acuminate repand ſmooth; flowers umbelled globular. This is a tree entirely ſmooth, with a brown bark. Native of the iſle of Bourbon, where they make ropes of the bark.

10. Aſſonia ovata: leaves ovate-toothed five-nerved tomentoſe; ſtyle very ſmall. Stem fruteſcent or arboreſcent, branched, covered with a ferruginous knap. Leaves alternate, white underneath, and rugged on the upper ſurface. Native of the iſle of Bourbon.

11. Aſſonia ferruginea: leaves ovate-oblong ſeven-nerved ferruginous beneath; petioles, peduncles, and calyxes, tomentoſe. Stem arboreſcent, from eight to ten feet high, (ſcarcely four in our ſtoves;) the branches, eſpecially the younger ones, clothed with a rufous knap. Leaves on the extreme twigs ſcattered alternately, green on the upper ſurface and ſmooth, tomentoſe on the under. Native of the iſle of Mauritius. Cultivated in the royal garden at Paris; but it has not flowered there.

Propagation and Culture. See Hibiscus and Pentapetes.

To ASSORT', *v. a.* [*aſſortir*, Fr.] To range in claſſes, as one thing ſuits with another.

ASSORT'MENT, *ſ.* The act of claſſing or ranging. A maſs or quantity properly ſelected and ranged.

To ASSOT', *v. a.* [from *ſot*; *aſſoter*, Fr.] To infatuate; to beſot: *a word out of uſe.*

To ASSUA'GE, *v. a.* [The derivation of this word is uncertain: Minſhew deduces it from *adſuadere*, or *aſſuaviare*; Junius from *ſwæs*, ſweet; from whence Skinner imagines *aſwæſan* might have been formed.] To mitigate; to ſoften; to allay:

Refreſhing winds the ſummers heats *aſſuage*,
And kindly warmth diſarms the winter's rage. *Addiſon.*

To appeaſe; to pacify. To eaſe; as, The medicine *aſſuages* pain.

To Assuage, *v. n.* To abate.—God made a wind to paſs over the earth, and the waters *aſſuaged. Gen.* viii. 1.

ASSUAGE'MENT, *ſ.* Mitigation; abatement of evil:

Tell me when ſhall theſe weary woes have end,
  Or ſhall their ruthleſs torment never ceaſe,
But all my days in pining languor ſpend,
  Without hope of *aſſuagement* or releaſe. *Spenſer.*

ASSUA'GER, *ſ.* One who pacifies or appeaſes.

ASSUAN'. See Syene.

ASSUA'SIVE, *adj.* Softening; mitigating:

If in the breaſt tumultuous joys ariſe,
Muſic her ſoft *aſſuaſive* voice ſupplies. *Pope.*

To ASSUB'JUGATE, *v. a.* [*ſubjugo*, Lat.] To ſubject to: *not in uſe.*

This valiant lord
Muſt not ſo ſtate his palm, nobly acquir'd;
Nor by my will *aſſubjugate* his merit,
By going to Achilles. *Shakeſpeare.*

ASSUEFAC'TION, *ſ.* [*aſſuefacio*, Lat.] The ſtate of being accuſtomed to any thing.

ASSU'ETUDE, *ſ.* [*aſſuetudo*, Lat.] Accuſtomance; cuſtom; habit.—We ſee that *aſſuetude* of things hurtful, doth make them loſe the force to hurt. *Bacon.*

To ASSU'ME, *v. a.* [*aſſumo*, Lat.] To take:

This when the various god had urg'd in vain,
He ſtrait *aſſum'd* his native form again. *Pope.*

To take upon one's ſelf. To arrogate; to claim or ſeize unjuſtly. To ſuppoſe ſomething granted without proof.—In every hypotheſis, ſomething is allowed to be *aſſumed. Boyle.*—To apply to one's own uſe; to appropriate.—His majeſty might well *aſſume* the complaint and expreſſion of king David. *Clarendon.*

To Assume, *v. n.* To be arrogant; to claim more than is due.

ASSU'MER, *ſ.* An arrogant man; a man who claims more than his due.—Can man be wiſe in any courſe, in which he is not ſafe too? But can theſe high *aſſumers*, and pretenders to reaſon, prove themſelves ſo? *South.*

ASSU'MING, *part. adj.* Arrogant; haughty.—This makes him over-forward in buſineſs, *aſſuming* in converſation, and peremptory in anſwers. *Collier.*

ASSUMP'SIT, *ſ.* [*aſſumo*, Lat.] In law, is taken for a voluntary promiſe, by which a man aſſumes or takes upon him to perform or pay any thing to another: it comprehendeth any verbal promiſe, made upon conſideration, and the civilians expreſs it diverſely, according to the nature of the promiſe, calling it ſometimes *pactum*, ſometimes *promiſſionem*, or *conſtitutum*, &c. An action upon the caſe on aſſumpſit, (or, as it is alſo expreſſed, on promiſes,) is an action the law gives the party injured by the breach or non-performance of a contract legally entered into; it is founded on a contract either expreſs, or implied by law; and gives the party damages in proportion to the loſs he has ſuſtained by the violation of the contract. 4 *Co.* 92. *Moor* 667.

The law diſtinguiſhes between a general *indebitatus aſſumpſit* and a *ſpecial aſſumpſit:* for though they come under the denomination of actions on the caſe, and the party is to be recompenſed in damages alike in both, yet the firſt ſeems to be of a ſuperior nature, and will lie in no caſe but where debt will lie; but for a particular undertaking, or collateral promiſe to diſcharge the debt or duty of another, a ſpecial aſſumpſit muſt be brought. 1 *New. Abr.* 163. Action on the caſe on aſſumpſit lies, for not making a good eſtate of land ſold, according to promiſe; not paying money upon a bargain and ſale, according to agreement; not delivering goods upon promiſe, on demand; this is by expreſs aſſumpſit; an implied aſſumpſit is where goods are ſold, or work is done, &c. without any price agreed upon; in an action on the caſe by *quantum meruit* or *quantum valebat*, the law implies a promiſe and ſatisfaction to the value. When one becomes legally indebted to another for goods ſold, the law implies a promiſe that he will pay this debt; and, if it be not paid, indebitatus aſſumpſit lies. 1 *Danv. Abr.* 26. And indebitatus aſſumpſit lies for goods ſold and delivered to a ſtranger *ad requiſitionem* of the defendant. But on indebitatus aſſumpſit for goods ſold, you muſt prove a price agreed on, otherwiſe the action will not lie; tho' this is helped by laying a *quantum meruit* with the indebitatus aſſumpſit, wherein if you fail in proof of the price agreed on, you may recover the value. *Wood's Inſt.* 536.

If A and B, having dealings with each other, make up their accounts, and B is found in arrear, and promiſes to pay the balance, an aſſumpſit lies againſt him, on *inſimul computaſſent*, and A need not bring a writ of account. *Cro. Jac.* 69. 1 *Rol. Rep.* 396. *Bulſt.* 208. *Moor* 854. So if A gives money, or delivers goods, to B to merchandize therewith, and B promiſes to render an account, aſſumpſit lies on this expreſs promiſe, as well as account. 1 *Salk.* 9. So if a tenant, being in arrear for rents, ſettles an account of arrears with his landlord, and promiſes to pay him the ſum in which he is found in arrear, an aſſumpſit lies on this promiſe. 1 *Rol. Abr.* 9. *Bro. Account,* 81. *Raym.* 211. 2 *Keb.* 813. Vide *Style*, 131, 283. *Cro. Jac.* 602. So on a balanced account between two partners, though including *items* not connected with the partnerſhip. 2 *Term. Rep.* 479, 483. But if the obligor in a bond, without any new conſideration, as forbearance, &c. promiſes to pay the money, an aſſumpſit will not lie, but the obligee muſt ſtill purſue his remedy by action of debt. 1 *Rol. Abr.* 8. *Hutt.* 34. *Cro. Eliz.* 240, ſeems contra. Where a man comes to buy goods, and they agree upon a price and a day for the payment, and the buyer takes them away, an aſſumpſit for the money is the proper action, for trover will not lie for the goods, becauſe the property was changed by a lawful bargain, and by that bargain the buyer was to convert the goods before the money was due. 1 *New Abr.* 167. If a man and a woman, being unmarried, mutually promiſe to marry each other, and afterwards the man marries another woman, by which he renders himſelf incapable of performing his contract, an aſſumpſit lies, in which the woman ſhall recover damages. *Carter*, 233. An indebitatus aſſumpſit lies for money by cuſtom due for ſcavage; adjudged upon a ſpecial verdict, by which it was found, that the ſum demanded was due by cuſtom, but that there was no expreſs promiſe to pay it. 2 *Lev.* 174. If one receive my rent, under pretence of title, I may have an indebitatus aſſumpſit againſt him. 2 *Mod.* 263. If a feme ſole marries a man, who in truth is married to another woman, and he makes a leaſe of her lands and receives the rents, ſhe may bring an indebitatus aſſumpſit againſt him for ſo much money received to her uſe; adjudged after verdict. 1 *Salk.* 28.

Where action is brought upon a contract, if the plaintiff miſtakes the ſum agreed upon, he fails in his action; but if he brings it upon the promiſe in law, ariſing from the debt, there, though he miſtakes the ſum, he ſhall recover. *Alleyn*, 29. Every contract made between parties, implies a mutual promiſe for performance: and yet an action may be brought on a reciprocal promiſe by one againſt the other, although he who brings it hath not performed on his ſide. *Dyer*, 30, 75. When an aſſumpſit or promiſe is the ground of the action, it muſt be preciſely ſet forth. 3 *Lev.* 319. If a promiſe be made without limitation of time for its performance, reaſonable time ſhall be allowed, if there be an immediate conſideration for it; and not time during life. 1 *Lill. Abr.* 112. On promiſe to deliver a thing ſuch a day, the party is bound to do it without requeſt. 1 *Lev.* 284. But, if a promiſe be to do any thing upon requeſt, the requeſt is neceſſary to intitle the plaintiff to the action on which it ſhall ariſe. 1 *Lev.* 48. Though in every indebitatus aſſumpſit, it is alleged the defendant promiſed to pay on requeſt, and that he was requeſted, and refuſed payment, yet no requeſt is ever proved. The time for the performance of the promiſe being elapſed, and the promiſe not performed, the law preſumes requeſt, unleſs in a particular caſe where a thing is not to be done, until requeſt. Every executory contract, and debt that is not upon record, or on a ſpecialty, which may be turned into damage, imports in it an aſſumpſit in law, and one may have debt or action on the caſe upon it at his election; for when a man doth agree to pay money, or to deliver any thing, he thereby promiſeth to pay or deliver it. *Plowd.* 128. 1 *Cro.* 94. Every contract executory implies an aſſumpſit to pay money at the day agreed, or immediately, if no time be limited. *Mo.* 667.

Indebitatus aſſumpſit lies by a prothonotary againſt an attorney, for fees for work done for defendant as attorney. *Holt's Rep.* 20. Alſo for a cuſtomary fine; for fees for being knighted; for money paid by miſtake, on an account or deceit; but not for money paid knowingly on illegal conſideration, as an uſurious bond. *Salk.* 22. Indebitatus aſſumpſit alſo lies on a judgment of a foreign court without declaring upon or proving the grounds or cauſe of action; and if the judgment was obtained unfairly, defendant muſt ſhew it. *Doug.* 1, 4. Though aſſumpſit lies not for rent uſually reſerved on leaſes; yet, if a man promiſe to pay, without a leaſe, ſo much a week as long as A, B, &c. permits him to enjoy a warehouſe, &c. which is a ſpecial cauſe of promiſe, this action will lie. 2 *Cro.* 592. Now, by 11 Geo. II. c. 19. ſ. 14. where the demiſe is not by deed, the landlord may recover his rent in an action on the caſe, for uſe and occupation.

Where a perſon pays money upon a miſtake; or if he receives more from another in a reckoning than he ought, or more fees than ſhould be taken, an aſſumpſit lies. 1 *Salk.* 22. *Comb.* 447. If a man receives money for the uſe of another perſon, aſſumpſit may be had againſt him, which ſupplies the place of action of account: and, where money was depoſited on a wager, an indebitatus lay for money received to a man's uſe. *Show.* 117. If, where a promiſe is made, one part of it is againſt law, and another part of it lawful, this is ground ſufficient for aſſumpſit. 4 *Rep.* 94. If a man delivers money to A. B. to my uſe, I may have an action on the caſe againſt him for this money. If a man accounts, and upon the account is found in arrear to a certain ſum, and preſently in conſideration thereof aſſumes to pay the debt at a day; action on the caſe lies for this after the day. *Yelv.* 70. And on a promiſe to pay a ſum of money at ſo much a month, an action on the caſe may be brought before the whole is payable; for it is grounded upon the promiſe, which is broken by every non-payment, and damages may be recovered. 2 *Cro.* 504. See Debt.

Some agreements, though never ſo expreſsly made, are deemed of ſo important a nature, that they ought not to reſt in verbal promiſe only, which cannot be proved but by the memory of witneſſes. To prevent which, the ſtatute of frauds and perjuries, 29 Car. II. c. 3. enacts, that in the five following caſes no verbal promiſe ſhall be ſufficient to ground an action upon, but at the leaſt ſome note or memorandum of it ſhall be made in writing, and ſigned by the party to be charged therewith. 1. Where an executor or adminiſtrator promiſes to anſwer damages out of his own eſtate. 2. Where a man undertakes to anſwer for the debt, default, or miſcarriage, of another. 3. Where any agreement is made, upon conſideration of marriage. 4. Where any contract or ſale is made of lands, tenements, or hereditaments, or any intereſt therein. 5. And, laſtly, where there is any agreement that is not to be performed within a year from the making thereof. In all theſe caſes a mere verbal aſſumpſit is void. The ſame ſtatute provides, that no contract for ſale of goods for the price of 10l. or upwards, ſhall be good, except the buyer actually receive part of the goods ſold, or give earneſt; or there be ſome note or memorandum in writing of the bargain being made by the parties or their agents. A letter written by a party is a ſufficient memorandum. 3 *Burr.* 1663. A parol promiſe of marriage between parties is not within the ſtatute. *Str.* 34. 5 *Mod.* 411. *Salk.* 24.

As to promiſes for the debt, &c. of another; if a perſon for whoſe uſe goods are furniſhed be liable at all, any other promiſe by a third perſon to pay that debt muſt be in writing. 2 *Term Rep.* 80. And there is no diſtinction between a promiſe to pay for goods furniſhed to a third perſon made before they are delivered, and one after. 2 *Term Rep.* 80. *Cowp.* 227. But if the credit was given to the promiſer originally, and the party furniſhing the goods cannot recover againſt the perſon for whoſe uſe they were furniſhed, then the perſon promiſing is liable; as if one ſay, "let A have goods, and I will pay you;" or, "look to me for payment." All promiſes and contracts are to receive a favourable interpretation; and ſuch conſtruction is to be made, where any obſcurity appears, as will beſt anſwer the intent of the parties; otherwiſe a perſon, by obſcure wording of his contract, might find means to evade and elude the force of it. Hence it is a general rule, that all promiſes ſhall be taken moſt ſtrongly againſt the promiſer, and are not to be rejected, if they can by any means be made out. If a man promiſes another, in conſideration that he will aſſign to him a certain term, to pay him 10l. this is a good aſſumpſit, though the time of aſſignment and payment be not appointed; for the 10l. ſhall be paid in a convenient time after the aſſignment, which alſo muſt be done in a convenient time, and he ſhall not have time during his life. 1 *Roll. Abr.* 14, 15. If there be an agreement to enter into an obligation for performance of a thing of a certain value, without mentioning in what ſum, it ſhall be according to the value. 1 *Sid.* 240.

The *conſideration* is the ground of the common action on the caſe: and no action on the caſe lieth againſt a man for a promiſe where there is no conſideration why he ſhould make the promiſe. 1 *Danv.* 53. A conſideration altogether executed and paſt was anciently held not to be ſufficient to maintain an aſſumpſit, but this doctrine is denied by the court of K. B. 3 *Burr.* 1671. See alſo *Cro. Eliz.* 282, by which it appears, that, though the conſideration were executed, it would be ſufficient if laid at plaintiff's requeſt. If an infant promiſe, after he is of full age, to pay a debt incurred in his infancy, this will bind him. 1 *Term Rep.* 648. If A undertakes to do a thing without hire, as to take brandies out of one cellar, and to lay them down in another cellar, no action lies for the non-feaſance; but, if he enters on the doing it, action lies for a miſ-feaſance, if it be through his own neglect, or miſmanagement, becauſe it is a deceit; but not if by mere accident; per Holt, 1 *Salk.* 26. Vide 3 *Salk.* 11. Where the doing a thing will be a good conſideration, a promiſe to do that thing will be ſo too; per Holt, Ch. J. 12 *Mod.* 459. Parting with my note to the defendant is a good conſideration. 7 *Mod.* 12, 13.

Implied contracts, are ſuch as do not ariſe from the expreſs determination of any court, or the poſitive direction of any ſtatute; but from natural reaſon and the juſt conſtruction of law: which extends to all preſumptive undertakings and aſſumpſits: which, though never perhaps actually made, yet conſtantly ariſe, upon this general implication and intendment of the courts of judicature, that every man hath engaged to perform what his duty or juſtice requires. Thus, if I employ a perſon to tranſact any buſineſs for me, or perform any work, the law implies that I undertook, or aſſumed to pay him ſo much as his labour deſerved. And, if I neglect to make him amends, he has a remedy for this injury, by bringing his action on the caſe upon this implied aſſumpſit; wherein he is at liberty to ſuggeſt, that I promiſed to pay him ſo much as he reaſonably deſerved, and then to aver that his trouble was really worth ſuch a particular ſum, which the defendant has omitted to pay. But this valuation of his trouble is ſubmitted to the determination of a jury; who will aſſeſs ſuch a ſum in damages as they think he really merited. This is called an aſſumpſit on a *quantum meruit*. There is alſo an implied aſſumpſit on a *quantum valebat*, which is very ſimilar to the former; being only where one takes up goods or wares of a tradeſman, without expreſsly agreeing for the price. There the law concludes, that both parties did intentionally agree, that the real value of the goods ſhould be paid; and an action on the caſe may be brought accordingly, if the vendee refuſes to pay that value.

Another ſpecies of implied aſſumpſit is, when one has had and received money belonging to another, without any valuable conſideration given on the receiver's part; for the law conſtrues this to be money had and received for the uſe of the owner only; and implies, that the perſon ſo receiving promiſed and undertook to account for it to the true proprietor: and, if he unjuſtly detains it, an action on the caſe lies againſt him for the breach of ſuch implied promiſe and undertaking; and he will be made to repair the owner in damages equivalent to what he has detained in ſuch violation of his promiſe. This is applicable to almoſt every caſe where the defendant has received money, which *ex æquo et bona*, he ought to refund. 2 *Burr.* 1012. This ſpecies of aſſumpſit lies in numberleſs inſtances for money the defendant has received from a third perſon; which he claims title to, in oppoſition to the plaintiff's right, and which he had by law authority to receive from ſuch third perſon. 2 *Burr.* 1008. One great benefit which ariſes to ſuitors from the nature of this action, is, that the plaintiff need not ſtate the ſpecial circumſtances, from which he concludes, that *ex æquo et bona*, the money received by the defendant ought to be deemed as belonging to him: he may declare generally that the money was received to his uſe, and make out his caſe at the trial. 2 *Burr.* 1010. This is equally beneficial to the defendant. It is the moſt favourable way in which he can be ſued: he can be liable no further than the money he has received; and againſt that may go into every equitable defence upon the general iſſue; he may claim every equitable allowance; he may prove a releaſe without pleading it; in ſhort, he may defend himſelf by every thing, which ſhews that the plaintiff, *ex æquo et bono*, is not intitled to the whole of his demand, or to any part of it.

This action will lie to recover premiums of inſurance paid by the inſured to the lottery-office-keeper. *Cowp.* 790. But it will not lie to recover back winnings paid by the lottery-office-keeper or inſurer of lottery-tickets. 4 *Burr.* 1984. If two perſons engage jointly in a ſtock-jobbing tranſaction and incur loſſes, and employ a broker to pay the differences, and one of them repay the broker with the privity and conſent of the other the whole ſum, he may recover a moiety from the other, in an action for money paid to his uſe. 3 *Term Rep.* 418. But in ſuch a caſe of an illegal tranſaction, if one partner pay money for another, without an expreſs authority, he cannot recover it back. And, generally, aſſumpſit for money paid, laid out, and expended, will not lie when the money has been paid againſt the expreſs conſent of the party for whoſe uſe it is ſuppoſed to have been paid. 1 *Term Rep.* 20.

The plaintiff muſt ſet forth every thing eſſential to the giſt of the action, with ſuch certainty, that it may appear to the court that there were ſufficient grounds for the action; for, if any thing material be omitted, it cannot appear to the court whether the damages given by the jury were in proportion to the demand, or whether the party was at all intitled to a verdict. And therefore, in an action upon the caſe, the plaintiff cannot declare *quod cum* the defendant was indebted to the plaintiff in ſuch a ſum, and that the defendant, in conſideration thereof, *ſuper ſe aſſumpſit* to pay, &c. without ſhewing the cauſe of the debt. 10 *Co.* 77. If in an aſſumpſit the plaintiff declares, *quod cum* there were ſeveral reckonings and accounts between the plaintiff and defendant; and at ſuch a day, &c. *inſimul computaverunt* for all debts, reckonings, and demands, and the defendant upon the ſaid account was found to be in arrear the ſum of 20l. in conſideration whereof the defendant promiſed to pay, &c. this is a good declaration, without ſhewing it was *pro mercimoniis*, or otherwiſe, wherefore he ſhould have an account; for an account may be for divers cauſes, and ſeveral matters and things may be included and compriſed therein, which *in pede computi* are reduced to a ſum certain, and thereupon being indebted to the plaintiff, it is ſufficient to ground an action. *Cro. Car.* 116.

If in an aſſumpſit the plaintiff declares, that the defendant did aſſume and promiſe to pay to the plaintiff ſo much money, and alſo to carry away certain wood before ſuch a day; the defendant as to the money cannot plead that he paid it, and as to the carriage of the wood, *non aſſumpſit*, for the promiſe, being intire, cannot be apportioned. *March*, 100. On an aſſumpſit in law, payment, or any other matter that excuſes payment, may be given in evidence, on the general iſſue. In an aſſumpſit in deed, it muſt be pleaded. *Gilb. Evid.* 204, 5. If the plaintiff declares upon an indebitatus aſſumpſit, and upon a *quantum meruit*, and the defendant pleads, that after the ſaid ſeveral promiſes made, and before the action brought, the plaintiff and defendant came to an account concerning divers ſums of money, and that the defendant was found in arrear to the plaintiff 30l. and thereupon, in conſideration that the defendant promiſed to pay the ſaid 30l. the plaintiff likewiſe promiſed to releaſe and acquit the defendant of all demands, this is a good plea; for by the account the firſt contract is merged. 2 *Mod.* 43, 44. The defendant cannot plead that he revoked his promiſe; as if A is in execution at the ſuit of B, and J. S. deſires B to let him go at large, and that he will ſatisfy him; to which B agrees: though J. S. before any thing is done in purſuance of this promiſe and agreement, comes to B, and tells him, that he revokes his promiſe, and that he will not ſtand to it; yet ſuch revocation cannot be pleaded in bar to the action. 1 *Rol. Abr.* 32. In an action upon an aſſumpſit, if the conſideration be executory; as if one promiſes, to do ſomething for me, in conſideration of ſomething to be done before by me, to or for him, if I will ſue him for that he is to do for me, I muſt aver, that I have done that which was firſt to be done by me, for till that be done I may not maintain an action upon the promiſe. *Cro. Jac.* 583, 620.

ASSUMP'TION, *ſ.* [*aſſumptio*, Lat.] The act of taking any thing to one's ſelf.—The perſonal deſcent of God himſelf, and his *aſſumption* of our fleſh to his divinity, more familiarly to inſinuate his pleaſure to us, was an enforcement beyond all methods of wiſdom. *Hammond.*—The ſuppoſition, or act of ſuppoſing, of any thing without further proof.—Theſe by way of *aſſumption*, under the two general propoſitions, are intrinſically and naturally good or bad. *Norris.*—The thing ſuppoſed; a poſtulate.—For the *aſſumption*, that Chriſt did ſuch miraculous and ſupernatural works to confirm what he ſaid, we need only repeat the meſſage ſent by him to John the Baptiſt. *South.*—The taking up any perſon into heaven, which is ſuppoſed by the Romiſh church of the Bleſſed Virgin.—Upon the feaſt of the *aſſumption* of the Bleſſed Virgin, the pope and cardinals keep the veſpers. *Stillingfleet.*—Adam, after a certain period of years, would have been rewarded with an *aſſumption* to eternal felicity. *Wake.*

ASSUMPTION, a town of South America, and capital of a province in Paraguay, ſituated in a fertile country, on the river Paraguay, the ſee of a biſhop, and reſidence of a governor, appointed by the king of Spain under the viceroy of Peru. Lat. 25. 30. S. lon. 3. 10. W. Ferro.

ASSUMPTION, an iſland, near the coaſt of California. Lat. 28. 4. N. lon. 120. W. Greenwich.

ASSUMPTION, a river of North America, which runs into the river St. Lawrence, oppoſite Montreal, in Canada.

ASSUMP'TIVE, *adj.* [*aſſumptivus*, Lat.] That is aſſumed.

ASSUMPTIVE ARMS, in heraldry, are ſuch as a perſon has a right to aſſume, with the approbation of his ſovereign, and of the heralds: thus, if a perſon, who has no right by blood, and has no coat of arms, ſhall take captive in lawful war, any gentleman, nobleman, or prince, he is, in that caſe, intitled to bear the ſhield of that priſoner, and enjoy it to him and his heirs for ever.

ASSU'RANCE, *ſ.* [*aſſurance*, Fr.] Certain expectation.—What encouragement can be given to goodneſs, beyond the hopes of heaven, and the *aſſurance* of an endleſs felicity? *Tillotſon.*—Secure confidence; truſt.—Freedom from doubt; certain knowledge.—The obedient, and the man of practice, ſhall outgrow all their doubts and ignorances, till perſuaſion paſs into knowledge, and knowledge advance into *aſſurance. South.*—Firmneſs; undoubting ſteadineſs.—Men whoſe conſideration will relieve our modeſty, and give us courage and *aſſurance* in the duties of our profeſſion. *Rogers.*—Confidence; want of modeſty; exemption from awe or fear.—My behaviour, ill governed, gave you the firſt comfort; my affection, ill hid, hath given you this laſt *aſſurance. Sidney.*—Freedom from vicious ſhame.—Converſation, when we come into the world, will add to our knowledge and *aſſurance. Locke.*—Ground of confidence; ſecurity; ſufficient reaſon for truſt or belief.—The nature of deſire itſelf is no eaſier to receive belief, than it is hard to ground belief; for, as deſire is glad to embrace the firſt ſhew of comfort, ſo is deſire deſirous of perfect *aſſurance. Sidney.*

None of woman born
Shall harm Macbeth.——
—Then live, Macduff, what need I fear of thee?
But yet I'll make *aſſurance* double ſure,
And take a bond of fate: thou ſhalt not live. *Shakeſpeare.*

Spirit; intrepidity.—They, like reſolute men, ſtood in the face of the breach with more *aſſurance* than the wall itſelf. *Knolles.*—Sanguineneſs; readineſs to hope.—This is not the grace of hope, but a good natural *aſſurance* or confidence, which Ariſtotle obſerves young men to be full of, and old men not ſo inclined to. *Hammond.*—Teſtimony of credit. Conviction.—Such an *aſſurance* of things as will make men careful to avoid a leſſer danger, ought to awaken men to avoid a greater. *Tillotſon.*—In theology, ſecurity with reſpect to a future ſtate; certainty of acceptance with God.

Assurance, is a faculty of poſſeſſing a man's ſelf, or of ſaying and doing indifferent things, without any uneaſineſs or emotion of mind. That which generally gives a man aſſurance is a moderate knowledge of the world; but, above all, a mind fixed and determined in itſelf to do nothing againſt the rules of honour and decency, and an open and aſſured behaviour is the natural conſequence of ſuch a reſolution. A man thus armed, if his words or actions are at any time miſinterpreted, retires within himſelf, and from a conſciouſneſs of his own integrity aſſumes force enough to deſpiſe the little cenſures of ignorance or malice. Such an aſſurance a man ought to cheriſh and encourage in himſelf.

Assurance, or **Insurance**, in commerce, is a ſecurity given by a particular corporation or ſociety, at certain ſums or rates per cent. uſually termed *policies of inſurance*; and are either on lives, or to provide againſt injuries by fire, or loſſes by ſea. An aſſurance on lives, is a compact by which ſecurity is granted for the payment of a certain ſum of money on the expiration of the life on which the policy is granted, in conſideration of ſuch a previous payment made to the aſſurer as is accounted a ſufficient compenſation for the loſs and hazard to which he expoſes himſelf.

The ſum at which this compenſation ſhould be valued, depends principally on theſe two circumſtances, 1ſt, On the rate of intereſt given for the uſe of money; and, 2d, On the probability of the duration of the life aſſured, and the values of annuities. For, if the intereſt of money be high, the value of the aſſurance will be proportionally low, *& è contra*; becauſe the higher the rate of intereſt, the leſs will be the preſent value which amounts to a certain propoſed ſum in any given time. Alſo, if the probability of the duration of life be high, the value of the aſſurance will again be proportionably low, *& è contra*; becauſe the longer the time is, the leſs will be the principal which will amount to any aſſigned ſum. Thus, if it be required to know the premium or preſent value, to be given for 100l. to be received at the end of any time, as ſuppoſe ten years; then, if the intereſt of money be at the rate of five per cent. the anſwer, or preſent premium, would be 61l. 7s. 10d. but, at four per cent. it would be 67l. 11s. 1d. and at three per cent. it would amount to 74l. 8s. 2d. Again, ſuppoſe it were required to aſſure 100l. on a life, for any time, for inſtance, one year; that is, let 100l. be ſuppoſed to be payable a year hence, provided a life of a given age fails in that time: here it is evident, that, whatever be the rate of intereſt, the leſs the probability of the life failing within the year, the leſs the riſk is, and the leſs the premium ought to be. In effect, the rate of intereſt being five per cent. if it were ſure that the life would fail in that year, the value of the aſſurance would be the ſame as the preſent value of 100l. payable at the end of the year, which is 95l. 4s. 9d. But, if it be an equal chance whether the life does or does not fail in the year, in which caſe the probability of failing is one-half; then the value of the aſſurance will be but half the former value, or 47l. 12s. 4½d. Or, if the odds againſt its failing be as two to one, that is, if one perſon out of every three die at the age of the propoſed life, the probability of dying being only one-third, the value of the aſſurance will be one-third of the firſt value, or 31l. 14s. 11d. And if the odds be nineteen to one, or one perſon die out of twenty, of that age, the probability of dying will be one in twenty, and the value of the aſſurance will alſo be one-twentieth of the firſt value, or 4l. 15s. 3d. nearly. Laſtly, if only one perſon die out of fifty at the given age, the probability of dying will be one in fifty, and the value of the aſſurance will be accordingly only one-fiftieth of the firſt ſum, or 1l. 18s. 1d. the intereſt of money being all along conſidered at the rate of five per cent. Now, according to Dr. Halley's table of obſervations, one perſon dies out of three at the age of 87; one in twenty at the age of 64; and one in fifty at the age of 39: it follows, therefore, that the value of the aſſurance of 100l. for one year, on a life aged 87, is 31l. 14s. 11d. on a life aged 64, it is 4l. 15s. 3d. and, on a life aged 39, it is 1l. 18s. 1d. reckoning intereſt at five per cent. But, if intereſt were rated at three per cent. theſe values would be 32l. 7s. 3d. and 4l. 17s. 1d. and 1l. 18s. 10d.

The aſſurances moſt commonly practiſed are on ſingle lives, and for ſingle years. When a life is aſſured for any number of years, the premium or value may be paid, either in one ſingle preſent payment; in conſequence of which the ſum aſſured will become payable without any farther compenſation, whenever, within the given term, the life ſhall happen to drop: or the value may be paid in annual payments, to be continued till the failure of the life, ſhould that happen within the term; or, if not, till the determination of the term. And the determination of the value of aſſurance, in all caſes, is to be made out from the rules for computing annuities on lives; the principal writers on which are, Halley, De Moivre, Simpſon, Smart, Kerſſeboom, De Parcieux, Price, Morgan, and Maſeres. See alſo Life Annuities, Reversion, &c.

Aſſurances may be made either on *ſingle* lives, as above explained, or they may be made on any number of *joint* lives, or on the *longeſt* of any lives; that is, an aſſurer may bind himſelf to pay any ſums at the extinction of any *joint* lives, or the *longeſt* of any lives, or at the extinction of any one or two of any number of lives. There are further aſſurances on ſurvivorſhips; by which is meant an obligation, for the value received, to pay a given ſum or annuity, provided a given life ſhall ſurvive any other given life or lives. For which ſee Survivorship. The principal offices for making theſe inſurances in England, are as follow: the Royal-Exchange Aſſurance, in the Exchange, and in Conduit-ſtreet, Hanover-ſquare, for houſes, goods, ſhips, and lives; the London Aſſurance, in Birchin-lane, for ſhips, houſes, and goods; the Hand-in-Hand Fire-office, Angel-court, Snowhill, for houſes only; the Union Fire-office, Maiden-lane, Wood-ſtreet, for goods only; the Weſtminſter Society, for granting annuities, and inſuring houſes and lives; the Sun Fire-office, Cornhill, for houſes and goods; the Phœnix Fire-office, Lombard-ſtreet and Charing-croſs, for every kind of property; the Amicable Society for a perpetual Aſſurance-office, Serjeant's-inn, Fleet-ſtreet; and the Equitable Aſſurance-office, on Lives and Survivorſhips, in Bridge-ſtreet, Blackfriars.

The London Aſſurance, is a corporation eſtabliſhed by a charter of George I. in 1720; under power of which, Aſſurances are made from the riſk of ſea-voyages, and from the danger of fire to houſes and goods; the prices of which are regulated by the apparent riſk to be aſſured. They alſo make aſſurances on lives; the prices of which are formed on an eſtimation of the probable duration of life at different ages, on the conſideration of the apparent health of the perſon to be aſſured, and of their avocations in life. This corporation, and the Royal-Exchange corporation, gave each the ſum of 150,000l. to government, for an *excluſive right* of making aſſurances as *corporate bodies*. They are known to poſſeſs a large and undeniable fund to anſwer loſſes: and the prudent management of theſe corporations has enabled them, of late years, to increaſe gradually their dividends to the proprietors of their ſtock. This *excluſive privilege* to make aſſurances as corporate bodies, is of great advantage and convenience to the public; and, as they act under a common ſeal, the aſſured may have a ſpeedy and eaſy mode of recovering loſſes, and cannot be ſubject to any calls or deductions whatever. When their charters were granted to them, it was enacted, that if a proprietor of the ſtock of one corporation ſhould at the ſame time, either directly or indirectly, be a proprietor of ſtock in the other corporation, the reſpective ſtock ſo held is to be forfeited, one moiety to the king, the other to the informer. This was evidently ſettled to prevent their intereſt from becoming a joint one; ſo that they ſhould be made to act in competition to each other, for the greater benefit of the public.

The Royal-Exchange Aſſurance, is a corporation eſtabliſhed by charter, as above, under the power of which, aſſurances are made from the riſk of ſea-voyages, and from the danger of fire to houſes and goods; the prices of which are regulated by the greater or leſs riſk ſuppoſed to be aſſured. They alſo make aſſurances on lives, the prices of which are formed on eſtimation of the probable duration of life at different ages, and under different circumſtances. This corporation has alſo, like the former, been empowered to grant life-annuities by an act of parliament, which requires that the prices of the annuities ſhould be expreſſed in tables, hung up in ſome conſpicuous place in their offices, for public inſpection; and no agreement for any price is valid, but ſuch as ſhall be expreſſed in the tables laſt made and publiſhed by the corporation.

The Amicable Society at Serjeant's-inn, requires an annual payment of 5l. from every member during life, payable quarterly. The whole annual income, hence ariſing, is equally divided among the nominees, or heirs, of ſuch members as die every year. But this ſociety engages that the dividends ſhall not be leſs than 150l. to each claimant, though they may be more. No members are admitted whoſe ages are greater than 45, or leſs than 12; nor is any difference of contribution allowed on account of difference of age. The ſociety has ſubſiſted ever ſince the year 1706, and its credit and uſefulneſs are well eſtabliſhed.

The Equitable Society for Aſſurances on Lives and Survivorſhips, at Blackfriar's-bridge, was eſtabliſhed in the year 1762, in conſequence of propoſals which had been made, and lectures, recommending ſuch a deſign, which had been read by Mr. Dodſon, author of the Mathematical Repoſitory. It aſſures any ſums or reverſionary annuities, on any life or lives for any number of years, as well as for the whole continuance of the lives; and in any manner that may be beſt adapted to the views of the perſons aſſured: that is, either by making the aſſured ſums payable certainly at the failure of any given lives, or on condition of ſurvivorſhip; and alſo, either by taking the price of the aſſurance in one preſent payment, or in annual payments, during any ſingle or joint lives, or any terms, leſs than the whole poſſible duration of the lives. In ſhort, there are no kinds of aſſurances on lives and ſurvivorſhips which this ſociety does not make.

In doing this, the ſociety follows the rules which have been given by the beſt mathematical writers on the doctrine of Life Annuities and Reverſions, particularly Mr. Thomas Simpſon, profeſſor of mathematics in the Royal Military Academy. It is to be obſerved, however, that the ſociety takes the advantage of making its calculations on the ſuppoſition that the intereſt of money is at ſo low a rate as three per cent. inſtead of the uſual intereſt of four per cent. which conſequently raiſes the inſurance proportionally higher; and it alſo founds its calculations on the tables of the probabilities and values of lives in London; another circumſtance which ſecures a very advantageous profit to the ſociety, as experience has proved that the deaths are really in a much lower proportion than according to thoſe tables, and even lower than thoſe of Dr. Halley, which are founded on the bills of mortality at Breſlaw. By theſe means the ſociety finding itſelf, by experience, well ſecured againſt future hazards, and being unwilling to take from the public an extravagant profit, have reduced the future payments for aſſurances one-tenth; and it ſeems there is reaſon to expect that this will be only a preparation to farther reduction.

From the foregoing account of this ſociety, it is manifeſt that its buſineſs is ſuch, that none but ſkilful mathematicians are qualified to conduct it. The intereſt of the ſociety therefore requires, that it ſhould make the places of thoſe who manage its buſineſs ſufficiently advantageous, to induce the ableſt mathematicians to accept them: and this will render it the more neceſſary for the ſociety to take care, in filling up any future vacancies, to pay no regard to any other conſiderations than the ability and integrity of the candidates. The conſequence of granting good pay, will be a multitude of ſolicitations on every vacancy, from perſons who, however unqualified, will hope for ſucceſs from their connexions, and the intereſt they are able to make. And ſhould the ſociety, in any future time, be led by ſuch cauſes to truſt its buſineſs in the hands of perſons not poſſeſſed of ſufficient ability, as mathematicians and calculators, ſuch miſtakes may be committed, as may prove, in the higheſt degree, detrimental and dangerous. There is reaſon to believe, that at preſent the ſociety is in no danger of this kind; and one of the great public advantages attending it is, that it has eſtabliſhed an office, where not only the buſineſs above deſcribed is tranſacted with faithfulneſs and ſkill, but where alſo all perſons, who want ſolutions of any queſtions relating to life-annuities and reverſions, may apply, and be ſure of receiving juſt anſwers. The following is a

Table of the Rates of Aſſurance on ſingle Lives in the Society for Equitable Aſſurances. The Sum aſſured 100*l.*

Age.	For one year.			For ſeven years at an annual payment of			For the whole life at an annual payment of		
	l.	s.	d.	l.	s.	d.	l.	s.	d.
10	1	9	6	1	10	7	2	2	10
15	1	11	0	1	12	7	2	6	6
20	1	13	11	1	16	0	2	12	10
25	1	17	7	2	0	2	3	0	6
30	2	2	6	2	6	0	3	8	11
35	2	8	7	2	14	2	3	17	9
40	2	19	2	3	5	1	4	7	11
45	3	11	0	3	18	6	5	0	0
50	4	4	8	4	11	2	5	12	11
55	5	0	9	5	11	7	6	9	3
60	5	19	1	6	16	10	7	17	7
65	7	0	11	8	13	0	10	3	9

Theſe rates are ten per cent. lower than the true values, according to the decrements of life in London, reckoning intereſt at three per cent; but, at the ſame time, it is to be obſerved, that, for all ages under 50, they are nearly one-third higher than all the true values, according to Dr. Halley's tables of the decrements of life at Breſlaw, and Dr. Price's tables of the decrements of life at Northampton and Norwich. But as the ſociety has lately found that the decrements of life among its members have hitherto been lower than even thoſe given in theſe laſt tables, it may reaſonably be expected, that they will in time reduce their rates of aſſurance to their true values, as determined by theſe tables.

As to the Weſtminſter Society, and the Phœnix Aſſurance-office, both of which have been lately eſtabliſhed, from the number and reſpectability of the members, the equitable terms upon which they deal, and the known ability and accuracy of the mathematicians and calculators employed in conducting them, there is every reaſon to expect an honourable and equitable treatment of the public, and a permanent continuance of their advantages.

To ASSU'RE. *v. a.* [*aſſurer*, Fr. from *aſſecurare*, low Latin.] To give confidence by a firm promiſe.—So when he had *aſſured* them with many words that he would reſtore them without hurt, according to the agreement, they let him go for the ſaving of their brethren. 2 *Mac.* xii.—To ſecure to another; to make firm.—So irreſiſtible an authority cannot be reflected on, without the moſt awful reverence, even by thoſe whoſe piety *aſſures* its favour to them. *Rogers.*—To make confident; to exempt from doubt or fear; to confer ſecurity.—And hereby we know, that we are of the truth, and ſhall *aſſure* our hearts before him. 1 *John*, iii. 19.—To make ſecure: with *of.*

But what on earth can long abide in ſtate?
Or who can him *aſſure* of happy day? *Spenſer.*

To affiance; to betroth.—This diviner laid claim to me, called me Dromio, ſwore I was *aſſured* to her. *Shakeſpeare.*

ASSU'RED, *part. adj.* [from *aſſure.*] Certain; indubitable; not doubted.—It is an *aſſured* experience, that flint laid about the bottom of a tree makes it proſper. *Bacon.* —Certain; not doubting. Immodeſt; viciouſly confident.

ASSU'REDLY, *adv.* Certainly; indubitably.—God is abſolutely good, and ſo, *aſſuredly*, the cauſe of all that is good; but of any thing that is evil, he is no cauſe at all. *Raleigh.*

ASSU'REDNESS, *ſ.* The ſtate of being aſſured; certainty.

ASSU'RER, *ſ.* He that gives aſſurance. He that gives ſecurity to make good any loſs.

AS'SUS, or As'sos, anciently a town of Troas (though by others ſuppoſed to be of Myſia), and the ſame with Apollonia; but different from the Apollonia on the river Rhyndacus. Ptolemy places it on the ſea-coaſt, but Strabo more inland; if he does not mean the head of an inland bay, as appears from Diodorus Siculus. It was the country of Cleanthes the ſtoic philoſopher, who ſucceeded Zeno. St. Luke, and others of St. Paul's companions, in his voyage (Acts xx. 13, 14.) went by ſea from Troas to Aſſos: but St. Paul went by land thither, and, meeting them at Aſſos, they all went together to Mytelene. It is ſtill called *Aſſos.*

AS'SY, a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Creſpy, eight miles ſouth of Creſpy.

ASSY'RIA, an ancient kingdom of Aſia, concerning the extent, commencement, and duration, of which, hiſtorians differ greatly in their accounts. Several ancient writers, in particular Cteſias and Diodorus Siculus, have affirmed, that the Aſſyrian monarchy, under Ninus and Semiramis, comprehended the greater part of the known world. Had this been the caſe, it is not likely that Homer and Herodotus would have omitted a fact ſo remarkable. The ſacred records intimate, that none of the ancient ſtates or kingdoms were of conſiderable extent; for neither Chederlaomer, nor any of the neighbouring princes, were tributary or ſubject to Aſſyria; and we find nothing of the greatneſs or power of this kingdom in the hiſtory of the Judges and ſucceeding kings of Iſrael, though the latter kingdom was oppreſſed and enſlaved by many different powers in that period. It is highly probable, therefore, that Aſſyria was originally of ſmall extent. According to Ptolemy, it was bounded on the north by Armenia Major, on the weſt by the Tigris, on the ſouth by Suſiana, and on the eaſt by Media.

It is probable, that the origin and revolutions of the Aſſyrian monarchy were as follows. The founder of it was Aſhur, the ſecond ſon of Shem, who went out of Shinar, either by the appointment of Nimrod, or to elude the fury of a tyrant; conducted a large body of adventurers into Aſſyria, and laid the foundation of Nineveh (Gen. x. 11.) Theſe events happened not long after Nimrod had eſtabliſhed the Chaldæan monarchy, and fixed his reſidence at Babylon. The Perſian hiſtorians ſuppoſe that the kings of Perſia, of the firſt dynaſty, were the ſame with the kings of Aſſyria, of whom Zohah, or Nimrod, was the founder of Babel. Herbelot Orient. Bib. v. *Bagdad.* It does not, however, appear that Nimrod reigned in Aſſyria. The kingdoms of Babylon and Aſſyria were originally diſtinct and ſeparate; and in this ſtate they remained until Ninus conquered Babylon, and made it tributary to the Aſſyrian empire. Ninus the ſucceſſor of Aſher (Gen. x. 11. Diod. Sic. lib. 1.) ſeized on Chaldæa, after the death of Nimrod, and united the kingdoms of Aſſyria and Babylon. This great prince is ſaid to have ſubdued Aſia, Perſia, Media, Egypt, &c. If he did ſo, the effects of his conqueſts were of no duration; for, in the days of Abraham, we do not find that any of the neighbouring nations were ſubject to Aſſyria. He was ſucceeded by Semiramis, a princeſs of an heroic mind, bold, enterpriſing, and fortunate; but of whom many fabulous things have been recorded. It appears, however, that there were two princeſſes of the ſame name, who flouriſhed at very different periods. One of them was the conſort of Ninus; the other lived five generations before Nitocris queen of Nebuchadnezzar. (Euſeb. Chron. p. 58. Herod. lib. 1. c. 184.) This fact has not been attended to by many writers.

Whether there was an uninterrupted ſeries of kings from Ninus to Sardanapalus, or not, is ſtill a queſtion. Some ſuſpicion has ariſen, that the liſt which Cteſias has given of the Aſſyrian kings is not genuine; for many names in it are of Perſian, Egyptian, and Grecian, extraction. Nothing memorable has been recorded concerning the ſucceſſors of Ninus and Semiramis. Of that effeminate race of princes it is barely ſaid, that they aſcended the throne, lived in indolence, and died in their palace at Nineveh. Diodorus relates, that, in the reign of Teutames, the Aſſyrians, ſolicited by Priam their vaſſal, ſent to the Trojans a ſupply of 20,000 foot and 200 chariots, under the command of Memnon, ſon of Tithonus preſident of Perſia: but the truth of this relation is rendered doubtful by the accounts of other writers. Sardanapalus was the laſt of the ancient Aſſyrian kings. Contemning his indolent and voluptuous courſe of life, Arbaces, governor of Media, withdrew his allegiance, and roſe up in rebellion againſt him. He was encouraged in this revolt by the advice and aſſiſtance of Beleſis, a Chaldæan prieſt, who engaged the Babylonians to follow the example of the Medes. Theſe powerful provinces, aided by the Perſians and other allies, who deſpiſed the effeminacy or dreaded the tyranny of their Aſſyrian lords, attacked the empire on all ſides. Their moſt vigorous efforts were, in the beginning, unſucceſsful. Firm and determined, however, they at length prevailed, defeated the Aſſyrian army, beſieged Sardanapalus in his capital, which they demoliſhed, and became maſters of the empire, B.C. 821.

After the death of Sardanapalus, the Aſſyrian empire was divided into three kingdoms, viz. the Median, Aſſyrian, and Babylonian. Arbaces retained the ſupreme power and authority, and fixed his reſidence at Ecbatana in

Media. He nominated governors in Aſſyria and Babylon, who were honoured with the title of *kings*, while they remained ſubject and tributary to the Median monarchs. Beleſis received the government of Babylon as the reward of his ſervices; and Phul was entruſted with that of Aſſyria. The Aſſyrian governor gradually enlarged the boundaries of his kingdom, and was ſucceeded by Tiglath-pileſer, Salmanaſar, and Sennacherib, who aſſerted and maintained their independency. After the death of Aſſarhaddon, the brother and ſucceſſor of Sennacherib, the kingdom of Aſſyria was ſplit, and annexed to the kingdoms of Media and Babylon. Several tributary princes afterwards reigned in Nineveh; but no particular account of them is found in the annals of ancient nations. We hear no more of the kings of Aſſyria, but of thoſe of Babylon. Cyaxares king of Media, aſſiſted Nebuchadnezzar king of Babylon in the ſiege of Nineveh, which they took and deſtroyed, B. C. 606. The Chaldæan or Babyloniſh kingdom was transferred to the Medes, after the reign of Nabonadius, ſon of Evil-merodach, and grandſon of Nebuchadnezzar. He is ſtyled Belſhazzar in the ſacred records, and was conquered by Cyrus, B. C. 538. Ancient Aſſyria is now called the Turkiſh Curdiſtan, though part of it is ſubject to the Perſians. The capital is Curdiſtan; the ancient Nineveh being now a heap of ruins.

AS'TA, a town of the United Netherlands, in the duchy of Guelderland, four miles ſouth-eaſt of Culemburg.

Asta, a river of Spain, which empties itſelf into the bay of Biſcay, at Villa Vicioſa.

Asta Re'gia, anciently a town of Bætica, ſituated at the mouth of the Bætis, ſixteen miles diſtant from the port of Cadiz. *Antonine*. Its ruins ſhew its former greatneſs. Its name is Phœnician, denoting a frith or arm of the ſea, on which it ſtood. It is ſaid to be the ſame with Xera.

ASTABAT', a town of Armenia, in Aſia, ſituated near the river Aras, twelve miles ſouth of Nakſhivan. The land about it is excellent, and produces very good wine. There is a root peculiar to this country, called *ronas*; which runs in the ground like liquorice, and ſerves for dying red. Lat. 39. 0. N. lon. 46. 30. E.

ASTAN'DA, ſ. in antiquity, a royal courier or meſſenger, the ſame with Angarus. King Darius of Perſia is ſaid by Plutarch, in his book on the fortune of Alexander, to have formerly been an *aſtanda*.

ASTARABAT', a town of Perſia, in the province of Segeſten, 100 miles north of Zareng, and 220 weſt-north-weſt of Candahar.

ASTARAC', a ſmall province of France, before the late diviſion of the country, ſituated in Gaſcony, about eight leagues ſquare. Mirande was the capital.

AS'TAROTH, or Ashtaroth, a goddeſs of the Sidonians. The word is Syriac, and ſignifies *ſheep*, eſpecially when their udders are turgid with milk. From the fecundity of theſe animals, which in Syria continue to breed a long time, they formed the notion of a deity, whom they called *Aſtaroth*, or *Aſtarte*. See Astarte.

Astaroth, the ancient reſidence of Og king of Baſhan; whether the ſame with Aſtaroth Carnaim, is matter of doubt: if one and the ſame, it follows from Euſebius's account, that it lay in Baſhan, and to the eaſt of Jordan, becauſe in the confines of Arabia.

AS'TAR, Es'tar, or Eoas'tar, was a goddeſs worſhipped by the ancient Saxons, ſuppoſed by ſome to be the Astarte of the Phœnicians and Syrians. Many German etymologiſts from hence derive *their* and *our* word Eaſter.

ASTAR'TE, (the ſingular of Aſtaroth,) a Phœnician goddeſs, called in Scripture the *queen of heaven*, and the *goddeſs of the Sidonians*. Solomon, in compliment to one of his queens, erected an altar to her. In the reign of Ahab, Jezebel cauſed her worſhip to be performed with much pomp and ceremony: ſhe had 400 prieſts; the women were employed in weaving hangings or tabernacles for her; and Jeremiah obſerves, that "the children gathered the wood, the fathers kindled the fire, and the women kneaded the dough, to make cakes for the queen of heaven."

Astarte, anciently a city on the other ſide Jordan; one of the names of Rabbath Ammon, in Arabia Petræa. *Stephanus*.

AS'TEISM, ſ. in rhetoric, a genteel irony, or handſome way of deriding another. Such, e. gr. is that of Virgil:

Qui Bavium non odit, amet tua carmina, Mævi, &c.

Diomed places the characteric of this figure, or ſpecies of irony, in that it is not groſs and ruſtic, but ingenious and polite.

AS'TELL (Mary), the great ornament of her ſex and country, was the daughter of Mr. Aſtell, an opulent merchant at Newcaſtle-upon-Tyne, where ſhe was born about the year 1668. She was well educated, and, amongſt other accompliſhments, was miſtreſs of the French, and had ſome knowledge of the Latin tongue. Her uncle, a clergyman, obſerving in her ſome marks of a promiſing genius, took her under his tuition, and taught her mathematics, logic, and philoſophy. She left the place of her nativity at the age of twenty years, and ſpent the remaining part of her life in the vicinity of London. Here ſhe purſued her ſtudies with great aſſiduity, made great proficiency in the ſciences, and acquired a complete knowledge of many claſſic authors. Her life was ſpent in writing for the advancement of learning, religion, and virtue; and in the practice of thoſe religious duties which ſhe ſo zealouſly and pathetically recommended to others, and in which perhaps no one was ever more ſincere and devout. Her ſentiments of piety, charity, humility, and other Chriſtian virtues, were uncommonly refined and ſublime. Her mind was calm and ſerene; and her converſation was innocently facetious, and highly entertaining. She would ſay, "The good Chriſtian only hath reaſon, and he always ought, to be cheerful;" and, "That dejected looks and melancholy airs are very unſeemly in a Chriſtian." When ſhe was confined to her bed by a gradual decay, and the time of her diſſolution drew near, ſhe ordered her ſhroud and coffin to be brought to her bed-ſide; and there to remain in her view, as a conſtant memento of her approaching fate, and to keep her mind fixed on proper contemplation. She died in the year 1731, in the ſixty-third year of her age, and was buried at Chelſea. She wrote, 1. A Serious Propoſal to the Ladies. 2. An Eſſay in Defence of the Female Sex. 3. Letters concerning the Love of God. 4. Reflections upon Marriage. 5. Moderation truly ſtated. 6. The Chriſtian Religion, as profeſſed by a Daughter of the Church of England; and ſome other tracts.

AS'TER, ſ. [αστηρ, a ſtar; ſo called becauſe the flower is radiated.] In botany, a genus of the ſyngeneſia polygamia ſuperflua claſs, of the natural order of compoſiti radiati. The generic characters are—Calyx: common imbricate; the inner ſcales prominent a little at the end, the lower ones ſpreading. Corolla: compound radiate; corollules hermaphrodite, numerous in the diſk; females ligulate, more than ten in the ray; proper, of the hermaphrodite, funnel-ſhaped, with a five-cleft ſpreading border; of the female, ligulate, lanceolate, three-toothed, at length rolling back. Stamina: hermaphrodite; filaments five, capillary, very ſhort; anthera cylindric, tubulous. Piſtillum: hermaphrodite; germ oblong; ſtyle filiform, the length of the ſtamens; ſtigma bifid, ſpreading; females, germ and ſtyle the ſame; ſtigmas two, oblong, revolute. Pericarpium: none; calyx ſcarcely changed. Seeds: ſolitary, oblong, ovate; down capillary. Receptaculum: naked, flattiſh.—*Eſſential Character.* Receptaculum naked; down ſimple; corolla, ray more than ten; calyx, imbricate, lower ſcales ſpreading.

Species. I. Shrubby. 1. Aſter taxifolius, or yew-leaved ſtarwort: underſhrubby; leaves decurrent, ſubulate, channelled, ciliate; flowers terminal. Leaves alternate, much crowded. Stem ſcarcely a foot high, erect, branching at top. 2. Aſter reflexus, or reflected-leaved ſtarwort: ſhrubby; leaves ovate, ſub-imbricate, recurved, ſerrate-ciliate; flowers terminal. Stem proliferous. 3. Aſter crinitus:

ſhrubbyiſh; leaves ovate-oblong, acute, tomentoſe underneath; calyxes terminated with a hair. Branches leſs divided. 4. Aſter fruticoſus, or ſhrubby ſtarwort: ſhrubby; leaves linear, dotted; peduncles one-flowered, naked. Stems three feet high, with ſide woody branches having cluſters of narrow leaves like the larch-tree. Flowers produced from the ſide of the branches, upon long ſlender peduncles ſingly: they are of a pale blue colour, and appear the beginning of March. Theſe all grow naturally at the Cape of Good Hope.

II. Herbaceous, entire-leaved, peduncles naked. 5. Aſter tenellus, or briſtly-leaved ſtarwort: leaves filiform, prickle-ciliate; calyxes hemiſpheric, with equal leaflets. Root perennial. Stem annual, ſeven inches high, round, a little hairy, branching at top. Leaves ſcattered, linear, muricated underneath, with the end ſtanding out. Flowers ſolitary, terminal, peduncled, hanging down before they open, and during the night. Native of the Cape.

6. Aſter Alpinus, or Alpine or great blue mountain ſtarwort: leaves ſubſpatulate, rough with hairs, quite entire; ſtems ſimple, one-flowered. The Alpine ſtarwort ſeldom riſes more than nine (generally from four to ſix) inches high on the Alps, and, when tranſplanted into a garden, not above ſixteen. At the top of each ſtalk is one large blue flower, ſomewhat like that of the Italian ſtarwort, No. 9. It flowers in June; and grows wild on the Alps and Pyrenees, in Auſtria, Savoy, about Montpellier, &c.

7. Aſter Sibiricus, or Siberian ſtarwort: leaves lanceolate almoſt ſtem-claſping, ſerrate hairy-ſcabrous; calyxes lax, leaflets lanceolate acuminate leafy hiſpid. Stems two feet high, ſending out ſide-branches. It is a native of Siberia, and flowers in Auguſt. It varies with leaves broader at the baſe, and numerous flowers; and leaves narrower at the baſe, with few flowers.

8. Aſter tripolium, or ſea ſtarwort: leaves linear-lanceolate, quite entire, fleſhy, ſmooth, three-nerved; calycine leaflets ſub-membranaceous, obtuſe. Root perennial. Stem ſmooth, ſtriated, branched towards the top, one or more, from ſix or nine inches to two or three, and even four or five feet, in height; whence ſome authors have made a great and leſs variety. Florets of the ray twenty-one to twenty-three, generally pale purple; of the centre about eighteen, yellow. The florets of the ray are ſometimes white; and flowers occur without any ray. This variety is found in the iſle of Wight. Native of ſalt-marſhes on the ſea-coaſt of Europe; and by inland ſalt-lakes in Germany and Siberia. With us alſo frequent about Briſtol; and, not only on the coaſt, but in the interior parts of the kingdom; where Dr. Stokes ſuppoſes, with good reaſon, that its preſence may indicate ſalt ſprings. It flowers in July and Auguſt. Morriſon obſerves, that in the morning the flowers, being expanded, appear blue; the blue florets quickly vaniſhing, and the diſk remaining, they appear yellow; in the evening theſe go off, and the white down of the ſeeds ſhews itſelf: thus the flower undergoes a triple change within the day, and hence is called *tripolium*.

9. Aſter amellus, or Italian ſtarwort: leaves oblong-lanceolate, entire, ſcabrous; branches corymbed; calyxes imbricate, ſubſquarroſe; leaflets obtuſe, the inner membranaceous coloured at the end. The ſtems of this grow in large cluſters from the root, and each of them branch at the top into eight or ten peduncles, each terminated by a ſingle large flower, having blue rays, with a yellow diſk. It flowers in Auguſt or September, and, in mild ſeaſons will often continue till the middle of November. It grows naturally in the vallies of Italy, Sicily, and Narbonne; alſo in Auſtria, Carniola, Germany, and Switzerland, where it is found very common about Bienne. It is generally ſuppoſed to be the *amellus* of Virgil. The leaves and ſtalks being rough and bitter, the cattle ſeldom browſe upon them, ſo that they remain in the paſtures after the graſs is eaten bare, and, making a fine appearance when they are full of flowers, might well engage the poet's attention. Cultivated in 1596 by Gerard. Gaſpar Bauhin mentions an amellus with roundiſh leaves, ſhorter than in the common ſort, and obtuſe, only throwing out a little ſpine at the end; they are alſo quite entire: whereas in the common ſort the leaves are erect, of a long elliptic form, and pointed; ſometimes entire, and ſometimes ſlightly toothed about the edge: the branches are leſs ſpreading, the peduncles ſhorter, often bearing two flowers, only half the ſize of the others. The flowers are in other reſpects alike, and they grow in the ſame places. Their differences do not alter by culture. It varies with a white flower.

10. Aſter divaricatus, or divaricate ſtarwort: branches divaricate; leaves ovate, ſerrate; floral leaves quite entire, rather obtuſe, ſtem-claſping. Stems rough, about two feet high, dividing toward the top into many forked branches, diverging from each other. The flowers grow almoſt in an umbel, and appear the beginning of September. Native of Virginia.

III. Herbaceous, entire leaved, peduncles ſcaly. 11. Aſter hyſſopifolius, or hyſſop-leaved ſtarwort: leaves linear-lanceolate, drawn to a point at the baſe, quite entire, ſtiff; branchlets corymbed, faſtigiate; leaflets frequently linear, imbricate; calyxes imbricate. Stem a foot high, rather ſtiff; rudiments of branches from each axilla. 12. Aſter dumoſus, or buſhy ſtarwort: leaves linear quite entire ſmooth, thoſe on the branchlets very ſhort; branches panicled; calyxes cylindric, cloſely imbricate. Stems upright, two feet high, full of branches. 13. Aſter ericoides, or heath-leaved ſtarwort: leaves linear quite entire very ſmooth, thoſe of the branchlets ſubulate approximating, thoſe the ſtem elongated; calyxes ſubſquarroſe, leaflets acute, ſtem ſmooth. Stems ſlender, three feet high, with ſlender ſide-branches moſt of their length, ſo as to form a thick buſh; they are terminated by ſingle flowers. 14. Aſter tenuifolius, or fine-leaved ſtarwort: leaves ſublinear, quite entire; peduncles leafy. Stems five feet high, ſlender, angular, ſmooth, not branching much. Leaves alternate, not very rough. Flowers terminal, ſolitary, ſmall, white. The peduncles have very ſmall ſubulate leaflets ſcattered over them. 15. Aſter linarifolius, or ſavoury-leaved ſtarwort: leaves linear quite entire mucronate ſcabrous ſtiff, upper ones lax remote; calyxes imbricate, branches faſtigiate. Stems purpliſh; leaves very rough. 16. Aſter linifolius, or flax-leaved ſtarwort: leaves linear, quite entire, roughiſh; branches corymbed, faſtigiate, with ſmall leaflets; calyxes imbricate; rays about equal to the diſk. Leaves lanceolate, gradually narrowing to the end. Stems ſtrong, from two to three feet high, putting out many ſide-branches near half their length, terminated by one blue flower, which appears in Auguſt and September. Theſe are all natives of North America.

17. Aſter acris: leaves lanceolate-linear, ſtiff, quite entire, flat; flowers corymbed, faſtigiate; peduncles leafy. The ſtems divide into a great number of branches, which divide again toward the top into ſeveral ſmaller ones, with very narrow leaves their whole length; the flowers grow in large cluſters at the top, forming a ſort of corymb; they are of a pale bluiſh colour, and appear the beginning of Auguſt. This grows naturally in the ſouth of France about Montpellier, and in Italy; alſo in Spain and Hungary. Gmelin found a variety with a yellow flower in Siberia.

18. Aſter concolor: leaves ovate, ſeſſile, quite entire; ſtem quite ſimple; raceme terminal. Four feet high. Flowers pale blue, appearing about Michaelmas. Native of Virginia.

19. Aſter rigidus, or ſtiff-leaved ſtarwort: leaves linear, alternate; flowers terminal, ſolitary. Leaves ſmall; ſtem woody, weak, not branching, terminated by one ſpecious flower. Native of Virginia.

20. Aſter Novæ Angliæ, or New England ſtarwort: leaves lanceolate, quite entire, cordate, ſtem-claſping, hairy; calyxes longer than the diſk, looſe; leaflets linear-lanceolate, nearly equal; ſtem hiſpid. Stems many, five feet high, brown, terminated by large purple violet flowers, growing in a looſe panicle, and expanding in Auguſt. Native of New England and Virginia.

21. Aſter undulatus, or waved ſtarwort: leaves ſerrate

hairy waved, lower cordate; petioles winged, dilated at the baſe; branchlets virgate, calyxes imbricate, ſtem hiſpid. Leaves broad, heart-ſhaped at bottom. Stems between two and three feet high, with ſmall ſide-branches, upon which the flowers come out in looſe ſpikes; they are of a pale blue colour, inclining to white. It flowers in Auguſt, and is a North American plant. Cultivated in 1699 by Jacob Bobart.

22. Aſter grandiflorus, or Cateſby's ſtarwort: leaves ſtem-claſping, linear, quite entire, hiſpid, ciliate; thoſe of the branches and calyx reflex. Stems many, three and even four feet high, ſtiff and reddiſh, hairy, and branching pyramidically. The branches have ſmall lanceolate leaves, growing alternate, hairy, and rough to the touch, the ſize of thoſe on common hyſſop; and each is terminated by one large blue flower, coming out at the end of October, and making a fine appearance moſt part of November. Mr. Cateſby brought it from Virginia about the year 1720, and gave it to Mr. Fairchild, gardener, at Hoxton, who propagated it in ſuch plenty, that in a few years it was diſtributed into moſt curious gardens near London.

IV. Herbaceous, leaves ſerrate, peduncles ſmooth. 23. Aſter cordifolius, or heart-leaved ſtarwort: leaves heart-ſhaped acute, finely ſerrate, underneath hairy; petioles almoſt ſimple, branches panicled, ſtem rough with hairs. It flowers in September. Native of North America, and the northern parts of Aſia.

24. Aſter puniceus, or red-ſtalked ſtarwort: leaves ſtem-claſping, lanceolate, ſerrate, ſubſcabrous; branches panicled; calyxes ſurpaſſing the diſk; leaflets linear-lanceolate, nearly equal; ſtem hiſpid. Stems ſeveral, ſtrong, upwards of two feet high, of a purple colour. Flowers of a pale blue colour: they appear at the end of September. Grows in North America. Cultivated in 1739 in the Chelſea garden. It varies in height from eight to three feet. The ſtems are either dark purple, or reddiſh green.

25. Aſter annuus, or annual ſtarwort: leaves ſomewhat hairy, the lower ones ſubovate ſerrate, the upper lanceolate; calyxes hemiſpheric; leaflets ſubequal ſtrigoſe. Stems about two feet high, terminated by a corymb of white flowers, opening in Auguſt. Annual. Native of North America and Denmark. Cultivated in 1640.

26. Aſter vernus, or vernal ſtarwort: root-leaves lanceolate, quite entire, obtuſe; ſtem almoſt naked, filiform, a little branching. Native of Virginia.

V. Herbaceous, leaves ſerrate, peduncles ſcaly. 27. Aſter Indicus, or Indian ſtarwort: leaves ovate-oblong, ſerrate; floral leaves oval-lanceolate, quite entire; branchlets one-flowered. Native of Japan and China, flowering from Auguſt to October.

28. Aſter lævis, or ſmooth aſter: leaves ſtem-claſping oblong quite entire ſhining, root-leaves ſubſerrate; branches ſimple, bearing about one flower; calyxes imbricate; peduncles leafy, ſubdivided; leaflets ſomewhat wedge-ſhaped acute, thickened at the end; ſtem ſmooth. Obſerved in North America by Kalm.

29. Aſter mutabilis, or variable ſtarwort: leaves almoſt ſtem-claſping, lanceolate, ſerrate, gloſſy, drawn to a point below; branchlets virgate; calyxes ſomewhat leafy, lax; ſtem ſmooth. It flowers at the end of October; Miller ſays the end of Auguſt; and was cultivated by him in 1731.

30. Aſter Tradeſcanti, or Tradeſcant's ſtarwort: leaves lanceolate ſerrate ſeſſile ſmooth, the middle branches virgate, calyxes cloſely imbricate, ſtem round ſmooth. Native of Virginia. Cultivated in 1656 by John Tradeſcant, jun. For the aſter Tradeſcanti of Miller, ſee No. 40.

31. Aſter Novi Belgii, or New Holland ſtarwort: leaves almoſt ſtem-claſping lanceolate ſmooth but ſcabrous about the edge, the lower ſerrate; branches ſubdivided; calyxes looſely imbricate; leaflets linear-lanceolate; ſtem round, ſmooth. Height near four feet, having broad leaves at the bottom, which diminiſh gradually to the top. The flowers appear at the latter end of Auguſt. Native of Virginia and Pennſylvania. Cultivated in 1759 by Miller.

32. Aſter tardiflorus, or late-flowering ſtarwort: leaves ſeſſile lanceolate, drawn to a point at the baſe, ſerrate, ſmooth; calyxes lax; leaflets lanceolate-linear ſubequal, ſmooth. Native of North America. Linnæus obſerves, that it flowered with him only once in eighteen years. With us it flowers from July to September. Stems two feet high.

33. Aſter miſer, or ſmall white-flowered ſtarwort: leaves ſeſſile lanceolate ſubſerrate ſmooth, calyxes imbricate, leaflets acute, diſk equal to the rays. Native of North America. Stems ſlender, above three feet high, ſending out many weak branches on every ſide, with very ſmall leaves. Flowers on ſhort peduncles on every ſide of the branches, appearing in November, and often continuing part of December. Introduced in 1776 by Mr. Thouin.

34. Aſter macrophyllus, or broad-leaved blue ſtarwort: leaves ſerrate, oblong; the upper ovate ſeſſile, thoſe on the ſtem cordate petioled; upper petioles winged. Native of North America. It varies with root-leaves oblong and ovate.

35. Aſter Chinenſis, or Chineſe ſtarwort or China aſter: leaves ovate angular toothed petioled, calyxes expanding leafy terminal. Linnæus remarks that the China aſter recedes ſomewhat from the other ſpecies in the fructification: and Dillenius obſerves that it differs from them all in its manner of growth, in the form of its leaves, and the ſize of its flowers. The height is from eighteen inches to two feet; the ſtem erect, ſtiff, furrowed, as thick as the little finger, putting out long bending branches from top to bottom. The leaves next the ground and at the origin of the branches are large, and reſemble thoſe of common *chenopodium*, or gooſefoot: thoſe on the branches are much ſmaller, and the upper ones are narrow and very entire. The flowers are the largeſt and handſomeſt of any in this genus: the diſk yellow, at firſt flat, then convex; the floſcules of the ray broad and long, ſcarcely notched at the end. Dillenius received the ſeeds from profeſſor Van Royen of Leyden, and affirms, as well as Mr. Miller, that this ſpecies came originally to Europe from China. Linnæus doubts of this. According to Mr. Miller, the ſeeds of the China aſter were ſent by the miſſionaries to France, where the plants were firſt raiſed in Europe. "In the year 1731 (ſays he) I received ſeeds, from which I raiſed plants, with red, and ſome with white, flowers; and, in 1736, I received ſeeds of the blue flower; but theſe were all ſingle. They came by the title of *la reine Marguerite*, as the French ſtill call it. In 1752 I received the ſeeds of the double flowers, both red and blue; and, in 1753, the ſeeds of the double white ſort, from Dr. Job Baſter of Zirkzee." Beſides the common varieties, white, blue, purple, and red, (both ſingle and double,) there is now another in the gardens, with variegated blue and white flowers.

36. Aſter Tartaricus, or Tartarian ſtarwort: root-leaves lanceolate ovate ſerrate ſcabrous, ſtem few-flowered. Is a native of Siberia.

37. Aſter hiſpidus, or ſhaggy ſtarwort: loweſt leaves oblong crenate ſcabrous, ſtem-leaves lanceolate entire ciliate, ſtem ſcabrous. 38. Aſter ſcaber, or rugged ſtarwort: leaves oblong ſerrate ſcabrous, peduncles panicled. Each about a foot in height, and both natives of Japan.

Species recited by Mr. Miller, &c. 39. Aſter glaber, or peach-leaved ſtarwort: leaves oblong-lanceolate acute, ſerrate, ſtem branching, flowers terminal, calyxes linear erect. Height five feet, with branching ſtalks, divided at the top into ſeveral peduncles, terminated by large pale-blue flowers, which are in beauty in October. Native of North America.

40. Aſter ſerotinus, or late-flowering blue ſtarwort or Michaelmas daiſy: leaves oblong acute, broader at the baſe, half ſtem-claſping; ſtem branching; flowers terminal, for the moſt part ſolitary. This was brought from Virginia by John Tradeſcant. Stems numerous, three feet and a half high, ſhooting out many lateral branches, terminated by pretty large flowers, very pale blue tending to white.

41. Aſter præcox, or early ſtarwort: leaves oblong acute ſcabrous, ſharply toothed, half ſtem-claſping; ſtem erect,

hairy; flowers corymbed; calyxes hairy, erect. Stems ſeveral, ſtrong, hairy, a foot and a half high, dividing into many ſmall branches at the top. Flowers large, blue, expanding at the end of July. Native of the Alps and Pyrenees. 42. Aſter altiſſimus, or lofty ſtarwort.

43. Aſter ramoſiſſimus, or branching ſtarwort: leaves linear-lanceolate, ſtiff; ſtem very branching ſpreading, flowers placed regularly one above another, peduncles leafy. Stems ſlender, purpliſh, about three feet high, ſending out many ſide-branches, ſpreading horizontally, almoſt the whole length. Flowers ſmall, pale purple, appearing in November. Native of North America.

44. Aſter umbellatus, or umbelled ſtarwort: leaves lanceolate, drawn to a point at the baſe, quite entire, about the edge ſcabrous; branches corymbed, faſtigiate. Stems ſtiff, channelled, about two feet high. Leaves placed alternately on every ſide. Flowers white, expanding at the end of September. Native of Philadelphia. Mr. Miller deſcribes its ſtem ſix feet high, ſtiff, ſmooth, branching only at top; ray of the flower white. Native of Nova Scotia, and flowers in July and Auguſt.

45. Aſter nervoſus, or three-nerved ſtarwort: leaves linear-lanceolate acute nerved, ſtems ſimple, flowers terminal in a kind of umbel. This has much the appearance of the foregoing ſort, but the leaves are narrower, whiter on their under ſide, and have three longitudinal veins: the flowers are alſo larger and whiter. It grows about the ſame height, and flowers at the ſame time with the former.

46. Aſter paniculatus, or panicled ſtarwort: lower leaves ovate, half ſtem-claſping at the baſe; upper leaves lanceolate, ſmall; ſtem panicled, branches one-flowered, peduncles leafy. Height four feet; with large blue flowers, expanding about the end of October. Native of North America.

47. Aſter latifolius: leaves linear-lanceolate ſmooth, three-nerved; flowers corymbed, terminal. Stems a foot and a half high. Grows in Canada.

48. Aſter procumbens, or procumbent ſtarwort: leaves ovate toothed, ſtem procumbent, peduncles naked axillary one-flowered. Roots buſhy, fibrous, creeping in the ground, and ſending out many ſlender round ſtems, which bend and incline to the ground: they are about four or five inches long, deſtitute of leaves, each ſuſtaining one flower, the ſhape and ſize of the common field daiſy, of a whitiſh purple colour, but the rays are narrower. This ſpecies was diſcovered by Dr. Houſtoun, in the year 1729, about Vera Cruz in America: he ſent the ſeeds to England, ſome of which grew in the Chelſea garden, and the plants flowered the following ſummer, but did not perfect their ſeeds. Perhaps ſome of theſe may not be diſtinct from the foregoing ones: and there are doubtleſs many ſpecies recited by authors, which have not yet taken their proper place in the ſyſtem. In Gordon's catalogue we have the following names, not to be found in Linnæus: 1. Aſter alienatus, or ſtrange-flowered ſtarwort. 2. Aſter virgatus, or ſlender branched. 3. Aſter ſalicifolius, or willow-leaved. 4. Aſter purpureus, or purple. 5. Aſter aculeatus, or prickly-leaved. 6. Aſter repens, or broad-leaved creeping. And 7. Aſter corymboſus, or white ſtarwort with heart-ſhaped leaves. But the whole genus requires the hand of ſome ſagacious botaniſt to extricate it from the confuſion in which it lies at preſent.

49. Aſter holoſericeus: herbaceous, leaves oblong-lanceolate ſerrate, underneath ſilver-ſilky, ſcapes one-flowered leafy. 50. Aſter coriaceus: herbaceous, leaves ovate quite entire, furrowed above, woolly underneath, ſcapes one-flowered leafy woolly. Natives of New Zealand.

Species from the Kew catalogue. 51. Aſter cymbalariæ, or cymbalaria-leaved ſtarwort: ſhrubby; leaves ovate ſinuate rough with hairs, calyxes imbricate rough with hairs. It was found at the Cape by Maſſon, introduced in 1786, and flowers moſt of the ſummer.

52. Aſter memoralis, or wood ſtarwort: leaves linear-lanceolate, drawn to a point at the baſe, ſomewhat ſcabrous; branches filiform, one-flowered; calyxes lax imbricate, leaflets acute. Stem a foot high. Native of Nova Scotia, and flowers in Auguſt and September.

53. Aſter paludoſus, or marſh ſtarwort: leaves linear ſtem-claſping erect, quite entire, very ſmooth; peduncles almoſt naked, calyxes ſquarroſe. Leaves three or four inches long, and two or three lines broad, remote. Native of the ſwamps of Carolina: flowers in September and October.

54. Aſter patens, or ſpreading hairy-ſtalked ſtarwort: leaves oblong entire acute cordate, almoſt ſtem-claſping, ſcabrous; branches ſpreading, elongated, few-flowered; calyxes imbricate, ſubſquarroſe; ſtem rough with hairs. Stem three feet high. Native of Virginia; and flowers in September and October.

55. Aſter folioloſus, or leafy ſtarwort: leaves lanceolate-linear quite entire ſmooth, thoſe on the branchlets ſpreading very much; calyxes imbricate, leaflets acute, ſtem pubeſcent. Native of North America, and flowers in October.

56. Aſter multiflorus, or ſmall-leaved ſtarwort: leaves linear quite entire, ſmoothiſh; branches one-ranked, calyxes imbricate ſquarroſe, ſcales ſomewhat leafy acute, ſtem pubeſcent. Native of North America, and flowers in September and October.

57. Aſter falicifolius, or willow-leaved ſtarwort: leaves linear-lanceolate quite entire ſmooth, calyxes imbricate lax, ſtem gloſſy. The height of a man: is a native of North America, and flowers in September and October.

58. Aſter æſtivus, or Labrador ſtarwort: leaves lanceolate, almoſt ſtem-claſping, quite entire, ſmooth, ſcabrous about the edge; calyxes lax, with equal leaflets. Is two feet high, a native of North America, and flowers in July and Auguſt.

59. Aſter junceus, or ſlender-ſtalked ſtarwort: leaves lanceolate-linear ſeſſile ſmooth, the loweſt ſubſerrate, thoſe of the branchlets lanceolate; branches virgate, calyxes imbricate, ſtem ſmoothiſh, four feet high. 60. Aſter pendulus, or pendulous ſtarwort: leaves elliptic-lanceolate ſerrate ſmooth, thoſe of the branchlets rather remote; branches very much divaricated, pendulous; ſtem pubeſcent. Theſe are natives of North America, and flower in October.

61. Aſter diffuſus, or diffuſe ſtarwort: leaves elliptic-lanceolate ſerrate ſmooth proportioned, branches ſpreading, calyxes imbricate, ſtem pubeſcent. Native of North America, and flowers in September.

62. Aſter divergens, or ſpreading downy-ſtalked ſtarwort: leaves elliptic-lanceolate ſerrate ſmooth, thoſe on the ſtem linear-lanceolate elongated, branches ſpreading, calyxes imbricate, ſtem pubeſcent. It is five feet high and upwards, a native of America, and flowers in October.

63. Aſter corymboſus, or corymbed ſtarwort: leaves cordate ſmooth acuminate all finely ſerrate, petioles ſimple, branches faſtigiate, ſtem ſmooth. Native of North America, and flowers in September.

64. Aſter ſpectabilis, or ſhowy ſtarwort: leaves lanceolate ſomewhat ſcabrous, the lower ſerrate; branches corymbed; calycine leaflets lax leafy, nearly wedge-ſhaped, ſharpiſh, ſquarroſe. Stem two feet high. It is a native of North America, and flowers in Auguſt and September.

65. Aſter radula, or rough ſtarwort: leaves lanceolate ſerrate acuminate wrinkled very ſcabrous, calyxes imbricate, leaflets lanceolate obtuſe. Native of Nova Scotia; flowers in September.

Propagation and Culture. In this numerous genus, the far greater part of the ſpecies are hardy, herbaceous, fibrous-rooted, autumn-flowering, ſhowy, perennials, with annual ſtems, from one to five feet in ſtature. America has furniſhed a conſiderable number of them; and they are particularly adapted to adorn large borders and plantations of ſhrubs in the latter ſeaſon. Two only, No. 25 and 35, are annual; and no more than five, No. 6, 8, 9, 17, and 25, natives of Europe. Some ſpecies from the Cape are ſhrubby plants, of the greenhouſe. The ſpecies from the Cape, No. 1-5, and No. 51, together with the Indian ſtarwort, No. 27, and the two Japaneſe ſpecies, No. 37, 38, not producing ſeeds in England, are propagated by cuttings, any time during the ſummer. Theſe ſhould be planted in ſmall pots filled with light earth, and plunged into an old hot-bed; where, if they are ſhaded from the ſun, and gently watered, they will put out roots in ſix weeks, when they may be placed in the open air; and, in about a month after, they ſhould be ſeparated, each into a ſmall pot filled with light ſandy earth. In October they muſt be removed into the greenhouſe, and placed where they may enjoy as much free air as poſſible, but be ſecured from froſt and damps, either of which will deſtroy them; ſo that they are much eaſier preſerved in a glaſs-caſe, where they will enjoy more light and air than in a greenhouſe; but they muſt not be placed in a ſtove, for artificial heat will ſoon deſtroy the plants. Theſe ſorts are at preſent in few Engliſh gardens. The North American ſpecies, which make at leaſt three-fifths of the genus, together with the Alpine and Italian ſtarworts, are eaſily propagated by parting the roots in autumn; they are moſt of them hardy, and will thrive in almoſt any ſoil or ſituation: for theſe reaſons, and becauſe they adorn the latter ſeaſon with the abundance and variety of their ſpecious flowers, they are very valuable plants, eſpecially among ſhrubs, and in large ornamental plantations, properly mixed with golden-rods, and other perennial autumnal hardy plants. Some of the ſpecies, No. 6, 41, 42, prefer a ſhady ſituation, and moiſt ſoil. They are apt to ſpread very much at the roots, ſo as to be troubleſome; and the ſeeds of ſome few are blown about, and come out like weeds. The Italian ſtarwort has not been ſo much cultivated in England, ſince the great variety of American ſpecies has been introduced, though it is by no means inferior to the beſt of them, and in ſome reſpects preferable to moſt; for it is not ſo ſubject to creep by the root as many of the American ſorts; nor do the ſtalks require ſupporting as they do, for theſe ſeldom grow more than two feet high, and are generally ſo ſtrong as to be in little danger of being broken by the wind. This is alſo propagated by parting the roots, ſoon after the plant is out of flower; for thoſe which are removed in the ſpring will not flower ſo ſtrong the ſucceeding autumn. The roots ſhould not be removed oftener than every third year, where they are expected to produce many flowers. The China aſter, being an annual plant, is propagated by ſeeds, which muſt be ſown in the ſpring on a warm border, or rather upon a gentle hot-bed, juſt to bring up the plants; for they ſhould be inured to the open air as ſoon as poſſible, to prevent their being drawn up very weak; when the plants are big enough to remove (three inches high), they ſhould be carefully taken up and planted in a bed of rich earth, at ſix inches diſtance every way, obſerving to ſhade them from the ſun till they have taken new root; and, if the ſeaſon proves dry, they muſt be often refreſhed with water. In this bed they may remain a month or five weeks, by which time they will be ſtrong enough to tranſplant into the borders of the flower-garden, where they are deſigned to remain; or into pots, to adorn court-yards, &c. the plants ſhould be taken up carefully, with large balls of earth to their roots, and the ground dug up, and well broken with the ſpade, where the holes are made to receive the plants; after they are planted, and the earth cloſed about their roots, there ſhould be ſome water given them to ſettle the earth. This work ſhould, if poſſible, be done when there is rain, for then the plants will ſoon take new root, after which time they will require no other care but to keep them clear from weeds. In Auguſt theſe plants will flower, by which time, if the ground be rich, they will be two feet high, and furniſhed with many ſide-branches, each terminated by a large radiated flower, forming one of the greateſt ornaments of the flower-garden in autumn. The ſeeds ripen the beginning of October, and ſhould be gathered when they are perfectly dry. In order to preſerve the varieties with double flowers, thoſe which grow upon the ſide branches, being commonly fuller of leaves than the flowers on the main ſtem, ſhould always be preſerved for ſeeds. See ARCTOTIS, ARNICA, BUPHTHALMUM, CARPESIUM, CHRYSANTHEMUM, CHRYSOCOMA, CINERARIA, CONYZA, ERIGERON, GORTERIA, INULA, SENECIO, SOLIDAGO, and TUSSILAGO.

ASTER, or STELLA MARINA. See ASTERIAS.

ASTERABAT', a province in the north-eaſt part of Perſia, having Tabriſtan on the eaſt, part of the Caſpian Sea and part of Jorjan on the north, Koraſan on the weſt, and Koumas on the ſouth. It is a mountainous country, except near the banks of the rivers that almoſt ſurround it, where it is pleaſant and fruitful, producing grapes of a prodigious ſize. In other parts the ſoil is ſandy and barren. Aſterabat is the chief town, which gives name to a gulph in the Perſian ſea, at the bottom of which it ſtands. Lat. 36. 40. N. lon. 72. 10. E. Greenwich.

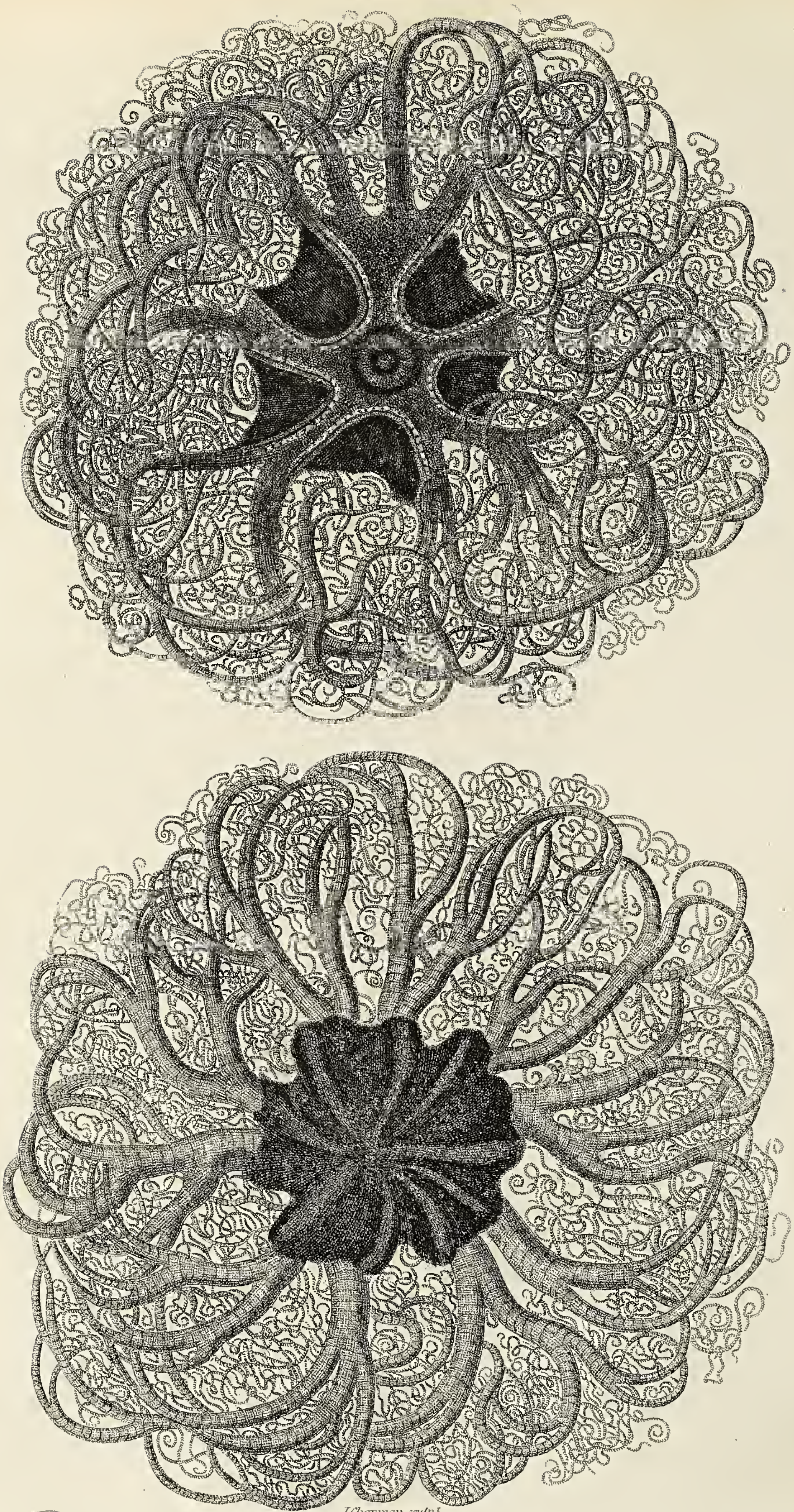
ASTE'RIA, *ſ.* a name by which ſome authors have called the *falco palumbarius*, or *goſhawk*. See FALCO.

ASTERIA, in fabulous hiſtory, the daughter of Ceus, married to Perſes, ſon of Crius, by whom ſhe had the celebrated Hecate. She enjoyed the favours of Jupiter, under the form of an eagle; but, being afterward angry with her, ſhe was changed into a quail. *Ovid.*

ASTERIA is alſo the name of a gem, uſually called the *cat's eye*, approaching to the nature of the opal, in having a bright included colour, which ſhifts about as it is moved. It has, however, only two colours, a pale brown and a white; the brown ſeeming the ground, and the white playing about in it, as the fire-colour in the opal. It is hard, and will take a fine poliſh, but is uſually worn with its native ſhape and ſmoothneſs. It is found in the Eaſt and Weſt Indies, and in Europe. The iſland of Borneo affords ſome very fine ſpecimens, but they are uſually ſmall; they are very common in the ſands of rivers in New Spain; and in Bohemia they are not unfrequently found immerſed in the ſame maſſes of jaſper with the opal.

ASTERIA is alſo the name of an extraneous foſſil, called in Engliſh the *ſtar-ſtone*. Theſe foſſils are ſmall, ſhort, angular, or ſulcated, columns, between one and two inches long, and ſeldom above a third of an inch in diameter: compoſed of ſeveral regular joints; when ſeparated, each reſembles a radiated ſtar. They are, not without reaſon, ſuppoſed to be a part of ſome ſea-fiſh petrified, probably the aſterias or ſea-ſtar. The aſteria is alſo called *aſtrites*, *aſtroites*, and *aſteriſcus*. They may be reduced to two kinds: thoſe whoſe whole bodies make the form of a ſtar; and thoſe which in the whole are irregular, but are adorned as it were with conſtellations in the parts. Dr. Liſter, for diſtinction's ſake, only gives the name *aſteria* to the former ſort, diſtinguiſhing the latter by the appellation of *aſtroites*; other naturaliſts generally uſe the two indiſcriminately. The aſteria of the ancients, appears to be of this latter kind. The quality of moving in vinegar, as if animated, is ſcarcely perceivable in the aſtroites, but is ſignal in the aſteria. The former muſt be broken in ſmall pieces before it will move; but the latter will move, not only in a whole joint, but in two or three knit together. Theſe ſtones are found in many parts of England; but at Cleydon in Oxfordſhire they are larger than common, but of a ſofter ſubſtance.

ASTE'RIAS, STAR-FISH, or SEA-STAR, *ſ.* a genus of inſects of the order of vermes molluſca. It has a depreſſed body, covered with a coriaceous coat; is compoſed of five or more ſegments, running out from a central part, and furniſhed with numerous tentacula, having the mouth in the centre. The conformation of the mouth is this: the under part of each lobe runs towards a point with the reſt at the centre of the body; and theſe ſeveral productions of the rays make a ſort of lips, the ends of each of which are armed with a number of ſharp teeth, which ſerve to to take and convey the food into the body. From this mouth there goes a ſeparate canal to all or many of the rays, which runs through their whole length, and becomes gradually narrower as it approaches the extremity. The tentacula reſemble the horns of ſnails, but ſerve the animal to walk with. They are capable of being contracted or ſhortened: and it is only at the creature's moving that they



J.Chapman sculp.t

The Caput Medusæ, or Magellanic Star-fish.

London, Published as the Act directs, June 18, 1796, by J.Wilkes.

they are ſeen of their full length; at other times, no part of them is ſeen but the extremity of each, which is formed like a ſort of button, or bead, being ſomewhat larger than the reſt of the horn.

The moſt ſingular of this genus is the *caput Meduſæ*, or Magellanic ſtar-fiſh, repreſented in Plate I. of aſterias. It is called Meduſa's Head, becauſe it bears ſome reſemblance to the ſnaky hair which painters have made peculiar to Meduſa. The body is divided into five parts or rays, as may be ſeen in the upper figure of the plate, which repreſents the belly or under part of the animal. In the center are obſerved ſome hollow rings, which, as it is ſuppoſed, conſtitute the mouth, ſince they are furniſhed with pores, through which the creature receives its nouriſhment in the water. To the under part of the five rays are affixed a great number of legs, diſpoſed in order, and by the help of theſe the animal contrives to walk, though indeed but very ſlowly. In the ſpace between is a black thick ſkin, that covers the back or upper part of the body, which is divided by ribs, as ſhewn in the lower figure; from the center of which grows out five double, or ten ſingle, arms or rays, of a yellow or reddiſh colour, and ranged two and two. The rays are ſub-divided into two parts, and each of theſe into two other branches, which ſucceſſively become in proportion ſmaller and more numerous, till the ray terminates in an infinite number of ſmall ramifications. All the branches, beginning from the body, were, in the animal repreſented in this plate, about a foot and a half long, and the animal meaſured upwards of three feet in diameter. The body, and all the rays, even to the extremity, are compoſed of hard cartilaginous vertebræ, which reſemble a ſtar or diſk, and are furniſhed with a prickle. It muſt be remarked that every ray ultimately diſparts itſelf into 512 extremities, the five rays therefore all together are ſeparated into 2560. Now, every branch, having 512 extremities, is compoſed of 1023 joints; the five rays therefore conſiſt of 5115. As every ray contains upon an average ſix vertebræ, there are all together 81,840 cartilaginous vertebræ; when therefore one of theſe creatures comes to its full and perfect growth, the joints, extremities, and vertebræ, multiplied together, produce a number almoſt incapable of being counted! As the ancients ranked this creature among the vegetables, they were doubtleſs of opinion that it drew its nouriſhment through a number of pores, ſomewhat like flowers which grow in the water. But Linnæus, and all the modern naturaliſts, find its mouth very diſtinctly in the centre, where five valves are united in a point. All the claws and joints are moveable, and lie extended in the water, which makes the animal appear perfectly like a flower in full bloom. It is oftentimes found upon a rock, or twiſted round a coral. In order to take theſe fiſh, they touch them with a ſtick, to which they immediately adhere. When drawn out of the water they hang down looſely like a bundle of flax, and when put down to be examined, they contract themſelves and become hard. The fragments of theſe rays or claws furniſh the foſſil entrochi. If we drown this animal in brandy or ſpirits of wine, and keep the rays flat and expanded in the execution, it is eaſy to extract, by means of a pair of forceps, the ſtomach of the animal whole and entire through the mouth. With reſpect to the difference between the large and ſmall ſpecies, the one has the claws leſs divided, and the other all forked. This ſpecies is found in the Indian ocean, and at the Cape of Good Hope. In the North Seas, and near Archangel, it is ſaid ſome are found of a prodigious ſize. The Caſpian ſea, however, abounds with the largeſt ſort of Meduſa's head. This creature ſeems to form the medium by which nature paſſes from naked worms to teſtaceous animals, and ſhell-fiſh in general.

Beſides the caput Meduſæ, this genus comprehends many ſpecies, which differ from each other as much in their their ſtructure as in the number of rays. Some have them ſmooth, others jagged, rough, prickly, or tuberous and furrowed The generality of theſe creatures are obſerved to have five rays; but thoſe having only four are as uncommon as thoſe with above five. Some are called ſtar-fiſh, others ſea-pies, others comets, and ſome bear the name of ſun-fiſh. In general they can ſwim with eaſe, and they are alſo able to adhere firmly to rocks, or the bottom of the ſea. The following ſpecies are found on the Britiſh coaſt: 1. The glacialis, with five rays, depreſſed, broad at the baſe, yellow, and having a round ſtriated operculum on the back, is the moſt common; it feeds on oiſters, and is very deſtructive to the beds. 2. The clathatra, or cancellated ſea-ſtar, with five ſhort thick rays, hirſute beneath, cancellated above, is found with the former, but more rare. 3. The oculata, with five ſmooth rays, dotted or punctured, is of a fine purple colour, and is found about Angleſea. 4. The hiſpida, with five rays, broad, angulated at top, and rough with ſhort briſtles, is of a brown colour, and likewiſe found about Angleſea. 5. The placenta, with five very broad and membranaceous rays, extremely thin and flat, is found about Weymouth. 6. The ſpherulata, with a pentagonal indented body; a ſmall globular bead between the baſe of each ray; the rays ſlender, jointed, taper, and hirſute on the ſides; found off Angleſea. 7. The decacnemos, has ten very ſlender rays, with numbers of long beards on the ſides; the body is ſmall, and ſurrounded beneath with ten ſmall filiform rays. It inhabits the weſtern coaſts of Scotland.

There are ſeveral foreign ſpecies very curious, the principal of which are as follow: 1. Aſteria reticulata, or reticular ſtar-fiſh, with five rays; in which the whole ſubſtance is compoſed of muſcular and cartilaginous excreſcences; the ſmall bones, which are found in the interior part of every ray, and which ſpread themſelves through it, are of an oblong figure, and have a large ſurface upwards like a blade-bone; and, being placed one after the other, repreſent a ſort of net-work. The other bones are ſmall ſpherical ſubſtances, of unequal ſurfaces, which have on the outſide the figure of a nipple, from which projects an apophyſis or cartilaginous protuberance. But, when theſe bones have attained their full ſize, they are in the ſhape of a ſtar, like thoſe toward the centre part of the animal. The number of theſe may perhaps amount to ſome thouſands. They are all united together in a tough ſubſtance reſembling ſhagreen, and ſeem on the outſide to be an aſſemblage of ſmall points or grains, like millet or poppy ſeed, which probably encreaſe by degrees, and conſtitute the growth of this creature. The interior part of them is a mucilage, compoſed of veſicles placed under the bones, which ſeem to aſſiſt the motion of the apophyſes, as they expand and contract themſelves alternately. M. le Kade, having anatomiſed an *aſteria rubens* of Linnæus, has deſcribed the interior parts of the ſtar-fiſh with great accuracy. In the centre of the inferior ſurface is diſcovered an opening, which divides itſelf into five furrows, extending to the extremity of each ray. At this aperture is obſerved a great number of points, and each ſide of the furrows is furniſhed with the ſame, every one of which is ſupported by a ſmall veſicle on the ſide of the furrow, which perfectly reſembles a hand with five fingers. By the help of theſe points or nipples, which amount from five hundred to a thouſand, the fiſh appears to advance along the bottom of the ſea, though indeed exceedingly ſlow, and almoſt imperceptible. The mechaniſm of this motion conſiſts in the veſicles, which are placed under theſe points or legs, being filled with a clear liquid, by the preſſure of which the legs are forced out; and they again contract themſelves as ſoon as the liquor runs back, like the horns of a ſnail. In the water the motion becomes more nimble, probably becauſe in a fluid the reſiſtance is not ſo great. The five ſides in general form a regular pentagon; but, when the animal is drawn out of the water, it is with great difficulty the rays are kept from being disfigured, and put out of their place. It often happens, by ſome accident, that a ray is torn from the body; in which caſe the animal is endued with the power of reproduction, ſince another ſhortly grows out and ſupplies its place. The natural colour of theſe creatures is blue, but when dried they become of a browniſh yellow. When ſtar-fiſh, which otherwiſe attract the damp, and retain the ſmell of ſalt water, are demoliſhed by putrefaction, or killed by any accident, they appear like a heap of grains; and it is affirmed, that not only every little piece, but even every vertebra, produces a new animal; and hence it is that a ſtar-fiſh in the ſea, which has been mutilated, ſo ſoon recovers itſelf. The upper ſide of this creature is ſhewn in the Aſterias Plate II. *fig.* 1. and they are found in great plenty in the Eaſt Indies, in the Antilles, and in the gulph of Mexico.

2. Aſteria ophiura, or lumbricale, a ſpecies very common in the North Seas; but the one repreſented, *fig.* 2. in this Plate, is much larger and darker, and was found in the American Ocean. The upper ſurface of this animal is compoſed of rings or vertebræ, which communicate a power of motion to the rays or arms on every ſide. The rays are of a membranaceous ſubſtance, and very tender. Its colour is blue when in the natural ſtate; but when dried becomes reddiſh or aſh-coloured. This ſpecies is found on rocks, and between lumps of coral, to which it will firmly adhere. It has the power of quick motion, its rays being entirely compoſed of a regular vertebræ.

3. Aſterias rubens, or ſtar-fiſh, the whole ſubſtance whereof appears like an aſſemblage of bones in the form of wedges, which in their ſize and figure reſemble ſmall bruſhes, and are ſuppoſed to be the young of the parent animal; every one of which, as they encreaſe in bulk, and approach to maturity, fall off from the parent, and become a ſeparate ſtar-fiſh. It has already been noticed that the rays or arms of this animal, after having been broken off, will regenerate, and grow again; which fact is clearly proved in the ſubject from which *fig.* 3. was engraved. This creature had by ſome accident loſt the fifth ray; but the accretion of a new one, ſmall, and juſt growing out, is plainly to be ſeen in the plate.

4. The tetractis petaloides of Mr. Link. This creature, having only four rays, is very rare and curious. It is beſet with excreſcences, and little tufts alternately diſpoſed, but which are ſo cloſe and thick, that it is impoſſible to examine them diſtinctly without deſtroying the whole; they are however ſuppoſed to be the young growing from the parent animal. This is another ſpecies of the aſteria rubens of Linnæus.

5. Aſteria aranciaca, or the aſtropecten echinatus minor of Mr. Link. The ſtructure of this individual differs very materially from the others, although the rays ſpring from a point in the centre, and the bones are placed in rows like thoſe of the preceding, but more numerous, and differ from each other in ſize. This ſpecies is not rough, and the bones are laid flat by the ſides of each other, being only ſeparated by deep notches. In the centre part, where the five rays unite, the laſt vertebra of two of them, at the point where they are oppoſed to each other, form an oblong aperture to each ray; there are therefore five ſuch apertures. The upper ſurface of this ſpecies alſo differs from the other varieties; and nothing but a ſimilar vertebræ to that above-mentioned is to be obſerved; only that thoſe of the under ſurface turn a little round the ſide, and then become jagged. With reſpect to the other exterior parts, they are all beſet with an infinite number of hairy points, thick-ſet and erected, like the ſurface of coarſe pluſh. Every one of theſe erected points is ſuppoſed to be a new animal growing out of the ſubſtance of the old.

6. Aſteria aculeata, or the ſtella marina ſcolopendroides of Mr. Link. The body of this ſpecies is round, or pentagonal, or in the ſhape of a flower; and every ray has four rows of thorny points, ſo that every vertebra has four prickles. On the under ſurface of the rays, between the vertebræ of the ſides, may be ſeen a great number of pores, in the form of little dots or points; and the mouth conſiſts of an aperture in the centre, in the form of a ſtar. Theſe creatures are natives of America, and are very abundant among the alcyons. If it be true, that from every bone, or from every tuft of prickles, there ſprings out a new creature; in that caſe every ſingle individual would become the mother of more than fifty thouſand young ones. All theſe little tufts or bruſhes are laid in rows, one after another, and united to each other by a tranſparent membrane, like that which is covered with white powder in the wings of butterflies. There are indeed in every ray many ſuch like rows of tufts; and the bones are in many of them diſengaged and ſeparated from each other, ſo as to make the creature appear hairy. On the laſt row of bones ariſes a new row by accretion, which are alſo duly ſeparated, while the laſt row is united by a membranaceous ſubſtance, and conſtitutes the interior part of the animal, as far as the new bones are ſet in. If then a ſingle layer is put in all round, the creature receives from thence more than twenty-five thouſand new parts; and this number is increaſed by every new layer or augmentation of circumference, in a manner ſo prodigious, that even a new creature is formed among the former bones. There may be ſome reaſon to doubt, whether after a continuance of this prodigious multiplication, the ſea would be able to contain ſo many of theſe inhabitants: but the whale, the ſea-horſe, the ſword-fiſh, the ſea-cows and lions, as well as many other great animals, derive their nouriſhment from theſe creatures, and conſequently prevent too great an increaſe of them.

Ariſtotle and Pliny called this genus *αςρη*, and *ſtella marina*, from their reſemblance to the pictured form of the ſtars of heaven; and they aſſerted that they were ſo exceedingly hot, as inſtantly to conſume whatſoever they touched. The foſſil world has been greatly enriched by the fragments and remains of the ſeveral pieces of ſtar-fiſh which have been converted into ſtones. See ASTERIA.

ASTERIAS, *ſ.* in botany. See GENTIANA.

ASTERISCOI'DES, *ſ.* in botany. See OSMITES.

ASTERIS'CUS, *ſ.* in botany. See ANTHEMIS, BUPHTHALMUM, and SILPHIUM.

AS'TERI SI'MILIS, *ſ.* in botany. See ERIGERON.

AS'TERISK, *ſ.* [*αςερισκος*, Gr.] A mark in printing or writing, in form of a little ſtar; as (*).—He alſo publiſhed the tranſlation of the Septuagint by itſelf, having firſt compared it with the Hebrew, and noted by *aſteriſks* what was defective, and by obeliſks what was redundant. *Grew.*

AS'TERISM, *ſ.* The ſame with conſtellation, or a collection of many ſtars, which are uſually repreſented on globes by ſome particular image or figure, to diſtinguiſh the ſtars which compoſe this conſtellation from thoſe of others.

ASTE'RIUS, or ASTU'RIUS, a Roman conſul, in 449. We have, under his name, "A Conference on the Old and New Teſtament," in Latin verſe: in which each ſtrophe contains, in the firſt verſe, an hiſtorical fact in the Old Teſtament; and, in the ſecond, an application of that fact to ſome point in the New.

ASTERN', *adv.* [from *a* and *ſtern.*] In the hinder part of the ſhip; behind the ſhip:

The galley gives her ſide, and turns her prow,
While thoſe *aſtern*, deſcending down the ſteep,
Through gaping waves behold the boiling deep. *Dryden.*

ASTEROCE'PHALUS, *ſ.* in botany. See SCABIOSA.

ASTEROI'DES, or BASTARD STARWORT. See INULA, BUPHTHALMUM, and CONYZA.

ASTEROPÆ'US, ſon of Pelegon, and king of Pænnia, who, being at the ſiege of Troy, was killed by Achilles.

ASTE'ROPE, a daughter of Atlas, and one of the Pleiades. A daughter of Pelias, who aſſiſted her ſiſters to kill her aged father, whom Medea promiſed to reſtore to his youth.

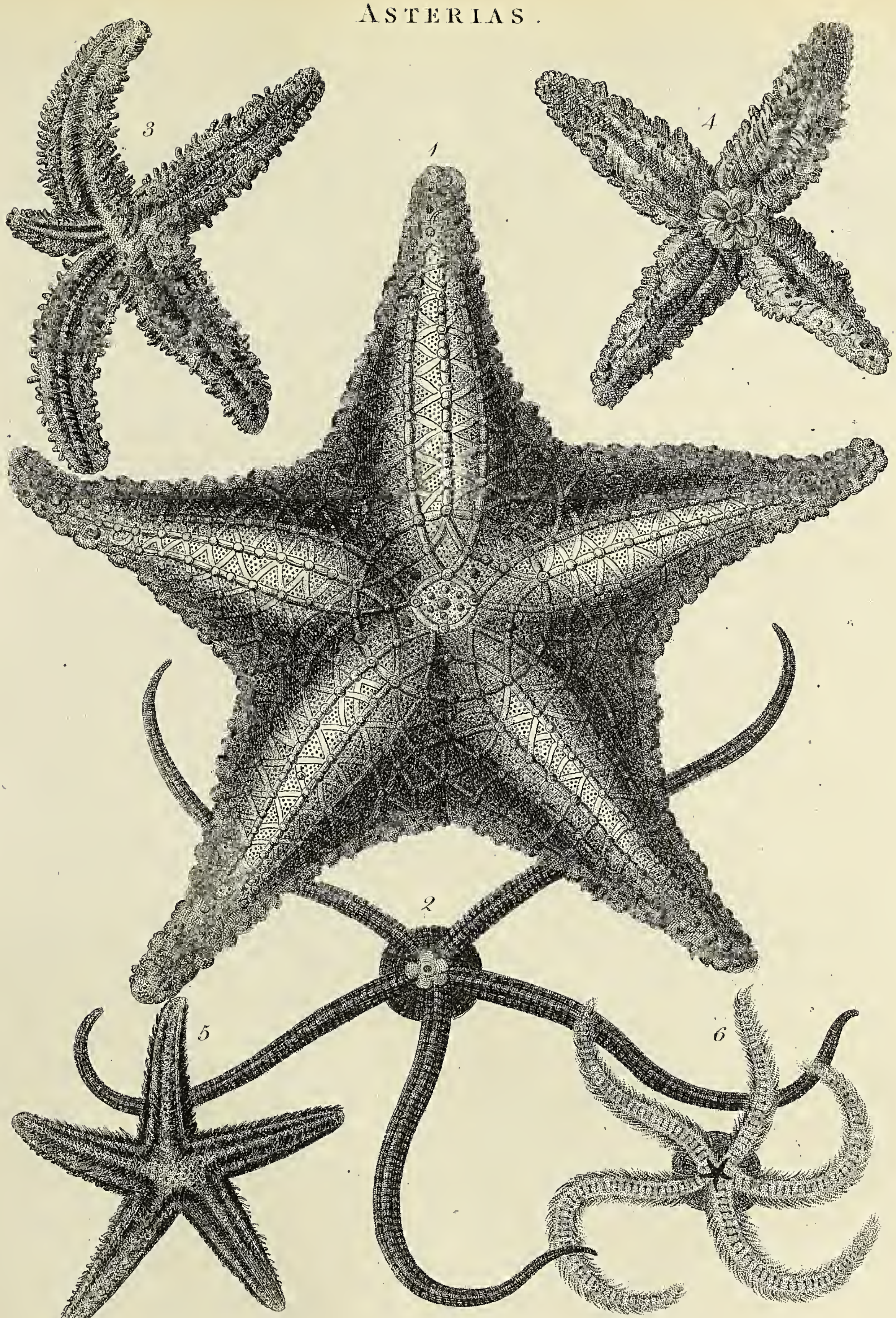
ASTEROPLATYCAR'POS. See OTHONNA.

ASTEROPO'DIUM, *ſ.* A kind of extraneous foſſil, of the ſame ſubſtance with the aſteriæ or ſtar-ſtones, to which they ſerve as a baſe.

ASTEROP'TERUS. See INULA and LEYSERA.

To ASTERT', *v. a.* [A word uſed by Spenſer, as it ſeems, for *ſtart*, or *ſtartle.*] To terrify; to ſtartle; to fright:

ASTERIAS.



Star Fish

J. Chapman sc.

London Published as the Act directs, Sept. 17th 1796, by J. Wilkes

We deem of death, as doom of ill deſert ;
But, knew we fools what it us brings until,
Die would we daily, once it to expert ;
No danger there the ſhepherd can *aſtert*. *Spenſer.*

ASTESAN', or County of As'TI, a country of Italy, bounded on the weſt by the principality of Chieri and Carmagnola, or the north by the Vercellois, on the eaſt by the Vercellois and the Alexandrin, and on the ſouth by the marquiſate of Gorzegno, about twenty-five miles long and ten broad. It was once a republic, but now belongs to the king of Sardinia.

ASTHE'NIA, *ſ.* [from α priv. and σθενος, ſtrength.] Debility, weakneſs.

AST'HMA, *ſ.* [from αω, or ασθμαινω, to breathe.] A frequent, difficult, and ſhort, reſpiration, joined with a hiſſing ſound and a cough, eſpecially in the night-time, and when the body is in a prone poſture; becauſe then the contents of the lower belly bear ſo againſt the diaphragm, as to leſſen the capacity of the breaſt, whereby the lungs have leſs room to move. *Quincy.*—An *aſthma* is the inflation of the membranes of the lungs, and of the membranes covering the muſcles of the thorax. *Floyer.*—For the cure, ſee MEDICINE.

ASTHMA'TIC, or ASTHMA'TICAL, *adj.* Troubled with an aſthma.—In *aſthmatical* perſons, though the lungs be very much ſtuffed with tough phlegm, yet the patient may live ſome months, if not ſome years. *Boyle.*—After drinking, our horſes are moſt *aſthmatic*; and, for avoiding the watering of them, we wet their hay. *Floyer.*

AS'TI, a city of Piedmont, ſituated near the rivers Barbo and Tanaro, and capital of a country called *Aſteſan*, or *County of Aſti.* The ſurrounding country is agreeable and fertile, interſperſed with ſmall hills, embelliſhing the ſeats of the nobility and gentry. There are ſprings in the neighbourhood, from whence they get ſalt. Aſti was not generally known before the year 1103, when Alaric, king of the Goths, having been defeated by Stilico, the inhabitants of Aſti, or the Romans, who held a garriſon in that town, conducted thither the infants and wives of that prince, with the moſt precious of the ſpoil taken from him. It is the ſee of a biſhop, ſuffragan of the archbiſhop of Milan, erected in the year 265. Beſides the cathedral, it contained upwards of thirty other churches, parochial and conventual. It was taken by the French in 1703, and retaken by the duke of Savoy in 1704. Again the French took it in 1746, but loſt it to the king of Sardinia in 1747. It is twenty-four miles eaſt of Turin, twenty-one eaſt-north-eaſt of Carmagnola, and twenty weſt of Alexandria. Lat. 44. 50. N. lon. 25. 48. E. Ferro.

ASTI'GI, a colony and conventus juridicus of Bætica, ſurnamed *Auguſta Firma*, ſituated on the Singulus, which falls into the Bætis; called alſo *Colonia Aſtigitana*, now *Ecya*, midway between Seville and Corduba. Lat. 37. 20. N. lon. 5. 0. W.

To ASTI'PULATE, *v. a.* [*aſtipulare ad rem faciendam*, Lat.] To agree, to covenant.

ASTIPULA'TION, *ſ.* A mutual agreement, aſſent, and conſent, between parties.

ASTO'MI, in anthropology, a people feigned without mouths. Pliny ſpeaks of a nation of Aſtomi in India, who lived only by the ſmell or effluvia of bodies taken in by the noſe.

AS'TON (Sir Arthur), an officer of note in king Charles the Firſt's army, was ſon of Sir Arthur Aſton, of Fulham, in Middleſex. He was a great traveller, and made ſeveral campaigns in foreign countries. Being returned to England about the beginning of the grand rebellion, with as many ſoldiers of note as he could bring with him, he took part with the king againſt the parliament. He commanded the dragoons at the battle of Edgehill, and with them did his majeſty conſiderable ſervice. The king, having a great opinion of his valour and conduct, made him governor of Reading, in Berkſhire, and commiſſary-general of the horſe; in which poſt he three times repulſed the earl of Eſſex, who, at the head of the parliament army, laid ſiege to that place; but Sir Arthur being dangerouſly wounded, the command devolved on colonel Richard Fielding, the eldeſt colonel in the garriſon. Sir Arthur was ſuſpected of taking this opportunity to get rid of a dangerous command. Some time after he was appointed governor of the garriſon of Oxford, in the room of Sir William Pennyman, deceaſed. In September following, he had the misfortune to break his leg by a fall from his horſe, and was obliged to have it cut off; whereupon, on the 25th of December, he was diſcharged from his command, which was conferred on colonel Gage. After the king's death, Sir Arthur was employed in the ſervice of king Charles II. and went with the flower of the Engliſh veterans into Ireland, where he was appointed governor of Drogheda. At length Cromwell having taken the town, about the 10th of Auguſt, 1649, and put the inhabitants to the ſword; Sir Arthur, the governor, was cut to pieces, and his brains beaten out with his wooden leg.

ASTO'NIED, *part. adj.* A word uſed in the verſion of the Bible for *aſtoniſhed.*—Many were *aſtonied* at thee. *Iſaiah*, lii. 14.

To ASTO'NISH, *v. a.* [*eſtonner*, Fr. from *attonitus*, Lat.] To confound with ſome ſudden paſſion, as with fear or wonder; to amaze; to ſurpriſe; to ſtun:

It is the part of men to fear and tremble,
When the moſt mighty gods by tokens ſend
Such dreadful heralds to *aſtoniſh* us. *Shakeſpeare.*

Aſtoniſh'd at the voice, he ſtood amaz'd,
And all around with inward horror gaz'd. *Addiſon.*

ASTO'NISHINGNESS, *ſ.* [from *aſtoniſh.*] Of a nature to excite aſtoniſhment.

ASTO'NISHMENT, *ſ.* [*eſtonnement*, Fr.] Amazement; confuſion of mind from fear or wonder.—We found, with no leſs wonder to us than *aſtoniſhment* to themſelves, that they were the two valiant and famous brothers. *Sidney.*

ASTOR'GA, a city of Spain, in the province of Leon, ſituated in a plain on the ſmall river Tueria; it is neither large nor populous, but ſtrong both by nature and art, and the ſee of a biſhop, ſuffragan of Compoſtella. The cathedral is ſo filled with eccleſiaſtics as to be called *the city of prieſts.* It is twenty-eight miles weſt of Leon. Lat. 42. 33. N. lon. 11. 30. E. Ferro.

To ASTOU'ND, *v. a.* [*eſtonner*, Fr.] To aſtoniſh; to confound with fear or wonder. This word is now ſomewhat obſolete:

Theſe thoughts may ſtartle well, but not *aſtound*
The virtuous mind, that ever walks attended
By a ſtrong ſiding champion, conſcience. *Milton.*

ASTRACAN', a province of Ruſſia, and the moſt eaſterly part of Europe; bounded on the north by Bulgaria and Baſkiria, on the ſouth by the Caſpian Sea, on the weſt by the Volga, which divides it from the Nagayan Tartars and Don Coſſacks, and on the eaſt by the great ridge of mountains which part it from Great Tartary. The province extends from the 46th to the 52d degree of latitude. The ſummer is long, and intenſely hot; the winter continues about three months ſo ſevere, that the Volga is ſometimes frozen hard enough to bear loaded ſledges. The ſoil is rich and fertile; but the Tartars who inhabit it are ſtrangers to agriculture. On the weſtern and ſouthern ſides of the Volga are heaths of a prodigious extent, ſandy, deſert, and uncultivated; theſe, however, produce vaſt quantities of fine tranſparent ſalt in pits, where the ſun bakes and incruſtates it to the thickneſs of an inch on the ſurface of the water. There are pits in the neighbourhood of Aſtracan which yield this excellent ſalt in great abundance. The metropolis, or city of Aſtracan, is ſituated within the the boundaries of Aſia, on an iſland called *Dolgoi*, about ſixty Engliſh miles above the place where the Volga diſembogues itſelf into the Caſpian Sea. The city derives its name from Hadgee Tarken, a Tartar, by whom it was founded. It was conquered by Iwan Baſilowitz, recovered by the Tartars in the year 1668, and retaken by the czar, who employed for this purpoſe a great number of flat-bottomed veſſels, in which he tranſported his forces down the Volga from Caſan.

The city of Aſtracan, including the ſuburbs, is in circuit near five miles. The number of inhabitants are calculated at 70,000, including Armenians and Tartars, as well as Perſians and Indians. The garriſon conſiſts of ſix regiments of Ruſſian troops, who, when this place was alarmed from the ſide of Perſia, had erected in the adjacent plain a great number of ſmall batteries, to ſcour the fields, and obſtruct the approach of the enemy. The houſes of Aſtracan are moſtly built of wood. The higher parts of the city command a proſpect of the Volga, which is here about three miles in breadth, and exhibits a noble appearance. The marſhy lands on the banks of it render the place very ſickly in the ſummer: the earth, being impregnated with ſalt, is extremely fertile, and produces abundance of fruit, the immoderate uſe of which is attended with epidemical diſtempers. Sickneſs is likewiſe the conſequence of thoſe annual changes in the atmoſphere produced by the floods in ſpring and autumn. All round the city of Aſtracan, at the diſtance of two miles, are ſeen a great number of gardens, orchards, and vineyards, producing all ſorts of herbs and roots. The grapes are accounted ſo delicious, that they are preſerved in ſand, and ſent to court by land-carriage at a prodigious expence; yet the wine of Aſtracan is very indifferent. The ſummer being generally dry, the inhabitants water their gardens by means of large wheels worked by wind or horſes, which raiſe the water to the higheſt part of the garden, from whence it runs in trenches to refreſh the roots of every ſingle tree and plant. The neighbouring country produces hares and partridges, plenty of quails in ſummer, with wild and water fowl of all ſorts in abundance.

About ten miles below Aſtracan is a ſmall iſland called *Boſmaiſe*, on which are built large ſtorehouſes for the ſalt, which is made about twelve miles to the eaſtward, and, being brought hither in boats, is conveyed up the Volga, to ſupply the country as far as Moſcow and Twere. The quantity of ſalt annually dug for theſe purpoſes amounts to ſome millions of pounds, the excluſive property of which is claimed by the crown, and yields a conſiderable revenue; for the ſoldiers and bulk of the people live almoſt entirely on bread and ſalt. The neighbourhood of theſe ſalt-works is of great advantage to the fiſheries, which extend from hence to the Caſpian Sea, and reach to the ſouth-eaſt as far as Yack, and even 100 miles above Zaritzen. The principal fiſh caught here are ſturgeon and belluga. Theſe are ſalted and put on-board veſſels, and ſent away for the uſe of the whole empire, even as far as Peterſburg. Of the roes of the belluga, which are white, tranſparent, and of an agreeable flavour, the fiſhers prepare the caviare, which is in ſo much eſteem all over Europe. Theſe fiſheries were firſt eſtabliſhed by one Tikon Demedoff, a carrier, who ſettled in this place about ſixty years ago, his whole wealth conſiſting of two horſes. By dint of ſkill and induſtry, he ſoon grew the richeſt merchant in this country: but his ſucceſs became ſo alluring to the crown, that of late years it hath engroſſed ſome of the fiſheries as well as the ſalt-works.

From the end of July to the beginning of October, the country about Aſtracan is frequently infeſted with myriads of locuſts, which darken the air in their progreſſion from the north to the ſouthward; and, wherever they fall, conſume the whole verdure of the earth. Theſe inſects can even live for ſome time under water: for, when the wind blows acroſs the Volga, vaſt numbers of them fall in cluſters, and are rolled aſhore; and their wings are no ſooner dry, than they riſe and take flight again.

Heretofore the inhabitants of Aſtracan traded to Khuva and Bukharia; but at preſent theſe branches are loſt, and their commerce is limited to Perſia and the dominions of Ruſſia. Even the trade to Perſia is much diminiſhed by the troubles of that country; nevertheleſs, the commerce of Aſtracan is ſtill conſiderable. Some years ago, the city maintained about forty veſſels, from 100 to 200 tons burden, for the Caſpian traffic. Some of theſe belong to the government, and are commanded by a commodore, under the direction of the admiralty. This office is generally well ſtocked with naval ſtores, which are ſold occaſionally to the merchants. The trading ſhips convey proviſions to the frontier towns of Terkie and Kiſlar, ſituated on the Caſpian Sea; and tranſport merchandize to ſeveral parts of Perſia. The merchants of Aſtracan export to Perſia, chiefly on account of the Armenians, red leather, linens, woollen cloths, and other European manufactures. In return, they import the commodities of Perſia, particularly thoſe manufactured at Caſan; ſuch as ſilk ſaſhes intermixed with gold, for the uſe of the Poles; wrought ſilks and ſtuffs mixed with cotton; rice, cotton, rhubarb, and other drugs; but the chief commodity is raw ſilk. The government has engroſſed the article of rhubarb, the greater part of which is brought into Ruſſia by the Tartars of Yakutſki, bordering on the eaſtern Tartars belonging to China. They travel through Siberia to Samura, thence to Caſan, and laſtly to Moſcow. The revenue of Aſtracan is computed at 150,000 rubles, or 33,000l. ariſing chiefly from ſalt and fiſh.

ASTRAD'DLE, *adv.* [from *a* and *ſtraddle.*] With one's legs acroſs any thing.

ASTRÆ'A, a name given by ſome to the ſign *Virgo*, by others called Erigone, and ſometimes Iſis. The poets feign that Juſtice quitted heaven to reſide on earth, in the golden age; but, growing weary of the iniquities of mankind, ſhe left the earth, and returned to heaven, placing herſelf in that part of the zodiac called Virgo, where ſhe became a conſtellation of ſtars, and from her orb ſtill looks down on the ways of men.

ASTRÆ'US, in fabulous hiſtory, one of the Titans, huſband to Aurora, and father of the winds and ſtars. Perceiving that his brothers had declared war againſt Jupiter, he armed the winds on his ſide: but Jupiter plunged them under the waters, and Aſtræus was changed into a ſtar.

AS'TRAGAL, *ſ.* [αϛραγαλος, the ankle or ankle-bone.] A little round member in the form of a ring or bracelet, ſerving as an ornament at the tops and bottoms of columns. See ARCHITECTURE.

ASTRAGAL, in gunnery, a round moulding encompaſſing a cannon, about half a foot from its mouth.

ASTRAGALOI'DES, *ſ.* in botany. See ASTRAGALUS and PHACA.

ASTRA'GALOMANCY, *ſ.* [from αϛραγαλος, and μαντεια, divination.] A ſpecies of divination performed by throwing ſmall pieces, with marks correſponding to the letters of the alphabet; the accidental diſpoſition of which formed the anſwer required. This kind of divination was practiſed in a temple of Hercules, in Achaia.

ASTRA'GALUS, *ſ.* [αϛραγαλος, *vertebra*, or *talus*, the ſeed being ſqueezed in the legume into a ſquariſh form in ſome ſpecies. It is the name of a ſhrub in the Greek writers.] In botany, a genus of the claſs diadelphia, order decandria, natural order papilionaceæ or leguminoſæ. The generic characters are—Calyx: perianthium one-leafed, tubular, five-toothed, acute; lower toothlets gradually leſs. Corolla: papilionaceous; banner longer than the other petals, reflex on the ſides, emarginate, obtuſe, ſtraight; wings oblong, ſhorter than the banner; keel length of the wings, emarginate. Stamina: filaments diadelphous, ſimple, and novemfid, almoſt ſtraight; antheræ roundiſh. Piſtillum: germ nearly columnar; ſtyle ſubulate aſcending; ſtigma obtuſe. Pericarpium: legume two-celled; the cells bent to one ſide. Seeds: kidney-ſhaped. —*Eſſential Character.* Legume two-celled, gibbous.

Species. I. Stems leafy, erect; not proſtrate. 1. Aſtragalus alopecuroides, or fox-tail milk-vetch: cauleſcent, ſpikes cylindric ſubſeſſile, calyxes and legumes woolly. This riſes with an upright hairy ſtem about two feet high, having long pinnate leaves with eighteen or twenty pairs of ovate leaflets. The flowers are produced in large cloſe obtuſe ſpikes from the axillas; their colour is yellow. The legumes are ſhut up in the woolly calyxes, and have two cells, containing three or four ſquare ſeeds in each. It flowers in June or July, and the ſeeds ripen in September. This plant ſeldom continues longer than two or three years. The firſt year it rarely flowers; but, when the plants come up in the ſpring, they will get ſtrength before winter, and will flower ſtronger the following ſummer. It was diſcovered by Tournefort on the Alps, and ſince his time has been found growing naturally in Siberia. Linnæus ſays it is from Siberia and Spain.

2. Aſtragalus chriſtianus: cauleſcent erect, flowers glomerate ſubſeſſile from all the leafy axillas. This ſends up ſtalks near three feet high, which are large at bottom, and gradually diminiſh to the top; the leaves alſo at bottom are very long, and diminiſh upward, ſo as to form a ſort of pyramid; theſe are winged, and compoſed of many large oval pairs of lobes, which are placed thinly on the midrib, and terminated by an odd one; the flowers come out in cluſters from the wings of each leaf, beginning near the root, where the foot-ſtalks are the longeſt, and continuing upward, diminiſhing in their number. Theſe are large, of a bright yellow colour, and are ſucceeded by cylindrical pods opening in two cells, filled with ſquare yellow ſeeds. It flowers in July, and in very favourable ſeaſons will perfect ſeeds in England. It was diſcovered in the Levant by Tournefort.

3. Aſtragalus capitatus: cauleſcent, heads globular, peduncles very long, leaflets emarginate. This has a perennial root which ſends up ſeveral erect ſtalks. It flowers the end of July; and was diſcovered by Tournefort in the Levant, whence he ſent the ſeeds to the Paris garden.

4. Aſtragalus piloſus, or pale-flowered milk-vetch: cauleſcent erect hairy, flowers in ſpikes, legumes ſubulate, hairy. Root woody, perennial; ſtem a foot or eighteen inches high, round, hard, branching. Native of the Valais, by the baths of Leuk, Siberia, Thuringia, and Auſtria. It flowers from June to Auguſt.

5. Aſtragalus ſulcatus, or furrowed milk-vetch: cauleſcent, erect, ſmooth, ſtriated, ſtiff; leaflets linear-lanceolate acute, legumes three-ſided. Root perennial, woody; ſtems erect, three feet high. Native of Siberia.

6. Aſtragalus galegiformis, or goat's-rue-leaved milk-vetch: cauleſcent ſtiff ſmooth, flowers in racemes pendulous, legumes three-ſided, mucronate at both ends. Root perennial; ſtems many, upright, more than five feet in height, (Linnæus ſays two feet.) It is a native of Siberia. Tournefort diſcovered it in the Levant, and ſent the ſeeds to the royal garden at Paris, whence many of the European gardens were ſupplied with it. In June or July it flowers, and the ſeeds ripen in autumn.

7. Aſtragalus Chinenſis: cauleſcent ſtiff ſmooth, flowers in racemes pendulous, legumes ovate inflated, mucronate at both ends. This ſpecies reſembles the foregoing in its ſtature and all its parts, differing from it chiefly in its legumes. It is perennial, flowering and ripening ſeeds the ſecond year in autumn. The ſeeds were ſent from China to Sweden in the year 1760.

8. Aſtragalus onobrychis, or purple-ſpiked milk-vetch: cauleſcent procumbent diffuſed, ſpikes peduncled, banner twice as long as the wings, leaflets linear. This ſpecies ought regularly to ſtand in the ſecond diviſion of the genus after No. 29. Native of Auſtria. Cultivated here in 1640. It flowers in June and July.

9. Aſtragalus uliginoſus, or violet-coloured milk-vetch: cauleſcent almoſt upright; flowers in ſpikes; legumes almoſt upright, naked, tumid, round-flatted, point reflex. It was found by Gmelin, in the moiſt meadows of Siberia; was introduced in 1775, by M. Thouin; and flowers from June to Auguſt.

10. Aſtragalus Carolinianus, or Carolina milk-vetch: cauleſcent upright even, peduncles in ſpikes, legumes ovate-cylindric, acuminated by the ſtyle. Root perennial; ſtems annual, upright, three feet high. It flowers in July and Auguſt, but unleſs the ſeaſon be warm the plants ſeldom ripen their ſeeds in England. It grows naturally in Carolina, whence Mr. Miller received the ſeeds: but it had been cultivated before in the Eltham garden.

11. Aſtragalus aſper, or rough milk-vetch: cauleſcent ſtiff, even, roughiſh; flowers in ſpikes on elongated peduncles, legumes oblong. Root perennial, branched; ſtems annual, two feet high, round, ſtreaked, leafy, with upright branches. It flowers in June and the beginning of July; at the end of the ſame month the pods ripen. Cultivated at Vienna from ſeeds ſent from Aſtracan.

II. Stems leafy, diffuſe. 12. Aſtragalus Canadenſis, or woolly milk-vetch: cauleſcent diffuſe, legumes ſubcylindric mucronate, leaflets almoſt naked. This reſembles the tenth ſpecies very much. Root perennial, creeping; ſtems round, about two feet high. Native of Virginia and Canada; according to Mr. Miller, of moſt parts of North America. It flowers here in July, and the ſeeds ripen the beginning of October.

13. Aſtragalus cicer, or bladdered milk-vetch: cauleſcent proſtrate, legumes ſubglobular, inflated, mucronate, hairy. Root thick, ſweet; ſtems eighteen inches long, and very branching. According to Mr. Miller, the ſtems are ſtriated, and near three feet long; the leaves are placed alternately at two inches diſtance; the peduncles are two inches long, and the flowers in ſmall looſe ſpikes; each cell of the legume contains two or three hard reddiſh ſeeds. It flowers in July, and the ſeeds ripen in autumn. This ſpecies is recommended to be cultivated for the food of cattle. It is a native of Italy, Auſtria, Switzerland, and Germany. Mr. Ray obſerved it between Geneva and Gex.

14. Aſtragalus microphyllus, or ſmall round-podded milk-vetch: cauleſcent erect-expanding, leaflets oval, calyxes rather tumid, legumes roundiſh. This has the air of the laſt, but is only one-fourth of it in ſize. Stem flexuoſe, a foot high, not ſmooth. Native of Siberia and Germany; flowering in June and July.

15. Aſtragalus glycyphyllus, or wild liquorice or liquorice-vetch: cauleſcent proſtrate, legumes ſubtriquetrous bowed, leaves oval, longer than the peduncle. Our wild liquorice-vetch has the ſtem two feet high and more, ſmooth, and branched. The leaves are ſweet with a mixture of bitterneſs, and do not ſeem to be agreeable to cattle, at leaſt the plant in its wild ſtate is left untouched; otherwiſe, this being the largeſt of the European ſpecies, it might have been deſirable to cultivate it. Native of moſt parts of Europe, in woods, hedges, and paſtures, eſpecially in a calcareous ſoil. It flowers in June, and the ſeeds ripen in September. In gardens it is apt to ſpread much at the root.

16. Aſtragalus hamoſus, or dwarf yellow-flowered milk-vetch: cauleſcent procumbent, legumes ſubulate, recurved, ſmooth; leaflets obcordate, villoſe underneath. Root annual. It flowers in June, and the ſeeds ripen in September. Native of Meſſina and Montpellier. It was cultivated here in 1640.

17. Aſtragalus contortuplicatus, or wave-podded milk-vetch: cauleſcent procumbent, legumes writhed, channelled, villoſe. This is annual, and varies wonderfully in ſize and height in different ſoils. It is a native of Siberia; and was introduced here in 1783, by Monſ. Thouin.

18. Aſtragalus boeticus, or triangular-podded milk-vetch: cauleſcent procumbent, ſpikes peduncled, legumes priſmatic, ſtraight, three-ſided, hooked at top. This alſo is annual, and ſends out ſeveral trailing branches near two feet long. It flowers in July, and the ſeeds ripen in autumn. Native of Spain, Portugal, and Sicily.

19. Aſtragalus laxmanni: cauleſcent procumbent, ſpikes elongated, legumes oblong, three-cornered, marked with a furrow, mucronate, villoſe. Root perennial, branching; ſtems branching, ſubangular, proſtrate, a foot long. It flowers in June and July; and is a native of Siberia.

20. Aſtragalus ſtella: cauleſcent diffuſe, heads peduncled, lateral; legumes ſtraight, ſubulate, mucronate. Native of Montpellier.

21. Aſtragalus ſeſameus, or ſtarry milk-vetch: caule-

ſcent diffuſe, heads ſubſeſſile lateral, legumes ſubulate, reflected at the point. Native of France and Italy; flowering in June and July. Cultivated in 1616, by Parkinſon.

22. Aſtragalus Auſtriacus, or Auſtrian milk-vetch: cauleſcent proſtrate, ſmooth, ſtriated, weak; leaflets ſublinear, emarginate; legumes round. Root perennial, woody; ſtems many, ſpread round on the ground, from ſeven inches to a foot high, ſometimes longer, leafy, not branching, ſlender, ſomewhat ſtreaked, and angular. Flowers in May and June.

23. Aſtragalus leontinus: cauleſcent proſtrate, legumes ovate, villoſe; flowers ſpiked, erect. It has no ſmell, but the colour of *galega officinalis*.

24. Aſtragalus pentaglottis: cauleſcent procumbent, legumes headed, folded back, compreſſed, converging, creſted, with a reflected point. According to Linnæus this is an annual plant; but Mr. Miller ſays that it flowers and perfects its ſeeds the ſecond year only, ſeldom continuing after that. It flowers the beginning of Auguſt, and bears ſeed at the end of the ſame month. Native of Spain, whence the ſeeds were ſent to Mr. Miller.

25. Aſtragalus epiglottis, or heart-podded milk-vetch: cauleſcent procumbent, legumes headed, ſeſſile, nodding, cordate, mucronate, folded back, naked. This is annual. Native of Provence, Spain, Portugal, and the Levant, in mountainous woods. It flowers in July, and the ſeeds ripen in autumn.

26. Aſtragalus hypoglottis, or purple mountain milk-vetch: cauleſcent proſtrate, legumes headed, ovate, folded back, compreſſed, hairy, with a reflex point. Root perennial. This ſpecies was for ſome time ſuppoſed by our Engliſh botaniſts to be the aſtragalus arenarius of Linnæus, which appears by the Linnæan herbarium to be a very different plant. It is found in ſandy and chalky paſtures, flowering from May to July.

27. Aſtragalus Syriacus, or Syrian milk-vetch: cauleſcent procumbent, heads peduncled, flowers reflected, legumes tomentoſe, ovate-oblong. This is a perennial plant, in appearance approaching to the next ſpecies, from which however it differs in being three times as large, and leſs hoary; in having numerous flowers head-ſpiked, not racemed, three times as large as in that, and more reflex. The leaves alſo are linear-lanceolate; the legumes oblong, hairy, and erect. Native of Siberia.

28. Aſtragalus arenarius: ſubcauleſcent, procumbent; flowers ſubracemed, erect; leaves tomentoſe. Root perennial, filiform; ſtem almoſt erect, ſix inches high, often branching, with a white knap on it. It is a native of Scania, in looſe ſand.

29. Aſtragalus glaux, or ſmall milk-vetch: cauleſcent diffuſe, heads peduncled, imbricate, ovate; flowers erect, legumes ovate, callous, inflated. Root woody; ſtems ſeven inches long. Native of Spain. Cultivated in 1648, in the botanic garden at Oxford.

30. Aſtragalus ſinicus: cauleſcent proſtrate, umbels peduncled, legumes priſmatic, three-ſided, erect, ſubulate at top. Root annual. According to Linnæus, the ſtems are ſeven inches long, and round. It grows naturally in China; flowers in July and Auguſt, and the ſeeds ripen in autumn.

31. Aſtragalus Alpinus, or Alpine milk-vetch: cauleſcent procumbent; flowers pendulous, racemed; legumes acute at both ends, hairy. Stems a foot high, or rather more, looſely leaved. Native of the mountains of Switzerland and Lapland. Introduced here about 1771.

32. Aſtragalus ammodytes: cauleſcent underſhrubby, flowers twin, legumes ovate, twin woolly. The root is annual, but runs very deep. Native of the ſandy hills of ſouthern Siberia.

33. Aſtragalus trimeſtris, or Egyptian milk-vetch: ſubcauleſcent, ſcapes moſtly two-flowered, legumes hooked, ſubulate, two-keeled. Root annual. Native of Egypt; flowering in June and July, and ripening its ſeeds in Auguſt. Introduced in 1777, by Ant. Gouan, M. D. Mr. Miller, however, had received ſeeds of it before from Juſſieu. He deſcribes the ſtems as upright, and a foot and half high.

III. Scape naked, without a leafy ſtem. 34. Aſtragalus verticillaris: leaflets aggregate-ſemiverticilled. Native of eaſtern Siberia, beyond Baikal.

35. Aſtragalus montanus: nearly ſtemleſs, ſcapes longer than the leaf, flowers looſely ſpiked, erect; legumes ovate, with an inflected point. Native of the ſouth of France, Switzerland, the Valais, Auſtria, Carniola, and Siberia. Mr. Miller ſays, that it grows naturally upon the mountains in Spain, whence he received it. He deſcribes it as a low plant, ſeldom more than three inches high; the flowers large, purple, erect, in a looſe ſpike, on long peduncles riſing above the leaves; the pods oblong, crooked, opening in two cells, and filled with ſquare ſeeds.

36. Aſtragalus veſicarius: ſcapes longer than the leaves, flowers looſely ſpiked, calyxes and legumes inflated hirſute. Root perennial. This is not ſtemleſs but cauleſcent, half a foot in height, and branching. Native of Dauphiné and Siberia.

37. Aſtragalus phyſodes: ſcapes equal to the leaves, legumes inflated, ſubglobular, naked. Root perennial, creeping. Native of Siberia; flowering in June.

38. Aſtragalus caprinus: ſcape erect, leaflets ciliate, legumes ovate, tumid, villoſe. Root perennial, long, and thick. Native of Barbary and Ruſſia. Ray obſerved it in the botanic garden at Montpellier, when he made ſome ſtay there in the year 1665.

39. Aſtragalus uralenſis, or ſilky milk-vetch: ſcape erect, longer than the leaves; legumes ſubulate, inflated, villoſe, erect. Root long, woody, deſtitute of leaves; ſtem five or ſix inches high, ſoft, and downy. Native of Dauphiné, Carinthia, the Pyrenees, and Siberia; alſo of mountainous paſtures in Scotland.

40. Aſtragalus monſpeſſulanus, or Montpellier milk-vetch: ſcapes declining, the length of the leaves; legumes ſubulate, round, rather bowed, ſmooth. Root very large, woody. Native of the ſouth of France, the government of Aigle, the Lower Valais, and the Griſons.

41. Aſtragalus incanus: ſcapes declining, leaflets tomentoſe, legumes ſubulate, rather bowed, hoary, incurved at top. Root perennial; ſcapes rough, often with twenty flowers. Native of the ſouth of France. Mr. Miller ſays, that he received it from the hills near Verona, but his deſcription by no means agrees with that of Linnæus.

42. Aſtragalus campeſtris, or field milk-vetch: calyxes and legumes villoſe, leaflets lanceolate acute, ſcape decumbent. Root long, ſlender, perennial; ſtem none, but procumbent runners half an inch long. Native of Switzerland and Germany.

43. Aſtragalus depreſſus, or dwarf white-flowered milk-vetch: ſcapes ſhorter than the leaf, legumes nodding, leaflets ſubemarginate, naked. This ſpecies was cultivated in the Oxford botanic garden in 1772.

44. Aſtragalus uncatus: ſcapeleſs, legumes ſubulate, hooked, longer than the leaf, leaflets obcordate. This plant is annual, ſending out a few branching ſtalks which trail upon the ground; the leaflets are broader at their end than at their baſe, and are indented ſo as to become almoſt heart-ſhaped; the flowers are axillary, in ſhort looſe ſpikes; they are almoſt white, and are ſucceeded by ſickle-ſhaped pods, having two cells filled with ſquare brown ſeeds. It flowers in July and Auguſt, and the ſeeds ripen in autumn. It grows naturally about Aleppo, whence the ſeeds were brought by Dr. Ruſſel.

45. Aſtragalus exſcapus, or hairy-podded milk-vetch: ſcapeleſs, legumes woolly, leaves villoſe. Native of Hungary. Introduced in 1787, by Joſ. Nic. de Jacquin, M. D.

IV. Stem woody. 46. Aſtragalus tragoides: nearly ſtemleſs, flowers radical, numerous, ſubſeſſile. Native of Switzerland, Siberia, and Armenia.

47. Aſtragalus tragacantha, or goat's-thorn: trunk arboreſcent, petioles becoming ſpineſcent. Root large, woody, and branching; ſtems a foot long, leafy, branching, hard. Native of the ſea ſhore near Marſeilles, of

Switzerland, mount Etna, Olympus, &c. Cultivated here in 1640. From the aſtragalus tragacantha, or goat's-thorn, is gathered the gum called gum tragacanth, ſo much uſed in various preparations in different trades, as well as in the materia medica. It differs from all other known gums in giving a thick conſiſtence to a much larger quantity of water, and in being ſoluble with much more difficulty, or rather diſſolving only imperfectly. When put into water it ſlowly imbibes a great quantity of the fluid, ſwells into a large volume, and forms a ſoft but not fluid mucilage. The demulcent qualities of this gum are to be conſidered as ſimilar to thoſe of gum arabic. It is ſeldom given alone, but frequently in combination with more powerful medicines, eſpecially in the form of troches, for which it is peculiarly well adapted. It gives name to an officinal powder.

V. *Other ſpecies.* 48. Aſtragalus fœtidus: ſtemleſs, leaves proſtrate, viſcid, ſharply linear; ſcapes erect, with few flowers. Native of Dauphiné; alſo of Mont Cenis, and other high Alps.

49. Aſtragalus Halleri: ſcapes leafleſs, leaves ovate-lanceolate, ſmooth; legumes inflated, hirſute, erect. Native of the mountains of the Valais, and of Piedmont, bordering on it.

50. Aſtragalus vulneraroides: ſtemleſs, hirſute, ſcapes longer than the leaves, legumes inflated, ovate, in heads. Native of Mont Cenis.

51. Aſtragalus tenuifolius, or upright milk-vetch: cauleſcent erect, ſpikes peduncled, banner twice as long as the wings, leaflets linear. 52. Aſtragalus vireſcens, or green-flowered milk-vetch: cauleſcent erect, legumes bent back, peduncles many-flowered, longer than the leaf; leaflets lanceolate, acute. Native of Siberia. Introduced in 1780, by Peter Simon Pallas, M. D. The former flowers in July and Auguſt, the latter in June.

53. Aſtragalus Garbancillo: ſtem ſhrubby, upright; pinnules ovate-oblong, ſomewhat tomentoſe; peduncles naked, elongated. Stem a foot and half high, branched, covered with a very ſhort whitiſh knap. Native of Peru. It flowered in the royal garden at Madrid, before 1791, in October and November. It is reported to be very injurious to cattle.

54. Aſtragalus hiſpidus: cauleſcent procumbent, leaflets and legumes ovate-oblong, hiſpid; corollas ſhorter than the calyx. 55. Aſtragalus emarginatus: almoſt ſtemleſs, ſcapes very long, heads globoſe, legumes woolly. 56. Aſtragalus lanatus: ſtemleſs, with a naked ſcape, the length of the leaves; legumes in cloſe ſpikes, woolly, half-cordate, three-ſided, ſubulate; leaves villoſe. Theſe three ſpecies are natives of mount Libanus.

57. Aſtragalus leucophæus: cauleſcent procumbent; legumes ſubcylindric, ſtraight, ſmooth; leaflets obcordate, villoſe underneath. The native country of this ſpecies is unknown. It appears to be an old inhabitant of Chelſea garden, and was marked with the name of aſtragalus piloſus in Miller's herbarium. It has, however, no affinity to the aſtragalus piloſus of Linnæus, nor does it even agree with the deſcription of that plant in Miller's dictionary. Communicated by Fairbairn, from Chelſea garden, in 1788.

58. Aſtragalus deflexus: ſubcauleſcent proſtrate, ſcapes twice as long as the leaf, legumes gaping, leaves pectinate, right-angled. Native of Siberia, on the loftieſt mountains; and ſent thence to the Paris garden by Demidow.

59. Aſtragalus unifultus: ſuffruticoſe procumbent, ſtipules ſolitary, ſtem-claſping, oppoſite to the leaves bifid. Native of Peru, where it was found by Dombey.

60. Aſtragalus varius: cauleſcent fruticuloſe upright, flowers in looſe ſpikes, legumes linear, ſtipules fuliginoſe downwards. This is a hoary little ſhrub, about a cubit in height. It flowers in ſummer, and ſoon ripens the ſeeds; though ſhrubby, it continues not many years. Native of Siberia, whence the ſeeds were ſent to the Paris garden by Demidow.

61. Aſtragalus ariſtatus: ſuffruticoſe proſtrate, leaves hairy, petioles ſpineſcent, calyxes awned. Native of Switzerland and Provence.

62. Aſtragalus pugniformis: ſhrubby, procumbent, heads ſtem-claſping, tomentoſe; petioles and leaves pungent and ſmooth. This is remarkable for the largeneſs of the heads or balls of flowers, almoſt the ſize of the fiſt. Native of the Levant.

63. Aſtragalus echinoides: the leaves are minute, the flowers ſmall, white, with a purple line on the banner. Native of Crete, or Candia.

Propagation and Culture. All the ſpecies may be raiſed from ſeeds; theſe ſhould be ſown in April, on an open border of light earth; the annual ſorts where they are to remain, the perennials to be tranſplanted to the places for which they are deſtined. They are in general hardy, and require no other care but to draw the plants out where they come up too thick, leaving them a foot and half or two feet aſunder, and to keep them clean from weeds. Obſerve only that ſome (as No. 26, 35, 37) require a ſhady ſituation and ſtrong ſoil; others, (as No. 6, 39,) an open ſituation and dry ſoil. No. 2 and 33 muſt be planted in a warm border. The ſecond ſort ſeldom flowers till the third year from ſeed, and will continue many years in a proper ſoil. No. 3, 7, 10, 12, 30, muſt be raiſed on a moderate hot-bed in the ſpring, and, when the plants are fit to remove, they ſhould be each put into a ſmall pot filled with light earth, and plunged again into the hot-bed, ſhading them from the ſun till they have taken root; after which they ſhould have free air admitted to them daily, in proportion to the warmth of the ſeaſon; and ſhould be frequently, but gently watered. In May they ſhould be removed to a ſheltered ſituation, where they may remain till October, when they ſhould be placed under a common frame. In the ſpring they may be turned out of the pots, and planted in a warm border, where they will flower, and ſometimes produce ſeeds. If the winter prove very ſevere, a little old tan ſhould be laid over the roots, which will effectually preſerve them. The tragacanth may be propagated by ſeeds, if they can be procured from abroad, in the ſame manner with the others. When they are large enough to tranſplant, they ſhould be carefully taken up, and ſome of them planted in ſmall pots filled with freſh earth, placing them in the ſhade until they have taken root; after which they may be removed into an open ſituation, where they may remain to the end of October, when they ſhould be placed under a common frame, where they may be ſheltered from ſevere froſt, but have free air in mild weather. The remainder of the plants may be ſet on a warm dry border. The plants in pots may be preſerved a year or two under frames in winter, and then being ſhaken out of the pots may be planted in a lean dry ſoil, and warm ſituation: but, as they are ſometimes deſtroyed by hard winters, it will be proper to keep a few plants in pots, to be ſheltered in winter, in order to preſerve the ſpecies. Theſe plants may alſo be increaſed by ſlips, and as they rarely produce ſeeds in this country, the latter method is generally uſed here. The beſt time for this work is in April, juſt as the plants begin to ſhoot, at which time the tender branches ſhould be ſlipped off, and their lower parts diveſted of the decayed leaves; then they ſhould be planted on a very moderate hot-bed, which muſt be covered with mats, to ſcreen them from the heat of the ſun by day, and the cold by night. Theſe ſlips ſhould be frequently but gently watered, until they have taken root; after which they may be expoſed to the open air, and in very dry weather they muſt be refreſhed with water. On this bed they may remain until the following ſpring, being covered with mats in very ſevere weather. In April they may be tranſplanted, either into pots filled with light ſandy earth, or into warm borders, where, if the ſoil be dry, gravelly, and poor, they will endure almoſt the ſevereſt cold of our climate; but, if they are planted in a very rich ſoil, they often decay in winter.

ASTRAGALUS. See ANTHYLLIS, BISERRULA, CROTALARIA, GLYCINE, HEDYSARUM, INDIGOFERA, OROBUS, and PHACA.

AS'TRAL, *adj.* [from *aſtrum*, Lat.] Starry; belonging to the ſtars:

Some *aſtral* forms I muſt invoke by pray'r,
Fram'd all of pureſt atoms of the air;
Not in their natures ſimply good or ill,
But moſt ſubſervient to bad ſpirits' will. *Dryden.*

ASTRAN'TIA, *ſ.* [*αστρον*, *aſtrum*, and *αντιος*, *obvium.*] In botany, a genus of the pentandria digynia claſs, ranking in the natural order of umbellatæ. The generic characters are—Calyx: umbel univerſal with very few rays (often three); partial with very numerous ones; involucre univerſal, with leaflets doubled to the ray; partial with leaflets about twenty, lanccolate, ſpreading, equal, coloured, longer than the umbellule; perianthium proper five-toothed, acute, erect, permanent. Corolla: univerſal uniform; floſcules of the ray abortive; proper with petals five, erect, inflex, bifid. Stamina: filaments five, ſimple, the length of the corollule; antheræ ſimple. Piſtillum: germ oblong, inferior; ſtyles two, erect, filiform; ſtigmas ſimple, ſpreading. Pericarpium: fruit ovate, obtuſe, crowned, ſtriated, bipartile. Seeds: two, ovate-oblong, covered with the cruſt of the pericarpium, wrinkled.—*Eſſential Character.* Partial involucres lanceolate, ſpreading, equal, longer, coloured; flowers very many, abortive.

Species. 1. Aſtrantia major, or great maſterwort: leaves five-lobed, lobes trifid. Stem eighteen inches high, little branched. Miller, following Tournefort, has made of this two ſpecies. Great maſterwort is a native of the mountains of Switzerland, flowering in Auguſt. Ray obſerved it on mount Jura, and mount Saleve in Savoy, near Geneva; native alſo of Tuſcany, Bohemia, Bavaria, Auſtria, Carniola, the Pyrenees, &c. It was cultivated here in 1596, by Gerard. There is a variety, called aſtrantia nigra minor, which differs only in ſize, probably from its ſituation, being a native of the Alps.

2. Aſtrantia carniolica: leaves five or ſeven-lobed, ſimple or bifid. Root nearly the thickneſs of the little finger, about an inch long, dark brown, having an aromatic balſamic ſmell, with a taſte at firſt ſlightly aromatic but nauſeous, and afterwards acrid. The whole plant is ſmooth. Stem round, erect, ſlender, from ſix inches to a foot in height, with only one leaf on it, reſembling the bottom leaves. It is a native of Carniola; flowering in July and Auguſt.

3. Aſtrantia minor, or little or alpine maſterwort: leaves digitate ſerrate. This ſeldom riſes a foot high. Native of the Alps and alpine vallies of Switzerland, but not of the low mountains, flowering there in Auguſt. With us it flowers in May and June.

4. Aſtrantia ciliaris: leaves lanceolate ſerrate-ciliate. Stem ſimple, a foot high, ruſhy, erect, a little ſtreaked, divided at the top into a few flowering branches. Native of the Cape of Good Hope.

5. Aſtrantia epipactis: leaves five-parted obtuſe ſerrate. Flowers yellow. Native of Idria and Gorizia, flowering in March; alſo of Hungary.

Propagation and Culture. Theſe plants, except the fourth, are very hardy; they may be propagated either by ſowing their ſeeds or by parting their roots. If from ſeeds, they ſhould be ſown in autumn, ſoon after they are ripe, on a ſhady border; and, when the plants are come up, they ſhould be carefully weeded, and, where they are too cloſe, ſome of the plants ſhould be drawn out, to allow room for others to grow, until Michaelmas, when they ſhould be tranſplanted where they are to remain; which ſhould always be in a moiſt ſoil and a ſhady ſituation. The diſtance theſe plants ſhould be placed is three feet, for their roots will ſpread to a conſiderable width, if they are permitted to remain long in the ſame place. They require no other culture but to keep them clear from weeds, and every third or fourth year to be taken up at Michaelmas, and their roots parted and planted again. Theſe plants are ſeldom preſerved but in botanic gardens, there being no great beauty in the flowers. The fourth ſort only, being a native of the Cape, will, whenever it is introduced, require the protection of a dry ſtove in winter.

ASTRAPIS'MUS, *ſ.* [from *αστραπη*, lightning.] The effect produced upon the body by lightning.

ASTRA'Y, *adv.* [from *ſtray.*] Out of the right way:

Like one that had been led *aſtray*
Through the heav'ns wide pathleſs way. *Milton.*

To ASTRICT', *v. a.* [*aſtringo*, Lat.] To contract by applications, in oppoſition to *relax*: a word not ſo much uſed as *conſtringe.*—The ſolid parts were to be relaxed or *aſtricted*, as they let the humours paſs either in too ſmall or too great quantities. *Arbuthnot.*

ASTRIC'TION, *ſ.* [*aſtrictio*, Lat.] The act or power of contracting the parts of the body by applications.—Lenitive ſubſtances are proper for dry atrabilarian conſtitutions, who are ſubject to *aſtriction* of the belly, and the piles. *Arbuthnot.*

ASTRICTION, among phyſicians, denotes the operation of aſtringent medicines.

ASTRIC'TIVE, *adj.* Styptic; of a binding quality.

ASTRIC'TORY, *adj.* [*aſtrictorius*, Lat.] Aſtringent; apt to bind.

ASTRIDE', *adv.* [from *a* and *ſtride.*] With the legs open.—I ſaw a place, where the Rhone is ſo ſtraitened between two rocks, that a man may ſtand *aſtride* upon both at once. *Boyle.*

ASTRID'GE, three miles from Ivinghoe, in Buckinghamſhire, the ſeat of his grace the duke of Bridgewater, which was a very ancient monaſtery. In the center of the houſe, in a fine ſquare, is a large baſon of water, where Jonas is repreſented coming out of the whale's belly; and round this are fine cloiſters, with hiſtorical paintings, but they are in a ruinous ſtate, and are ſaid to be of very great antiquity. Within the houſe is a bed and chair the work of queen Elizabeth, wrought in fine needle-work; and in the ſame bed the queen was taken priſoner and carried to the Tower, by her ſiſter Mary.

ASTRI'FEROUS, *adj.* [*aſtrifer*, Lat.] Bearing or having ſtars.

ASTRI'GEROUS, *adj.* [*aſtriger*, Lat.] Carrying ſtars.

To ASTRIN'GE, *v. a.* [*aſtringo*, Lat.] To preſs by contraction; to make the parts draw together.—Tears are cauſed by a contraction of the ſpirits of the brain; which contraction, by conſequence, *aſtringeth* the moiſture of the brain, and thereby ſendeth tears into the eyes. *Bacon.*

ASTRIN'GENCY, *ſ.* The power of contracting the parts of the body, oppoſed to the power of *relaxation.*—Aſtriction prohibiteth diſſolution; as, in medicines, aſtringents inhibit putrefaction: and, by *aſtringency*, ſome ſmall quantity of oil of vitriol will keep freſh water long from putrefying. *Bacon.*—Acid, acrid, auſtere, and bitter, ſubſtances, by their *aſtringency*, create horror, that is, ſtimulate the fibres. *Arbuthnot.*

ASTRIN'GENT, *adj.* [*aſtringens*, Lat.] Binding; contracting; oppoſed to *laxative*: it is uſed ſometimes of taſtes which ſeem to contract the mouth.—*Aſtringent* medicines are binding, which act by the aſperity of their particles, whereby they corrugate the membranes, and make them draw up cloſer. *Quincy.*—What diminiſhes ſenſible perſpiration, encreaſeth the inſenſible; for that reaſon a ſtrengthening and *aſtringent* diet often conduceth to this purpoſe. *Arbuthnot.*

ASTRIOLIS'MUS, *ſ.* [from *αστηρ*, a ſtar.] The effect produced upon the frame by the ſtars or planets.

ASTRODIC'TICUM, *ſ.* An aſtronomical inſtrument invented by M. Weighel, by means of which many perſons ſhall be able to view the ſame ſtar at the ſame time.

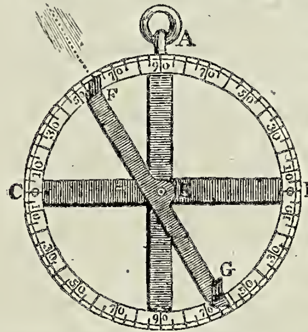
ASTROGNO'SIA, *ſ.* The ſcience of the fixed ſtars, or the knowledge of their names, conſtellations, magnitudes, &c.

ASTRO'GRAPHY, *ſ.* [from *αστρον* and *γραφω.*] The ſcience of deſcribing the ſtars.

ASTRO'LABE, *ſ.* [from *αστηρ*, ſtar, and *λαμβανω*, I take; alluding to its uſe in taking, or obſerving, the ſtars.] The

Arabians call it in their tongue *aſtharlab*; a word formed by corruption from the common Greek name. This name was originally uſed for a ſyſtem or aſſemblage of the ſeveral circles of the ſphere, in their proper order and ſituation with reſpect to each other. And the ancient inſtruments were much the ſame as our armillary ſpheres. The firſt and moſt celebrated of this kind, was that of Hipparchus, which he made at Alexandria, the capital of Egypt, and lodged in a ſecure place, where it ſerved for divers aſtronomical operations. Ptolemy made the ſame uſe of it: but, as the inſtrument had ſeveral inconveniences, he contrived to change its figure, though perfectly natural, and agreeable to the doctrine of the ſphere; and to reduce the whole aſtrolabe to a plane ſurface, to which he gave the name of the *planiſphere*. Hence, aſtrolabe is uſed among the moderns for a planiſphere, or a ſtereographic projection of the circles of the ſphere upon the plane of one of the great circles; which is uſually either the plane of the equinoctial, the eye being then placed in the pole of the world; or that of the meridian, the eye being ſuppoſed in the point of interſection of the equinoctial and horizon; or on that of the horizon.

Astrolabe, or Sea Astrolabe, more particularly denotes an inſtrument chiefly uſed for taking altitudes at ſea; as, the altitude of the pole, the ſun, or the ſtars. The common aſtrolabe, repreſented by the annexed figure, conſiſts of a large braſs ring, about fifteen inches in diameter, whoſe limb, or a convenient part of it, is divided into degrees and minutes. It is fitted with a moveable label or index, which turns upon the centre, and carries two ſights; having a ſmall ring, at A, to hang it by in time of obſervation. To make uſe of it in taking altitudes; ſuſpend it by the ring A, and turn it to the ſun, &c. ſo as that the rays may paſs freely through both the ſights F and G; then will the label cut or point out the altitude on the divided limb. The aſtrolabe, though now grown into diſuſe, is by many eſteemed equal to any other inſtrument for taking the altitude at ſea; eſpecially between the tropics, where the ſun comes near the zenith.



ASTRO'LOGER, *ſ.* [*aſtrologus*, Lat. from αστρον and λογος, Gr.] One that, ſuppoſing the influences of the ſtars to have a caſual power, profeſſes to foretel or diſcover events depending on thoſe influences.—A happy genius is the gift of nature: it depends on the influence of the ſtars, ſay the *aſtrologers*; on the organs of the body, ſay the naturaliſts; it is the particular gift of heaven, ſay the divines, both chriſtians and heathens. *Dryden.*—It was anciently uſed for one that underſtood or explained the motions of the planets, without including prediction.—A worthy *aſtrologer*, by perſpective glaſſes, hath found in the ſtars many things unknown to the ancients. *Raleigh.*

ASTROLO'GIAN, *ſ.* The ſame with *aſtrologer*.

ASTROLO'GIC, or Astrolo'gical, *adj.* Profeſſing aſtrology. Relating to aſtrology.—The poetical fables are more ancient than the *aſtrological* influences, that were not known to the Greeks till after Alexander the Great. *Bentley.*

ASTROLO'GICALLY, *adv.* In an aſtrological manner.

To ASTRO'LOGIZE, *v. n.* To practiſe aſtrology.

ASTRO'LOGY, *ſ.* The art of foretelling future events, from the poſitions, aſpects, and influences, of the heavenly bodies. The word is compounded of αστηρ, a ſtar, and λογος, a diſcourſe; whence in the literal ſenſe of the term, aſtrology ſhould ſignify no more than the *doctrine* or *ſcience of the ſtars*; which indeed was its original acceptation, and conſtituted the ancient aſtrology; which conſiſted formerly of both the branches now called aſtronomy and aſtrology, under the name of the latter only; and for the ſake of making judiciary predictions it was, that aſtronomical obſervations, properly ſo called, were chiefly made by the ancients. And though the two branches be now perfectly ſeparated, and that of aſtrology almoſt univerſally rejected by men of learning, this has but lately been the caſe, as their union ſubſiſted, in ſome degree, from Ptolemy till Kepler, who had a ſtrong bias towards this ſcience. Aſtrology may be divided into two branches, *natural* or *meteorological*, and *judiciary*.

To *natural* or *meteorological* aſtrology belongs the predicting of natural effects; ſuch as the changes of weather, winds, ſtorms, hurricanes, thunder, floods, peſtilences, &c. But this art properly belongs to *phyſiology* or *natural philoſophy*; and is only to be deduced, *à poſteriori*, from phenomena and obſervations. And for this department of aſtrology it is that Mr. Boyle makes an apology in his Hiſtory of the Air.

Judicial or *judiciary* aſtrology, which is what is commonly underſtood by *aſtrology*, is that which profeſſes to foretel moral events, or ſuch as have a dependence on the fate and fortune of man; as if they were produced or directed by the ſtars. The profeſſors of this kind of aſtrology, in effect, maintain, "That the heavens are one great volume or book, wherein God has written the hiſtory of the world; and in which every man may read his own deſtiny, and the tranſactions of his time. The art, ſay they, had its riſe from the ſame hands as aſtronomy itſelf: while the ancient Aſſyrians, whoſe ſerene unclouded ſky favoured their celeſtial obſervations, were intent on tracing the paths and periods of the heavenly bodies, they diſcovered a conſtant ſettled relation of analogy, between them and things below; and hence were led to conclude theſe to be the *parcæ*, the deſtinies ſo much talked of, which preſide at our births, and diſpoſe of our future fate. The laws therefore of this relation being aſcertained by a ſeries of obſervations, and the ſhare each planet has therein; by knowing the preciſe time of any perſon's nativity, they were enabled, from their knowledge in aſtronomy, to erect a ſcheme or horoſcope of the ſituation of the planets at that particular point of time; and hence, by conſidering their degrees of power and influence, and how each was either ſtrengthened or tempered by ſome other, to compute what would probably be the reſult thereof."

Judicial aſtrology, it is commonly ſaid, was invented in Chaldæa, and from thence tranſmitted to the Egyptians, Greeks, and Romans; though ſome inſiſt that it was of Egyptian origin, and aſcribe the invention to Cham. But it is to the Arabs that we owe it. At Rome the people were ſo taken with it, that the aſtrologers, or, as they were then called, the mathematicians, maintained their ground in ſpite of all the edicts of the emperors to expel them out of the city. Among the Indians, the bramins, who introduced and practiſed this art in the eaſt, have hereby made themſelves the arbiters of good and evil hours, which gives them great authority: they are conſulted as oracles, and they ſell their anſwers at good rates.

The fundamental principle, therefore, on which the ſcience or doctrine of aſtrology ſeems to depend, is founded on the ſuppoſed influence of certain aſpects, formed by the principal ſtars and planets with the earth; which aſpects, being either of a benign or malignant quality, are accordingly ſuppoſed to temper and influence the ambient with their rays; and, by their configurations with the ſun and moon, to act both upon the fruit of the womb, and upon all ſubſtances, animate or inanimate, upon which the ambient or elementary matter, thus ſaturated and prepared, can poſſibly be ſuppoſed to fall. In the ancient aſtrology only five aſpects were materially regarded, namely, *conjunction*, *ſextile*, *quartile*, *trine*, and *oppoſition*. Conjunction is denoted by this character ☌, and is when the planets are in the ſame ſign and degree, or have the ſame longitude. Sextile is denoted by ⚹, and is when the planets are diſtant by the ſixth part of a circle, or two ſigns or ſixty degrees. Quartile is denoted by □, and is when the planets are diſtant one-fourth of the circle, or ninety degrees, or three ſigns. Trine is denoted by △, and is when the planets are diſtant by one-third of the circle, or four ſigns, or 120 degrees. And oppoſition is denoted by ☍, and is when the planets are in oppoſite points of the circle, or differ by one-half the circle, or ſix ſigns, or 180 degrees of longitude. Theſe intervals are reckoned according to the longitudes of the planets; ſo that the aſpects are the ſame, whether the planet be in the ecliptic or out of it.

To the five ancient aſpects, modern writers have added ſeveral more: as *decile*, for the tenth part of a circle; *tridecile*, or $\frac{3}{10}$; and *biquintile*, or $\frac{2}{5}$ of a circle. And Kepler adds others, from meteorological obſervations: as the *ſemiſextile*, being $\frac{1}{12}$, or 30°; and *quincunx*, or $\frac{5}{12}$, or 150°. Laſtly, to the aſtrological phyſicians, &c. we owe *octile*, or $\frac{1}{8}$; *trioctile*, or $\frac{3}{8}$; and *quintile*, $\frac{1}{5}$ of the circle. Theſe aſpects are divided with regard to their ſuppoſed influences, into *benign*, *malign*, and *indifferent*. The trine and ſextile aſpects being eſteemed benign or friendly; the quartile and oppoſition, malign or unfriendly; and the conjunction an indifferent aſpect.

Aſpects are alſo diſtinguiſhed into *partile* and *platic*. Partile aſpect, is when the planets are juſt ſo many degrees diſtant, as are expreſſed above: and theſe only are the proper aſpects. Platic aſpect, is when the planets do not regard each other exactly from theſe very degrees of diſtance; but the one exceeding as much as the other falls ſhort. So that the one does not caſt its rays immediately on the body of the other, but only on its orb or ſphere of light.

The conſtellations, alſo, which form the twelve ſigns of the zodiac, and the ſigns themſelves, are ſaid to have a very powerful operation upon mundane affairs; and the reaſon is, becauſe they form the pathway of the ſun, moon, and planets, in all their configurations, and thereby receive from them a more forcible power and energy, whereby they act both upon the inclination and temperature of man's body, and upon the four ſeaſons of the year. Theſe ſigns are diſtinguiſhed by the following characters:

♈ Aries	♋ Cancer	♎ Libra	♑ Capricornus
♉ Taurus	♌ Leo	♏ Scorpio	♒ Aquarius
♊ Gemini	♍ Virgo	♐ Sagittarius	♓ Piſces

They are placed in this order, and divided into four equal parts, anſwering to the four quarters of the year, becauſe the equator cuts and divides the circle of the zodiac at the point beginning with Aries, and at the oppoſite point of Libra, dividing the whole into two equal parts, conſiſting of ſix northern and ſix ſouthern ſigns. But the reaſon why the ſun's courſe begins and is reckoned from Aries is, as tradition informs us, becauſe the ſun, when firſt brought into exiſtence, was ſaid to have been placed in this ſign. And this is not an unreaſonable conjecture, ſince the ſpring quarter begins when the ſun enters Aries, and brings with it increaſe and length of days, and all nature begins to multiply and flouriſh, and, as it were, to riſe into new life. The northern ſigns terminate with Virgo, and the ſix ſouthern commence with Libra; but the northern ſigns are conſidered of a more efficacious and noble nature than the ſouthern.

Now whenever the profeſſors of this ſcience proceed to calculations, either in meteorological or judiciary aſtrology, they project what is called the horoſcope, or figure of the twelve houſes of heaven; into which, by the help of an Ephemeris for the given year, they collect the true places of the ſun, moon, planets, and principal fixed ſtars, all which they carefully place therein; and, by this means, they note every diſtinct aſpect which the heavenly bodies form with the earth, and with one another; from the ſuppoſed tendency of which their judgment is decided. To form a competent idea of what is meant by the twelve houſes of heaven, let us ſuppoſe the whole celeſtial globe, or ſphere of heaven, divided into four equal parts by the horizon and meridional line, and each of theſe into four quadrants, and each quadrant into three equal parts, by lines drawn from points of ſections in different parts of the horizon and meridian, equi-diſtant from each other. By this operation, the whole globe or ſphere will be apportioned into twelve equal parts, which conſtitute what is called the *twelve houſes* of heaven. In this diviſion of the heavens, the firſt quadrant is deſcribed by a parallel line, drawn from the point of the eaſt angle to the ſouth, or mid-heaven; and contains the twelfth, eleventh, and tenth, houſes, called the oriental or vernal quarter. The ſecond quadrant is deſcribed by a ſimilar line, running from the exterior point of the mid-heaven to the point of the weſtern angle, and contains the ninth, eighth, and ſeventh, houſes, called the meridian or eſtival quarter. The third quadrant is formed by a parallel line running from the extreme point of the eighth houſe to the north angle; and contains the ſixth, fifth, and fourth, houſes, called the occidental or autumnal quarter. The fourth quadrant is deſcribed by a line drawn from the extreme point of the north angle to the extremity of the line which deſcribes the firſt quadrant, both meeting in the eaſt angle of the heavens, and contains the third, ſecond, and firſt, houſes, called the northern or wintery quarter. The lines thus drawn deſcribe the twelve ſigns of the zodiac, or track in which the ſun, moon, and planets, move.

Theſe twelve houſes are diſtinguiſhed by the names of *angular*, *ſuccedent*, or *cadent*. The angular houſes are four, called the aſcendant, mid-heaven or meridian, the ſeventh houſe, and the bottom of the heaven; theſe are deemed the moſt powerful and moſt fortunate houſes. The ſuccedent houſes are the eleventh, ſecond, eighth, and fifth; and are ranked next in force and virtue to the angles. The third claſs, or cadent houſes, are the third, twelfth, ninth, and ſixth; and are conſidered of the leaſt efficacy of them all. Now, if a calculation is to be made to foretel the probable kind of weather for any given time come, the peculiar influence of theſe twelve houſes, the nature of the ſigns or conſtellations which fall in them, and the particular aſpects which the ſun, moon, and planets, make with the earth, are not only to be well conſidered, but likewiſe the following general obſervations, which we have ſelected from a recent publication by Dr. Sibly, and which we ſhall here give in his own words:

"Whatever affects the ſtate of the air or atmoſphere, muſt neceſſarily, in an adequate proportion, alter the ſtate of the weather; and that, by how much the more the elements are impregnated or charged with electrical matter, or that the motions of the winds are increaſed or diminiſhed, or that the clouds are ſurcharged with moiſt and diſcordant vapours, by ſo much the more will ſtormy, tempeſtuous, and unſettled, weather, be produced. So likewiſe, it is equally demonſtrable, that, as the temperature of the air, and the ſtate of the ambient and elementary matter, is from time to time varied and changed, or ſurcharged to a greater or leſs exceſs with any particular quality, ſo in a proportionate degree will the animal functions and ſpirits of men be raiſed or depreſſed, their minds agitated, and their paſſions inflamed; whence often ariſe putrid and malignant diſeaſes throughout whole provinces. And, ſeeing theſe things are ſo, that their cauſes are brought about by the attractions and mutations of the ſun, moon, and ſtars, in their different motions and poſitions, and in their conjunctions and oppoſitions, and various configurations among themſelves and with the earth; and, ſince theſe motions and poſitions of the planets, and all their different aſpects, can be aſcertained for any ſeries of years to come; ſo, it is manifeſt, that, by knowing their influences and effects upon the air, earth, winds, and elements, and upon the conſtitutions and paſſions of men; a preſage of times and ſeaſons, of famines, peſtilences, inundations, and various great and univerſal calamities, may be ſought out and diſcriminated.

"This ſpeculation is therefore defined to be, the art of prognoſtication by the rules of aſtronomy. It is divided into two principal or diſtinct parts; the one whereof is called *general*, or *univerſal*, becauſe it relates to whole empires, nations, or provinces; and the other *local*, or *particular*,

cular, ſince it relates only to the weather applicable to particular and diſtinct climates; which, from a ſimilar theory of eclipſes, tides, and winds, it is manifeſt, might be aſcertained with very great exactneſs. In theſe conſiderations, two things are to be regarded, as the principal ground-work of the whole, namely the tendency and familiarity of the twelve ſigns of the zodiac, and the planets and ſtars, to the temperature of the different climates; and the qualities produced in certain ſeaſons by the ecliptical conjunctions of the ſun and moon, and by the revolutions and tranſits of the planets, with their riſings and ſtations. The firſt and greater cauſe hath reſpect unto whole regions, and ſheweth the uncertainty of national glory and perfection, ſo liable to be diſturbed by wars and inteſtine broils, or deſtroyed by famine, peſtilence, earthquakes, or inundations. The ſecondary or inferior cauſe is produced in certain times, as in the contrariety of ſeaſons, and their mutations more or leſs in their different quarters; as heats or winds more vehement or remiſs, out of their proper and accuſtomed times, whereby plenty or ſcarcity, or diſeaſes, are produced, as the cauſe and quality ſhall happen to be. Hence are diſcovered the ſympathies exiſting between the motions and configurations of the planets, and between the mutations and varieties of weather obſervable in the ſame ſeaſons of the year; and of the general good or evil attendant on mankind; all which are accounted for according to the principles of natural reaſon. For it is an undeniable fact, that every diſtinct property will have its diſtinct effect; and, that the knowledge of theſe effects point out the property, whether it be good or evil. Thus we know, that the property of the planets ruling particular ſeaſons, as the moon does the tides, will conſtantly produce the ſame effect, when unimpeded with the property or influence of other attractive bodies; for then the effective property is changed, and can only be determined by contemplating the force and mixture of the different planets, according to their co-operation and power, or places in the zodiac.

"To obtain a proper knowledge of the weather for any given year, it is requiſite exactly to obſerve the ingreſs of the ſun into the firſt point of Aries, Cancer, Libra, and Capricorn, at the change or commencement of the four different quarters of the year; together with the conjunctions or oppoſitions of the luminaries next preceding the ſame ingreſſes. Then to the time of the ingreſs erect the horoſcope, or ſcheme of the heavens, and obſerve whether the places of the luminaries, at the time of their conjunction or oppoſition, happen in a moiſt, dry, or cold, manſion; and of what planets they are aſpected, and likewiſe if the ruling planets be conjoined in ſuch a manſion with the ruling ſign of that conjunction or oppoſition. Then the ſcheme of the heavens, erected for the ſun's entrance into the firſt ſcruple of Aries, will, with the help of the moon's principal aſpects and configurations with the ſun and other planets at her ſeveral changes, foreſhew the general ſtate of the weather for that quarter. But, in this ſpecies of prediction, we muſt never loſe ſight of the influence and attraction of the earth, nor of the force and peculiarity of each climate reſpectively; becauſe theſe peculiarities ariſe entirely from the particular ſituations of different climates or countries with reſpect to the ſun, and would have their weather fixed and certain, the ſame as their increaſe or decreaſe of day or night, were it not for the attractive and expulſive force of the other celeſtial bodies, which are inceſſantly varying that of the ſun, and of one another, according to their different poſitions and aſpects. Hence it is neceſſary, before an attempt be made to give judgment of the weather in any particular country or climate, to well conſider its particular ſituation with reſpect to land and ſea, mountains and vallies, iſlands and continents, caverns and lakes, as well as of its geographical poſition with reſpect to the tropics, equinoctial, ecliptic, &c. for, as every different climate is differently affected by the ſun's influence upon it, as well as by the quality of its own proper ſoil or component parts, ſo will the action of the other celeſtial bodies thereupon be more powerful or remiſs, as their nature and quality ſhall be found to agree with or oppoſe the ſtate and temperature of thoſe climates, and the ſun's influence at thoſe times upon them. Hence we ſee clearly the extreme difficulty of calculating the weather for England, Ireland, or any of the iſlands, which, being ſurrounded by the ſea, are ſubject to much greater variations of weather than any of the continents or great oceans. The cauſe is apparent. In England, we find almoſt every ſlight configuration of the ſun and moon, and the riſing and ſetting of particular ſtars, will change the ſtate of the atmoſphere almoſt inſtantaneouſly; and, from the proximity of the ſea every way round us, and the conſequent moiſt vapours inceſſantly drawn up into the air by the attraction of theſe bodies, we become ſubject to wet, cloudy, corruſcuous, weather, which extends not to any of the ſurrounding coaſts, but is peculiar only to the iſland over which theſe vapours are engendered. And hence it is we ſo often ſee ſhowers, which, though accompanied with violent thunder, lightning, wind, and hail, are frequently not heard of at a few miles diſtance; and that when, in one county, there has been a drought, and the land and corn almoſt dried and parched up, in the next adjoining county they ſhall be viſited with frequent ſhowers, and the fruits of the earth be luxuriant and flouriſhing. This fact muſt be within every man's obſervation who reſides in England, and the cauſe is entirely peculiar to the country. The moiſt vapours of the contiguous ocean are drawn up into the clouds one hour; and, by the oppoſing influence of ſome planet or ſtar then riſing or culminating, are driven down the next; whence it is obvious, that all attempts to foretel ſuch mutations and changes as theſe are abſurd and futile. The object of this part of aſtrology means only to aſcertain thoſe great and powerful operations of the ſtars, which ſhall be felt generally throughout whole provinces; that, having their cauſe in the principal conjunctions, oppoſitions, or quadratures, of the ſuperior bodies, will raiſe wind and rain over a whole continent; pervade the bowels of the earth in porous and ſubterraneous countries, and clothe the face of nature with fleecy ſnow or hoary froſt; or, from humidity and heat, ſhall either parch the land, while its fainting inhabitants gaſp for breath, or putrefy its air with peſtilential qualities, which ſends them by thouſands to the grave.

"The next thing to be conſidered in relation to the weather, is the conjunctions and aſpects of the planets. The conjunction of Saturn and Jupiter, which ought accurately to be obſerved, produces its effects in the mutation of the air many days before and after. This conjunction happening in hot and dry manſions, or with fixed ſtars of the ſame nature, generally produces dryneſs; increaſeth heat in ſummer, and mitigates the cold in winter; but in moiſt ſigns it portends rain and inundations. Yet this is diligently to be noted, that the effects produced by this conjunction will be of the nature of the ruling planet; for, if Saturn claims principal dominion in the place of the conjunction, and is elevated above Jupiter in reſpect of latitude, it denotes many diſeaſes, and much evil in general; but the contrary, if Jupiter prevails. So likewiſe theſe two ponderous planets being in oppoſition, quartile, trine, or ſextile, is a ſign of continuance of ſeaſons; but for the moſt part they bring impetuous ſtorms of rain and hail; particularly if they happen in the ſpring time, in moiſt ſigns, they produce turbulent air; in ſummer, hail and thunder; in autumn, wind and rain; in winter, obſcure and thick clouds and dark air. Saturn and Mars in conjunction, quartile, or oppoſition, uſually preſage winds and rain, hail, thunder, lightning, and corruſcations, according to the ſeaſons of the year; in ſpring, wind, rain, and thunder; in ſummer, hail and thunder; in autumn, violent rain; and, in winter, diminution of cold. Saturn and the Sun in conjunction, quartile, or oppoſition, in the ſpring-time, threaten dark and heavy clouds; in ſummer, hail, thunder, and remiſſion of heat; in autumn, rain and cold; in winter, froſt, ſnow, and cloudy weather. Saturn and Venus in conjunction, quartile, or oppoſition, generally produce cold rain and ſhowers; in ſpring, they bring rain and cold; in ſummer, ſudden and haſty ſhowers; in autumn, cold rain; in winter, ſnow or ſleet. Saturn and Mercury in conjunction, quartile, and oppoſition, in dry ſigns and manſions, bring drought; in moiſt ſigns, rain; in the airy, winds; in the earthy, cold air and dryneſs; particularly in the ſpring, they produce wind and rain; in ſummer, wind and ſhowers; in autumn, wind and clouds; and, in winter, wind and ſnow. Saturn and the moon, in conjunction, quartile, or oppoſition, affect the air according to that part of the heavens wherein they are conjoined or aſpected. In moiſt ſigns, they portend clouds and coldneſs; in the airy, and in Sagittarius and Capricorn, they produce cold, eſpecially when the moon is of full light; and, when ſhe is void of courſe, they bring drought; but, in dry ſigns, they foreſhew ſharp air; and a froſty ſeaſon, if it be in winter; generally the Moon and Saturn ſtir up thick clouds and gentle ſhowers. In the ſpring, they produce a turbid and moiſt air; in ſummer, moiſture, with remiſſion of heat, and ſometimes hail, if there be any aſpect of Mars or Mercury; in autumn, a cloudy air; in winter, clouds and ſnow, with vehement cold.

"Jupiter and Mars, in conjunction, quartile, or oppoſition, change the quality of the air, according to the nature of the ſigns and ſtars to which they are configurated. In hot and dry manſions, they cauſe great heat; in the moiſt ſigns, thunder and rain; but, particularly in the ſpring-time, they produce winds and turbulent air; in ſummer, heat, with thunder and lightning; in autumn, tempeſtuous and windy air; and, in winter, remiſſion of cold and temperature of air. But, in this conjunction, we muſt obſerve the ruling planet; for, if Jupiter hath rule above Mars, it denotes much good and felicity, plenty of the fruits of the earth, and of all ſuch things as ſerve for the ſuſtenance of man. Alſo, Jupiter and Mars, with tempeſtuous ſtars, as Arcturus, the Eagle, tail of the Dolphin, light ſtar of the Crown, &c. ſtir up wind and hail, and in ſummer thunder. Jupiter and the Sun, in conjunction, quartile, or oppoſition, bring wholeſome winds and ſerene air, particularly in ſpring and autumn; in ſummer they produce thunder, and in winter remiſſion of cold. Jupiter and Venus, in conjunction, quartile, or oppoſition, generally produce ſerenity and temperature of air; in the moiſt ſigns, they promiſe gentle ſhowers; in other ſigns, fair weather, wholeſome winds, and fertility of all things. Jupiter and Mercury, in conjunction, quartile, or oppoſition, ſtir up winds and rain; in the fiery ſigns, they bring dryneſs and warm winds; in the airy ſigns, fair weather, but winds in all ſeaſons of the year; particularly, in the ſpring and autumn they portend hail, and in winter ſnow. Jupiter and the Moon, in conjunction, quartile, or oppoſition, produce gentle winds, ſerenity, and temperature of the air; yet they alter the weather, according to the quality of the ſign which they poſſeſs; but at all times they generally denote a mild and temperate ſeaſon.

"Mars and the Sun, in conjunction, quartile, or oppoſition, in the fiery ſigns, portend heat and dryneſs; in the watery, hail, thunder, and lightning; in the airy, clouds; and, in the earthy, violent winds; in the ſpring and autumn, they excite dry winds; in ſummer, great heat, lightning, and thunder; and, in winter, remiſſion of cold. Mars and Venus, in conjunction, quartile, or oppoſition, are productive of much rain, if in moiſt ſigns, eſpecially in ſpring and autumn; in ſummer, they engender ſhowers; in winter, remiſſion of cold, and often ſnow. Mars and Mercury, in conjunction, quartile, or oppoſition, in winter and ſpring, foretel ſnow; in ſummer, thunder and hail; in autumn, hail and great winds; and, in fiery and dry ſigns, they preſage warmth and exceſſive drought. Mars and the Moon, in conjunction, quartile, or oppoſition, in moiſt ſigns, demonſtrate rain; in fiery, dryneſs, red clouds, and ſometimes rain; in ſummer, lightning, hail, and coruſcations. Mars, entering new ſigns, very often changes the air; ſo Mars, paſſing by Succulæ, or Hyades, produces clouds and moiſture. Mars in Cancer, with north latitude, in autumn and winter, brings warm weather, with wind and rain, and ſharp diſeaſes, if Mars be in aſpect with Saturn, Venus, or Mercury. Mars paſſing by the Pleiades makes a cloudy ſeaſon; and, being accompanied with ſtars of a tempeſtuous nature, as Arcturus, the Eagle, bright ſtar of the Crown, Bull's Eye, Tail of the Dolphin, Procyon, Fidicula, Scorpion's Heart, Virgin's Spike, &c. riſing or ſetting with them, foreſhews a turbulent, windy, and oftentimes a ſultry and unwholeſome, air. The Sun and Venus in conjunction commonly produce moiſture; in ſpring and autumn, rain; in ſummer, ſhowers and thunder; in winter, rain. The Sun and Mercury in conjunction, in the airy ſigns produce winds, in the watery ſigns rain, in the fiery, drought and warm winds injurious to mankind. The Sun and Moon, in conjunction, quartile, or oppoſition, in moiſt ſigns, portend rain; in fiery ſigns, fair weather, but generally they alter the ſtate of the air, according to the quality of the ruling planet and the nature of the ſeaſon. The conjunction, ſemi-ſextile, and ſextile, of Venus and Mercury, infer ſtore of wind and rain; and, in winter, ſnow; provided they be nearly equal in motion; Venus in the firſt decade of Cancer preſages rain: alſo, being with the Pleiades, Hyades, and the Aſſelli, ſhe denotes a moiſt ſeaſon. If, in the autumnal quarter, more retrograde planets be with the ſun than in the other ſeaſons, which in the winter following will become direct, it is a ſign of great drought.

"Daily experience ſhews, that the weather is much varied by the ſituation of the winds; for, according to their different bearing is the ſeaſon much inclined, ſometimes to hail, rain, and ſnow, and again to fair weather; wherefore I ſhall ſtate thoſe aſpects which are found to attract, raiſe, vary, or alter, the poſition of the winds, as they alternately riſe or ſet in parallels to the different bearings of the earth. Beſides theſe, there are lateral and collateral winds, blowing between theſe points, which partake more or leſs of the quality of the foregoing, as they approach or recede from them. Saturn is the mover of the eaſtern winds, Jupiter of the northern, Mars of the weſt and ſouth, Venus of the ſouthern, and Mercury according as he ſhall be in aſpect with others; the Sun and Moon raiſe the weſtern winds. The quality of the winds, and their bearing, is alſo known from their poſitions in the horoſcope; for, the planets with latitude and ſouth declination, from the meridian, cauſe the ſouthern winds to blow; from the *imum cœli*, with latitude and northern declination, they then promote the northern winds; the oriental planets move the eaſtern winds, but the occidental the weſtern winds; and, when they are weak, they attract or cauſe the intermediate winds to blow. Alſo the ſituation and quality of the winds are gathered from the latitude of the moon, as ſhe inclines to the north and ſouth; ſo the ſigns will alſo demonſtrate the winds: for Aries, Leo, and Sagittarius, excite the north-weſt winds; Taurus, Virgo, and Capricorn, the ſouth-eaſt; Gemini, Libra, and Aquaries, the north-eaſt; Cancer, Scorpio, and Piſces, the ſouth-weſt. Likewiſe, from the application of Mercury to the other planets, we may in ſome meaſure prognoſticate the quality of the winds; for, if Mercury apply to Saturn, it produces great winds, clouds, and rain; if to Jupiter, mild winds; if to Mars, warm winds; if to Mars and the Sun, warm and hurtful winds; if to Venus, cold winds.

"Alſo the riſing, culminating, and ſetting, of the fixed ſtars, with the ſun, moon, and other planets, alter the ſtate of the winds in the following manner: Regulus, or the Lion's Heart, ſetting with the Sun, excites the weſt winds to blow many days together. The riſing of Pleiades with the Sun moveth the eaſt wind. The ſetting of Arcturus ſtirreth up the ſouth winds. The ſetting of Pleiades with the Sun excites the north-eaſt wind. The riſing of the Dolphin with the Sun alſo produces wind. The riſing or ſetting of Arcturus, with the Sun, Saturn, Jupiter, Mars, or Mercury, begetteth winds. The ſetting of Hyades troubles both ſea and land, eſpecially when Mars and Mercury give aſpect. If, at the time of the matutine ſetting of Dolphin, there be ſhowers, there will be none at the riſing of Arcturus. The riſing of the Haedi produces rain. The matutine riſing of the greater Dog-ſtar produces heat, troubleth the ſeas, and caſts an univerſal laſſitude over all things. Ptolemy, from many years obſervation, deduced the following effects from the fixed ſtars riſing with the ſun. Orion's Girdle, riſing with the ſun, maketh a turbid air. The ſetting of the Crown preſages tempeſts. Syrius and Aquilo, riſing in the evening, produce tempeſts. The ſetting of Regulus cauſes the north wind, and ſometimes rain. The ſetting of the Dolphin produces wind and ſnow. The ſetting of Vindemiator moveth the north-eaſt wind. The riſing of the Ram's Horn brings rain and ſnow. The veſpertine riſing of Arcturus portends tempeſts. The riſing of the Pleiades maketh the weſt wind to blow. The veſpertine ſetting of Syrius produces the ſouth and north-north-eaſt winds. The matutine ſetting of the Hyades preſages rain and the ſouth wind. The veſpertine ſetting of the Pleiades moves the mild ſouth wind, terminating in the weſt. The riſing of the Succulæ brings rain. The riſing of Orion maketh the weſt wind to blow. The matutine ſetting of the Eagle cauſes great heat and the ſouth wind; of Arcturus denotes ſhowers; of the Succulæ produces rain, ſnow, and winds.

"The Sun, riſing with the Aſſelli, fills the air with thunder, lightning, and ſhowers. The Sun riſing with the Eagle produces ſnow, as alſo with the Tail of the Goat, and Head of Meduſa. His riſing with Aldebaran and the ſtars of Orion, produces wind, rain, thunder, and lightning. When he riſes with the cloudy ſtars in Leo, with Orion, with the tail of Leo, the light ſtar of Hydra, the Crown, or the ſtars in the forehead of the Scorpion, it portends a cloudy ſeaſon. The Sun ſetting with the Harp denotes a cold and moiſt time; with the Pleiades, mild ſhowers; with Regulus, ſhowers, thunder, and lightning; with the Greater Dog-ſtar, warm time, with thunder and lightning; with Orion and Aldebaran, a turbid, windy, and wet, air; with Acanor, and the ſtars of Jupiter, a ſerene and temperate ſeaſon; with the ſtars of the nature of Saturn, he produces cold rain or ſnow; with the ſtars of Venus, rain or miſt; with the ſtars of Mars, thunder and lightning. Saturn, with the Head of Meduſa, begetteth cold and moiſture; with the Pleiades, he troubles the air, and engenders clouds, rain, and ſnow; with the ſtars of Orion he produces wind and ſhowers; with Arcturus, wind and rain; with the Virgin's Spike, ſhowers and thunder; with the Dolphin, bright ſtar of the Crown, Goat's Tail, or the Harp, he cauſes a moiſt and cloudy time, and ſometimes ſnow and rain; with Preſepe, and the Hyades, winds, clouds, rain, and thunder; with the Lion's Heart, thunder and rain; with the Greater Dog-ſtar, winds, rain, thunder, and lightning. Jupiter, riſing with Regulus, brings fair weather in winter, and mitigates the cold, and increaſeth the heat in ſummer; with the Neck of the Lion it produces winds, and with Acanor it promiſes ſerenity. Mars riſing with the Goat's Tail foreſhews a moiſt time; with the ſtars in the Scorpion's Forehead, cold rain or ſnow; with Arcturus, vehement winds, rain, thunder, and lightning; with the Eagle, rain, ſnow, and great coldneſs; with the ſtars of Orion, Hyades, Regulus, and the Dog-ſtar, great heat. Mercury with the Pleiades produces mild winds and rain; with the Eagle, ſnow or rain; with the ſtars of Orion, Hyades, Regulus, and the Dog-ſtar, winds, ſhowers, thunder, and lightning; with the Goat's Tail, cold winds, ſnow, or ſhowers; with the Back and Neck of the Lion, moiſt winds; with the Lion's Tail, Spica Virgo, the Harp, &c. it portends a ſudden change to wind and rain.

"Now theſe and the like aſpects, being collected, throughout the year, by the help of an Ephemeris, and carefully arranged, and well conſidered, will, in a remarkable manner, foreſhew the general tendency of the weather for the year to come, in whatever country or climate theſe aſpects are made. And this is the mode that is or ought to be adopted by thoſe who calculate or foretel the weather in our common almanacs, and which, if correctly done, will be found generally true."

Calculations for the riſe, growth, duration, and fall, of empires, are conducted in a ſimilar manner; examples of which the preſent author has given in the origin of the United States of America, and in the recent fall of the monarchy of France; which he pretends to have foretold ſix years before either of theſe events took place. With regard to the *calculation of nativities*, we ſhall give the outlines of the operation in this author's own words: "As the calculation of nativities is a moſt intereſting and curious ſpeculation, it is neceſſary to ſtate, in the plaineſt language, the principles on which it is conducted. It is manifeſt to the moſt ſuperficial obſerver, that a certain ſecret power is diffuſed through all things that are near the earth, according to the nature and properties of the firmament, and circumambient air, and to the power and influence of the luminaries and other celeſtial bodies. The ſun, being the ſuperior luminary and the fountain of life, governs all things that bear relation to the earth, not only by varying the ſeaſons, and bringing to perfection the ſeeds of animals, and the fruitfulneſs of plants, the flowing of waters and the mutation of bodies, but alſo the changes of the day, of heat and moiſture, of dryneſs and cold, as it hath reſpect to the meridian, or mid-heaven. The moon alſo, being neareſt to the earth, diſtils down an amazing influence, by which things animate and inanimate are affected and changed. Rivers are augmented and diminiſhed according to her light; the tides vary as ſhe riſes and ſets; plants and animals, in whole or in part, increaſe and decreaſe with her. In the ſame manner the ſtars, fixed and erratic, as they keep on their uniform courſe, cauſe many appearances around us, for they produce cold and heat, and wind and rain, by which alſo things on earth are ſuitably governed; and their mutual configurations, as their influences co-operate with or oppoſe one another, produce variations accordingly.

"The power of the ſun is on all hands admitted to be moſt prevalent, as it is obviouſly moſt univerſal. The other heavenly bodies, according to the variety of their aſpects with the ſun, unite with, or reſiſt, his influence, agreeable to the nature and force of ſuch aſpects. This happens moſt frequently, and moſt forcibly, with the moon, at all the changes. But theſe affections in the ſtars operate more obſcurely, and employ longer time, according to their declination, or as they appear or diſappear in our horizon. Hence then, by the rules of nature, and the teſtimony of our own reaſon and experience, it muſt be admitted, that of all the planets, the influence of the ſun is the moſt powerful; and that the influence of the other planets have moſt energy, when the beams of the ſun co-operate with them. The moon likewiſe, by reaſon of her ſwiftneſs, and proximity to the earth, modifies and conveys theſe influences to ſublunary bodies, with a force ſuperior to all the other ſtars. And theſe influences are always moſt powerful, and moſt viſible in their effects, when this mediation of the moon is exerciſed in conveying the influences of the ſtars to the ſun, or of the ſun to the other ſtars, and thence to the earth. But, in defining theſe varying properties and effects, particular regard muſt be had to the latitude, declination, riſing, and ſetting, of the ſtars, both fixed and erratic, eſpecially thoſe which approach neareſt to the ecliptic.

"Whoever contemplates theſe premiſes, and attentively obſerves the aſpects, will find, that not only conjoined bodies are ſubject to the configurations of the ſtars, but alſo the buddings and perfection of ſeeds are framed and formed according to the quality with which the heavenly matter and circumambient air is endued. The obſervant huſbandman and ſhepherd pre-conjecture the proper ſeaſons for ſeed-ſowing, planting, and procreation of animals, by conſulting the ſtate of the winds and the face of the ſky. The ſkilful mariner likewiſe prepares againſt the dangers of an approaching ſtorm by ſimilar obſervations; but they are frequently deceived for want of better experience, and an adequate knowledge of the courſes and effects of the heavenly bodies, which, when exactly underſtood, conduce to an almoſt certain preſcience herein. For it is found, that he who correctly knows the motions of the ſtars, and their configurations with the ſun and moon, and is not ignorant of the times, nor the place, nor the aſpects, and is well ſkilled in the ſimple ways of nature, can admirably foretel, in any ſeaſon, the proper ſtate and temperature of the air, as that it will be hotter or moiſter, or colder or drier, according to the nature and properties of the reſpective rays of the ſtars and moon configurated with the ſun. And, as theſe ſpeculations are founded upon the moſt ſimple principles of nature, as that the ſun is hot and dry, and the moon is cold and moiſt, and the obſervations deduced herefrom are ſeldom known to vary; ſo, by ſimilar qualities and obſervations, and by rules equally well founded, we obtain an extenſive preſcience reſpecting man. For, from the natural ſtate of the ambient and heavenly matter at the time of the conſtruction of the body, it is eaſy to know in general, the quality and temperature of each perſon born; that ſuch ſhall be the formation of his body, and ſuch the diſpoſition of his mind, and ſuch the future events, advantageous or diſadvantageous, of his life, according to the ſtate of the heavens at that particular time, whether qualified for the production of ſuch a temper, or whether inimical to it. Thus, a preſage is not only poſſible by the laws of nature, but proper and neceſſary to the wiſdom and well-being of ſociety. The errors of thoſe who do not underſtand the fundamental principles of this learning, have doubtleſs afforded ſtrong and plauſible reaſons to the bulk of mankind for diſcarding it altogether, and for conſidering thoſe events which others have more ſucceſsfully aſcertained, to be the effects of mere chance. But ſurely a doctrine is not to be rejected, becauſe ſome of its followers are vicious or ignorant. In this ſpeculation, above all others, reaſonable allowances ſhould be made, as well for the weakneſs of human comprehenſion, as for the great and undefinable extent of the contemplation.

“ But that aſtrological predictions are poſſible, and to be defined with great preciſion, when properly managed, is an aſſertion moſt true and manifeſt. It remains, therefore, that we ſpeak of the advantages of this benevolent diſpenſation of Providence; for, if a foreknowledge be advantageous or neceſſary to the ſafety and future happineſs of the ſoul, what can be more ſo in reſpect to the body, ſince it affords not only temporal delight, happineſs, and pleaſure, but enables us to underſtand things both divine and human? Whatever happens in the courſe of nature, either neceſſarily or accidentally, that materially affects our proſperity or adverſity, and either prolongs life or deſtroys it, if they happen ſuddenly and unexpectedly, confound with fear, or tranſport with joy; but, if they are foreknown, they fortify the mind by ſuch foreknowledge, and prepare it for ſuſtaining the beſt or worſt occurrences with calmneſs and ſerenity. In what reſpect therefore is man ſuperior to the irrational part of the creation, if he cannot bear to know the hour of his diſſolution? The terms of our exiſtence, as every day's experience repeatedly ſhews, are that we muſt die. Where then, to minds fraught with reaſon and integrity, can be the horror, the diſtreſs, or calamity, of knowing nearly the time when that certain event ſhall take place? To men of a virtuous habit, ſuch a knowledge muſt be invaluable; and to thoſe of leſs ſcrupulous principles, it cannot be unwelcome, provided reaſon or philoſophy make up any part of their conſtitution. And ſurely I need not mention a ſtronger inſtance of the advantages of preſcience, than what will naturally ariſe from the obſervation of every man of experience, when he looks back upon the occurrences of his paſt life, and recollects but half the loſſes and inconveniences he has ſuſtained, only for want of that foreknowledge in worldly affairs which the art of prediction ſupplies.

“ We are not however to believe, that the accidents and events of life ſo befal men, as though a law were ſet over them by ſome indiſſoluble cauſe from above, by which they are of neceſſity brought to paſs, no other cauſe being able to oppoſe or prevent them. It were unphiloſophical and abſurd thus to imagine; for the motion of the heavenly bodies is immutable by divine law, and the mutation of earthly things is diſpoſed of and revealed by a natural generation and order, which the ſuperior cauſe follows by accident. It is alſo to be obſerved, that many things happen to man, not only by reaſon of the natural and proper quality of the heavenly matter, but alſo by the operation of ſome more univerſal cauſes; as by great mutations and mixtures of the elements, plagues and peſtilences, and floods and conflagrations, are produced, by which multitudes are at once ſwept away, and periſh under one common fatality. Thus greater cauſes always overcome the leſs, and the ſtronger the weaker; and, whenever the ſtronger power prevails in any great mutation, the more general effects we have been ſpeaking of happen.

“ Hence it is demonſtrable, that, though ſimple cauſes have natural properties peculiar to themſelves, yet there are other cauſes equally ſimple, which operate in contact with thoſe of the former, and by which the bare ſimple nature of each is changed by mutation into a third quality, which differs in nature from either of the former; according to which ſuch ſimple natural properties are either partly or wholly changed, or otherwiſe fruſtrated or diverted. As for example, in the weather, the ſun, in his own ſimple nature, is the fountain of light and heat; but, being joined with Saturn, never fails, if not prevented by ſome other apparent cauſe, both in winter and ſummer, to produce cold and cloudy weather. But, if Mars happens to be joined in configuration with them, the caſe is altered, and, inſtead of cold, the weather will not fail in ſummer to be hot and ſultry, though at the ſame time cloudy, corruſcuous, and diſorderly; and, in winter, remarkably cloſe and warm, though lowering and turbulent; more eſpecially if attended with a new or full moon. Theſe are facts founded upon a rational hypotheſis, and proved by long experience and conſtant obſervation. Calculators of nativities, therefore, when they ſpeak of thoſe things which may come to paſs, can do it in no other way, conformable to truth and nature, but by the power and effects of the circumambient matter or aſpects, which, being more or leſs inclined to ſuch a temperature, will produce ſuch an accident, ſtature of body, or diſpoſition of mind.

“ Theſe obſervations become clear and obvious, from a conſideration of the planets and their aſpects. The Sun is found by nature to cauſe heat and dryneſs in a moderate degree. His power and influence are moſt viſible to our ſenſes, by reaſon of his magnitude, and the manifeſt mutations of the ſeaſons; for, by how much the nearer he approaches to our vertical point, by ſo much the more he ſtirs up heat in us, and ſubjects us to his nature. But the nature of the Moon is chiefly moiſtening; for, being nearer the earth, ſhe exhales the vapours of all moiſt bodies, and thus evidently affects all moiſt things, and putrefies them; but, becauſe of her analogy with the Sun, ſhe moderately participates of heat. The planet Saturn cools and dries, becauſe he is far diſtant from the heat of the ſun and vapours of the earth; but he cools moſt abundantly, and dries moſt moderately. The Georgium Sidus, though he might have great influence on Saturn and Jupiter, yet can have little or none upon the earth, on account of his vaſt diſtance, being ſcarcely viſible to the naked eye. The other planets receive virtue alſo according to their diſtance, and to the configurations they make with the ſun and moon. Mars drieth much, and burns, becauſe of his hot and fiery nature; but the influence of Jupiter is temperate, becauſe he moves between the coldneſs of Saturn and the heat of Mars. Venus hath nearly the ſame temperature, but in a different meaſure, becauſe of her vicinity to the ſun; ſhe moiſtens moſt, as does the Moon, through the greatneſs of their light, by which they aſſume the moiſture of the vapours of the earth. Mercury ſometimes dries, and ſometimes moiſtens; according to his poſition and configuration with other ſtars. Hence ariſe the four principal humours, whence all bodies are engendered. Two of them are generative and active, the hot and the moiſt; for, by theſe are all things joined together, and increaſed: and two are corruptive and hurtful; the dry and the cold; for by theſe all things are diſſolved and deſtroyed. Wherefore two of the planets, viz. Jupiter and Venus, are defined to be benefics, becauſe of their benevolent temperature, and becauſe heat and moiſture equally abounds in them; and likewiſe the moon, for the ſame reaſon. But Saturn and Mars, being of an oppoſite nature, are defined to be of a malevolent and deſtructive influence, by reaſon of the extreme cold of the one, and the violent heat of the other.

“ Thus the power of theſe various affections, being mixed among themſelves, produce many differences of quality in the circumambient matter which continually ſurrounds us; the proper and diſtinct power of which, alternately prevailing, is changed more or leſs by the force of other configurations. To theſe effects, the operation of the fixed ſtars in general contribute not a little. Thoſe of the greateſt magnitude are the moſt powerful and efficacious; and thoſe in or near the ecliptic have more energy than thoſe remote from it. The bright ſtars have more influence than the dull and languid; thoſe of a red colour partake of the quality of Mars; thoſe of a lead colour operate with ſimilar effect to Saturn; and ſo of the others, according to their affinity with the planets. Stars which have north latitude and declination affect us moſt; and thoſe with ſouth latitude, the more ſouthern. Thoſe ſituated in the zenith influence more than thoſe which are more remote; and ſuch as are in partile conjunction of any planet, or which riſe or ſet, or culminate, with them, have a more than oridinary power and influence.

“ Now from this diſpoſition and temperature are brought about the great ends and purpoſes of nature, by means of the aſpects and poſitions of the planets configurated in the heavens, and thus acting upon the earth; and it is upon theſe aſpects and configurations that the art of prediction is founded, and the events of futurity ſought out and known. To reduce theſe to practice, in the calculation of a nativity, let us ſuppoſe an infant born at any given time. Firſt project the horoſcope, or plan of the planet's way in the heavens. Examine, at that inſtant of time, by the help of an ephemeris for the ſame year, what was the poſition of the ſun, moon, and planets, in reſpect to their aſpects with each other, with the principal fixed ſtars, and with that latitude on the earth where the infant was born. Collect theſe aſpects, and place them with great care preciſely in the ſame degree and minute in the horoſcope as they were found in the zodiac, and particularly mark down the places of the moon's nodes; and the figure will be ready for conſideration. The firſt thing to be done is to find out the place of the *apheta*, *hyleg*, *prorogator*, or *ſignificator of life*; and the *anareta*, *promittor*, or *ſignificator of death*.

“ The aphetic, hylegiacal, or prorogatory, places, are thoſe particular ſituations in the figure, or in the heavens, from whence the apheta, hyleg, prorogator, or ſignificator of life, is to be taken. Theſe appellations have all the ſame meaning, and ſignify that planet or ſtar which is *lord of life*. The firſt is derived from the Greek, the ſecond from the Hebrew, the third from the Latin. Theſe hylegiacal or prorogatory places are in number five, viz. the aſcendant, the ſeventh, ninth, tenth, and eleventh, houſes; and they are taken from the five degrees next and immediately above the cuſp of the aſcendant to the twenty-five degrees below the cuſp of the ſame, computed by oblique aſcenſion. In the ſame manner they are determined in the ſeventh, ninth, tenth, and eleventh, houſes; for inſtance, it is computed from the five degrees in the eighth houſe, to the middle of the eleventh houſe, towards the twelfth; which middle is eaſily found, by adding half the ſemidiurnal arch to the right aſcenſion of the meridian, and where that ends is the middle of the eleventh houſe; the part beyond which is not hylegiacal or prorogatory. Now theſe only are the places in which the planet who aſſumes the power of hyleg or giver of life can be found; for whatſoever is under the earth is not fit for ſuch dominion; nor is any poſition above the earth, which hath not configuration to the horoſcope. The twelfth houſe, therefore, which is called the evil angle, is not prorogatory, becauſe it not only declines from the angle, but alſo makes the influence of the ſtars poſited therein of an evil tendency.

“ The anaretic or killing places are the places of Saturn and Mars, which kill according to the direction of the hyleg to the ſucceeding ſigns, when they meet either bodily, or caſt their rays from any place of the figure, whether it be by quartile or oppoſition; and ſometimes it happens by ſextile, when they proceed from ſigns obedient or beholding, becauſe they have then the ſame efficacy with the quartile or oppoſition. So likewiſe a quartile, configurated from the following or ſucceeding ſigns to the aphetic place; and alſo a ſextile malignantly affected, when in ſigns of long aſcenſion; and even the trines, in ſhort aſcenſions, have ſufficient force to kill, when unimpeded by benefic rays; as will likewiſe the ſolar place, if the Moon be hyleg. But it muſt be remembered, that theſe places are only anaretic when they are malignantly affected; for their anaretic or killing power is impeded or deſtroyed whenever it falls in the terms of a benefic ſtar, or whenever the benefics caſt a ſextile, quartile, trine, or oppoſitional, ray to the very anaretical point, or to thoſe points which follow. Hence life is generally found to be preſerved, when Jupiter is not above twelve degrees diſtant from the anareta or killing planet; or when Venus is not more than eight. The zodiacal aſpects of the anaretic or killing ſtars will be likewiſe of little force, whenever the latitude of the apheta, or giver of life, and that of the anareta, or deſtroyer of life, do not correſpond.

“ To define the cauſe and quality of death, we muſt conſider whether it is likely to happen by means of the beams of the malefic ſtars being caſt orientally; for the place of the malefic or anaretical planet, if joined by body, or, if not, the place of the aſpect, ought carefully to be obſerved, in order to judge of the quality of death. If theſe deſtructive beams flow occidentally, conſider the occidental place of the ſtar; for, ſuch as they are which have dignities in the anaretic place, ſuch will be the quality of death; if no planet hath dignities therein, ſuch as before others are carried by their motions to theſe anaretic places are to be eſteemed the cauſers of death, and our judgment ſhould be regulated thereby; the configurations of the ſtars made thereto being likewiſe conſidered, together with the nature of the ſigns, and the terms in which they fall.

“ Theſe principal ſignificators being thus aſcertained, we are next to contemplate and examine with preciſion and truth, all the various aſpects in the face of the heavens, which are found to have an evident relation to that point of time, and to that latitude of the earth, wherein the nativity occurred. From theſe aſpects, according to their different nature, quality, temperature, and configurations, is to be traced out the natural conſtitution and temperature of the native, the endowments or imperfections of body and mind, the duration of life, and the principal incidents of fate and fortune attendant thereon, conformable to the malefic or benefic influences of thoſe aſpects which denote the ſame. And the times when theſe events ſhall be fulfilled are found to happen when the two planets, which are the ſignificator and promittor of the event, or, which is the ſame thing, are the two principals in the aſpect denoting the ſame, ſhall be brought together by an arch of direction, ſo as to form a bodily aſpect, or junction of rays. The arch of direction, is the path-way or track deſcribed in the heavens by any planet that is ſignificator, or that aſſumes the dominion or government of life, or any other incident or event peculiar to the native, from the moment of birth to its meeting or forming an aſpect with the anaretas, or promittors, at which time the event, be it what it may, that is indicated thereby, comes to paſs. For, as all the heavenly bodies conſtantly move in circles, their progreſs, whether for a long or ſhort time, will neceſſarily form arches, the content or degrees of which, being accurately found, and meaſured, or equated by the ſolar motion, will deſcribe the length of time, whether it be years, months, or days, which the ſignificator will be in forming the arch of direction which produces the event, and which, if truly calculated, will generally correſpond with the prediction."

Although aſtrology is now generally exploded, yet ſo great has been the controverſy for and againſt its exiſtence in nature, that it has occaſionally occupied the attention of the greateſt and wiſeſt philoſophers in every age and country; and many hundred volumes have been written on the ſubject. We could not therefore conſider ourſelves juſtified in paſſing over its aſſumed merits in ſilence, or of withholding from our readers the principles upon which it is founded. For the ſame reaſon we ſhall conclude with the general obſervations of the above-mentioned author, who is the laſt that has written in defence of this ſcience.

"We may affirm, that all mankind have each of them, more or leſs, a certain ſhare of wiſdom, power, or wealth, wherewith they occupy in this life, and carry forward all their undertakings. Thus we ſee ſome men, by means of riches, cunning, or contrivance, grow mighty, and purpoſe as if nothing could impede the full accompliſhment of their deſigns; and yet we find there are two things which confound the wiſeſt, and greateſt, and proudeſt, of them all, in the very ſummit of their glory: theſe are, Time and Chance; two mighty lords upon earth, which bring to paſs many ſtrange and marvellous events. Time is that motion of ſpace which proceeded out of eternity when the world began, and holdeth on unto eternity, which is to ſucceed at the world's end. Out of this one long time are engendered infinite ſpaces of time, of a great variety of ſorts; and theſe are either general or ſpecial, and each of them either fortunate or unfortunate. There is a time for every purpoſe under heaven: a time of pleaſure, and another time of pain and grief; a time to riſe, and a time to fall; a time to be born, and a time to die. (Eccl. iii. 1, 2, &c.) There is a certain lucky time in man's life, wherein if he go out to battle, though with but few men, yet he carrieth the victory; and there is another time wherein, though he go out with ever ſo complete an army, yet ſhall he gain nothing but diſgrace. (Eccl. ix. 11.) So alſo there is a time when overtures of marriage ſhall be ſucceſsful, but a man's deſires anſwer it not; and again there is a time when deſires of marriage ſhall ſtrongly urge, and all overtures prove ineffectual; but there is a time alſo when deſires and overtures ſhall exactly correſpond, and ſuit together. In like manner there is a time when proſperity and riches ſhall offer themſelves, and be attained, whether a man ſleep or wake; and by and by, though he purſue them with wings, yet ſo unlucky a time occurs, as renders all his endeavours fruitleſs. Some men come into the world in a lucky hour, ſo that, let them be wiſe or fooliſh, they ſhall be buoyed up on the wings of fate in all matters of wealth or honour, and ſucceed in all that they take to; while wiſer and better men, ſmitten with an unlucky time of birth, ſhall be as undeſervedly diſparaged, and all their undertakings ſhall prove unſucceſsful and unhappy. Some ſhall be lucky in the van of their enterprizes, and as unfortunate in their rear; others again contrariwiſe. And thus time ſeems to mock and ſport with the men of this life, and to advance, or counteract, all their ſkill and contrivances, even to a degree infinitely beyond whatever we could reaſonably conceive or expect. And yet time of itſelf is but a dead thing, and a mere inſtrument; but the wheels of the heavens, turning upon it, imprint riddles in its face, and carve and cut out the various ſhapes of proſperity and adverſity upon the minuteſt portion thereof. And wonderful it is to obſerve, that a child, the moment it draws breath, becomes time-ſmitten by the face of heaven, and receives an impreſſion from the ſtars therein, which, taking riſe from the aſcendant, ſun, moon, and other principal ſignificators, operate as the impreſſors ſtand, and point out, as with the finger of God, the cauſes whence the fate and fortune of the new-born infant proceed; and, whether it comes before or at its full time, or in what part of the world ſoever it is born, it matters not; for, as the nature of the ſignificators are that aſcend upon the horizon at the birth, ſuch ſhall certainly be the fortune of the native. This is a truth that will bear the moſt minute enquiry, and will be found the ordination of an all-wiſe and indulgent Providence, for the ſpeculation and improvement of his creature man. And theſe ſignificators repreſent, as it were, a ſeries of curious knots, which untie by courſe; and, as every knot unties, different times ſeem to fly out, and perform their errands; and of theſe, ſometimes we may obſerve two, or three, or more, lucky knots opening together, and at other times as many that are inauſpicious. Yet *all times are beautiful in their ſeaſons*, if men could hit them; but through the malignity of ſin, and an intemperate purſuit of worldly pleaſures, we often loſe the favourable time afforded us, of embracing the moſt ſubſtantial happineſs.

"The ſecond great lord over human inventions, is chance. And theſe chances proceed from a great variety of rare and ſecret operations of heaven, which throw in the way of men thoſe ſtrange and fortuitous turns of fortune that ſurpaſs all human foreſight or conception. And yet there is really no ſuch thing as chance in nature; but all thoſe curious hits, that ſtrike in between the cauſe and its effect, we call chances, as beſt ſuiting human ideas, becauſe of the undeſcribable properties of them. For in ſhuffling a pack of cards, or in caſting the dice, it ſeems to us a mere chance what caſt ſhould happen uppermoſt, or what card will go to the bottom of the pack; and yet it is evident by experience, that there is a certain luck in nature, which preſides over all theſe adventures, ſo that a man ſhall either win or loſe in a methodical courſe. It alſo happens in the time of battle, and in every purſuit after wealth and honour, that chances fall in upon us, and turn the ſcale by a ſecret kind of fate, beyond all that could reaſonably have been expected; and thus heaven breathes into all human actions an infinity of theſe chances, that overturn the wiſdom, and power, and all the greatneſs, of man. Theſe chances are uniformly managed by a certain kind of luck, either good or bad, which drives the nail; and this, by ſome heavenly influence, that infuſes a ſecret virtue or poiſon into our actions, as courage into their hearts on one ſide, or diſmay on the other; and ſkill into ſome men's heads to purſue the right courſe to be rich, or folly into others, whereby they run headlong to miſery and want; or elſe fortunateth or infortunateth by miſtake of words, ſignals, or acts, that turn to the beſt or worſt advantage, by ſtrange hits or miſcarriages; and thus it happens that a ſlight miſtake in battle begets an utter rout, after a victory made almoſt complete, by the mere utterance of a wrong word, or ſteering an improper courſe. But, which way ſoever it happens, the whole matter is wrought by a good or ill luck, and the hand of God is at the bottom of it; not by any new-contrived act, but by the ſame regular courſe of nature ordained from the beginning of the world.

"Thus both Time and Chance are the ſervants of nature, under whoſe commands they ſway the world, and worldly men; but by her laws are both of them diſpoſed. Time meaſures out the extent of men's lives, and ſets bounds how long they may live by ſtrength of nature, and how much of that time ſhall be extenuated by means of ſin; and it alſo carves out limits to the particular fates of all mankind; and Chance acts in obſervance of thoſe limits, and brings about the good and bad ſucceſs of every fate. And thus, by the ſervice of Time and Chance, nature performs all her great and ſecret operations, whether upon collective bodies, or places, or perſons. It may be thought ſtrange that nature ſhould bring forth men and women at a great diſtance of years, hours, and places, all deſtined to die at one time, and by the ſame manner of death, either by war, plague, peſtilence, or ſhipwreck; and that time and chance ſhould ſhould pick them up, and draw them together, from a variety of different purſuits, to partake at laſt in one and the ſame deſtructive fate.

Yet this is no more ſtrange than true; for theſe things frequently happen, and that by the imperceptible influences of thoſe heavenly aſpects and ſtars, which *in their courſes fought againſt Siſera.* (Judg. v. 20.) And by the ſame rule, as many men, women, and children, are, on the other hand, gathered together by a ſimilar force and virtue, to enjoy great and good fortune.

“ Some perhaps will contend, that theſe operations of nature are incompatible with the free agency of man's will. But, if what has already been premiſed be attentively conſidered, this ſuppoſition will immediately vaniſh; for God, who ordained the courſe of nature, certainly foreſaw the minuteſt turn of every man's will, and eventually contrived his fate to correſpond therewith, ſo as to admit its free and uncontrouled choice. And whoever denies this antecedent principle, or preſcience of God in the conſtruction of the world, denies one of his moſt eſſential attributes. The will of man, without doubt, in a variety of inſtances, makes great ſtruggles and wreſtlings with the ſtarry influences, both in good and in evil purſuits, and often prevails over them exceedingly: for, though a perſon be born under ſuch benevolent or malignant aſpects, as ſhall point out his natural temper and diſpoſition, and indicate the principal tranſactions, fortunate or unfortunate, that are likely to be the diſtinguiſhing marks of his life; yet does it depend entirely upon the free uncontrouled will of that man, whether all thoſe circumſtances, ſo pointed out in his nativity, ſhall come to paſs, or not; becauſe the free will in every man, when fortified by habits of virtue and wiſdom, often enable him to over-rule thoſe evil aſpects, ſo as to avoid the commiſſion of any criminal offence, and to guard againſt the misfortunes or loſſes impending over him; while men of a profligate and careleſs habit not only loſe the advantages of a promiſing nativity, but, if born under malevolent aſpects, are often reduced to the laſt ſtage of diſtreſs, and periſh under the very ſame ſtrokes of nature, which wiſer and better men, born in the ſame inauſpicious moments, have endured with much eaſe. And thus far *ſapiens dominabitur aſtries*, the wiſe man, above the fool, may rule his ſtars. But we muſt not forget, that under theſe operations of fate, there are many inſtances ſo powerful, that no wiſdom of man can oppoſe. Such are the fatal wounds of death, when nature's glaſs is run out, and ſuch the violent blows of excruciating pain and ſickneſs, and the high tides of proſperity and adverſity; in all which caſes, we find by experience, *aſtra regunt homines*, the ſtars rule and overpower men. Yet nevertheleſs, ſuch is the infinite preſcience and providence of God, that foreſeeing the deſires and deſerts of all wiſe and holy men, in their different ages and times, he alſo laid their fates ſuiting to their actions. He foreſaw Joſeph's prayers and tears in his captivity, and accordingly provided his advancement in nature to correſpond therewith. (See Gen. xxxvii. and xli. 40. Pſal. cv. 18, 19, 20.) He foreſaw Hannah's faſting, and earneſt prayer, and ordained her opening womb to bud forth in courſe of nature exactly anſwering thereto. (Sam. i. 10, 11, &c.) So that the wiſdom and will of man has its full free work, without reſtraint or controul; and grace and virtue act by their own principles; and yet nature, as it was contrived from all eternity, acts freely too.

“ Now the ſcience which we call *Aſtrology*, is nothing more than the ſtudy or inveſtigation of this frame or model of nature, with all its admirable productions and effects; whereby we acquire a knowledge of the ſecret virtues of the heavens, and the ſhining luminaries therein contained. It is a ſcience which all may attain to, by common diligence and application; and, the more we delight in it, the more readily do we foreſee the motions of future events, and the curioſities of chance and natural accidents, and the courſes of luck by which both are governed, and the order of fate, unto which all of them are ſubſervient; together with all the moſt curious acts of attracting and expelling, alluring and threatening, encouraging and diſheartening, and all ſuch-like operations of nature, moſt ſecretly and imperceptibly performed, beyond the reach of imagination. And, as by a ſkill in this ſtudy we attain to ſee and experience things that are paſt, ſo by the ſame ſkill we attain to a knowledge of things which are to come; and, by knowing the time of our birth, are enabled to read in the heavens the ſtory of our whole lives, our bleſſings and croſſes, honour and diſhonour, proſperity and adverſity, ſickneſs and health, and all the years of our life, and time of our death, even as though we had ſeen them tranſacted and come to paſs in their ſeveral times and ſeaſons. For God hath aſſuredly given this knowledge unto the wiſe man, *to know the time and the judgment, and the number of our days, that we may be certified how long we have to live*, with comfort and content: (Eccl. i. 5. Pſal. xxxix. 4, 5.) that we may be timely prepared for all ſtates of proſperity and adverſity, and that we may ſupport ourſelves with fortitude and reſignation, in proportion to our foreknowledge of theſe events.

“ But many men will not believe, that by natural means all or any of this foreknowledge can be fairly and lawfully obtained, or that the influences attributed to the heavenly bodies have any foundation in truth. It is therefore neceſſary to bring ſuch evidence in ſupport of what has been advanced, as will be found incontrovertible and deciſive; and for this purpoſe I muſt refer to the teſtimony of thoſe ſacred writings, in which the doctrine of this ſcience is ſo demonſtrably proved, that it will be difficult to believe the one without admitting the other. Let us conſider the account given by Moſes, of the creation of the heavenly bodies. God ſaid, “ Let there be lights in the firmament of heaven, to divide the day from the night; the greater light to rule the day, and the leſſer light to rule the night; and let them be for ſigns, and for ſeaſons, and for days and years.” Theſe then were the purpoſes for which they were ordained, and irrevocably fixed by their great Creator: firſt for lights; for had they not had a place in the firmament, or were we deprived of their illuminating rays, we ſhould be inſtantly overwhelmed with impenetrable darkneſs. Secondly, they are to divide the day from the night; and this they never ceaſe to do: for when the ſun, the greater light, is ſunk five degrees below our horizon, we call it night; for then the moon and ſtars appear, and ſhed their leſſer light, and darkneſs in ſome degree is ſpread around, and every thing declares it to be the ſtate of night. But when the ſun, that glorious fountain of life, light, and motion, begins to touch the eaſtern verge of the horizon, darkneſs is diſpelled, light begins again to dawn, and the ſtars which beautifully beſpangle our hemiſphere are ſoon obſcured by the full blaze of day; but, as days and nights are unequal, and never continue at one ſtay, theſe celeſtial luminaries diſtinguiſh their reſpective reigns. Thirdly, they are for ſigns; not to brutes, for they have not the faculty of underſtanding them; nor to angels, for they continually behold the face of God, and obey his will in the government of the heavenly bodies, at his pleaſure. Therefore, when God ſaith, *Let them be for ſigns*, he muſt ſpeak in reference to man, whom he formed a rational creature, capable of diſtinguiſhing one ſign from another, and of improving by them. Nor are we to look upon them as mere ſigns, like beacons upon a hill, or as only ſetting bounds to days, months, and years; but we are to conſider them as ſigns and tokens of thoſe hidden events of futurity, which it concerns every wiſe and good man to know; and which he may always foreſee, by a virtuous and ſober ſtudy of theſe intelligent ſigns, placed for that purpoſe in the firmament of heaven. And that this was the intent of them, is clearly demonſtrated by the words of our Saviour, when he foretold the deſtruction of Jeruſalem, and the final conſummation of all things. His apoſtles aſked him, What ſhall the ſigns of theſe things be? He replies, Earthquakes, famines, and peſtilences; fearful *ſights in the heavens*, and ſigns in the ſun, in the moon, and in the ſtars. (Luke xxi. 6, 7, 11, 25, &c.) Such alſo was the ſign by which the eaſtern ſages diſcovered the birth of our Saviour, and the place of his nativity; and numerous other inſtances may be adduced both from ſacred and profane hiſtory, in ſupport of this doctrine. The fourth uſe of theſe celeſtial luminaries, is for ſeaſons. This is alſo obvious; for we find that heat and cold, and drought and moiſture, are all guided and governed by the heavenly bodies; and that not only ſpring and autumn, and ſummer and winter, bear teſtimony of it; but we have it confirmed by the evidence of our own conſtitution and feeling; for, when the weather is heavy and lowering, we find ourſelves dull and languid; when bright and radiant, we are cheerful and merry; and, when unſettled and unſeaſonable, we feel it by indiſpoſition and melancholy; and this is all brought about by the operation of theſe luminaries upon the ſeaſons of the year, in the due courſe of nature. The next uſe allotted them is, fifthly for days, and ſixthly for years; and that theſe are meaſured out, and governed by them, is every way apparent; by the ſun's circuit, and the moon's energy. The ſun, like a ſtrong man, rejoices to run his race; he riſeth out of the chambers of the eaſt, and with golden rays diſpels the morning clouds, and exhales the pearly dew; cheering and refreſhing all nature with his preſence. Hence it is evident, that theſe luminaries were not only placed in the heavens to give light upon the earth, to govern the ſeaſons, and to ſet bounds to time; but alſo to communicate ſigns and tokens to mankind, of things to come. We ſhall now conſider how far it is ſcriptural, and conſonant to reaſon, to allow them thoſe influences attributed to them by aſtrology.

“ That the ſun, moon, and all the planets, have a direct and obvious influence upon earthly ſubſtances, no man of common obſervation will deny. The ſun is the fountain of heat, and that heat is the nurſe of life; and the moon is the fountain of moiſture, which tempers the violent heat of the ſun, and modifies all his operations. But the ſun and moon, and all the planets, have each of them a particular ſpecific property, according to their own innate quality, and according to the nature of that ſign or band of ſtars under which they happen to be poſited. This is a fact eſtabliſhed by repeated obſervation and experience; for, when the ſun enters the equinoctial ſign Aries, the ſpring begins to ſhew herſelf, and all vegetative nature, by the moon's humidity, and the ſun's temperate heat, ſeems to revive and flouriſh, and, as it were, to riſe from the dead; whither the cold blaſts of the hyemnal air had before conſigned it. So, when his radiant beams enter the ſign Taurus, they ſtir up the benign influences of the Pleiades and Hyades; Hoedi being then to the north, and Orion to the ſouth, and Arcturus ſinking below the horizon; and their cold and tempeſtuous effects begin to ceaſe, as they are ſucceeded by theſe benevolent conſtellations, which produce warm ſoutherly winds, and gentle ſhowers, repleniſhing the earth, and cauſing vegetation. Again, when the ſun riſes with the Dog-ſtar, we find an influence which cauſes vehemency of heat, contagion, and infirmity. Medicaments adminiſtered under this conſtellation prove hard and obnoxious; and we find dogs at this time apt to run mad: the ſea is troubled without any apparent cauſe, and all nature ſeems more or leſs oppreſſed by it; and yet theſe effects are never found to be equally violent in any two ſummers, which clearly proves an influence in the ſtars, as well as in the ſun. And again, though the ſun keeps the ſame conſtant and invariable courſe through the twelve ſigns of the zodiac, for an infinity of annual revolutions, yet we never find the ſeaſons and weather exactly correſpond, which they doubtleſs would do, were it not that cold and heat, and wind and rain, are governed by the configurations the ſun makes with the planets and fixed ſtars; and this alſo evidently proves the force of their influence. It is likewiſe manifeſt, that whenever the planet Saturn is paſſing out of one ſign into another, the weather is more or leſs turbulent and unſettled.

“ But it is not the weather only, nor the inanimate part of the creation alone, that is affected by the influences of the ſun, moon, and planets; for we find they operate upon the human ſpecies, and upon all animate nature, in every part of the world. The ſun, and the quality of the heavens about the torrid zone, naturally occaſion thoſe men who are born and live under it, to be quite black, with ſhort criſped hair, of a mean ſtature, and hot conſtitution, imbibing a fierce and ſavage ſpirit; and this by reaſon of the ſun's continual ſtay and power in that fiery region. It is obſervable, that the inhabitants of the ſouth are of a better and quicker wit, and much more ingenious and tractable; and this is accounted for by their vertical point being ſituated nearer the zodiac, in which the planets move. So likewiſe the inhabitants of the north are of a ſtrong body, but of rude manners and condition, becauſe their vertical point is placed at a great diſtance from the ſun's courſe; and therefore they abound with cold and moiſture, and are of a phlegmatic conſtitution, of a fair complexion, tall, courageous, and ingenious. Europe, being ſituated in the north-weſt part of the earth, is under Mars in Aries, and, by reaſon of this planet ruling in that triplicity, its inhabitants are naturally of a noble and magnanimous ſpirit, given to martial exploits, and feats of war; of a generous mind, and courteous manners. And thus the ſun, modified by the different ſigns and conſtellations through which he paſſes, regulates the climates, and ſheds his influence upon all mankind, leaving behind him evident marks of his government and ſway. Some, indeed, have attempted to account for the ſwarthy and black complexion of the ſavage race, by a variety of other plauſible conjectures: but none are to be relied on, that do not attribute its cauſe to the intenſe heat and power of the ſun in thoſe climates; than which nothing can be more conſonant to reaſon, ſince we find, even in this country, that if we remain long together in the ſun, in the heat of ſummer, our complexions change, and we become in a degree tanned and ſwarthy.

“ Conſpicuous as are the influences of the ſun, thoſe of the moon are no leſs ſo. This is evinced by a conſideration of that wonderful and never-ceaſing operation of the moon upon the ocean, ſo as to occaſion that perpetual flux and reflux of the ſea, which we call tides. Here we ſee the waters of the vaſt ocean, forgetful, as it were, of their natural reſt, move and roll in tides obſequious to the ſtrong attractive power of the moon, and with an increaſe or diminution of force, in proportion as ſhe appears in ſtrength, or want of aſpect. This is an influence ſo univerſally admitted, and ſo peculiar to that luminary, that it eſtabliſhes at once the doctrine we contend for. But there are numerous other inſtances of the effects of the moon, no leſs common than extraordinary, and perfectly well known: thoſe unhappy perſons who labour under a deprivation of ſenſe, and are afflicted with lunacy, have their fits more violent and terrible, in proportion as the moon increaſes or diminiſhes in light and motion; and in all chronic and acute diſeaſes, her power and influence are viſibly and forcibly felt. Indeed every ſubject of the creation is more or leſs affected by the moon's energy: the eyes of cats are obſerved to ſwell or fall at the full and change of the moon; and even the ſhell-fiſh at the bottom of the ocean are known to feel the weight of her influence. Thoſe who ſleep in the fields, or in any place expoſed to the open air by moon-light, find their heads oppreſſed with water, and their ſenſes inert and heavy; and butcher's meat hung up, and expoſed to the moon-light, will ſoon putrefy. The gardener alſo brings abundant teſtimonies of the influence of the moon upon the vegetable world: if peaſe are ſown in the increaſe of the moon, they never ceaſe blooming; and, if fruits and herbs are ſet in the wane, experience ſhews that they are neither ſo rich in flavour, nor ſo ſtrong and healthy, as when planted during her increaſe; ſo vines, becauſe they ſhould not ſpread too faſt, are uſually pruned in the wane. It is alſo remarkable, that a pomegranate will live only as many years as the moon was days old when it was planted; and, in planting ſhrubs, or the like, if they are to ſhoot up ſtrait and tall, and to take little root, they are ſet when the moon is in an airy ſign and increaſing in light: but contrariwiſe when they are to take deep root, and to ſtrike downwards. And thus we may obſerve flowers that are under the moon's influence only open their bloſſoms in the night; whilſt thoſe which are peculiarly under the government of the ſun open every morning when he begins to riſe, and cloſe in the evening when he ſinks below the horizon. Theſe effects and influences of the moon are ſo common, and ſo generally known, that it were almoſt needleſs to repeat them here, but for the purpoſe of drawing this concluſion, that, as one planet has a known and forcible action upon ſublunary things, it is natural to believe that all the others are endued in ſome degree with a ſimilar force and virtue. Indeed moſt phyſicians know that the planet Saturn rules all climacterical years, as the ſun doth critical days, and the moon the criſis of all acute diſeaſes; and that every ſeventh year Saturn comes to the ſquare or oppoſition of his place in the radix of every man's nativity; and that, after the revolution of the ſun, he becomes the chief ruler of critical days, and is often obſerved, by his configurations with the moon, to ſet aſide the fatal criſis of thoſe deſperate diſorders, over which the patient was not expected to live. From theſe phyſical reaſons, we may ſafely conclude that Satuin is by nature cold and melancholy, as the ſun is hot and cheerful; and, being thus oppoſite to the ſun in quality and effect, ſo is he in relation to the ſigns and manſions of the heavens where he bears rule, and therefore inclines always to cold, as the ſun does to heat. Hence it follows, that when the ſun is in Aquaries, which is the proper ſign of Saturn, and oppoſite to his own ſign Leo, the weather inclines more to cold than to heat; and, at every conjunction, ſquare, or oppoſition, of Saturn with the two great luminaries, we always find the weather cold, moiſt, and lowering, even in the midſt of ſummer, unleſs the rays of Jupiter or Mars interpoſe, in which caſe theſe effects are ſomewhat leſs viſible. Thus, we may preſume to affirm, that the influences of the ſun, moon, and planets, and are eſtabliſhed beyond contradiction.

"But, beſides theſe ſigniorities of the ſun, moon, and planets, the fixed ſtars have alſo their principalities in the heavens. The Lord, who gave the ſun for a light by day, gave the ordinances of the moon and ſtars alſo for a light by night; and to theſe ſtars hath he committed a certain rule or dominion over the day and night, and that promiſcuouſly. (Jer. xxxi. 35. and Gen. i. 18.) Now the ſtars have no viſible operation upon us, beſides that little light they adminiſter to our eyes in a dark and clear night; and that is ſo very ſmall, that all the ſtars in heaven, beſides the ſun and moon, are not to be compared, in this reſpect, with the ſmalleſt wax-light; and this little light too is only to be had when the nights are ſerene and unclouded. Can it then be ſuppoſed that God made theſe glorious bodies, many of which are bigger than the whole earth, and move in their orbs as ſo many other worlds in the heavens, merely for a twinkle in the night, and that only when the weather permits? lo! every little daiſy that grows upon the cold ground has a ſecret and inſenſible virtue wrapt in its leaves and flowers; and have theſe celeſtial bodies no influences but what we now and then catch with our eyes, as they occaſionally ſparkle their dim glances upon us? Yes, they have each of them a ſecret power and virtue, wherewith they act upon all earthly things, as well by day as by night, and in cloudy as well as in clear weather. But, as their operations are not performed by ſenſible and palpable means, it follows that they have a ſecret and hidden way of rule, whereby the influences are imperceptibly infuſed into every concern of this life. And, as have the ſtars, ſo alſo have the ſun and moon, a ſecret and imperceptible action, peculiar to themſelves; for it is not the mere heat that gives life, nor the mere moiſture that ſuſtains it; for, if that were the caſe, then might man make living creatures artificially. It is true that heat may hatch the eggs, but all the ingenuity of man cannot make an egg that can be hatched; for there is a ſecret operation of the ſun and moon, independent of heat and moiſture, neceſſary to the production of life, both in vegetive and ſenſitive animals. And in theſe ſecret and inſenſible operations, beſides the light that they give, conſiſts that rule which the ſun, moon, and ſtars, were ordained to exerciſe over all the ſons of day and night; and herein are written all thoſe ordinances of the moon and ſtars, which are to be a law unto mankind, and to the whole body of nature, ſo long as the world endures. (Jer. xxxi. 35, 36.) Thus the ſtars have their natural influences, aſſigned to them in the frame of nature, from the beginning of the world; and theſe influences are diffuſed upon all earthly things, as far as day and night extend their limits. And this God himſelf confirms, when he ſays to Job, "Canſt thou bind the ſweet influences of Pleiades, or looſe the bands of Orion? Canſt thou bring forth Mazzaroth in his ſeaſon; or canſt thou guide Arcturus with his ſons?" (Job xxxviii. 31, 32, 33.) Whence it is evident that the ſtars called the Pleiades have their ordinances, that is, their ſweet influences, which no power of man is able to reſtrain. And the ſtars of Orion have their ordinances, and binding faculty, by ſhowers in ſummer, and froſt in winter, bringing ſuch an hard and tough coat of armour upon the ground, as all the contrivances of man are not able to prevent. Thus Mazzaroth, and Arcturus with his ſons, have alſo their ordinances, and the whole hoſt of heaven have their courſe, by which the purpoſes of God, and all the events of this life, are uniformly brought to paſs. (See Argol. Aſtr. ante Ephem. lib. ii. cap. 8. Stellæ tempeſtuoſæ ſunt Orion, Arcturus, &c. plurioſæ Pleiades.)

"To this purpoſe it is ſaid, by Deborah the propheteſs, *That the ſtars of heaven fought in their courſes againſt Siſera*, (Judges v. 20.) not by ſword or ſpear, nor by thunder or lightning; but by thoſe fatal and malevolent influences, wherewith Siſera and his hoſt were marked from their cradle, and drawn together, by the operation of time and chance, to partake in one common deſtruction in the ſame day. And to this effect the Almighty diſcourſes with Job, concerning the *treaſures of the ſnow and hail, which he has hid againſt the time of trouble, and the day of war and battle.* (Job xxxviii. 22, 23, 24, 25, &c.) Now what can we ſuppoſe the meaning of this hiding to be, but the order of thoſe meteors, ſo curiouſly lodged within the arms of the ſtars, and withheld by their influences, that they may fall by due courſe of nature, at ſuch exact periods, as to effect the puniſhment of the wicked, and of God's declared enemies, ſuch as was Siſera, at the preciſe time when their abominations call forth the judgments of an injured and incenſed Deity? And after the ſame manner the light and heat, the wind and rain, the thunder and lightning, the froſt and dew, are all of them ſo admirably contrived in the poſition of the heavens, that they come to paſs in their due and appointed ſeaſons, and *make the graſs to grow even in the wilderneſs, where no man dwells.* (Job xxxviii. 26, 27.) Now it muſt be obvious to the meaneſt underſtanding, that, if theſe things were regulated by a virtue immediately iſſuing from the boſom of the Deity, then would the light and heat, the wind and rain, and all the reſt of them, fall only where men and beaſts dwell, who may ſee and enjoy the bleſſings of them, and adore and glorify Him who ſends them; but, ſince they fall equally where neither man nor living creature is to be found, it follows, that they fall by virtue of means, and that in a continued courſe, wherever thoſe means lead them, making the earth fertile and productive where eaters are not to be found, as well as where they are.

"Thus far Scripture and Reaſon unite, in confirming our belief of the ſtarry influence; but, there are ſo many other proofs of it, in the ordinary productions of nature, that it would be highly unpardonable were I to paſs them over in ſilence. The loadſtone affords us one very ſtriking example, by its attractive and expulſive faculty, and by the magnetic virtue it has a power of communicating to other diſtinct bodies. Thus we ſee a needle, only touched with the loadſtone, and placed in the compaſs, will conſtantly point towards the north pole; and, though it be ever ſo far diſtant, or though rocks and mountains, or even the earth's body, intervene, yet it retains this directive property in ſo extraordinary a degree, that it will continue preciſely in the ſame direction, unleſs violence be uſed to prevent it; and, even after it has been removed by force, it will of itſelf return to its former ſituation, without the leaſt ſenſible difference. The properties of the loadſtone in many other reſpects are ſo very inexplicable, that the experiments of our moſt celebrated modern mathematicians have not been able to afford us a ſatisfactory definition of them. This however is certain, that it could not poſſibly imbibe theſe miraculous properties without the aid of ſome celeſtial matter, which is communicated to it by the influence of the pole-ſtar, or ſome other of the heavenly bodies within the polar circles, from whence it is manifeſt the loadſtone receives theſe ſecret and admirable qualities. Another aſtoniſhing effect of this influence may be obſerved in the natural production of life and motion; how it ſtarts up and grows, and continues in the lap of heat and moiſture, proportionally conjoined, and perfect in all its parts, beyond the utmoſt of our comprehenſion whence it comes, or which way it is maintained, unleſs by the operation of this ſecret and inviſible influence. And, if this be denied, I would wiſh to aſk, Whence the roſe, ſurrounded by ill-ſcented weeds and thiſtles, derives its fragrant ſmell? or how the plantane, by the path-way ſide, acquires its admirable virtue of healing ſores? or which way the lily, ſtanding up to its middle in mud and mire, receives its coat of many colours, ſo beautifully wrought, as many times we ſee it is? or how a grain of wheat, thrown into the cold earth, putrefies and dies, (St. John xii. 24.) and then ſtarts up into new life, and multiplies into an ear of thirty or forty grains for one? or tell me how the matter of an egg, by the ſitting of the hen, is in a few weeks animated, and converted into a chicken, that will eat, and walk, and chirp, the moment it emerges from the ſhell? or by what means the ſeed in the womb, without any art, or ſkill, or knowledge of the mother, coagulates, and turns into fleſh and blood, receives life, and is ſo admirably formed into a perfect child, that learns to cry, and ſpeak, and call? You will ſay, perhaps, That this is the immediate workmanſhip and effect of God. But this we already know; the only queſtion is, how he does it; whether by means, or without? If without means, then every child that is born, and every ſeed that grows out of the ground, muſt of neceſſity come to paſs by a new creation; for to bring things into exiſtence without means, is the ſame as to produce them without matter; and requires no more but for the Almighty to ſay, Let there be men; or, Let there be leaves and flowers; and, as the Word ſays, they come to paſs. But we are certain there never was more than one creation, which was at the beginning of the world, and ever ſince that time all things have come to paſs by a regular courſe of nature; and hence it follows that there muſt be a natural and efficient means for the production of all things. And, if ſo, then muſt theſe things come to paſs by an earthly means alone, or elſe by the aid and aſſiſtance of ſome celeſtial influence. But by an earthly means alone, it is evident, they cannot come to paſs; for we know experimentally, that neither, fire, earth, air, or water, can of themſelves infuſe into the roſe its grateful and fragrant ſmell; it muſt therefore proceed from the agency of ſome ſpiritual or material ſubſtance, far ſuperior in efficacy and virtue to any earthly element. If it proceeds from a ſpiritual ſubſtance, it is effected either by the angels, or by the ſoul of the world. But by the angels we know it cannot be; for they have their peculiar offices allotted them in another way; and, though they are ſubjects of the world, yet are they no part of the great frame of nature, from whence all things in their order are formed. And, if it be effected by the ſoul of the world, then certainly muſt there be ſuch a ſoul ſomewhere exiſting, which at preſent is a matter in diſpute among the learned; and this ſoul muſt have a ſpecial ſeat in the world, worthy of itſelf, from whence it may inform and actuate every minute particle of the creation. If this be admitted, then it undoubtedly dwells among the celeſtial matter, and from thence ſupplies the earth, through the medium of the heavenly bodies, with all that power and virtue, which brings to paſs that variety of ſhape, colour, ſmell, life, and increaſe, which we daily ſee come to paſs. But if this hypotheſis be denied, and it is inſiſted that the earth is ſupplied with all her ſecret virtues by ſome ſupernatural material ſubſtance; then name any one thing beſides the heavenly matter, and the ſtars of heaven, that can be ſuppoſed to form that ſubſtance, and the argument ceaſes; for either way it proves an influence and aſtrology in the heavens, beyond contradiction, and there will remain only one queſtion to be decided, which is, Whether theſe celeſtial influences create the ſucceſſion of earthly things by an immediate power from God, or whether there exiſts a general ſoul in the world, through the means of which they come to paſs in a due order and courſe of nature? *Utrum horum mavis accipe*; I contend for no more. "In the beginning God created the heaven and the earth; and the earth was without form, and void, and darkneſs was upon the face of the deep, and the ſpirit of God moved upon the face of the waters." Here, when there was nothing but earth and water, and darkneſs overſpread all, the *ſpirit of God* maintained that chaotic maſs, and managed the earth by the water, and the water and darkneſs by himſelf. But now both the earth and water are *under the face of heaven*, and the light is *upon this heaven*, and the ſpirit of God moveth upon the face of the heavens *in that light*; and, as he actuates the earth and the waters *by the heavens*, ſo doth he actuate the heavens *by himſelf*. And agreeably to this idea ſpeaks the prophet Hoſea, when he ſays, *God will hear the heavens, and they ſhall hear the earth, and the earth the corn and wine and oil, and they Jezreel*; (Hoſea ii. 21, 22.) wherein he ſhews us, that, as man lives by corn and wine, ſo they by the earth, and the earth by the heavens; and, if ſo, then by the heavens is it that the earth receives all its efficacy and virtue, whereby it brings forth ſmell, colour, taſte, and life. Moſes alſo tells us, that *God ſhall open his good treaſure the heavens, to give rain unto the land, and to bleſs all the works of our hands*; (Deut. xxviii. 12.) whence it is evident that there lodges in the celeſtial influences a faculty of fortunating civil affairs, as well as of managing natural things; and that the root of all earthly bleſſings is from heaven. Moſes ſays again, that *the ſun, moon, and ſtars, God hath diſtributed unto all nations under heaven*; and the Pſalmiſt, ſpeaking of the ſun and heavenly bodies, ſays, *they declare the glory of God, and ſhew forth his handy-work; day and night do continually tell of them, and their voice is heard in all languages, and their words are gone into the ends of the world*; by which we learn that the heavens, and all the ſtars therein, are full of ſuch virtues as the whole world hath need of; and that theſe virtues God hath lodged in the heavens, to be dealt out for the comfort and happineſs of his creatures upon earth. *His ſpirit* (ſaith Job) *hath garniſhed the heavens; and by the ſpirit of his mouth was the whole army of heaven made.*

"The notion, or idea, that there is one general ſoul actuating the whole world, as there is one ſoul informing every man's body, was not only the opinion of the Platoniſts and ancient philoſophers, but alſo of many learned men in later ages: and I muſt confeſs, it appears very reaſonable to believe that the world has ſuch a ſoul. For, were there not one and the ſame general living virtue, comprehending the whole ſyſtem of nature, from the exterior circumference of the heavens to the inmoſt centre of the earth, how could the ſympathies and antipathies of nature poſſibly work ſuch compliances and differences as we know they do, at the amazing diſtances we ſee them, and without any viſible or imaginable contact; unleſs ſome faculty exiſts in the world, that is capable of ſuſtaining this inviſible correſpondency between one creature and another? Where life is, theſe things are eaſily effected;

as the child in the womb is nouriſhed by the food the mother eats; but, in the inanimate part of the creation, we are at a loſs which way to account for it. Now, admitting that there really is ſuch an univerſal ſoul exiſting, yet it is queſtionable whether this ſoul be intellectual, or merely vegetive. That there is an intellectual power informing the whole world, as the ſoul does the body, is not to be doubted; for otherwiſe the whole frame of nature would be inert and motionleſs; but then, if we admit the ſoul of the world to carry this intellect in its own brain, it will follow, that this ſoul is a God; for an intellectual being, filling heaven and earth with its preſence, is an attribute of God's. (Jer. xxiii. 23, 24, 25, 26.) Hence I conclude there is an univerſal ſoul in the world, but that is only vegetive, and not intellectual; and that in this ſoul dwells the ſpirit of Almighty God, who filleth the heavens and the earth with his preſence, and from hence garniſheth the heavens, and cauſeth the precious influences of the ſun, moon, and ſtars, to be diſtributed into all parts of the world. (Acts xvii. 28. Job xxvi. 13. Deut. iv. 19.) And thus God rules immediately in the heavens, but rules the world mediately by the heavens. It is true, indeed, that God is equally well able to govern and maintain the world without means, as he was at firſt to conſtitute and create the frame of nature; but ſuch is his divine will and pleaſure, that he has thought fit to bring all things to paſs by virtue of means, as ordained from the beginning of the world.

“ *Known unto God are all his works, from the beginning of the world*; (Acts xv. 18.) and therefore it would be derogatory to the attributes of the Deity, not to believe that the minuteſt events of this world were foreſeen and provided for in that moſt perfect frame or model of nature, which, as we have already ſeen, may be compared to the conſtruction of a watch, conſiſting of many ſmall wheels, regulated by one maſter-wheel, or firſt mover, which being wound up at the creation, with the line of time, of a ſeemingly infinite length, has ever ſince been winding off, unto the preſent hour; and yet is there ſtill more line upon the wheel; but how much remains, is only in the breaſt of the Almighty. And, when this line ſhall be entirely wound off, then will the frame of nature find its period, (2 Peter iii.) and all ſubordinate wheels will ceaſe their motion. But, until that time, there is allotted in this frame of nature, unto every one that comes into the world, a certain order or courſe of life, by which he runs thro' ſickneſs and health, honour and diſhonour, and all the occurrences of life, from his cradle to the grave. For man is, as it were, a little world within himſelf; and, though he ſtand but as one wheel in the frame of the great world, yet within this one there ſeems many thouſands of wheels, eſpecially in enterpriſing people, which appear to move one within another almoſt *ad infinitum*, till the thread turned on the outer wheel break, or elſe be wound off, and there they make a ſtop, and die. All theſe things God, who made man at the firſt, perfectly knows, and foreknew from the beginning of the world; and, by this order of man's life, he perfectly knows all the paſſages of our lives, and even the moſt ſecret thoughts of our hearts, both ſleeping and waking; (John ii. 24, 25.) and how one thought drives off and brings on another, and continues ſo doing till the laſt moment of our lives, when our breath fails. Now every man being, as it were, a wheel of the great world, it will follow that all men move in a certain frame or wheel above themſelves, by virtue of which the maſter-wheel of every man's life is put in motion: and this wheel is ſubordinate unto others, and theſe alſo unto the maſter-wheel of the whole world, which is the high and mighty wheel of heaven, wherein the ſun, moon, and ſtars, are ſet, to carry on the great works of nature, unto the end of time. And hence comes the original of every man's nativity, and of all natural qualities, paſſions, and incidents of our lives, except the motions of our free-will and reaſon, which may be allured and inclined by the works of nature, but cannot be forced by them. Now above and beyond this great wheel of nature, there is yet another wheel, (2 Cor. xii. 2, 3, 4.) within which the heavens themſelves are turned; and herein is that great and hidden line of time, whereby the whole world, with all its dependencies, is made to hold on, and continue its motion, unto the final end of all things; and this ſtupendous wheel is God himſelf, who draws out the line of time, and, *ſitting upon the circles of the earth, he ſtretches out the heavens as a curtain, and beholdeth all the inhabitants of the world as graſshoppers under his feet*; (Iſaiah xl. 22, 23, &c.) and hence he diſcerns as it were, with one view, all the world naked before him, both paſt, preſent, and to come.

“ From what has been advanced, it appears obvious that every occurrence of our lives, and all the various productions of nature, however ſtrange or incomprehenſible they may appear, are brought to paſs by a regular and eſtabliſhed means, decreed by the wiſdom of God, at the beginning of the world; and conſequently, whatever happens by a contrary effect, muſt of neceſſity be produced by the immediate hand of God, and conſtitutes a miracle. Such was the caſe when the Almighty made the ſun and moon ſtand ſtill; and when, at the prayer of Iſaiah, he reverſed its courſe, and made it retrograde. Such alſo were the works of our Saviour, when he raiſed the dead, and gave ſight to men born blind. And ſuch was the work of God, when the ſea made a lane for men to paſs through on dry ground; and when the fire had no power to ſcorch nor to burn thoſe who walked in the midſt of it. (Joſh. x. 12, 13. 2 Kings xx. 11. John ix. 6, 7. and xi. 44, 53. Exod. xvi. 21, 22. Dan. iii. 27.) Theſe miracles, it is true, had no immediate dependance upon the works of nature; and yet, as God from the beginning ſaw the neceſſity of them, and the occaſion upon which they would be required, it is reaſonable to ſuppoſe he ſet down in his eternal mind the contrivance of theſe miracles, and ſo ordained them to keep pace with the works of nature, and to come to paſs at their appointed ſeaſons, without diſturbing or deranging that univerſal frame of the world, out of which all natural things proceed, and from whence all the hoſt of heaven derive their faculty of influencing earthly ſubſtances. And that the heavenly bodies poſſeſs theſe influences, in an infinitely powerful degree, I believe will not be denied, ſince both ſcripture and reaſon, as we have now ſeen, ſubſtantially prove them. The ancient philoſophers were unanimous in ſubſcribing to this opinion, even without the teſtimony of the ſacred writings; and many very learned authors, in later ages, have ſupported the ſame doctrine. Milton gives us a very ſtriking proof of his belief of the ſtarry influence, in the following paſſage of his Paradiſe Loſt:

To the blank moon
Her office they preſcrib'd; to th' other five,
Their planetary motions and aſpects,
In ſextile, ſquare, and trine, and oppoſite,
Of noxious efficacy, and when to join
In ſynod unbenign; and taught the fix'd
Their influence malignant when to ſhow'r;
Which of them riſing with the ſun, or falling,
Should prove tempeſtuous, &c.

“ The ingenious Mr. Ferguſon alſo proves, in a variety of inſtances, an efficiency and influence in the ſun and moon, though he denies that any ſuch faculty exiſts in the fixed ſtars. And yet he has ſhewn, by very ſatisfactory obſervations, that “ the fixed ſtars are ſo many glorious ſuns, with ſyſtems and worlds ſurrounding them ſimilar to our own;” and that “ the Almighty would not have placed them at ſuch diſtance from each other, unleſs proper objects were near enough to be benefited by their influences.” Hence it follows, from his own hypotheſis, that the fixed ſtars do each of them poſſeſs a natural influence, homogeneal to the ſun and moon. But to what diſtance the fixed ſtars, or any of the heavenly bodies, are capable of extending theſe influences, is beyond the power of the moſt enlightened mind to determine; ſince the celeſtial matter flows through a boundleſs and unlimited ſpace, and operates upon every ſubſtance that falls within the line of its direction. And now, having made it apparent, by an union of concurrent teſtimonies, that the ſun, moon, and ſtars, have their reſpective influences, and that an aſtrology in the heavens does by conſequence exiſt, it will be proper to conſider how far the ſtudy of this noble ſcience will be compatible with our moral and religious obligations, and what degree of it is attainable by the human underſtanding.

“ That the ſtudy and practice of aſtrology is a moral purſuit, becoming ſober and religious men, may be collected from the cuſtoms of the ancients in all enlightened countries; as well as from the beſt and wiſeſt of God's choſen people. And that our all-wiſe and beneficent Creator originally implanted in the frame of nature a means whereby mankind may attain to the knowledge of ſuch future contingencies as concern their welfare and happineſs, is in no reſpect to be doubted, ſince we obſerve in the brute creation, that even the moſt inconſiderable creatures upon the earth are more or leſs endowed with a gift of foreknowledge. Thus the induſtrious bee, and laborious ant, lay in their ſummer ſtore, to ſupply the neceſſary wants of an inclement winter, which they foreknow is yet to come. The badger, and hedge-hog, and the mole, alſo provide themſelves a magazine of plants and herbs, which they foreknow will enable them to lie concealed in their holes, during the hard froſts of winter, contented with their priſon, which affords them ſafety. Their holes are alſo conſtructed with amazing art, and have generally two apertures, that, in caſe one is beſet by an enemy, they may eſcape by the other. The doublings of the hare, and the cunning of the fox, to eſcape the hounds, are alſo aſtoniſhing indications of foreſight and ſagacity. The feathered race are likewiſe endowed with a ſimilar faculty, and often foretel an approaching ſtorm a conſiderable time before it appears, by retiring in flocks to their holes and hiding-places for ſhelter and protection. The birds of paſſage ſeem to inherit this gift in a moſt remarkable degree; for they aſſemble together in prodigious flocks, at an appointed hour, and take their leave of us before the approach of winter, which they foreſee will deſtroy the flies and other inſects upon which their own life depends, as they feed upon nothing elſe. And it is no leſs extraordinary than true, that theſe birds return as early as the ſun brings forth this claſs of inſects into new life; and they have alſo the ſagacity to find out and repoſſeſs their former neſts and habitations. The ſame provident forecaſt, for ſelf-preſervation and ſafety, is even extended to the innumerable inhabitants of the immenſe ocean, where we ſee the fiſhes, preſſed by unceaſing hunger, indiſcriminately prey upon one another, the large upon the ſmall even of its own ſpecies; whence the ſmaller fiſh, in regular gradations, when in danger of being devoured, fly for an aſylum to the ſhallow waters where they know their enemy cannot or dares not purſue them. And this purſuit of one ſpecies of fiſh after another, is by no means confined to a ſingle region; for we find ſhoals of them purſuing one another, from the vicinity of the pole even down to the equator; and thus the cod, from the banks of Newfoundland, purſues the whiting, which flies before it, even to the ſouthern ſhores of Spain. It is aſtoniſhing alſo that herrings, which appear to generate towards the north of Scotland, regularly make their way, once a year, to the Britiſh Channel. Their voyage is conducted with the utmoſt regularity; and the time of their departure is fixed from the month of June to Auguſt. They always aſſemble together before they ſet out, and no ſtragglers are ever found from the general body. It is impoſſible to aſſign any cauſe for this emigration, but it doubtleſsly proceeds from the ſame inſtinctive impulſe with which all orders of animate nature are more or leſs endued. Seeing then that the Supreme Being, in his paternal regard for the minuteſt part of his works, has endowed the loweſt claſs of animals with a gift of foreknowledge in what immediately concerns their ſafety and welfare; would it not be derogatory to the equal providence of God, to ſuppoſe he had not ordained, in an infinitely ſuperior degree, a means of communicating foreknowlege to man, whom he hath graciouſly formed in his own expreſs image and likeneſs, and appointed lord over his vaſt creation?—A creature whom he hath endowed with a rational ſoul, capable of paying him adoration and worſhip; and with an underſtanding qualified to decypher the golden characters he hath placed in the firmament of heaven, for ſigns of thoſe hidden events of futurity which are yet to come? If we give the ſcriptures an attentive peruſal, we ſhall find a variety of paſſages to confirm this opinion, both in the Old and New Teſtament. And we may gather additional evidence, that the Almighty intended we ſhould ſtudy futurity, from the communication given to Adam in Paradiſe by the angel Gabriel; as well as from the commiſſion Michael the archangel received from God, to ſhew him, in a viſion, the principal events of futurity, from his fall, to the birth, reſurrection, and aſcenſion, of Chriſt. And I think I am warranted to ſay, from the authority of our Saviour's own words, that there appears only one event concerning the human race, which the Deity ever propoſed to withhold from their knowledge, and that is, the time of the laſt and terrible day of judgment. But even of this awful and ſecret event, we are promiſed ſome previous intimations, by ſigns in the ſun, moon, and ſtars; which are the common ſignificators of all inferior tranſactions of futurity.

“ Now if we conſider aſtrology, what it truly is, a moral and virtuous ſtudy, we may eaſily believe the accounts tranſmitted to us by Joſephus and other hiſtorians, concerning its antiquity and divine original. We have already ſeen that Adam, previous to his expulſion from Paradiſe, was inſtructed in a foreknowledge of futurity, by the expreſs command of God, as a means of enlarging his mind, and alleviating his diſtreſs, upon being turned adrift into the wide world. Joſephus, an hiſtorian of character and eminence, who quotes the moſt ancient authors of reſpectability for what he aſſerts, confirms the ſame thing, and further informs us, that Adam, before his death, inſtructed his ſon Seth in this ſcience, who afterwards engraved the rudiments of it upon permanent pillars of ſtone, which endured through many generations, and were not entirely effaced till ſome time after the deluge. (See Joſ. Ant. lib. i. cap. 4, 8, 12, &c.) We have it from the ſame authority, that the art was taught by Enos and Noah, who preſerved it to the days of Abraham, and he increaſed the knowledge of it by divine aids, teaching it to the Chaldeans and Egyptians. Joſeph is alſo ſaid to have patroniſed and taught it in Egypt, and is ſuppoſed by Origen, Diodorus Siculus, and other ancient hiſtorians, to have been the author of an aſtrological work, called, The Aphoriſms of Hermes the Egyptian. (Orig. tom. in Gen. Diod. Sic. lib. i. cap. 2.) Moſes afterwards taught and profeſſed it, independent of the gift of prophecy, which always came by divine inſpiration, and conſequently was only exerciſed upon certain extraordinary occaſions. From Moſes, we are told, the prophets and ſeers had it; and that it was afterwards particularly taught among the tribe of Iſſachar, who are on that account ſtiled in the ſacred writings, *Men who had underſtanding in the times*, and were expert at reſolving all queſtions concerning futurity. (1 Chron. xii. 32.) And as this tribe were neither prieſts nor Levites, nor endued with the ſpirit of prophecy, it follows that their underſtanding in the times, and their ability in foretelling future events, aroſe entirely from an acquired knowledge of the ſigns and influences of the heavenly bodies. For the ſame reaſon the Perſian aſtrologers were called *mages*, or wiſe men, who were ſkilled in the times; and the Chaldeans termed their young ſtudents in aſtrology, *Men ſkilled in wiſdom and cunning ſcience, to learn the learning of the Chaldeans.* (Eſth. i. 13. Dan. i. 4.) And, after the Chaldean method of ſtudying the ſcience of aſtrology, Daniel, and Shadrach, and Meſech, and Abednego, were inſtructed by their tutor Melzar, and became *ten times more learned in all mat-*

ters of wiſdom and underſtanding than all the aſtrologers in the realm, in conſideration of which they were elected members of the public ſchools at Babylon, which were founded for the ſtudy of this art; and Daniel was made, by the king's decree, maſter over the Chaldean aſtrologers. (Dan. i. 4. ii. 13. v. 11.)

“In the days of Samuel, it appears to have been a common cuſtom to go to the ſeers, or men of underſtanding in the times, not only to be informed concerning future contingencies, but alſo to enquire after loſt goods. To this effect we find Saul and his ſervants diſcourſing, when they were ſent out to find the ſtrayed aſſes of Kiſh, Saul's father; and, not being able to find them, the ſervant propoſes to go and enquire of the ſeer, which way the aſſes were gone, and where they may be found. Saul agrees to this, but aſks, *What have we to give him? we have no bread left, nor have we any ſufficient preſent.* The ſervant replies, *I have a fourth part of a ſhekel of ſilver; I'll give him that.* Saul anſwers, *Well ſaid; let us go.* (1 Sam. ix. 6, 7, &c.) This paſſage enables us to diſtinguiſh between the gift of prophecy, for the purpoſe of eſtabliſhing God's true religion, and the art of anſwering horary queſtions, and predicting future events. The one was evidently effected by ſupernatural means, and promulgated to the people without expence; whilſt the other, by being calculated for the benefit of reſpective individuals, was accompanied with money or preſents. In the ſame way we find David, when in Keilah, where he heard that Saul was coming to beſiege him, was deſirous of knowing the truth, whether Saul was coming or not; and, if he was, *Whether the men of Keilah would be true to him, or would betray him.* And, being informed they would betray him into the hands of the enemy, who were ſeeking his life, he fled into the wilderneſs of Ziph, and eſcaped the danger that was impending over him. (1 Sam. xxiii. 10, 11, 12, 13, 14.) And in the New Teſtament alſo, we have frequent confirmations of the meteorological part of the ſcience, from our Saviour's own words, in his converſation with the phariſees, who were all verſed in aſtrology. He addreſſes them to this effect: ‘When it is evening, ye ſay, It will be fair weather, becauſe the ſky is red; and in the morning, It will be foul weather, becauſe the ſky is red and lowering. And, when a cloud ariſeth out of the weſt, ſtraightway ye ſay, A ſhower cometh; and it is ſo. And, when ye ſee the ſouth-wind blow, ye ſay, There will be heat; and ſo it comes to paſs. Ye hypocrites, ye can diſcern the face of the ſky, but the ſigns of the times ye cannot diſcern.’ (See Matth. xvi. 2. Luke xii. 24, 55, 56.) And now, if we impartially contemplate the origin and antiquity of this ſcience, and recollect that the beſt and wiſeſt men in every age of the world were profeſſors of it, we muſt admit its practice to be highly conſiſtent with our moral and religious duties.

That the human underſtanding is alſo capable of attaining to a very high degree of knowledge in the hidden works of futurity, and in the ſecret operations of nature, is likewiſe to be proved, beyond the power of contradiction. Indeed the paſſages already quoted are a ſufficient confirmation of it to every diſpaſſionate reader; but, as there are ſome very extraordinary inſtances of this predictive faculty recorded by different hiſtorians, I will juſt mention a few of them, by way of corroborating the evidence already brought in its ſupport. The emperor Domitian required the profeſſor Largius Proculus to calculate his nativity, from the ſuppoſed time of his birth, which was done, and delivered into the emperor's own hands. Aſclatarius, a famous aſtrologer of thoſe times, procuring a copy of this nativity, rectified it, and foretold the hour and manner of the emperor's death; which when Domitian heard, he commanded Aſclatarius to be brought before him, when he affirmed his predictions would prove true. Domitian aſked him if he could foretel the manner of his own death? Aſclatarius replied, That he knew he ſhould ſhortly be torn in pieces by dogs; but, to confute the aſtrologer, the emperor ordered him to be burnt alive. The cruel ſentence was accordingly put in execution; his body was bound and laid upon the pile, and the fire kindled; but at that inſtant there aroſe a dreadful ſtorm of wind and rain, which drove the ſpectators away, and extinguiſhed the fire; and Aſclatarius was afterwards torn in pieces by dogs, as he had foretold. When Latinus informed the emperor of this event, he was greatly mortified, and very melancholy; and, on the day his aſſaſſination had been predicted, he feigned himſelf indiſpoſed, and locked himſelf up in his chamber. Stephanus, the captain of his guards, went to his door, pretending he had received ſome important diſpatches, which he wanted to deliver to him; but, Domitian declining to admit him till a certain hour was paſt, Stephanus perſuaded him it was then much later than the time ſpecified. The emperor, in conſequence, concluding the danger to have paſſed by with the hour, or looking upon the prediction as a mere fable, ſeeing no conſpiracy or danger about him, opened the door, upon which Stephanus ſtepped up to him with a drawn dagger, and ſtabbed him to the heart, in the very hour that had been predicted by the aſtrologer, on the 18th day of September, the month he had ordered to be called Germanicus. (Vid. Sueton. in Domitian.) The ſame writers add, that Apollonius Tyaneus was at that inſtant of time at Epheſus, ſtanding in the preſence of the magiſtrates, and in a kind of ecſtacy cried out, O Stephanus, ſtrike the tyrant; and after a pauſe added, 'Tis well, thou haſt killed him. This art of rectifying nativities, was a diſcovery which brought the ſcience to very high perfection, and has enabled its profeſſors to be aſtoniſhingly exact in predictions of conſequence. Thus Lucius Firmianus, by the acts of Romulus's life, and the time of his death, found that he was born in the firſt year of the ſecond Olympiad, the twenty-third day of the month, about ſun-riſing. And hence he diſcovered that the building of Rome was begun when the Moon was in Libra, the Sun with Mercury, and Venus in Taurus, Jupiter in Piſces, and Saturn with Mars in Scorpio. (Vid. Peucer de Divinat. ſect. de Aſtrolog.) The archbiſhop of Piſa conſulted ſeveral different profeſſors of aſtrology concerning his deſtiny, and they all calculated his nativity at different times, and without any communication with one another; but they all foretold that he would be hanged. It ſeemed highly incredible at the time, becauſe he was in ſo much honour and power; but the event juſtified the predictions; for in the ſedition of Pope Sextius IV. in the ſudden rage and uproar of the people, he was ſeized and hanged. (Vid. Annal. Florentin.) Petrus Leontius, a celebrated phyſician and aſtrologer of Spoletanum, caſt his own nativity, and foretold that his death would be occaſioned by water, and many years afterwards he was found drowned in a pond, into which he had fallen the preceding night, by miſtaking his way. (Jovius, Elog. 35.) Joſephus tells us he caſt the nativities of Veſpaſian and his ſon Titus, and predicted that they would both be emperors; and ſo it turned out. R. Cervinus calculated the nativity of his ſon Marcellus, and foretold that he ſhould come to great preferment and dignity in the church; and, his mother afterwards entreating him to marry one Caſſandra Benna, he very reſolutely declined it, ſaying, He would not with the bands of matrimony bind himſelf from that better fortune which the ſtars had promiſed him if he continued to live ſingle and unmarried. And he was afterwards really made pope. (Vid. Thuan. l. 15.) Picus Mirandula was a ſevere writer againſt aſtrology, inſomuch that he was termed Flagellum Aſtrologorum; and, to ſtop the malignity of his pen, Lucius Bellantius, and two other aſtrologers of eminence, procured the time of his birth, and calculated his nativity, which they afterwards ſent him, with this prediction incloſed, ‘That he would die in the thirty-third year of his age.’ This exaſperated him ſo much, that he began to write a new tract, with inconceivable aſperity, againſt the poor aſtrologers, attempting to prove their calculations a mere bubble, and themſelves a ſet of impoſtors. But, when the fatal appointed hour arrived, he ſaw the folly of his own conceits; recanted his opinion, and ſealed by his death a ſtanding memorial of the inerrability and truth of this ſcience. Many other extraordinary circumſtances of the kind might be related from different authors, were it not already ſufficiently obvious that the intellectual faculties of man, when cultivated by ſtudy, and improved by experience, are capable of attaining a very extenſive degree of knowledge and ſkill in this art.

"It hath been contended, in oppoſition to that part of aſtrological ſcience, which determines the bodily forms and mental diſpoſition of the native from the ſeveral ſignificators in his own and in his parents' genethliacal figures, that this likeneſs or ſimilitude in body and temper, is ſtamped by the energy or idea of the parents in the act of copulation. Although I am willing to admit this doctrine in part, yet I contend that the *primary* cauſe, which furniſhes that energy or motion in the parents, is derived from their reſpective ſignificators in the heavens; and that they impreſs their particular quality in proportion as they happen to be in dignity and power at that preciſe time. If the ſignificators of the mother are then ſuperior in force and dignity, the mother's features and diſpoſition will be moſt viſible; if the father's geniture be the ſtrongeſt, the father's temper and ſimilitude will be moſt predominant in the offspring then begotten; but, if both their ſignificators are equally ſtrong, the child then equally participates in the likeneſs and diſpoſition of both his parents. Let it nevertheleſs be remembered, that, however ſtrong the ſignificators of both or either of the parents might be, yet thoſe proper to the fœtus, or conceptional matter, invariably take the lead, and ſtamp that peculiar form and temperature upon the native, which in a great meaſure ſupplant the firſt impreſſions given by thoſe of the parent, and form a perſon and mind eſſentially differing from both, though with ſome veſtiges of hereditary ſimilitude. And hence the reaſon why ſons and daughters more or leſs depart from the ſtature, features, complexion, and temper, of their parents; and why no two human beings, in the whole compaſs of generation, were ever yet formed preciſely alike! If, however, the man lives, who can fairly and completely refute theſe arguments, he ſhall have my thanks and my applauſe. And I will add, in the emphatic words of an unrivalled author, that 'my heart is already with him.' I am willing to be converted. I admire his morality, and would gladly ſubſcribe to the articles of his faith. Grateful, as I am, to the good Being whoſe bounty has imparted to me this reaſoning intellect, I hold myſelf proportionably indebted to him, from whoſe enlightened underſtanding another ray of knowledge communicates to mine. But neither ſhould I think the moſt exalted faculties of the human mind a gift worthy of the Divinity, nor any aſſiſtance, in the improvement of them, a ſubject of gratitude to my fellow creature, if I were not ſatisfied, that really to inform the underſtanding, corrects and enlarges the heart."

Thoſe who are deſirous of further information in this abſtruſe enquiry, are referred to Dr. Sibly's Work on the Occult Sciences, 2 vols. 4to. who ſeems to have collected and explained the intereſting parts of all the ancient writings on aſtrology, whoſe works are now either wholly out of print, or extremely ſcarce and valuable.

Astrology is deſcribed, in painting and ſculpture, as a woman crowned with ſtars, having on a rich veſtment embroidered with the ſame, a ſun upon her breaſt, in her right hand a ſceptre, and in her left a cœleſtial globe; at her feet an eagle.

ASTRO'NIUM, *ſ.* [*απο του αστρου*, from a ſtar, on account of the radiated form of the calyx.] In botany, a genus of the claſs dioecia, order pentandria. The generic characters are—I. Male. Calyx: perianthium five-leaved, coloured, ſmall; leaflets ovate, concave, obtuſe, ſpreading. Corolla: petals five, ovate, very obtuſe, flat, ſpreading very much; nectary five, roundiſh, very ſmall glands in the diſk of the flower. Stamina: filaments five, ſubulate, ſpreading, the length of the corolla; anthers oblong, incumbent. II. Female. Calyx: perianthium five-leaved, coloured; leaflets oblong, concave, obtuſe, converging. Corolla: petals five, ſubovate, obtuſe, concave, erect, leſs than the calyx, permanent. Piſtillum: germ ovate, obtuſe; ſtyles three, ſhort, reflex; ſtigmas ſubcapitate. Pericarpium: none; calyx increaſed, coloured; its leaflets at firſt expanded into a pendulous ſtar, at length dropping the ſeed. Seeds: one, oval, the length of the calyx, lacteſcent.—*Eſſential Character.* Male. Calyx, five-leaved; corolla, five-petalled; ſtyles, three; ſeed one.

There is but one ſpecies, called aſtronium graveolens. It is an upright tree, from twelve to thirty feet in height, abounding every where in a ſlightly glutinous terebinthine juice, which has a diſagreeable ſmell. After the fruits in the female and the flowers in the male plant have fallen off, new branches are put forth, having unequally pinnate leaves on them, with three pairs of leaflets, which are oblong-ovate, acuminate, quite entire or ſerrulate, ſmooth, veined, three inches in length. Panicles lax, half a foot long in the males, but a foot and a half long in the females, ſcattered on the outmoſt twigs. Flowers ſmall, red. The calyxes are expanded into ſtars nine lines in diameter. Native of woods about Carthagena in New Spain; flowering in May and June, and fruiting in July.

ASTRON'OMER, *ſ.* [*aſtronome*, Fr. *aſtronomus*, Lat. of *αστρον*, a ſtar, and *νομος*, Gr. a law.] One that ſtudies the celeſtial motions, and the rules by which they are governed.

ASTRONO'MIC or Astrono'mical, *adj.* Belonging to aſtronomy.—Our forefathers marking certain mutations to happen in the ſun's progreſs through the zodiac, regiſtrate and ſet them down in their *aſtronomical* canons. *Brown.*

ASTRONO'MICAL CA'LENDAR, an inſtrument engraved on copper plates, printed on paper, and paſted on a board, with a braſs ſlider carrying a hair: it ſhews by inſpection the ſun's meridian altitude, right aſcenſion, declination, riſing, ſetting, amplitude, &c. to a greater degree of exactneſs than the common globes.

Astronomical Hours, are ſuch as are accounted from noon or midnight of one natural day to noon or midnight of another.

Astronomical Observations. Of theſe there are records, or mention, in almoſt all ages. It is ſaid that the Chineſe have obſervations for a courſe of many thouſand years. But of theſe, as well as thoſe of the Indians, we have never yet had any benefit. But the aſtronomical obſervations of moſt of the other ancients, as Babylonians, Greeks, &c. amongſt which thoſe of Hipparchus make a principal figure, are carefully preſerved by Ptolemy, in his Almageſt. About the year 880, Albategni, a Saracen, applied himſelf to the making of obſervations; in which he was followed by others of the ſame nation, as well as Perſians and Tartars; among whom were Naſſir-Eddin-Ettuſi, Arzachel, who alſo conſtructed a table of ſines, and Ulug Beigh. In 1457 Regiomontanus undertook the province at Norimberg; and his diſciples, J. Werner and Ber. Walther, continued the ſame from 1475 to 1504. Their obſervations were publiſhed together in 1544. In 1509, Copernicus, and after him the landgrave of Heſſe, with his aſſiſtants Rothman and Byrge, obſerved; and after them Tycho Brahe, aſſiſted by the celebrated Kepler, from 1582 to 1601. All the foreging obſervations, together with Tycho's apparatus of inſtruments, are contained in the Hiſtoria Cœleſtis, publiſhed in 1672, by order of the emperor Ferdinand. In 1651, was publiſhed at Bononia, by Ricciolus, Almageſtum Novum, being a complete body of ancient and modern obſervations, which he ſo named after the work of the ſame nature by Ptolemy.—Soon after, Hevelius, with a magnificent and well-contrived apparatus of inſtruments, deſcribed in his Machina Cœleſtis, began a courſe of obſervations. It has been objected to him, that he only uſed plain ſights, and could never be brought to take the advantage of teleſcopic ones; which occaſioned Dr. Hook to write animadverſions on Hevelius's inſtruments, printed in 1674, in which he too raſhly deſpiſes them, on account of their inaccuracy: but Dr. Halley, who at the inſtance of the Royal Society went over to Dantzick in the year 1679, to inſpect his inſtruments, approved of their juſtneſs, as well as of the obſervations made with them. Our two countrymen Jer. Horrox and Will. Crabtree, are celebrated for their obſervations from the year 1635 to 1645, who firſt obſerved the tranſit of Venus over the ſun in the year 1639. They were followed by Flamſteed, Caſſini the father and ſon, Halley, de la Hire, Roemer, and Kirchius. The obſervations of the celebrated Dr. Bradley have not yet been publiſhed, though long expected. We have alſo now publiſhed, from time to time, the accurate obſervations of the preſent Britiſh Aſtronomer Royal: as alſo thoſe of the French and other obſervatories, with the obſervations of many ingenious private aſtronomers, which are to be found in the Tranſactions and Memoirs of the various Philoſophical Societies. There have been alſo obſervations of many other eminent aſtronomers; as, Galileo, Huygens, and our countryman Harriot, whoſe very intereſting obſervations have lately been brought to light by the earl of Egremont, and count Bruhl, by whoſe means they may come to be publiſhed. Other publications of celeſtial obſervations, are thoſe of Caſſini, La Caille, Monnier, &c.

ASTRONOMICAL PLACE of a planet or ſtar, is the longitude or place in the ecliptic, reckoned from the beginning of Aries, according to the natural order of the ſigns.

ASTRONOMICAL QUADRANT, is an inſtrument framed and fitted with teleſcopes, &c. to take obſervations of the moon or ſtars.

ASTRONOMICAL SECTOR, a very uſeful mathematical inſtrument, made by the late ingenious Mr. Graham; a deſcription of which is given in the courſe of the article ASTRONOMY.

ASTRONO'MICALLY, *adv.* [from *aſtronomical.*] In an aſtronomical manner.

ASTRONO'MICALS, are ſexageſimal fractions, ſo called becauſe anciently they were wholly uſed in aſtronomical calculations.

ASTRO'NOMY, *ſ.* [*Aſtronomie*, Fr. *Aſtronomia*, Lat. of αϛρονόμια, of αϛρον, a ſtar, and νομος, Gr. the law, rule, &c.] Is that branch of natural philoſophy which treats of the heavenly bodies, their motions, periods, eclipſes, magnitudes, diſtances, and other phenomena. The determination of their magnitudes, diſtances, and the orbits which they deſcribe, is called *plane* or *pure* aſtronomy; and the inveſtigation of the cauſes of their motions, is called *phyſical* aſtronomy. The former is determined from obſervations on their apparent magnitudes and motions; and the latter from analogy, by applying thoſe principles and laws of motion by which bodies on and near the earth are governed, to the other bodies in the ſyſtem. But, before we enter upon the general view or hiſtorical detail of the riſe and progreſs of aſtronomy, it will be proper to give a conciſe arrangement and explanation of thoſe various aſtronomical terms, which conſtitute the fundamental principles of the ſcience; and which we have collected from the elaborate work of the Rev. S. Vince, Plumian Profeſſor of Aſtronomy in the Univerſity of Cambridge.

DEFINITIONS.

A *great* circle of a ſphere is that whoſe plane paſſes through its center; and a *ſmall* circle is that whoſe plane does not paſs through its center.

A diameter of a ſphere perpendicular to any great circle is called the *axis* of that circle; and the extremities of the diameter are called its *poles.* Hence the pole of a great circle is 90° from every point of it upon the ſurface of the ſphere; but, as the axis is perpendicular to the circle when it is perpendicular to any two radii, a point on the ſurface of a ſphere, 90° diſtant from any two points of a great circle, will be the pole.

All angular diſtances on the ſurface of a ſphere, to an eye at the center, are meaſured by the arcs of great circles; for they, being arcs to equal radii, will be as the angles. Hence all triangles formed upon the ſurface of a ſphere, for the ſolution of ſpherical problems, muſt be formed by the arcs of great circles. And all great circles muſt biſect each other; for, paſſing through the center of the ſphere their common ſection muſt be a diameter, which biſects all circles.

Secondaries to a great circle are great circles which paſs through its poles. Hence ſecondaries muſt be perpendicular to their great circle; for, if one line be perpendicular to a plane, any plane paſſing through that line will alſo be perpendicular to it; therefore as the axis of the great circle is perpendicular to it, and is the common diameter to all the ſecondaries, they muſt all be perpendicular to the great circle.

The axis of the earth is that diameter about which it performs its diurnal motion; and the extremities of this diameter are called its *poles.*

The *terreſtrial equator* is a great circle of the earth perpendicular to its axis. Hence the axis and poles of the earth are the axis and poles of its equator. That half of the earth which lies on the ſide of the equator which we inhabit is called the *northern hemiſphere*, and the other the *ſouthern*; and the poles are reſpectively called the *north* and *ſouth* poles.

The *latitude* of a place on the earth's ſurface is its angular diſtance from the equator, meaſured upon a ſecondary to it. Theſe ſecondaries to the equator are called *meridians.* The *longitude* of a place on the earth's ſurface is an arc of the equator intercepted between the meridian paſſing through the place, and another, called the firſt meridian, paſſing through that place from which you begin to meaſure.

If the plane of the *terreſtrial* equator be produced to the ſphere of the fixed ſtars, it marks out a circle called the *celeſtial* equator; and if the axis of the earth be produced in like manner, the points in the heavens to which it is produced are called *poles*, being the poles of the celeſtial equator. The ſtar neareſt to each pole is called the *pole* ſtar. Secondaries to the celeſtial equator are called *circles of declination*; of theſe, twenty-four which divide the equator into equal parts, each containing 15°, are called *hour* circles. Small circles parallel to the celeſtial equator are called *parallels of declination.*

The *ſenſible* horizon is that circle in the heavens whoſe plane touches the earth at the ſpectator. The *rational* horizon is a great circle in the heavens, paſſing through the earth's center, parallel to the ſenſible horizon. *Almacanter* is a ſmall circle, parallel to the horizon.

If the radius of the earth to the place where the ſpectator ſtands be produced both ways to the heavens, that point vertical to him is called the *zenith*, and the oppoſite point the *nadir.* Hence the zenith and nadir are the poles of the rational horizon; for the radius produced, being perpendicular to the ſenſible, muſt alſo be perpendicular to the rational, horizon.

Secondaries to the horizon are called *vertical* circles, becauſe they are perpendicular to the horizon; on theſe circles therefore the altitude of a heavenly body is meaſured. A ſecondary common to the celeſtial equator and the horizon of any place, and which therefore paſſes through the poles of each, is the celeſtial meridian of that place. Hence the plane of the celeſtial meridian of any place coincides with the plane of the terreſtrial meridian of the ſame place. That direction which paſſes through the north pole is called *north*, and the oppoſite direction is called *ſouth.* Hence the meridian muſt cut the horizon in the north and ſouth points; and hence the meridian of any place divides the heavens into two hemiſpheres lying to the eaſt and weſt; that lying to the eaſt is called the *eaſtern* hemiſphere, and the other lying to the weſt is called the *weſtern* hemiſphere.

The vertical circle which cuts the meridian of any place at right angles is called the *prime* vertical; and the points where it cuts the horizon are called the *eaſt* and *weſt* points. Hence the eaſt and weſt points are 90° diſtant from the north and ſouth. Theſe four are called the *cardinal* points.

The *azimuth* of an heavenly body is its diſtance on the horizon, when referred to it by a ſecondary, from the north or ſouth points. The *amplitude* is its diſtance from the eaſt or weſt point.

The *ecliptic* is that great circle in the heavens which the ſun appears to deſcribe in the courſe of a year. The ecliptic and equator being great circles muſt biſect each other, and their angle of inclination is called the *obliquity of the ecliptic*; alſo the points where they interſect are called the *equinoctial* points. The times when the ſun comes to theſe points are called the *equinoxes*.

The ecliptic is divided into twelve equal parts, called *ſigns*; ♈ Aries, ♉ Taurus, ♊ Gemini, ♋ Cancer, ♌ Leo, ♍ Virgo, ♎ Libra, ♏ Scorpio, ♐ Sagittarius, ♑ Capricornus, ♒ Aquaries, ♓ Piſces. The order of theſe is according to the motion of the ſun. The firſt point of Aries coincides with one of the equinoctial points, and the firſt point of Libra with the other. The firſt ſix ſigns are called *northern*, lying on the north ſide of the equator; and the laſt ſix are called *ſouthern*, lying on the ſouth ſide. The ſigns ♑, ♒, ♓, ♈, ♉, ♊, are called *aſcending*, the ſun approaching our (or the north) pole whilſt it paſſes through them; and ♋, ♌, ♍, ♎, ♏, ♐, are called *deſcending*, the ſun receding from our pole as it moves through them.

The motion of the heavenly bodies which is according to the order of the ſigns is called *direct*, or *in conſequentia*; and the motion in the contrary direction is called *retrograde*, or *in antecedentia*. The *real* motion of all the planets is according to the order of the ſigns, but their *apparent* motion is ſometimes in an oppoſite direction, hence called *retrograde*. The *zodiac* is a ſpace extending 8° on each ſide of the ecliptic, within which the motion of all the planets is contained.

The *right aſcenſion* of a body is an arc of the equator intercepted between the firſt point of Aries and a declination circle paſſing through the body, meaſured according to the order of the ſigns. The *oblique aſcenſion* is an arc of the equator intercepted between the firſt point of Aries and that point of the equator which riſes with any body, meaſured according to the order of the ſigns. The *aſcenſional difference* is the difference between the right and oblique aſcenſion.

The *declination* of a body is its angular diſtance from the equator, meaſured upon a ſecondary to it drawn through the body.

The *longitude* of a ſtar is an arc of the eclipic intercepted between the firſt point of Aries and a ſecondary to the ecliptic paſſing through the body, meaſured according to the order of the ſigns. If the body be in our ſyſtem, and ſeen from the *ſun*, it is called the *heliocentric* longitude; but if ſeen from the *earth* it is called the *geocentric* longitude: the body in each caſe being referred perpendicularly to the ecliptic in a plane paſſing through the eye.

The *latitude* of a ſtar is its angular diſtance from the ecliptic, meaſured upon a ſecondary to it drawn through the body. If the body be in our ſyſtem, its angular diſtance from the ecliptic ſeen from the *earth* is called the *geocentric* latitude; but if ſeen from the *ſun* it is called the *heliocentric* latitude.

The *tropics* are two parallels of declination touching the ecliptic. One, touching it at the beginning of Cancer, is called the *tropic of Cancer*; and the other, touching it at the beginning of Capricorn, is called the *tropic of Capricorn*. The two points where the tropics touch the ecliptic are called the *ſolſticial* points.

Colures are two ſecondaries to the celeſtial equator, one paſſing through the equinoctial points, called the *equinoctial* colure; and the other paſſing through the ſolſticial points, called the *ſolſticial* colure. The times when the ſun comes to the ſolſticial points are called the *ſolſtices*.

The *arctic* and *antarctic* circles are two parallels of declination, the former about the north and the latter about the ſouth pole, the diſtance of which from the two poles is equal to the diſtance of the tropics from the equator. Theſe are alſo called *polar* circles. The two tropics and two polar circles, when referred to the earth, divide it into five parts, called *zones*; the two parts within the polar circles are called the *frigid* zones; the two parts between the polar circles and tropics are called the *temperate* zones; and the part between the tropics is called the *torrid* zone.

A body is in *conjunction* with the ſun, when it has the *ſame* longitude; in *oppoſition*, when the difference of their longitudes is 180°; and in *quadratures*, when the difference of their longitudes is 90°. The conjunction is marked thus ☌, the oppoſition thus ☍, and the quadratures thus □. *Syzygy* means either conjunction or oppoſition.

The *elongation* of a body is its angular diſtance from the ſun when ſeen from the earth.

The *diurnal parallax* is the difference between the apparent places of the bodies in our ſyſtem when referred to the fixed ſtars, if ſeen from the center and ſurface of the earth. The *annual* parallax is the difference between the apparent places of a body in the heavens, when ſeen from the oppoſite points of the earth's orbit.

The *argument* is a term uſed to denote any quantity by which another required quantity may be found. For example, the argument of that part of the equation of time which ariſes from the unequal angular motion of the earth in its orbit about the ſun is the ſun's anomaly, becauſe that part of the equation depends entirely upon the anomaly; and, the latter being given, the former is found from it. The argument of a ſtar's latitude is its diſtance from its node, becauſe upon this the latitude depends.

The *nodes* are the points where the orbits of the primary planets cut the ecliptic, and where the orbits of the ſecondaries cut the orbits of their primaries. That node is called *aſcending* where the planet paſſes from the ſouth to the north ſide of the ecliptic; and the other is called the *deſcending* node. The aſcending node is marked thus ☊, and the deſcending node thus ☋. The line which joins the nodes is called the *line of the nodes*.

If a perpendicular be drawn from a planet to the ecliptic, the angle at the ſun between two lines, one drawn from it to that point where the perpendicular falls, and another to the earth, is called the angle of *commutation*.

The angle of *poſition* is the angle at an heavenly body formed by two great circles, one paſſing through the pole of the equator and the other through the pole of the ecliptic.

Apparent noon is the time when the ſun comes to the meridian. *True* or *mean* noon is twelve o'clock, by a clock adjuſted to go twenty-four hours in a mean ſolar day. The *equation of time* is the interval between *true* and *apparent* noon.

A ſtar is ſaid to riſe or ſet *coſmically*, when it riſes or ſets at ſun-riſing; and when it riſes or ſets at ſun ſetting, it is ſaid to riſe or ſet *achronically*. A ſtar riſes *heliacally*, when, after having been ſo near to the ſun as not to be viſible, it emerges out of the ſun's rays and juſt appears in the morning; and it ſets *heliacally*, when the ſun approaches ſo near to it, that it is about to immerge into the ſun's rays and become inviſible in the evening.

Curtate diſtance of a planet from the ſun or earth is the diſtance of the ſun or earth from that point of the ecliptic where a perpendicular to it paſſes through the planet.

Aphelion is that point in the orbit of a planet which is fartheſt from the ſun. *Perihelion* is that point in the orbit of a planet which is neareſt to the ſun. *Apogee* is that point of the earth's orbit which is fartheſt from the ſun, or that point of the moon's orbit which is fartheſt from the earth. *Perigee* is that point of the earth's orbit which is neareſt to the ſun, or that point of the moon's orbit which is neareſt to the earth. The terms aphelion and perihelion are alſo applied to the earth's orbit.

Apſis of an orbit is either its aphelion or perihelion, apogee or perigee; and the line which joins the apſides is called *the line of the apſides*.

Anomaly (true) of a planet is its angular diſtance at any time from its aphelion, or apogee—*(mean)* is its angular diſtance from the ſame point at the ſame time if it had moved uniformly with its mean angular velocity. *Equation of the center* is the difference between the *true* and *mean* anomaly; this is ſometimes called the *proſthaphereſis*.

Nonageſimal degree of the ecliptic is that point which is higheſt above the horizon.

The *mean* place of a body is the place where a body, not moving with an uniformly angular velocity about the central body, *would* have been, if the angular velocity had been uniform. The *true* place of a body is the place where the body actually is at any time.

Equations are corrections which are applied to the *mean* place of a body in order to find its *true* place.

A *digit* is a twelfth part of the diameter of the ſun or moon.

Thoſe bodies which revolve about the ſun in orbits very nearly circular are called *planets*, or *primary* planets, for the ſake of diſtinction; and thoſe bodies which revolve about the *primary* planets are called *ſecondary* planets, or *ſatelites.*

Thoſe bodies which revolve about the ſun in very elliptic orbits are called *comets*. The ſun, planets, and comets, comprehend all the bodies in what we call the *ſolar ſyſtem*: All the other heavenly bodies are called *fixed ſtars*, or ſimply *ſtars*.

Conſtellation is a parcel of ſtars contained within ſome aſſumed figure, as a ram, a dragon, an Hercules, &c. the whole heaven is thus divided into conſtellations. A diviſion of this kind is neceſſary, in order to direct a perſon to any part of the heavens which we want to point out.

Characters uſed for the Sun, Moon, and Planets.—☼ The Sun, ☽ the Moon, ☿ Mercury, ♀ Venus, ⊖ the Earth, ♂ Mars, ♃ Jupiter, ♄ Saturn, ♅ Georgian, or Herſchel.

Characters uſed for the Days of the Week.—☼ Sunday, ☽ Monday, ♂ Tueſday, ☿ Wedneſday, ♃ Thurſday, ♀ Friday, ♄ Saturday.

ORIGIN and PROGRESS of ASTRONOMY.

Aſtronomy is inconteſtably the loftieſt monument of human genius—the brighteſt conqueſt atchieved beyond the circle of geometric truths. This ſublime ſcience affords a noble field for the ſpeculations of the philoſophic mind, and has attracted the curioſity and occupied the attention of the learned in every period of ſociety.

Adam in his ſtate of innocence, as we have ſeen under aſtrology, is ſuppoſed by the Jewiſh rabbins, to have been endowed with a knowledge of the nature, influence, and uſes, of the heavenly bodies; and Joſephus aſcribes to Seth and his poſterity a ſimilar knowledge. But, be this as it may, it is evident that the great length of the antediluvian lives would afford ſuch excellent opportunities for obſerving the heavenly bodies, that it is ſuppoſed that the ſcience of aſtronomy was conſiderably advanced before the flood. Indeed Joſephus ſays that longevity was beſtowed upon them for the very purpoſe of cultivating the ſciences of geometry and aſtronomy; obſerving that the latter could not be learned in leſs than 600 years; "for that period," he adds, "is the *grand year*." An expreſſion remarkable enough; and by which it may be ſuppoſed is meant the period in which the ſun and moon come again into the ſame ſituation in which they were at the beginning of it, with regard to the nodes, apogee of the moon, &c. If the antediluvians had ſuch a period of 600 years, they muſt have known the motions of the ſun and moon more exactly than their deſcendants knew them ſome ages after the flood.

On the building of Babel, it is ſuppoſed that Noah retired with his children born after the flood, to the north-eaſtern part of Aſia, where his deſcendants peopled the vaſt empire of China. And this, ſays Dr. Long, "may perhaps account for the Chineſe having ſo early cultivated the ſtudy of aſtronomy." It is ſaid that the Jeſuit miſſionaries have found traditional accounts among the Chineſe, of their having been taught this ſcience by their firſt emperor Fo-hi, who is ſuppoſed to be the ſame with Noah; and Kempfer aſſerts that Fo-hi diſcovered the motions of the heavens, divided time into years and months, and invented the twelve ſigns into which they divide the zodiac, and which they diſtinguiſh by theſe names following; 1, the mouſe; 2, the ox or cow; 3, the tiger; 4, the hare; 5, the dragon; 6, the ſerpent; 7, the horſe; 8, the ſheep; 9, the monkey; 10, the cock or hen; 11, the dog; and, 12, the boar. They divide the heavens into twenty-eight conſtellations, or claſſes of ſtars, alloting four to each of the ſeven planets; ſo that the year always begins with the ſame planet; and their conſtellations anſwer to the twenty-eight lunar manſions uſed by the Arabaian aſtronomers. Theſe conſtellations however they do not mark with the figures of animals, like moſt other nations, but by connecting the ſtars by ſtraight lines, and denoting the ſtars themſelves by ſmall circles.

The Chineſe themſelves have many records and traditions of the high antiquity of their aſtronomy; though not without ſuſpicion of great miſtakes. But, on more certain authority, it is aſſerted by F. Gaubil, that at leaſt 120 years before Chriſt, the Chineſe had determined by obſervations the number and extent of their conſtellations as they now ſtand; the ſituation of the fixed ſtars with reſpect to the equinoxial and ſolſticial points; and the obliquity of the ecliptic; with the theory of eclipſes: and that they were, long before that, acquainted with the true length of the ſolar year, the method of obſerving meridian altitudes of the ſun by the ſhadow of a gnomon, and of deducing from thence his declination, and the height of the pole. The ſame miſſionary alſo ſays, that the Chineſe have yet remaining ſome books of aſtronomy, which were written about 200 years before Chriſt; from which it appears, that the Chineſe had known the daily motion of the ſun and moon, and the times of the revolutions of the planets, many years before that period. Du Halde informs us, that Tcheou-cong, the moſt ſkilful aſtronomer that ever China produced, lived more than a thouſand years before Chriſt; that he paſſed whole nights in obſerving the celeſtial bodies, and arranging them into conſtellations, &c. At preſent however, the ſtate of aſtronomy is but very low in that country, although it be cultivated at Peking, by public authority, in the ſame manner as in moſt of the capital cities of Europe.

The inhabitants of Japan, of Siam, and of the Mogul's empire, have alſo been acquainted with aſtronomy from time immemorial; and the celebrated obſervatory at Benares, is a monument both of the ingenuity of the people, and of their ſkill in that ſcience. Indeed, according to Porphyry, aſtronomy muſt have been of very ancient ſtanding in the eaſt. He informs us that, when Babylon was taken by Alexander, there were brought from thence celeſtial obſervations for the ſpace of 1903 years; which therefore muſt have commenced within 115 years after the flood, or within fifteen years after the building of Babel. Epigenes, according to Pliny, affirmed that the Babylonians had obſervations of 720 years engraven on bricks. Again, Achilles Tatius aſcribes the invention of aſtronomy to the Egyptians; and adds, that their knowledge of that ſcience was engraven on pillars, and by that means tranſmitted to poſterity.

M. Bailly, in his elaborate Hiſtory of ancient and modern Aſtronomy, endeavours to trace the origin of this ſcience among the Chaldeans, Egyptians, Perſians, Indians, and Chineſe, to a very early period. And thence he maintains, that it was cultivated in Egypt and Chaldea 2800 years before Chriſt; in Perſia, 3209; in India, 3101; and in China, 2952 years before that æra. He alſo apprehends, that aſtronomy had been ſtudied even long before this diſtant period, and that we are only to date its revival from thence.

In inveſtigating the antiquity and progreſs of aſtronomy among the Indians, M. Bailly examines and compares four different ſets of aſtronomical tables of the Indian philoſophers, namely, that of the Siameſe, explained by M. Caſſani in 1689; that brought from India by M. le Gentil of the Academy of Sciences; and two other manuſcript tables, found among the papers of the late M. de Liſle; all of which he found to accord together, and all referring to the meridian of Benares, above-mentioned. It appears that the fundamental epoch of the Indian aſtronomy, is a conjunction of the ſun and moon, which took place at the amazing diſtance of 3102 years before Chriſt; and M. Bailly informs us that, by our moſt accurate aſtronomical tables, ſuch a conjunction did really happen at that time. He further obſerves that, at preſent, the Indians calculate eclipſes by the mean motions of the ſun and moon obſerved 5000 years ſince; and that their accuracy, with regard to the ſolar motion, far exceeds that of the beſt Grecian aſtronomers. They had alſo ſettled the lunar motions by computing the ſpace through which that luminary had paſſed in 1,600,984 days, or a little more than 4383 years. M. Bailly alſo informs us, that they make uſe of the cycle of nineteen years, the ſame as that aſcribed by the Greeks to Meton; that their theory of the planets is much better than Ptolemy's, as they do not ſuppoſe the earth in the centre of the celeſtial motions, and believe that Venus and Mercury move round the ſun; and that their aſtronomy agrees with the moſt modern diſcoveries as to the decreaſe of the obliquity of the ecliptic, the acceleration of the motion of the equinoctial points, &c. In the 2d vol. of the Tranſactions of the Royal Society of Edinburgh is alſo a learned and ingenious diſſertation on the aſtronomy of the Brahmins of India, by profeſſor Playfair; in which the great accuracy and high antiquity of the ſcience, among them, is reduced to the greateſt probability. It hence appears that their tables and rules of computation have peculiar reference to an epoch, and to obſervations, three or four thouſand years before Chriſt; and many other inſtances are there adduced, of their critical knowledge in the other mathematical ſciences, employed in their precepts and calculations.

Aſtronomy, it ſeems, was not unknown to the Americans; though in their diviſion of time, they made uſe only of the ſolar and not of the lunar motions. And that the Mexicans, in particular, had a ſtrange predilection for the number thirteen, by means of which they regulated almoſt every thing: their ſhorteſt periods conſiſted of thirteen days; their cycle of thirteen months, each containing twenty days; and their century of four periods, of thirteen years each; and this exceſſive veneration for the number thirteen, aroſe, according to Siguenza, from its being the number of their greater gods. And it is very remarkable, that the Abbé Clavigero aſſerts it a fact, that, having diſcovered the exceſs of a few hours in the ſolar above the lunar year, they made uſe of intercalary days, to bring them to an equality, as eſtabliſhed by Julius Cæſar in the Roman calendar; but with this difference, that, inſtead of one day every four years, they interpoſed thirteen days every fifty-two years, which produces the ſame effect.

Moſt authors, however, fix the origin of aſtronomy and aſtrology, either in Chaldea or in Egypt; and accordingly among the ancients we find the word Chaldean often uſed for aſtronomer, or, which was the ſame thing, aſtrologer. Indeed both of theſe nations pretended to a very high antiquity, and claimed the honour of producing the firſt cultivators of this ſcience. The Chaldeans boaſted of their temple or tower of Belus, and of Zoroaſter, whom they placed 5000 years before the deſtruction of Troy; while the Egyptians boaſted of their colleges of prieſts, where aſtronomy was taught, and of the monument of Oſymandyas, in which, it is ſaid, there was a golden circle of 365 cubits in circumference, and one cubit thick, divided into 365 equal parts according to the days of the year, &c. From Chaldea and Egypt, aſtronomy paſſed into Phœnicia, and this people applied it to the purpoſes of navigation, ſteering their courſe by the north polar ſtar; and hence they became maſters of the ſea, and of almoſt all the commerce in the world.

The Greeks, it is probable, derived their aſtronomical knowledge chiefly from the Egyptians and Phœnicians, by means of ſeveral of their countrymen who viſited thoſe nations for the purpoſe of learning the different ſciences.

By what we can collect from the hiſtorical fragments of thoſe early ages, it appears, that though mankind were unacquainted with the true principles of aſtronomy, they had nevertheleſs formed many rational concluſions with reſpect to the celeſtial phenomena. Thoſe even who ſurveyed the heavens with the moſt careleſs attention, neceſſarily diſtinguiſhed in them three different ſorts of objects; the Sun, the Moon, and the Stars. Theſe laſt, appearing always in the ſame ſituation, and at the ſame diſtance with regard to one another, and ſeeming to revolve every day round the earth in parallel circles, which widened gradually from the poles to the equator, were naturally thought to have all the marks of being fixed, like ſo many gems, in the concave ſide of the firmament, and of being carried round by the diurnal revolutions of that ſolid body: for the azure ſky, in which the ſtars ſeem to float, was readily apprehended, upon account of the uniformity of their apparent motions, to be a ſolid body, the roof or outer wall of the univerſe, to whoſe inſide all thoſe little ſparkling objects were attached. From this original idea of aſtronomy, we ſhall trace its progreſs to the preſent time, in the language and order of the much-admired poſthumous work of Dr. Adam Smith.

The Sun and Moon, often changing their diſtance and ſituation, in regard to the heavenly bodies, could not be apprehended, even by the earlieſt aſtronomers, to be attached to the ſame ſphere with them. They aſſigned, therefore, to each of them, a ſphere of its own; that is, ſuppoſed each of them to be attached to the concave ſide of a ſolid and tranſparent body, by whoſe revolutions they were carried round the earth. There was not indeed, in this caſe, the ſame ground for the ſuppoſition of ſuch a ſphere as in that of the fixed ſtars; for neither the Sun nor the Moon appears to keep always at the ſame diſtance with regard to any one of the other heavenly bodies. But, as the motion of the ſtars had been accounted for by an hypotheſis of this kind, it rendered the theory of the heavens more uniform, to account for that of the Sun and Moon in the ſame manner. The ſphere of the Sun they placed above that of the Moon; as the Moon was evidently ſeen in eclipſes to paſs betwixt the Sun and the Earth. Each of them was ſuppoſed to revolve by a motion of its own, and at the ſame time to be affected by the motion of the fixed ſtars. Thus, the Sun was carried round from eaſt to weſt by the communicated movement of this outer ſphere, which produced his diurnal revolutions, and the viciſſitudes of day and night; but at the ſame time he had a motion of his own, contrary to this, from weſt to eaſt, which occaſioned his annual revolution, and the continual ſhifting of his place with regard to the fixed ſtars. This motion was more eaſy, they thought, when carried on edgeways, and not in direct oppoſition to the motion of the outer ſphere, which occaſioned the inclination of the axis of the ſphere of the Sun to that of the ſphere of the fixed ſtars; this again produced the obliquity of the ecliptic, and the conſequent changes of the ſeaſons. The Moon, being placed below the ſphere of the Sun, had both a ſhorter courſe to finiſh, and was leſs obſtructed by the contrary movement of the ſphere of the fixed ſtars, from which ſhe was farther removed. She finiſhed her period, therefore, in a ſhorter time, and required but a month, inſtead of a year, to complete it.

The ſtars, when more attentively ſurveyed, were ſome of them obſerved to be leſs conſtant and uniform in their motions than the reſt, and to change their ſituations with regard to the other heavenly bodies; moving generally eaſtwards, yet appearing ſometimes to ſtand ſtill, and ſometimes even to move weſtwards. Theſe, to the number of five, were diſtinguiſhed by the name of planets, or wandering ſtars, and marked with the particular appellations of Saturn, Jupiter, Mars, Venus, and Mercury. As, like the Sun and Moon, they ſeem to accompany the motion of the fixed ſtars from eaſt to weſt, but at the ſame time to have a motion of their own, which is generally from weſt to eaſt; they were each of them, as well as thoſe two great lamps of heaven, apprehended to be attached to the inſide of a ſolid concave and tranſparent ſphere, which had a revolution of its own, that was almoſt directly contrary to the revolution of the outer heaven, but which, at the ſame time, was hurried along by the ſuperior violence and rapidity of this laſt.

This is the ſyſtem of concentric ſpheres, the firſt regular ſyſtem of aſtronomy which the world beheld, as it was taught in the Italian ſchool, before Ariſtotle and his two cotemporary philoſophers, Eudoxus and Callippus, had given it all the perfection which it is capable of receiving. Though rude and inartificial, it is capable of connecting together, in the imagination, the grandeſt and the moſt ſeemingly disjointed appearances in the heavens. The motions of the moſt remarkable objects in the celeſtial regions, the Sun, the Moon, and the fixed ſtars, are ſufficiently connected with one another by this hypotheſis. The eclipſes of theſe two great luminaries are, though not ſo eaſily calculated, as eaſily explained, upon this ancient, as upon the modern, ſyſtem. When theſe early philoſophers explained to their diſciples the very ſimple cauſes of thoſe dreadful phenomena, it was under the ſeal of the moſt ſacred ſecrecy, that they might avoid the fury of the people, and not incur the imputation of impiety, when they thus took from the gods the direction of thoſe events, which were apprehended to be the moſt terrible tokens of their impending vengeance. The obliquity of the ecliptic, the conſequent changes of the ſeaſons, the viciſſitudes of day and night, and the different lengths of both days and nights, in the different ſeaſons, correſpond too, pretty exactly, with this ancient doctrine. And if there had been no other bodies diſcoverable in the heavens beſides the Sun, the Moon, and the fixed ſtars, this old hypotheſis might have ſtood the examination of all ages, and have gone down triumphant to the remoteſt poſterity.

If it gained the belief of mankind by its plauſibility, it attracted their wonder and admiration; ſentiments that ſtill more confirmed their belief, by the novelty and beauty of that view of nature which it preſented to the imagination. Before this ſyſtem was taught in the world, the earth was regarded as, what it appears to the eye, a vaſt rough and irregular plain, the baſis and foundation of the univerſe, ſurrounded on all ſides by the ocean, and whoſe roots extended themſelves through the whole of that infinite depth which is below it. The ſky was conſidered as a ſolid hemiſphere, which covered the earth, and united with the ocean at the extremity of the horizon. The Sun, the Moon, and all the heavenly bodies, roſe out of the eaſtern, climbed up the convex ſide of the heavens, and deſcended again into the weſtern ocean, and from thence, by ſome ſubterraneous paſſages, returned to their firſt chambers in the eaſt. Nor was this notion confined to the people, or to the poets who painted the opinions of the people: it was held by Xenophanes, the founder of the Eleatic philoſophy, after that of the Ionian and Italian ſchools, the earlieſt that appeared in Greece. Thales of Miletus too, who, according to Ariſtotle, repreſented the Earth as floating upon an immenſe ocean of water, may have been nearly of the ſame opinion; notwithſtanding what we are told by Plutarch and Apuleius concerning his aſtronomical diſcoveries, all of which muſt plainly have been of a much later date. To thoſe who had no other idea of nature, beſides what they derived from ſo confuſed an account of things, how agreeable muſt that ſyſtem have appeared, which repreſented the Earth as diſtinguiſhed into land and water, ſelf-balanced and ſuſpended in the centre of the univerſe, ſurrounded by the elements of air and ether, and covered by eight poliſhed and cryſtalline ſpheres, each of which was diſtinguiſhed by one or more beautiful and luminous bodies, and all of which revolved round their common centre, by varied, but by equable and proportionable, motions. It ſeems to have been the beauty of this ſyſtem that gave Plato the notion of ſomething like an harmonic proportion, to be diſcovered in the motions and diſtances of the heavenly bodies; and which ſuggeſted to the earlier Pythagoreans, the celebrated fancy of the muſic of the ſpheres: a wild and romantic idea, yet ſuch as does not ill correſpond with that admiration, which ſo beautiful a ſyſtem, recommended too by the graces of novelty, is apt to inſpire.

Whatever are the defects which this account of things labours under, they are ſuch, as to the firſt obſervers of the heavens could not readily occur. If all the motions of the five planets cannot, the greater part of them may, be eaſily connected by it; they and all their motions are the leaſt remarkable objects in the heavens; the greater part of mankind take no notice of them at all; and a ſyſtem, whoſe only defect lies in the account which it gives of them, cannot thereby be much diſgraced in their opinion. It was, however, to remedy thoſe defects, that Eudoxus, the friend and auditor of Plato, found it neceſſary to increaſe the number of the celeſtial ſpheres. Each planet is ſometimes obſerved to advance forward in that eaſtward courſe which is peculiar to itſelf, ſometimes to retire backwards, and ſometimes again to ſtand ſtill. To ſuppoſe that the ſphere of the planet ſhould by its own motion, if one may ſay ſo, ſometimes roll forwards, ſometimes roll backwards, and ſometimes do neither the one nor the other, is contrary to all the natural propenſities of the imagination, which accompanies with eaſe and delight any regular and orderly motion, but feels itſelf perpetually ſtopped and interrupted, when it endeavours to attend to one ſo deſultory and uncertain. It would purſue, naturally and of its own accord, the direct or progreſſive movement of the ſphere, but is every now and then ſhocked, and turned violently out of its natural career, by the retrograde and ſtationary appearances of the planet, betwixt which and its more uſual motion, the fancy feels a want of connection, a gap or interval, which it cannot fill up, but by ſuppoſing ſome chain of intermediate events to join them. The hypotheſis of a number of other ſpheres revolving in the heavens, beſides thoſe in which the luminous bodies themſelves were infixed, was the chain with which Eudoxus endeavoured to ſupply it. He beſtowed four of theſe ſpheres upon each of the five planets; one in which the luminous body itſelf revolved, and three others above it. Each of theſe had a regular and conſtant, but a peculiar movement of its own, which it communicated to what was properly the ſphere of the planet, and thus occaſioned that diverſity of motions obſervable in thoſe bodies. One of theſe ſpheres, for example, had an oſcillatory motion, like the circular pendulum of a watch. As when you turn round a watch, like a ſphere upon its axis, the pendulum will, while turned round along with it, ſtill continue to oſcillate, and communicate to whatever body is comprehended within it, both its own oſcillations and the circular motion of the watch; ſo this oſcillating ſphere, being itſelf turned round by the motion of the ſphere above it, communicated to the ſphere below it, that circular as well as its own oſcillatory motion; produced by the one, the daily revolutions; by the other, the direct, ſtationary, and retrograde, appearances of the planet, which derived from a third ſphere that revolution by which it performed its annual period. The motions of all theſe ſpheres were in themſelves conſtant and equable, ſuch as the imagination could eaſily attend to and purſue, and which connected together that otherwiſe incoherent diverſity of movements obſervable in the ſphere of the planet. The motions of the Sun and Moon being more regular than thoſe of the five planets, by aſſigning three ſpheres to each of them, Eudoxus imagined he could connect together all the diverſity of movements diſcoverable in either. The motion of the fixed ſtars being perfectly regular, one ſphere he judged ſufficient for them all. So that, according to this account, the whole number of celeſtial ſpheres amounted to twenty-ſeven. Callippus, though ſomewhat younger, the cotemporary of Eudoxus, found that even this number was not enough to connect together the vaſt variety of movements which he diſcovered in thoſe bodies, and therefore increaſed it to thirty-four. Ariſtotle, upon a yet more attentive obſervation, found that even all theſe ſpheres would not be ſufficient, and therefore added twenty-two more, which increaſed their number to fifty-ſix. Later obſervers diſcovered ſtill new motions, and new inequalities, in the heavens. New ſpheres were therefore ſtill to be added to the ſyſtem, and ſome of them to be placed even above that of the fixed ſtars. So that in the ſixteenth century, when Fracoſtorio, ſmitten with the eloquence of Plato and Ariſtotle, and with the regularity and harmony of their ſyſtem, in itſelf perfectly beautiful, though it correſponds but inaccurately with the phenomena, endeavoured to revive this ancient aſtronomy, which had long given place to that of Ptolemy and Hipparchus, he found it neceſſary to multiply the number of celeſtial ſpheres to ſeventy-two; neither were all theſe enough.

This ſyſtem had now become as intricate and complex as thoſe appearances themſelves, which it had been invented to render uniform and coherent. The imagination, therefore, found itſelf but little relieved from that embarraſſment, into which thoſe appearances had thrown it, by ſo perplexed an account of things. Another ſyſtem, for this reaſon, not long after the days of Ariſtotle, was invented by Apollonius, which was afterwards perfected by Hipparchus, and delivered to us by Ptolemy, the more artificial ſyſtem of eccentric ſpheres and epicycles.

In this ſyſtem, they firſt diſtinguiſhed betwixt the real and apparent motion of the heavenly bodies. Theſe, they obſerved, upon account of their immenſe diſtance, muſt neceſſarily appear to revolve in circles concentric with the globe of the Earth, and with one another: but that we cannot, therefore, be certain that they really revolve in ſuch circles, ſince, though they did not, they would ſtill have the ſame appearance. By ſuppoſing, therefore, that the Sun and the other planets revolved in circles, whoſe centres were very diſtant from the centre of the Earth; that conſequently, in the progreſs of their revolution, they muſt ſometimes approach nearer, and ſometimes recede farther from it, and muſt, therefore, to its inhabitants, appear to move faſter in the one caſe and ſlower in the other; thoſe philoſophers imagined they could account for the apparently unequal velocities of all thoſe bodies.

By ſuppoſing, that, in the ſolidity of the ſphere of each of the five planets there was formed another little ſphere, called an *epicycle*, which revolved round its own centre, at the ſame time that it was carried round the centre of the Earth by the revolution of the great ſphere, betwixt whoſe concave and convex ſides it was encloſed; in the ſame manner as we might ſuppoſe a little wheel incloſed within the outer circle of a great wheel, and which whirled about ſeveral times upon its own axis, while its centre was carried round the axis of the great wheel; they imagined they could account for the retrograde and ſtationary appearances of thoſe moſt irregular objects in the heavens. The planet, they ſuppoſed, was attached to the circumference, and whirled round the centre of this little ſphere, at the ſame time that it was carried round the Earth by the movement of the great ſphere. The revolution of this little ſphere, or epicycle, was ſuch, that the planet, when in the upper part of it, that is, when fartheſt off and leaſt ſenſible to the eye, was carried round in the ſame direction with the centre of the epicycle, or with the ſphere in which the epicycle was incloſed; but, when in the lower part, that is, when neareſt and moſt ſenſible to the eye, it was carried round in a direction contrary to that of the centre of the epicycle: in the ſame manner as every point in the upper part of the outer circle of a coach-wheel revolves forward in the ſame direction with the axis, while every point in the lower part revolves backwards in a contrary direction to the axis. The motions of the planet, therefore, ſurveyed from the Earth, appeared direct when in the upper part of the epicycle, and retrograde when in the lower. When again it either deſcended from the upper part to the lower, or aſcended from the lower to the upper, it neceſſarily appeared ſtationary.

But, though, by the eccentricity of the great ſphere, they were thus able, in ſome meaſure, to connect together the unequal velocities of the heavenly bodies, and, by the revolutions of the little ſphere, the direct, ſtationary, and retrograde, appearances of the planets, there was another difficulty that ſtill remained. Neither the Moon, nor the three ſuperior planets, appear always in the ſame part of the heavens when at their periods of moſt retarded motion, or when they are ſuppoſed to be at the greateſt diſtance from the Earth. The apogeum, therefore, or the point of the greateſt diſtance from the earth, in the ſpheres of each of thoſe bodies, muſt have a movement of its own, which may carry it ſucceſſively through all the different points of the ecliptic. They ſuppoſed, therefore, that, while the great eccentric ſphere revolved eaſtwards round its centre, its centre too revolved weſtwards in a circle of its own, round the centre of the earth, and thus carried its apogeum through all the different points of the ecliptic.

But, with all thoſe combined and perplexed circles, tho' the patrons of this ſyſtem were able to give ſome degree of uniformity to the real directions of the planets, they found it impoſſible ſo to adjuſt the velocities of thoſe ſuppoſed ſpheres to the phenomena, as that the revolution of any one of them, when ſurveyed from its own centre, ſhould appear perfectly equable and uniform. From that point, the only point in which the velocity of what moves in a circle can be truly judged of, they would ſtill appear irregular and inconſtant, and ſuch as tended to embarraſs and confound the imagination. They invented, therefore, for each of them, a new circle, called the *equalizing circle*, from whoſe centre they ſhould all appear perfectly equable; that is, they ſo adjuſted the velocities of theſe ſpheres, as that, though the revolution of each of them would appear irregular when ſurveyed from its own centre, there ſhould, however, be a point comprehended within its circumference, from whence its motions ſhould appear to cut off, in equal times, equal portions of the circle, of which that point was the centre.

Nothing can more evidently ſhew how much the repoſe and tranquillity of the imagination is the ultimate end of philoſophy, than the invention of this equalizing circle. The motions of the heavenly bodies had appeared inconſtant and irregular, both in their velocities and in their directions. They were ſuch, therefore, as tended to embarraſs and confound the imagination, whenever it attempted to trace them. The invention of eccentric ſpheres, of epicycles, and of the revolution of the centres of the eccentric ſpheres, tended to allay this confuſion, to connect together thoſe disjointed appearances, and to introduce harmony and order into the mind's conception of the movements of thoſe bodies. It did this, however, but imperfectly; it introduced uniformity and coherence into their real directions. But their velocities, when ſurveyed from the only point in which the velocity of what moves in a circle can be truly judged of, the centre of that circle ſtill remained, in ſome meaſure, inconſtant as before; and ſtill, therefore, embarraſſed the imagination. The mind found itſelf ſomewhat relieved from this embarraſſment, when it conceived, that, how irregular ſoever the motions of each of thoſe circles might appear when ſurveyed from its own centre, there was, however, in each of them, a point, from whence its revolution would appear perfectly equable and uniform, and ſuch as the imagination could eaſily follow. Thoſe philoſophers tranſported themſelves, in fancy, to the centres of theſe imaginary circles, and took pleaſure in ſurveying from thence all thoſe fantaſtical motions, arranged according to that harmony and order which it had been the end of all their reſearches to beſtow upon them. Here, at laſt, they enjoyed that tranquillity and repoſe which they had purſued through all the mazes of this intricate hypotheſis; and here they beheld this, the moſt beautiful and magnificent part of the great theatre of nature, ſo diſpoſed and conſtructed, that they could attend, with eaſe and delight, to all the revolutions and changes that occurred in it.

Thus, the ſyſtem of concentric, and that of eccentric, ſpheres, ſeem to have been the two ſyſtems of aſtronomy that had the moſt credit and reputation with that part of the ancient world who applied themſelves particularly to the ſtudy of the heavens. Cleanthes, however, and the other philoſophers of the Stoical ſect who came after him, appear to have had a ſyſtem of their own, quite different from either. But, though juſtly renowned for their ſkill in dialectic, and for the ſecurity and ſublimity of their moral doctrines, thoſe ſages ſeem never to have had any high reputation for their knowledge of the heavens; neither is the name of any one of them ever counted in the catalogue of the great aſtronomers, and ſtudious obſervers of the ſtars, among the ancients. They rejected the doctrine of the ſolid ſpheres; and maintained, that the celeſtial regions were filled with a fluid ether, of too yielding a nature to carry along with it, by any motion of its own, bodies ſo immenſely great as the Sun, Moon, and five planets. Theſe, therefore, as well as the fixed ſtars, did not derive their motion from the circumambient body, but had each of them, in itſelf, and peculiar to itſelf, a vital principle of motion, which directed it to move with its own peculiar velocity, and its own peculiar direction. It was by this internal principle, that the fixed ſtars revolved directly from eaſt to weſt in circles parallel to the equator, greater or leſs according to their diſtance or nearneſs to the poles, and with velocities ſo proportioned, that each of them finiſhed its diurnal period in the ſame time, in ſomething leſs than twenty-three hours and fifty-ſix minutes. It was by a principle of the ſame kind, that the Sun moved weſtwards, (for they allowed of no eaſtward motion in the heavens,) but with leſs velocity than the fixed ſtars, ſo as to finiſh his diurnal period in twenty-four hours, and, conſequently, to fall every day behind them by a ſpace of the heavens nearly equal to that which he paſſes over in four minutes; that is, nearly equal to a degree. This revolution of the Sun, too, was neither directly weſtwards, nor exactly circular; but, after the ſummer ſolſtice, his motion began gradually to incline a little ſouthwards, appearing in his meridian to-day farther ſouth than yeſterday, and to-morrow ſtill farther ſouth than to-day; and thus continuing every day to deſcribe a ſpiral line round the Earth, which carried him gradually farther and farther ſouthwards till he arrived at the winter ſolſtice. Here, this ſpiral line began to change its direction, and to bring him gradually, every day, farther and farther northwards, till it again reſtored him to the ſummer ſolſtice. In the ſame manner they accounted for the motion of the Moon, and that of the five planets, by ſuppoſing that each of them revolved weſtwards, but with directions and velocities that were both different from one another, and continually varying; generally, however, in ſpherical lines, ſomewhat inclined to the equator.

This ſyſtem ſeems never to have had the vogue. The ſyſtem of concentric, as well as that of eccentric, ſpheres, gives ſome ſort of reaſon, both for the conſtancy and equability of the motion of the fixed ſtars, and for the variety and uncertainty of that of the planets. Each of them beſtow ſome ſort of coherence upon thoſe apparently disjointed phenomena. But this other ſyſtem ſeems to leave them pretty much as it found them. Aſk a Stoic, Why all the fixed ſtars perform their daily revolutions in circles parallel to each other, though of very different diameters, and with velocities ſo proportioned, that they all finiſh their period at the ſame time, and through the whole courſe of it preſerve the ſame diſtance and ſituation with regard to one another? He can give no other anſwer, but that the peculiar nature, or, if one may ſay ſo, the caprice, of each ſtar directs it to move in that peculiar manner. His ſyſtem affords him no principle of connection by which he can join together, in his imagination, ſo great a number of harmonious revolutions. But either of the other two ſyſtems, by the ſuppoſition of the ſolid firmament, affords this eaſily. He is equally at a loſs to connect together the peculiarities that are obſerved in the motions of the other heavenly bodies; the ſpiral motion of them all; their alternate progreſſion from north to ſouth, and from ſouth to north; the ſometimes accelerated, and again retarded, motions of the Sun and Moon; the direct, retrograde, and ſtationary, appearances of the planets. All theſe have, in his ſyſtem, no bond of union, but remain as looſe and incoherent in the fancy as they at firſt appeared to the ſenſes, before philoſophy had attempted, by giving them a new arrangement, by placing them at different diſtances, by aſſigning to each ſome peculiar but regular principle of motion, to methodize and diſpoſe them into an order that ſhould enable the imagination to paſs as ſmoothly, and with as little embarraſſment, along them, as along the moſt regular, familiar, and coherent, appearances of nature.

Such were the ſyſtems of aſtronomy that, in the ancient world, appear to have been adopted by any conſiderable party. Of all of them, the ſyſtem of eccentric ſpheres was that which correſponded moſt exactly with the appearances of the heavens. It was not invented till after thoſe appearances had been obſerved, with ſome accuracy, for more than a century together; and it was not completely digeſted by Ptolemy till the reign of Antoninus, after a much longer courſe of obſervations. We cannot wonder, therefore, that it was adapted to a much greater number of the phenomena than either of the other two ſyſtems which had been formed before thoſe phenomena were obſerved with any degree of attention; which, therefore, could connect them together only while they were thus regarded in the groſs, but which, it could not be expected, ſhould apply to them when they came to be conſidered in the detail. From the time of Hipparchus, therefore, this ſyſtem ſeems to have been pretty generally received by all thoſe who attended particularly to the ſtudy of the heavens. That aſtronomer firſt made a catalogue of the fixed ſtars; calculated, for ſix hundred years, the revolutions of the Sun, Moon, and five planets; marked the places in the heavens in which, during all that period, each of thoſe bodies ſhould appear; aſcertained the times of the eclipſes of the Sun and Moon, and the particular places of the Earth in which they ſhould be viſible. His calculations were founded upon this ſyſtem; and as the events correſponded to his predictions, with a degree of accuracy which, though inferior to what aſtronomy has ſince arrived at, was greatly ſuperior to any thing which the world had then known, they aſcertained, to all aſtronomers and mathematicians, the preference of his ſyſtem above all thoſe which had been current before it.

It was, however, to aſtronomers and mathematicians only that they aſcertained this; for, notwithſtanding the evident ſuperiority of this ſyſtem to all thoſe with which the world was then acquainted, it was never adopted by any one ſect of philoſophers. Indeed philoſophers, long before the days of Hipparchus, ſeem to have abandoned the ſtudy of nature, to employ themſelves chiefly in ethical, rhetorical, and dialectical, queſtions. Each party of them had, perhaps, by this time, completed their peculiar ſyſtem or theory of the univerſe, and no human conſideration could then have induced them to give up any part of it. That ſupercilious and ignorant contempt with which they regarded all mathematicians, among whom they counted aſtronomers, ſeems even to have hindered them from enquiring ſo far into their doctrines as to know what opinions they held. Neither Cicero nor Seneca, who have ſo often occaſion to mention the ancient ſyſtems of aſtronomy, take any notice of that of Hipparchus. His name is not to be found in the writings of Seneca. It is mentioned but once in thoſe of Cicero, in a letter to Atticus, but without any note of approbation as a geographer, and not as an aſtronomer. Plutarch, when he counts up, in his ſecond book concerning the Opinions of Philoſophers, all the ancient ſyſtems of aſtronomy, never mentions this, the only tolerable one which was known in his time. Thoſe three authors, it ſeems, converſed only with the writings of philoſophers. The elder Pliny indeed, a man whoſe curioſity extended itſelf equally to every part of learning, deſcribes the ſyſtem of Hipparchus, and never mentions its author without ſome note of that high admiration which he had ſo juſtly conceived for his merit. Such profound ignorance in theſe profeſſed inſtructors of mankind, with regard to ſo important a part of the learning of their own times, is indeed very extraordinary.

Syſtems in many reſpects reſemble machines. A machine is a little ſyſtem created to perform, as well as to connect together, in reality, thoſe different movements and effects which the artiſt has occaſion for. A ſyſtem is an imaginary machine invented to connect together in the fancy thoſe different movements and effects which are already in reality performed. The machines that are firſt invented to perform any particular movement are always the moſt complex, and ſucceeding artiſts generally diſcover that, with fewer wheels, with fewer principles of motion, than had originally been employed, the ſame effects may be more eaſily produced. The firſt ſyſtems, in the ſame manner, are always the moſt complex, and a particular connecting chain or principle is generally thought neceſſary to unite every two ſeemingly disjointed appearances: but it often happens, that one great connecting principle is afterwards found to be ſufficient to bind together all the diſcordant phenomena that occur in a whole ſpecies of things. How many wheels are neceſſary to carry on the movements of this imaginary machine, the ſyſtem of eccentric ſpheres? The weſtward diurnal revolution of the firmament, whoſe rapidity carries all the other heavenly bodies along with it, requires one. The periodical eaſtward revolutions of the Sun, Moon, and five planets, require, for each of thoſe bodies, another. Their differently accelerated and retarded motions require, that thoſe wheels or circles ſhould neither be concentric with the firmament, nor with one another; which, more than any thing, ſeems to diſturb the harmony of the univerſe. The retrograde and ſtationary appearance of the five planets, as well as the extreme inconſtancy of the Moon's motion, require, for each of them, an epicycle, (another little wheel attached to the circumference of the great wheel,) which ſtill more interrupts the uniformity of the ſyſtem. The motion of the apogeum of each of thoſe bodies requires, in each of them, ſtill another wheel, to carry the centres of their eccentric ſpheres round the centre of the Earth. And thus this imaginary machine, tho' perhaps more ſimple, and certainly better adapted to the phenomena, than the fifty-ſix planetary ſpheres of Ariſtotle, was ſtill too intricate and complex for the imagination to reſt in it with complete tranquillity and ſatisfaction.

It maintained its authority, however, without any diminution of reputation, as long as ſcience was at all regarded in the ancient world. After the reign of Antoninus, and indeed after the age of Hipparchus, who lived almoſt 300 years before Antoninus, the great reputation which the earlier philoſophers had acquired ſo impoſed upon the imaginations of mankind, that they ſeem to have deſpaired of ever equalling their renown. All human wiſdom, they ſuppoſed, was comprehended in the writings of thoſe elder ſages. To abridge, to explain, and to comment upon, them, and thus ſhew themſelves, at leaſt, capable of underſtanding ſome of their ſublime myſteries, became now the only probable road to reputation. Proclus and Theon wrote commentaries upon the Syſtem of Ptolemy; but, to have attempted to invent a new one, would then have been regarded, not only as preſumption, but as impiety to the memory of their ſo much revered predeceſſors.

The ruin of the empire of the Romans, and, along with it, the ſubverſion of all law and order, which happened a few centuries afterwards, produced the entire neglect of that ſtudy of the connecting principles of nature, to which leiſure and ſecurity can alone give occaſion. After the fall of thoſe great conquerors and civilizers of mankind, the empire of the khalifs ſeems to have been the firſt ſtate under which the world enjoyed that degree of tranquillity which the cultivation of the ſciences requires. It was under the protection of thoſe generous and magnificent princes, that the ancient philoſophy and aſtronomy of the Greeks were reſtored and eſtabliſhed in the eaſt; that tranquillity, which their mild, juſt, and religious, government diffuſed over their vaſt empire, revived the curioſity of mankind, to inquire into the connecting principles of nature. The fame of the Greek and Roman learning, which was then recent in the memories of men, made them deſire to know, concerning theſe abſtruſe ſubjects, what were the doctrines of the ſo much renowned ſages of thoſe two nations.

They tranſlated, therefore, into the Arabian language, and ſtudied, with great eagerneſs, the works of many Greek philoſophers, particularly of Ariſtotle, Ptolemy, Hippocrates, and Galen. The ſuperiority which they eaſily diſcovered in them, above the rude eſſays which their own nation had yet had time to produce, and which were ſuch, we may ſuppoſe, as ariſe every where in the firſt infancy of ſcience, neceſſarily determined them to embrace their ſyſtems, particularly that of aſtronomy: neither were they ever afterwards able to throw off their authority. For, though the munificence of the Abaſſides, the ſecond race of khalifs, is ſaid to have ſupplied the Arabian aſtronomers with larger and better inſtruments than any that were known to Ptolemy and Hipparchus, the ſtudy of the ſciences ſeems, in that mighty empire, to have been either of too ſhort or too interrupted a continuance, to allow them to make any conſiderable correction in the doctrines of thoſe old mathematicians. The imaginations of mankind had not yet got time to grow ſo familiar with the ancient ſyſtems, as to regard them without ſome degree of that aſtoniſhment which their grandeur and novelty excited; a novelty of a peculiar kind, which had at once the grace of what was new, and the authority of what was ancient. They were ſtill, therefore, too much enſlaved to thoſe ſyſtems, to dare to depart from them, when thoſe confuſions which ſhook, and at laſt overturned, the peaceful throne of the khaliffs, baniſhed the ſtudy of the ſciences from that empire. They had, however, before this, made ſome conſiderable improvements: they had meaſured the obliquity of the ecliptic with more accuracy than had been done before. The tables of Ptolemy had, by the length of time, and by the inaccuracy of the obſervations upon which they were founded, become altogether wide of what was the real ſituation of the heavenly bodies, as he himſelf indeed had foretold they would do. It became neceſſary, therefore, to form new ones, which was accordingly executed by the orders of the khalif Almamon, under whom was alſo made the firſt menſuration of the Earth that we know of, after the commencement of the Chriſtian era, by two Arabian aſtronomers, who, in the plain of Sennaar, meaſured two degrees of its circumference.

The victorious arms of the Saracens carried into Spain the learning, as well as the gallantry, of the eaſt; and along with it the tables of Almamon, and the Arabian tranſlations of Ptolemy and Ariſtotle; and thus Europe received a ſecond time, from Babylon, the rudiments of the ſcience of the heavens. The writings of Ptolemy were tranſlated from Arabic into Latin; and the Peripatetic philoſophy was ſtudied in Averroes and Avicenna with as much eagerneſs, and with as much ſubmiſſion to its doctrines in the weſt, as it had been in the eaſt.

The doctrine of the ſolid ſpheres had originally been invented in order to give a phyſical account of the revolutions of the heavenly bodies, according to the ſyſtem of concentric circles, to which that doctrine was very eaſily accommodated. Thoſe mathematicians who invented the doctrine of eccentric circles and epicycles, contented themſelves with ſhewing how, by ſuppoſing the heavenly bodies to revolve in ſuch orbits, the phenomena might be connected together, and ſome ſort of uniformity and coherence he beſtowed upon their real motions. The phyſical cauſes of thoſe motions they left to the conſideration of the philoſophers; though, as appears from ſome paſſages of Ptolemy, they had ſome general apprehenſion, that they were to be explained by a like hypotheſis. But, though the ſyſtem of Hipparchus was adopted by all aſtronomers and mathematicians, it never was received, as we have already obſerved, by any one ſect of philoſophers among the ancients, No attempt, therefore, ſeems to have been made amongſt them, to accommodate to it any ſuch hypotheſis.

The ſchoolmen, who received at once from the Arabians the philoſophy of Ariſtotle and the aſtronomy of

Hipparchus, were neceſſarily obliged to reconcile them to one another, and to connect together the revolutions of the eccentric circles and epicycles of the one, by the ſolid ſpheres of the other. Many different attempts of this kind were made by many different philoſophers: but, of them all, that of Purbach, in the fifteenth century, was the happieſt and the moſt eſteemed. Though his hypotheſis is the ſimpleſt of any of them, it would be in vain to deſcribe it; for, if the ſyſtem of eccentric circles and epicycles was before too perplexed and intricate for the imagination to reſt in with tranquillity and ſatisfaction, it became much more ſo, when this addition had been made to it. The world, juſtly indeed, applauded the ingenuity of that philoſopher, who could unite, ſo happily, two ſuch ſeemingly inconſiſtent ſyſtems. His labours, however, ſeem rather to have increaſed than to have diminiſhed the cauſes of that diſſatisfaction, which the learned began to feel with the ſyſtem of Ptolemy. He, as well as all thoſe who had worked upon the ſame plan before him, by rendering this account of things more complex, rendered it ſtill more embarraſſing than it had been before. Neither was the complexneſs of this ſyſtem the ſole cauſe of the diſſatisfaction, which the world in general began, ſoon after the days of Purbach, to expreſs for it. The tables of Ptolemy having, upon account of the inaccuracy of the obſervations on which they were founded, become altogether wide of the real ſituation of the heavenly bodies, thoſe of Almamon, in the ninth century, were, upon the ſame hypotheſis, compoſed to correct their deviations. Theſe again, a few ages afterwards, became, for the ſame reaſon, equally uſeleſs. In the thirteenth century, Alphonſus, the philoſophical king of Caſtile, found it neceſſary to give orders for the compoſition of thoſe tables which bear his name. It is he, who is ſo well known for the whimſical impiety of uſing to ſay, that, had he been conſulted at the creation of the univerſe, he could have given better advice; an apophthegm which is ſuppoſed to have proceeded from his diſlike to the intricate ſyſtem of Ptolemy. In the fifteenth century, the deviation of the Alphonſine tables began to be as ſenſible as thoſe of Ptolemy and Almamon had been before. It appeared evident, therefore, that, though the ſyſtem of Ptolemy might, in the main, be true, certain corrections were neceſſary to be made in it before it could be brought to correſpond with exact preciſion to the phenomena. For the revolution of his eccentric circles and epicycles, ſuppoſing them to exiſt, could not, it was evident, be preciſely ſuch as he repreſented them; ſince the revolutions of the heavenly bodies deviated, in a ſhort time, ſo widely from what the moſt exact calculations, that were founded upon his hypotheſis, repreſented them. It had plainly, therefore, become neceſſary to correct, by more accurate obſervations, both the velocities and directions of all the wheels and circles of which his hypotheſis is compoſed. This, accordingly, was begun by Purbach, and carried on by John Muller, commonly called Regiomontanus, the diſciple, the continuator, and the perfecter, of the ſyſtem of Purbach; and one, whoſe untimely death, amidſt innumerable projects for the recovery of old, and the invention and advancement of new, ſciences, is, even at this day, to be regretted.

When once the world have been convinced that an eſtabliſhed ſyſtem ought to be corrected, it is not very difficult to perſuade them that it ſhould be deſtroyed. Not long, therefore, after the death of Regiomontanus, Copernicus began to meditate a new ſyſtem, which ſhould connect together the celeſtial appearances, in a more ſimple as well as a more accurate manner than that of Ptolemy. The confuſion, in which the old hypotheſis repreſented the motions of the heavenly bodies, was, he tells us, what firſt ſuggeſted to him the deſign of forming a new ſyſtem, that theſe, the nobleſt works of nature, might no longer appear devoid of that harmony and proportion which diſcover themſelves in her meaneſt productions. What moſt of all diſſatisfied him was, the notion of the equalizing circle, which, by repreſenting the revolutions of the celeſtial ſpheres, as equable only, when ſurveyed from a point that was different from their centres, introduced a real inequality into their motions; contrary to that moſt natural, and indeed fundamental, idea, with which all the authors of aſtronomical ſyſtems, Plato, Eudoxus, Ariſtotle, even Hipparchus and Ptolemy themſelves, had hitherto ſet out, that the real motions of ſuch beautiful and divine objects muſt neceſſarily be perfectly regular, and go on in a manner as agreeable to the imagination as the objects themſelves are to the ſenſes. He began to conſider, therefore, whether, by ſuppoſing the heavenly bodies to be arranged in a different order from that in which Ariſtotle and Hipparchus had placed them, this ſo much ſought for uniformity might not be beſtowed upon their motions. To diſcover this arrangement, he examined all the obſcure traditions delivered down to us, concerning every other hypotheſis which the ancients had invented for the ſame purpoſe. He found, in Plutarch, that ſome old Pythagoreans had repreſented the Earth as revolving in the centre of the univerſe, like a wheel round its own axis; and that others, of the ſame ſect, had removed it from the centre, and repreſented it as revolving in the ecliptic like a ſtar round the central fire. By this central fire, he ſuppoſed they meant the Sun; and, though in this he was very widely miſtaken, it was, it ſeems, upon this interpretation that he began to conſider how ſuch an hypotheſis might be made to correſpond to the appearances. The ſuppoſed authority of thoſe old philoſophers, if it did not originally ſuggeſt to him his ſyſtem, ſeems, at leaſt, to have confirmed him in an opinion, which it is not improbable that he had before-hand other reaſons for embracing, notwithſtanding what he himſelf would affirm to the contrary.

It then occurred to him, that, if the Earth was ſuppoſed to revolve every day round its axis, from weſt to eaſt, all the heavenly bodies would appear to revolve, in a contrary direction, from eaſt to weſt. The diurnal revolution of the heavens, upon this hypotheſis, might be only apparent; the firmament, which has no other ſenſible motion, might be perfectly at reſt; while the Sun, the Moon, and the five planets, might have no other movement beſide that eaſtward revolution, which is peculiar to themſelves. That, by ſuppoſing the Earth to revolve with the planets, round the Sun, in an orbit, which comprehended within it the orbits of Venus and Mercury, but was comprehended within thoſe of Mars, Jupiter, and Saturn, he could, without the embarraſſment of epicycles, connect together the apparent annual revolutions of the Sun, and the direct, retrograde, and ſtationary, appearances of the planets: that, while the Earth really revolved round the Sun on one ſide of the heavens, the Sun would appear to revolve round the Earth on the other; that, while ſhe really advanced in her annual courſe, he would appear to advance eaſtward in that movement which is peculiar to himſelf. That, by ſuppoſing the axis of the Earth to be always parallel to itſelf, not to be quite perpendicular, but ſomewhat inclined to the plane of her orbit, and conſequently to preſent to the Sun, the one pole when on the one ſide of him, and the other when on the other, he would account for the obliquity of the ecliptic; the Sun's ſeemingly alternate progreſſion from north to ſouth, and from ſouth to north, the conſequent change of the ſeaſons, and different lengths of days and nights in the different ſeaſons.

If this new hypotheſis thus connected together all theſe appearances as happily as that of Ptolemy, there were others which it connected together much better. The three ſuperior planets, when nearly in conjunction with the Sun, appear always at the greateſt diſtance from the Earth, are ſmalleſt, and leaſt ſenſible to the eye, and ſeem to revolve forward in their direct motion with the greateſt rapidity. On the contrary, when in oppoſition to the Sun, that is, when in their meridian about midnight, they appear neareſt the Earth, are largeſt, and moſt ſenſible to the eye, and ſeem to revolve backwards in their retrograde motion. To explain theſe appearances, the ſyſtem of Ptolemy ſuppoſed each of theſe planets to be at the upper part of their ſeveral epicycles, in the one caſe; and at the lower, in the other. But it afforded no ſatisfactory principle of connection, which could lead the mind eaſily to conceive how the epicycles of thoſe planets, whoſe ſpheres were ſo diſtant from the ſphere of the Sun, ſhould thus, if one may ſay ſo, keep time to his motion. The ſyſtem of Copernicus afforded this eaſily, and like a more ſimple machine, without the aſſiſtance of epicycles, connected together, by fewer movements, the complex appearances of the heavens. When the ſuperior planets appear nearly in conjunction with the Sun, they are then in the ſide of their orbits, which is almoſt oppoſite to, and moſt diſtant from, the Earth, and therefore appear ſmalleſt, and leaſt ſenſible to the eye. But, as they then revolve in a direction which is almoſt contrary to that of the Earth, they appear to advance forward with double velocity; as a ſhip, that ſails in a contrary direction to another, appears from that other to ſail both with its own velocity and the velocity of that from which it is ſeen. On the contrary, when thoſe planets are in oppoſition to to the Sun, they are on the ſame ſide of the Sun with the Earth, are neareſt it, moſt ſenſible to the eye, and revolve in the ſame direction with it; but, as their revolutions round the Sun are ſlower than that of the Earth, they are neceſſarily left behind by it, and therefore ſeem to revolve backwards; as a ſhip which ſails ſlower than another, tho' it ſails in the ſame direction, appears from that other to ſail backwards. After the ſame manner, by the ſame annual revolution of the Earth, he connected together the direct and retrograde motions of the two inferior planets, as well as the ſtationary appearances of all the five.

There are ſome other particular phenomena of the two inferior planets, which correſpond ſtill better to this ſyſtem, and ſtill worſe to that of Ptolemy. Venus and Mercury ſeem to attend conſtantly upon the motion of the Sun, appearing, ſometimes on the one ſide, and ſometimes on the other, of that great luminary; Mercury being almoſt always buried in its rays, and Venus never receding above forty-eight degrees from him, contrary to what is obſerved in the other three planets, which are often ſeen in the oppoſite ſide of the heavens, at the greateſt poſſible diſtance from the Sun. The ſyſtem of Ptolemy accounted for this, by ſuppoſing that the centres of the epicycles of theſe two planets were always in the ſame line with thoſe of the Sun and the Earth; that they appeared therefore in conjunction with the Sun when either in the upper or lower part of their epicycles, and at the greateſt diſtance from him when in the ſides of them. It aſſigned, however, no reaſon why the epicycles of theſe two planets ſhould obſerve ſo different a rule from that which takes place in thoſe of the other three, nor for the enormous epicycle of Venus, whoſe ſides muſt have been forty-eight degrees diſtant from the Sun, while its centre was in conjunction with him, and whoſe diameter muſt have covered more than a quadrant of the great circle. But how eaſily all theſe appearances coincide with the hypotheſis, which repreſents thoſe two inferior planets revolving round the Sun in orbits comprehended within the orbit of the Earth, is too obvious to require an explanation.

Thus far did this new account of things render the appearances of the heavens more completely coherent than had been done by any of the former ſyſtems. It did this, too, by a more ſimple and intelligible, as well as a more beautiful, machinery. It repreſented the Sun, the great enlightener of the univerſe, whoſe body was alone larger than all the planets taken together, as eſtabliſhed immoveable in the centre, ſhedding light and heat on all the worlds that circulated around him in one uniform direction, but in longer or ſhorter periods according to their different diſtances. It took away the diurnal revolution of the firmament, whoſe rapidity, upon the old hypotheſis, was beyond what even thought could conceive. It not only delivered the imagination from the embarraſſment of epicycles, but from the difficulty of conceiving theſe two oppoſite motions going on at the ſame time, which the ſyſtem of Ptolemy and Ariſtotle beſtowed upon all the planets; I mean, their diurnal weſtward and periodical eaſtward revolutions. The Earth's revolution round its own axis took away the neceſſity for ſuppoſing the firſt, and the ſecond was eaſily conceived when by itſelf. The five planets, which ſeem, upon all other ſyſtems, to be objects of a ſpecies by themſelves, unlike to every thing to which the imagination has been accuſtomed, when ſuppoſed to revolve along with the Earth round the Sun, were naturally apprehended to be objects of the ſame kind with the Earth, habitable, opaque, and enlightened only by the rays of the Sun. And thus this hypotheſis, by claſſing them in the ſame ſpecies of things, with an object that is of all others the moſt familiar to us, took off that wonder and uncertainty which the ſtrangeneſs and ſingularity of their appearance had excited; and thus far better anſwered the great end of philoſophy.

Neither did the beauty and ſimplicity of this ſyſtem alone recommend it to the imagination; the novelty and unexpectedneſs of that view of nature, which it opened to the fancy, excited more wonder and ſurpriſe than the ſtrangeſt of thoſe appearances, which it had been invented to render natural and familiar, and theſe ſentiments ſtill more endeared it. For, though it is the end of philoſophy, to allay that wonder, which either the unuſual or ſeemingly disjointed appearances of nature excite, yet ſhe never triumphs ſo much, as when, in order to connect together a few, in themſelves, perhaps, inconſiderable objects, ſhe has, if I may ſay ſo, created another conſtitution of things, more natural indeed, and ſuch as the imagination can more eaſily attend to, but more new, more contrary to common opinion and expectation, than any of thoſe appearances themſelves. As, in the inſtance before us, in order to connect together ſome ſeeming irregularities in the motions of the planets, the moſt inconſiderable objects in the heavens, and of which the greater part of mankind have no occaſion to take any notice during the whole courſe of their lives, ſhe has, to talk in the hyperbolical language of Tycho Brahe, moved the Earth from its foundations, ſtopped the revolution of the firmament, made the Sun ſtand ſtill, and ſubverted the whole order of the univerſe.

Such were the advantages of this new hypotheſis, as they appeared to its author, when he firſt invented it. But, though that love of paradox, ſo natural to the learned, and that pleaſure, which they are ſo apt to take in exciting, by the novelty of their ſuppoſed diſcoveries, the amazement of mankind, may, notwithſtanding what one of his diſciples tells us to the contrary, have had its weight in prompting Copernicus to adopt this ſyſtem; yet, when he had completed his Treatiſe of Revolutions, and began coolly to conſider what a ſtrange doctrine he was about to offer to the world, he ſo much dreaded the prejudice of mankind againſt it, that, by a ſpecies of continence of all others the moſt difficult to a philoſopher, he detained it in his cloſet for thirty years together. At laſt, in the extremity of old age, he allowed it to be extorted from him, but died as ſoon as it was printed, and before it was publiſhed.

When it appeared in the world, it was almoſt univerſally diſapproved, as well by the learned as by the ignorant. The natural prejudices of ſenſe, confirmed by education, prevailed too much with both, to allow them to give it a fair examination. A few diſciples only, whom he himſelf had inſtructed in his doctrine, received it with eſteem and admiration. One of them, Reinholdus, formed, upon this hypotheſis, larger and more accurate aſtronomical tables than what accompanied the Treatiſe of Revolutions, in which Copernicus had been guilty of ſome errors in calculation. It ſoon appeared, that thoſe Prutenic Tables, as they were called, correſponded more exactly with the heavens, than the Tables of Alphonſus. This ought naturally to have formed a prejudice in favour of the diligence and accuracy of Copernicus in obſerving the heavens. But it ought to have formed none in favour of his hypotheſis; ſince the ſame obſervations, and the reſult of the ſame calculations, might have been accommodated to the ſyſtem of Ptolemy, without making any greater alteration in that ſyſtem than what Ptolemy had foreſeen, and had even foretold ſhould be made. It formed, however, a a prejudice in favour of both, and the learned began to examine, with ſome attention, an hypotheſis which afforded the eaſieſt methods of calculation, and upon which the moſt exact predictions had been made. The ſuperior degree of coherence, which it beſtowed upon the celeſtial appearances, the ſimplicity and uniformity which it introduced into the real directions and velocities of the planets, ſoon diſpoſed many aſtronomers, firſt to favour, and at laſt to embrace, a ſyſtem which thus connected together ſo happily the moſt disjointed of thoſe objects that chiefly occupied their thoughts. Nor can any thing more evidently demonſtrate, how eaſily the learned give up the evidence of their ſenſes to preſerve the coherence of the ideas of their imagination, than the readineſs with which this, the moſt violent paradox in all philoſophy, was adopted by many ingenious aſtronomers, notwithſtanding its inconſiſtency with every ſyſtem of phyſics then known in the world, and notwithſtanding the great number of other more real objections, to which, as Copernicus left it, this account of things was moſt juſtly expoſed.

It was adopted, however, nor can this be wondered at, by aſtronomers only. The learned in all other ſciences, continued to regard it with the ſame contempt as the vulgar. Even aſtronomers were divided about its merit; and many of them rejected a doctrine, which not only contradicted the eſtabliſhed ſyſtem of natural philoſophy, but which, conſidered aſtronomically only, ſeemed to labour under ſeveral difficulties. Some of the objections againſt the motion of the Earth, that were drawn from the prejudices of ſenſe, the patrons of this ſyſtem, indeed, eaſily enough got over. They repreſented, that the Earth might really be in motion, though, to its inhabitants, it ſeemed to be at reſt; and that the Sun, and fixed ſtars, might really be at reſt, though from the Earth they ſeemed to be in motion; in the ſame manner as a ſhip, which ſails thro' a ſmooth ſea, ſeems to thoſe who are in it to be at reſt, though really in motion; while the objects which ſhe paſſes along ſeem to be in motion, though really at reſt.

But there were ſome other objections, which, though grounded upon the ſame natural prejudices, they found it more difficult to get over. The Earth had always preſented itſelf to the ſenſes, not only as at reſt, but as inert, ponderous, and even averſe to motion. The imagination had always been accuſtomed to conceive it as ſuch, and ſuffered the greateſt violence, when obliged to purſue, and attend it, in that rapid motion which the ſyſtem of Copernicus beſtowed upon it. To enforce their objection, the adverſaries of this hypotheſis were at pains to calculate the extreme rapidity of this motion. They repreſented, that the circumference of the Earth had been computed to be above twenty-three thouſand miles: if the Earth, therefore, was ſuppoſed to revolve every day round its axis, every point of it near the equator would paſs over above twenty-three thouſand miles in a day; and conſequently, near a thouſand miles in an hour, and about ſixteen miles in a minute; a motion more rapid than that of a cannon-ball, or even than the ſwifter progreſs of ſound. The rapidity of its periodical revolution was yet more violent than that of its diurnal rotation. How, therefore, could the imagination ever conceive ſo ponderous a body to be naturally endowed with ſo dreadful a movement? The Peripatetic philoſophy, the only philoſophy then known in the world, ſtill further confirmed this prejudice. That philoſophy, by a very natural, though, perhaps, groundleſs diſtinction, divided all motion into *natural* and *violent*. Natural motion was that which flowed from an innate tendency in the body, as when a ſtone fell downwards: violent motion that which aroſe from external force, and which was, in ſome meaſure, contrary to the natural tendency of the body, as when a ſtone was thrown upwards, or horizontally. No violent motion could be laſting; for, being conſtantly weakened by the natural tendency of the body, it would ſoon be deſtroyed. The natural motion of the Earth, as was evident in all its parts, was downwards, in a ſtraight line to the centre, as that of fire and air was upwards in a ſtraight line from the centre. It was the heavens only that revolved naturally in a circle. Neither, therefore, the ſuppoſed revolution of the Earth round its own centre, nor that round the Sun, could be natural motions; they muſt therefore be violent, and conſequently could be of no long continuance. It was in vain that Copernicus replied, that gravity was, probably, nothing elſe beſides a tendency in the different parts of the ſame planet, to unite themſelves to one another; that this tendency took place, probably, in the parts of the other planets, as well as in thoſe of the Earth; that it could very well be united with a circular motion; that it might be equally natural to the whole body of the planet, and to every part of it; that his adverſaries themſelves allowed, that a circular motion was natural to the heavens, whoſe diurnal revolution was infinitely more rapid than even that motion which he had beſtowed upon the Earth; that, tho' a like motion was natural to the Earth, it would ſtill appear to be at reſt to its inhabitants, and all the parts of it to tend in a ſtraight line to the centre, in the ſame manner as at preſent. But this anſwer, how ſatisfactory ſoever it may appear to be now, neither did nor could appear to be ſatisfactory then. By admitting the diſtinction betwixt natural and violent motions, it was founded upon the ſame ignorance of mechanical principles with the objection. The ſyſtems of Ariſtotle and Hipparchus ſuppoſed, indeed, the diurnal motion of the heavenly bodies to be infinitely more rapid than even that dreadful movement which Copernicus beſtowed upon the Earth. But they ſuppoſed, at the ſame time, that thoſe bodies were objects of a quite different ſpecies from any we are acquainted with near the ſurface of the Earth, and to which, therefore, it was leſs difficult to conceive that any ſort of motion might be natural. Thoſe objects, beſides, had never preſented themſelves to the ſenſes, as moving otherwiſe, or with leſs rapidity, than theſe ſyſtems repreſented them. The imagination, therefore, could feel no difficulty in following a repreſentation which the ſenſes had rendered quite familiar to it. But, when the planets came to be regarded as ſo many Earths, the caſe was quite altered. The imagination had been accuſtomed to conceive ſuch objects as tending rather to reſt than motion; and this idea of their natural inertneſs, encumbered, if one may ſay ſo, and clogged its flight, whenever it endeavoured to purſue them in their periodical courſes, and to conceive them as continually ruſhing through the celeſtial ſpaces with ſuch violent and unremitting rapidity.

Nor were the firſt followers of Copernicus more fortunate in their anſwers to ſome other objections, which were founded indeed in the ſame ignorance of the laws of motion, but which, at the ſame time, were neceſſarily connected with that way of conceiving things, which then prevailed univerſally in the learned world. If the Earth, it was ſaid, revolved ſo rapidly from weſt to eaſt, a perpetual wind would ſet in from eaſt to weſt, more violent than what blows in the greateſt hurricanes; a ſtone thrown weſtwards, would fly to a much greater diſtance than one thrown eaſtwards; as what moved in a direction contrary to the motion of the Earth, would neceſſarily paſs over a greater portion of its ſurface, than what, with the ſame velocity, moved along with it. A ball, it was ſaid, dropped from the maſt of a ſhip under ſail, does not fall preciſely at the foot of the maſt, but behind it; and, in the ſame manner, a ſtone dropped from a high tower would not, upon the ſuppoſition of the Earth's motion, fall preciſely at the bottom of the tower, but weſt of it, the Earth being, in the mean time, carried away eaſtward from below it. It is amuſing to obſerve, by what ſubtile and metaphyſical evaſions the followers of Copernicus endeavoured to elude this objection, which, before the doctrine of the compoſition of motion had been explained by Galileo, was altogether unanſwerable. They allowed, that a ball dropped from the maſt of a ſhip under ſail would not fall at the foot of the maſt, but behind it; becauſe the ball, they ſaid, was no part of the ſhip, and becauſe the motion of the ſhip was natural neither to itſelf nor to the ball. But the ſtone was a part of the earth, and the diurnal and annual revolutions of the Earth were natural to the whole, and to every part of it, and therefore to the ſtone. The ſtone, therefore, having naturally the ſame motion with the Earth, fell preciſely at the bottom of the tower. But this anſwer could not ſatisfy the imagination, which ſtill found it difficult to conceive how theſe motions could be natural to the Earth; or how a body, which had always preſented itſelf to the ſenſes as inert, ponderous, and averſe to motion, ſhould naturally be continually wheeling about both its own axis and the Sun with ſuch violent rapidity. It was, beſides, argued by Tycho Brahe, upon the principles of the ſame philoſophy which had afforded both the objection and the anſwer, that even upon the ſuppoſition, that any ſuch motion was natural to the whole body of the Earth, yet the ſtone, which was ſeparated from it, could no longer be actuated by that motion. The limb, which is cut off from an animal, loſes thoſe animal motions which were natural to the whole: the branch, which is cut off from the trunk, loſes that vegetative motion which is natural to the whole tree. Even the metals, minerals, and ſtones, which are dug out from the boſom of the Earth, loſe thoſe motions which occaſioned their production and increaſe, and which were natural to them in their original ſtate. Though the diurnal and annual motion of the Earth, therefore, had been natural to them while they were contained in its boſom; it could no longer be ſo when they were ſeparated from it.

Tycho Brahe, the great reſtorer of the ſcience of the heavens, who had ſpent his life and waſted his fortune upon the advancement of aſtronomy, whoſe obſervations were both more numerous and more accurate than thoſe of all the aſtronomers who had gone before him, was himſelf ſo much affected by the force of this objection, that, tho' he never mentioned the ſyſtem of Copernicus without ſome note of the high admiration he had conceived for its author, he could never himſelf be induced to embrace it; yet all his aſtronomical obſervations tended to confirm it. They demonſtrated, that Venus and Mercury were ſometimes above and ſometimes below the Sun; and that, conſequently, the Sun, and not the Earth, was the centre of their periodical revolutions. They ſhewed, that Mars, when in his meridian, at midnight, was nearer to the Earth than the Earth is to the Sun; though, when in conjunction with the Sun, he was much more remote from the Earth than that luminary; a diſcovery which was abſolutely inconſiſtent with the ſyſtem of Ptolemy, which proved, that the Sun, and not the Earth, was the centre of the periodical revolutions of Mars, as well as of Venus and Mercury; and which demonſtrated, that the Earth was placed betwixt the orbits of Mars and Venus. They made the ſame thing probable with regard to Jupiter and Saturn; that they, too, revolved round the Sun; and that, therefore, the Sun, if not the centre of the univerſe, was at leaſt that of the planetary ſyſtem. They proved, that comets were ſuperior to the Moon, and moved through the heavens in all poſſible directions; an obſervation incompatible with the ſolid ſpheres of Ariſtotle and Purbach, and which, therefore, overturned the phyſical part, at leaſt, of the eſtabliſhed aſtronomy.

All theſe obſervations, joined to his averſion to the ſyſtem, and perhaps, notwithſtanding the generoſity of his character, ſome little jealouſy of the fame of Copernicus, ſuggeſted to Tycho the idea of a new hypotheſis, in which the Earth continued to be, as in the old account, the immoveable centre of the univerſe, round which the firmament revolved every day from eaſt to weſt, and, by ſome ſecret virtue, carried the Sun, the Moon, and the five planets, along with it, notwithſtanding their immenſe diſtance, and notwithſtanding there was nothing betwixt it and them but the moſt fluid ether. But, although all theſe ſeven bodies thus obeyed the diurnal revolution of the firmament, they had each of them, as in the old ſyſtem, a contrary periodical eaſtward revolution of their own, which made them appear to be every day, more or leſs, left behind by the firmament. The Sun was the centre of the periodical revolutions of the five planets; the Earth that of the Sun and Moon. The five planets followed the Sun in his periodical revolution round the Earth, as they did the firmament in its diurnal rotation. The three ſuperior planets comprehended the Earth within the orbit in which they revolved round the Sun, and had each of them an epicycle to connect together, in the ſame manner as in the ſyſtem of Ptolemy, their direct, retrograde, and ſtationary, appearances. As, notwithſtanding their immenſe diſtance, they followed the Sun in his periodical revolution round the Earth, keeping always at an equal diſtance from him, they were neceſſarily brought much nearer to the Earth when in oppoſition to the Sun than when in conjunction with him. Mars, the neareſt of them, when in his meridian at midnight, came within the orbit which the Sun deſcribed round the Earth, and conſequently was then nearer to the Earth than the Earth was to the Sun. The appearances of the two inferior planets were explained, in the ſame manner as in the ſyſtem of Copernicus, and conſequently required no epicycle to connect them. The circles in which the five planets performed their periodical revolutions round the Sun, as well as thoſe in which the Sun and Moon performed theirs round the Earth, were, as both in the old and new hypotheſis, eccentric circles, to connect together their differently accelerated and retarded motions.

Such was the ſyſtem of Tycho Brahe, compounded, as is evident, out of thoſe of Ptolemy and Copernicus; happier than that of Ptolemy, in the account which it gives of the motions of the two inferior planets; more complex, by ſuppoſing the different revolutions of all the five to be performed round two different centres; the diurnal round the Earth, the periodical round the Sun; but, in every reſpect, more complex and more incoherent than that of Copernicus. Such, however, was the difficulty that mankind felt in conceiving the motion of the Earth, that it long balanced the reputation of that otherwiſe more beautiful ſyſtem. It may be ſaid, that thoſe who conſidered the heavens only, favoured the ſyſtem of Copernicus, which connected ſo happily all the appearances which preſented themſelves there: but that thoſe who looked upon the Earth, adopted the account of Tycho Brahe, which, leaving it at reſt in the centre of the univerſe, did leſs violence to the uſual habits of the imagination. The learned were, indeed, ſenſible of the intricacy and of the many incoherences of that ſyſtem; that it gave no account why the Sun, Moon, and five planets, ſhould follow the revolution of the firmament; or why the five planets, notwithſtanding the immenſe diſtance of the three ſuperior ones, ſhould obey the periodical motion of the Sun; or why the Earth, though placed between the orbits of Mars and Venus, ſhould remain immoveable in the centre of the firmament, and conſtantly reſiſt the influence of whatever it was, which carried bodies that were ſo much larger than itſelf, and that were placed on all ſides of it, periodically round the Sun. Tycho Brahe died before he had fully explained his ſyſtem. His great and merited renown diſpoſed many of the learned to believe, that, had his life been longer, he would have connected together many of theſe incoherences, and knew methods of adapting his ſyſtem to ſome other appearances, with which none of his followers could connect it.

The objection to the ſyſtem of Copernicus, which was drawn from the nature of motion, and that was moſt inſiſted on by Tycho Brahe, was at laſt fully anſwered by Galileo; not, however, till about thirty years after the death of Tycho, and about a hundred after that of Copernicus. It was then that Galileo, by explaining the nature of the compoſition of motion, by ſhewing, both from reaſon and experience, that a ball dropped from the maſt of a ſhip under ſail would fall preciſely at the foot of the maſt, and by rendering this doctrine, from a great number of other inſtances, quite familiar to the imagination, took off, perhaps, the principal objection which had been made to this hypotheſis. Several other aſtronomical difficulties, which encumbered this account of things, were removed by the ſame philoſopher. Copernicus, after altering the centre of the world, and making the Earth and all the planets revolve round the Sun, was obliged to leave the Moon to revolve round the Earth as before. But, no example of any ſuch ſecondary planet having then been diſcovered in the heavens, there ſeemed ſtill to be this irregularity remaining in the ſyſtem. Galileo, who firſt applied teleſcopes to aſtronomy, diſcovered by their aſſiſtance the ſatellites of Jupiter, which, revolving round that planet, at the ſame time that they were carried along with it in its revolution, round either the Earth or the Sun, made it ſeem leſs contrary to the analogy of nature, that the Moon ſhould both revolve round the Earth, and accompany her in her revolution round the Sun.

It had been objected to Copernicus, that, if Venus and Mercury revolved round the Sun in an orbit comprehended within the orbit of the Earth, they would ſhew all the ſame phaſes with the Moon, preſent ſometimes their darkened and ſometimes their enlightened ſides to the Earth, and ſometimes part of the one and part of the other. He anſwered, that they undoubtedly did all this; but that their ſmallneſs and diſtance hindered us from perceiving it. This very bold aſſertion of Copernicus was confirmed by Galileo: his teleſcopes rendered the phaſes of Venus quite ſenſible, and thus demonſtrated, more evidently than had been done, even by the obſervations of Tycho Brahe, the revolutions of theſe two planets round the Sun, as well as ſo far deſtroyed the ſyſtem of Ptolemy. The mountains and ſeas, which by the help of the ſame inſtrument he diſcovered, or imagined he had diſcovered, in the Moon, rendering that planet in every reſpect ſimilar to the Earth, made it ſeem leſs contrary to the analogy of nature, that, as the Moon revolved round the Earth, the Earth ſhould revolve round the Sun. The ſpots which, in the ſame manner, he diſcovered in the Sun, demonſtrating by their motion the revolution of the Sun round his axis, made it ſeem leſs improbable that the Earth, a body ſo much ſmaller than the Sun, ſhould revolve round her axis in the ſame manner.

Succeeding teleſcopical obſervations, diſcovered in each of the five planets, ſpots not unlike thoſe which Galileo had obſerved in the Moon, and thereby ſeemed to demonſtrate what Copernicus had only conjectured, that the planets were naturally opaque, enlightened only by the rays of the Sun, habitable, diverſified by ſeas and mountains, and in every reſpect bodies of the ſame kind with the Earth; and thus added one other probability to this ſyſtem. By diſcovering, too, that each of the planets revolved round its own axis, at the ſame time that it was carried round either the Earth or the Sun, they made it ſeem quite agreeable to the analogy of nature, that the Earth, which in every other reſpect reſembled the planets, ſhould like them too revolve round its own axis, and at the ſame time perform its periodical motion round the Sun.

While in Italy the unfortunate Galileo was adding ſo many probabilities to the ſyſtem of Copernicus, there was another philoſopher employing himſelf in Germany, to aſcertain, correct, and improve, it: Kepler, with great genius, but without the taſte or the order and method of Galileo, poſſeſſed, like all his other countrymen, the moſt laborious induſtry, joined to that paſſion for diſcovering proportions and reſemblances betwixt the different parts of nature, which, though common to all philoſophers, ſeems in him to have been exceſſive. He had been inſtructed by Mæſtlinus in the ſyſtem of Copernicus; and his firſt curioſity was, as he tells us, to find out why the planets, the Earth being counted for one, were ſix in number; why they were placed at ſuch irregular diſtances from the Sun; and whether there was any uniform proportion betwixt their ſeveral diſtances, and the times employed in their periodical revolutions. Till ſome reaſon or proportion of this kind could be diſcovered, the ſyſtem did not appear to him to be completely coherent. He endeavoured firſt to find it in the proportions of numbers and plain figures; afterwards in thoſe of the regular ſolids; and laſt of all in thoſe of the muſical diviſions of the octave. Whatever was the ſcience which Kepler was ſtudying, he ſeems conſtantly to have pleaſed himſelf with finding ſome analogy betwixt it and the ſyſtem of the univerſe; and thus arithmetic and muſic, plain and ſolid geometry, came all of them by turns to illuſtrate the doctrine of the ſphere, in the explaining of which he was by his profeſſion principally employed. Tycho Brahe, to whom he had preſented one of his books, though he could not but diſapprove of his ſyſtem, was pleaſed however with his genius, and with his indefatigable diligence in making the moſt laborious calculations. That generous and magnificent Dane invited the obſcure and indigent Kepler to come and live with him, and communicated to him, as ſoon as he arrived, his obſervations upon Mars, in the arranging and methodizing of which his diſciples were at that time employed. Kepler, upon comparing them with one another, found that the orbit of Mars was not a perfect circle; that one of its diameters was ſomewhat longer than the other; and that it approached to an oval, or an ellipſe, which had the Sun placed in one of its foci. He found too, that the motion of the planet was not equable; that it was ſwifteſt when neareſt the Sun, and ſloweſt when fartheſt from him; and that its velocity gradually encreaſed or diminiſhed, according as it approached or receded from him. The obſervations of the ſame aſtronomer diſcovered to him, though not ſo evidently, that the ſame things were true of all the other planets; that their orbits were elliptical, and that their motions were ſwifteſt when neareſt the Sun, and ſloweſt when fartheſt from him. They ſhewed the ſame things too of the Sun, if ſuppoſed to revolve round the Earth; and conſequently of the Earth, if ſuppoſed to revolve round the Sun.

That the motions of all the heavenly bodies were perfectly circular, had been the fundamental idea upon which every aſtronomical hypotheſis, except the irregular one of the Stoics, had been built. A circle, as the degree of its curvature is every where the ſame, is of all curve lines the ſimpleſt and the moſt eaſily conceived. Since it was evident, therefore, that the heavenly bodies did not move in ſtraight lines, the indolent imagination found, that it could moſt eaſily attend to their motions if they were ſuppoſed to revolve in perfect circles. It had, upon this account, determined that a circular motion was the moſt perfect of all motions, and that none but the moſt perfect motion could be worthy of ſuch beautiful and divine objects; and it had upon this account, ſo often, in vain, endeavoured to adjuſt to the appearances, ſo many different ſyſtems, which all ſuppoſed them to revolve in this manner.

The equality of their motions was another fundamental idea, which, in the ſame manner, and for the ſame reaſon, was ſuppoſed by all the founders of aſtronomical ſyſtems. For an equal motion can be more eaſily attended to, than one that is continually either accelerated or retarded. All inconſtancy, therefore, was declared to be unworthy thoſe bodies which revolved in the celeſtial regions, and to be fit only for inferior and ſublunary things. The calculations of Kepler overturned, with regard to the planets, both theſe natural prejudices of the imagination; deſtroyed their circular orbits, and introduced into their real motions ſuch an inequality as no equalizing circle would remedy. It was, however, to render their motions perfectly equable, without even the aſſiſtance of an equalizing circle, that Copernicus, as he himſelf aſſures us, had originally invented his ſyſtem. Since the calculations of Kepler, therefore, overturned what Copernicus had principally in view in eſtabliſhing his ſyſtem, we cannot wonder that they ſhould at firſt ſeem rather to embarraſs than improve it.

It is true, by theſe elliptical orbits and unequal motions, Kepler diſengaged the ſyſtem from the embarraſſment of thoſe ſmall epicycles, which Copernicus, in order to connect the ſeemingly accelerated and retarded movements of the planets with their ſuppoſed real equality, had been obliged to leave in it. For it is remarkable, that though Copernicus had delivered the orbits of the planets from the enormous epicycles of Hipparchus, that though in this conſiſted the great ſuperiority of his ſyſtem above that of the ancient aſtronomers, he was yet obliged himſelf to abandon in ſome meaſure this advantage, and to make uſe of ſome ſmall epicycles to join together thoſe ſeeming irregularities. His epicycles indeed, like the irregularities for whoſe ſake they were introduced, were but ſmall ones, and the imaginations of his firſt followers ſeem accordingly, either to have ſlurred them over altogether, or ſcarcely to have obſerved them. Neither Galileo nor Gaſſendi, the two moſt eloquent of his defenders, take any notice of them. Nor does it ſeem to have been generally attended to, that there was any ſuch thing as epicycles in the ſyſtem of Copernicus, till Kepler, in order to vindicate his own elliptical orbits, inſiſted, that, even according to Copernicus, the body of the planet was to be found but at two different places in the circumference of that circle which the centre of its epicycle deſcribed.

It is alſo true that an ellipſe is, of all curve lines after a circle, the ſimpleſt and moſt eaſily conceived; and it is true, beſides all this, that while Kepler took from the motion of the planets the eaſieſt of all proportions, that of equality, he did not leave them abſolutely without one, but aſcertained the rule by which their velocities continually varied; for a genius ſo fond of analogies, when he had taken away one, would be ſure to ſubſtitute another in its room. Notwithſtanding all this, notwithſtanding that his ſyſtem was better ſupported by obſervations than any ſyſtem had ever been before, yet ſuch was the attachment to the equal motions and circular orbits of the planets, that it ſeems for ſome time to have been in general but little attended to by the learned, to have been altogether neglected by philoſophers, and not much regarded even by aſtronomers.

Gaſſendi, who began to figure in the world about the latter days of Kepler, and who was himſelf no mean aſtronomer, ſeems indeed to have conceived a good deal of eſteem for his diligence and accuracy, in accommodating the obſervations of Tycho Brahe to the ſyſtem of Copernicus. But Gaſſendi appears to have had no comprehenſion of the importance of thoſe alterations which Kepler had made in that ſyſtem, as is evident from his ſcarcely ever mentioning them in the whole courſe of his voluminous writings upon aſtronomy. Des Cartes, the cotemporary and rival of Gaſſendi, ſeems to have paid no attention to them at all, but to have built his theory of the heavens without any regard to them. Even thoſe aſtronomers, whom a ſerious attention had convinced of the juſtneſs of his corrections, were ſtill ſo enamoured with the circular orbits and equal motions, that they endeavoured to compound his ſyſtem with thoſe ancient but natural prejudices. Thus Ward endeavoured to ſhew, that though the planets moved in elliptical orbits, which had the Sun in one of their foci, and though their velocities in the elliptical line were continually varying, yet if a ray was ſuppoſed to be extended from the centre of any one of them to the other focus, and to be carried along by the periodical motion of the planet, it would make equal angles in equal times, and conſequently cut off equal portions of the circle of which that other focus was the centre. To one therefore, placed in that focus, the motion of the planet would appear to be perfectly circular and perfectly equable, in the ſame manner as in the equalizing circles of Ptolemy and Hipparchus. Thus Bouillaud, who cenſured this hypotheſis of Ward, invented another of the ſame kind, infinitely more whimſical and capricious. The planets, according to that aſtronomer, always revolve in circles; for, that being the moſt perfect figure, it is impoſſible they ſhould revolve in any other. No one of them however continues to move in any one circle, but is perpetually paſſing from one to another, through an infinite number of circles, in the courſe of each revolution; for an ellipſe, ſaid he, is an oblique ſection of a cone, and in a cone, betwixt the two vortices of the ellipſe there is an infinite number of circles, out of the infinitely ſmall portions of which the elliptical line is compounded. The planet therefore, which moves in this line, is, in every point of it, moving in an infinitely ſmall portion of a certain circle. The motion of each planet too, according to him, was neceſſarily for the ſame reaſon perfectly equable, an equable motion being the moſt perfect of all motions. It was not however, in the elliptical line, that it was equable, but in any one of the circles that were parallel to the baſe of that cone, by whoſe ſection this elliptical line had been formed: for, if a ray was extended from the planet to any one of thoſe circles, and carried along by its periodical motion, it would cut off equal portions of that circle in equal times; another moſt fantaſtical equalizing circle, ſupported by no other foundation beſides the frivolous connection betwixt a cone and an ellipſe, and recommended by nothing but the natural paſſion for circular orbits and equable motions. It may be regarded as the laſt effort of this paſſion, and may ſerve to ſhew the force of that principle which could thus oblige this accurate obſerver, and great improver of the theory of the heavens, to adopt ſo ſtrange an hypotheſis. Such was the difficulty and heſitation with which the followers of Copernicus adopted the corrections of Kepler. The rule indeed which Kepler aſcertained for determining the gradual acceleration or retardation in the movement of the planets, was intricate, and difficult to be comprehended; it could therefore but little facilitate the progreſs of the imagination in tracing thoſe revolutions which were ſuppoſed to be conducted by it. According to that aſtronomer, if a ſtraight line was drawn from the centre of each planet to the Sun, and carried along by the periodical motion of the planet, it would deſcribe equal areas in equal times, though the planet did not paſs over equal ſpaces; and the ſame rule he found took place nearly with regard to the Moon. The imagination, when acquainted with the law by which any motion is accelerated or retarded, can follow and attend to it more eaſily, than when at a loſs, and as it were wandering in uncertainty with regard to the proportion which regulates its varieties; the diſcovery of this analogy therefore, no doubt, rendered the ſyſtem of Kepler more agreeable to the natural taſte of mankind: it was, however, an analogy too difficult to be followed or comprehended, to render it completely ſo.

Kepler, beſides this, introduced another new analogy into the ſyſtem, and firſt diſcovered, that there was one uniform relation obſerved betwixt the diſtances of the Planets from the Sun, and the times employed in their periodical motions. He found, that their periodical times were greater than in proportion to their diſtances, and leſs than in proportion to the ſquares of thoſe diſtances; but, that they were nearly as the mean proportionals betwixt their diſtances and the ſquares of their diſtances; or, in other words, that the ſquares of their periodical times were nearly as the cubes of their diſtances; an analogy, which, though, like all others, it no doubt rendered the ſyſtem ſomewhat more diſtinct and comprehenſible, was, however, as well as the former, of too intricate a nature to facilitate very much the effort of the imagination in conceiving it. The truth of theſe analogies, however, intricate as they were, was at laſt fully eſtabliſhed by the obſervations of Caſſini. That aſtronomer firſt diſcovered, that the ſecondary planets of Jupiter and Saturn revolved round their primary ones, according to the ſame laws which Kepler had obſerved in the revolutions of the primary ones round the Sun, and that of the Moon round the Earth; that each of them deſcribed equal areas in equal times, and that the ſquares of their periodic times were as the cubes of their diſtances. When theſe two laſt abſtruſe analogies, which, when Kepler at firſt obſerved them, were but little regarded, had been thus found to take place in the revolutions of the Four Satellites of Jupiter, and in thoſe of the Five of Saturn, they were now thought not only to confirm the doctrine of Kepler, but to add a new probability to the Copernican hypotheſis. The obſervations of Caſſini ſeem to eſtabliſh it as a law of the ſyſtem, that, when one body revolved round another, it deſcribed equal areas in equal times; and that, when ſeveral revolved round the ſame body, the ſquares of their periodic times were as the cubes of their diſtances. If the Earth and the five planets were ſuppoſed to revolve round the Sun, theſe laws, it was ſaid, would take place univerſally. But if, according to the ſyſtem of Ptolemy, the Sun, Moon, and five planets, were ſuppoſed to revolve round the Earth, the periodical motions of the Sun and Moon would, indeed, obſerve the firſt of theſe laws, would each of them deſcribe equal areas in equal times; but they would not obſerve the ſecond, the ſquares of their periodic times would not be as the cubes of their diſtances: and the revolutions of the five planets would obſerve neither the one law nor the other. Or if, according to the ſyſtem of Tycho Brahe, the five planets were ſuppoſed to revolve round the Sun, while the Sun and Moon revolved round the Earth, the revolutions of the five planets round the Sun would, indeed, obſerve both theſe laws; but thoſe of the Sun and Moon round the Earth would obſerve only the firſt of them. The analogy of nature, therefore, could be preſerved completely, according to no other ſyſtem but that of Copernicus, which, upon that account, muſt be the true one. This argument is regarded by Voltaire, and the cardinal of Polignac, as an irrefragable demonſtration; even M‘Laurin, who was more capable of judging, nay, Sir Iſaac Newton himſelf, ſeems to mention it as one of the principal evidences for the truth of that hypotheſis. Yet, an analogy of this kind, it would ſeem, far from a demonſtration, could afford, at moſt, but the ſhadow of a probability. It is true, that, though Caſſini ſuppoſed the planets to revolve in an oblong curve, it was in a curve ſomewhat different from that of Kepler. In the ellipſe the ſum of the two lines, which are drawn from any one point in the circumference to the two foci, is always equal to that of thoſe which are drawn from any other point in the circumference to the ſame foci. In the curve of Caſſini, it is not the ſum of the lines, but the rectangles which are contained under the lines, that are always equal. As this, however, was a proportion more difficult to be comprehended than the other, the curve of Caſſini has never had the vogue.

Nothing now embarraſſed the ſyſtem of Corpernicus, but the difficulty which the imagination felt in conceiving bodies ſo immenſely ponderous as the Earth, and the other planets, revolving round the Sun with ſuch incredible rapidity. It was in vain that Copernicus pretended, that, notwithſtanding the prejudices of ſenſe, this circular motion might be as natural to the planets as it is to a ſtone to fall to the ground. The imagination had been accuſtomed to conceive ſuch objects as tending rather to reſt than motion. This habitual idea of their natural inertneſs was incompatible with that of their natural motion. It was in vain that Kepler, in order to aſſiſt the fancy in connecting together this natural inertneſs with their aſtoniſhing velocities, talked of ſome vital and immaterial virtue, which was ſhed by the Sun into the ſurrounding ſpaces, which was whirled about with his revolution round his own axis, and which, taking hold of the planets, forced them, in ſpite of their ponderouſneſs and ſtrong propenſity to reſt, thus, to whirl about the centre of the ſyſtem. The imagination had no hold of this immaterial virtue, and could form no determinate idea of what it conſiſted in. The imagination, felt a gap, or interval, betwixt the conſtant motion and the ſuppoſed inertneſs of the planets, and had in this, as in all other caſes, ſome general idea or apprehenſion that there muſt be a connecting chain of intermediate objects to link together theſe diſcordant qualities. Wherein this connecting chain conſiſted, it was, indeed, at a loſs to conceive; nor did the doctrine of Kepler lend it any aſſiſtance in this reſpect. That doctrine, like almoſt all thoſe of the philoſophy in faſhion during his time, beſtowed a name upon this inviſible chain, called it an immaterial virtue, but afforded no determinate idea of what was its nature.

Des Cartes was the firſt who attempted to aſcertain, preciſely, wherein this inviſible chain conſiſted, and to afford the imagination a train of intermediate events, which, ſucceeding each other in an order that was of all others the moſt familiar to it, ſhould unite thoſe incoherent qualities, the rapid motion, and the natural inertneſs, of the planets. Des Cartes was the firſt who explained wherein conſiſted the real inertneſs of matter; that it was not in an averſion to motion, or in a propenſity to reſt, but in a power of continuing indifferently either at reſt or in motion, and of reſiſting with a certain force whatever endeavoured to change its ſtate from the one to the other. According to that ingenious and fanciful philoſopher, the whole of infinite ſpace was full of matter, for with him matter and extenſion were the ſame, and conſequently there could be no void. This immenſity of matter, he ſuppoſed to be divided into an infinite number of very ſmall cubes; all of which, being whirled about upon their own centres, neceſſarily gave occaſion to the production of two different elements. The firſt conſiſted of thoſe angular parts, which, having been neceſſarily rubbed off, and grinded yet ſmaller by their mutual friction, conſtituted the moſt ſubtile and moveable part of matter. The ſecond conſiſted of thoſe little globules that were formed by the rubbing off of the firſt. The interſtices betwixt theſe globules of the ſecond element was filled up by the particles of the firſt. But in the infinite colliſions, which muſt occur in an infinite ſpace filled with matter, and all in motion, it muſt neceſſarily happen, that many of the globules of the ſecond element ſhould be broken and grinded down into the firſt. The quantity of the firſt element having thus been increaſed beyond what was ſufficient to fill up the interſtices of the ſecond, it muſt, in many places, have been heaped up together without any mixture of the ſecond along with it. Such, according to Des Cartes, was the original diviſion of matter. Upon this infinitude of matter thus divided, a certain quantity of motion was originally impreſſed by the Creator of all things, and the laws of motion were ſo adjuſted as always to preſerve the ſame quantity in it, without increaſe, and without diminution. Whatever motion was loſt by one part of matter, was communicated to ſome other; and whatever was acquired by one part of matter, was derived from ſome other: and thus, through an eternal revolution, from reſt to motion, and from motion to reſt, in every part of the univerſe, the quantity of motion in the whole was always the ſame.

But, as there was no void, no one part of matter could be moved without thruſting ſome other out of its place, nor that without thruſting ſome other, and ſo on. To avoid, therefore, an infinite progreſs, he ſuppoſed, that the matter which any body puſhed before it rolled immediately backwards, to ſupply the place of that matter which flowed in behind it; as we may obſerve in the ſwimming of a fiſh, that the water, which it puſhes before it, immediately rolls backwards, to ſupply the place of what flows in behind it, and thus forms a ſmall circle or vortex round the body of the fiſh. It was, in the ſame manner, that the motion originally impreſſed by the Creator upon the infinitude of matter, neceſſarily produced in it an infinity of greater and ſmaller vortices, or circular ſtreams: and the law of motion being ſo adjuſted as always to preſerve the ſame quantity of motion in the univerſe, thoſe vortices either continued for ever, or by their diſſolution gave birth to others of the ſame kind. There was thus at all times an infinite number of greater and ſmaller vortices, or circular ſtreams, revolving in the univerſe.

But, whatever moves in a circle is conſtantly endeavouring to fly off from the centre of its revolution; for the natural motion of all bodies is in a ſtraight line. All the particles of matter therefore, in each of thoſe greater vortices, were continually preſſing from the centre to the circumference, with more or leſs force, according to the different degrees of their bulk and ſolidity. The larger and more ſolid globules of the ſecond element forced themſelves upwards to the circumference, while the ſmaller, more yielding, and more active, particles of the firſt, which could flow even through the interſtices of the ſecond, were forced downwards to the centre. They were forced downwards to the centre, notwithſtanding their natural tendency was upwards to the circumference; for the ſame reaſon that a piece of wood, when plunged in water, is forced upwards to the ſurface, notwithſtanding its natural tendency is downwards to the bottom; becauſe its tendency downwards is leſs ſtrong than that of the particles of water, which therefore, if one may ſay ſo, preſs in before it, and thus force it upwards. But, there being a greater quantity of the firſt element than was neceſſary to fill up the interſtices of the ſecond, it was neceſſarily accumulated in the centre of each of theſe great circular ſtreams, and formed there the fiery and active ſubſtance of the Sun. For, according to that philoſopher, the ſolar ſyſtems were infinite in number, each fixed ſtar being the centre of one: and he is among the firſt of the moderns, who thus took away the boundaries of the univerſe; even Copernicus and Kepler themſelves having confined it within what they ſuppoſed the vault of the firmament.

The centre of each vortex being thus occupied by the moſt active and moveable parts of matter, there was neceſſarily among them, a more violent agitation than in any other part of the vortex, and this violent agitation of the centre cheriſhed and ſupported the movement of the whole. But, among the particles of the firſt element, which fill up the interſtices of the ſecond, there are many which, from the preſſure of the globules on all ſides of them, neceſſarily receive an angular form, and thus conſtitute a third element of particles leſs fit for motion than thoſe of the other two. As the particles, however, of this third element were formed in the interſtices of the ſecond, they are neceſſarily ſmaller than thoſe of the ſecond, and are therefore, along with thoſe of the firſt, urged down towards the centre, where, when a number of them happen to take hold of one another, they form ſuch ſpots upon the ſurface of the accumulated particles of the firſt element, as are often diſcovered by teleſcopes upon the face of that Sun which enlightens and animates our particular ſyſtem. Thoſe ſpots are often broken and diſpelled, by the violent agitation of the particles of the firſt element, as has hitherto happily been the caſe with thoſe which have ſucceſſively been formed upon the face of our Sun. Sometimes, however, they encruſt the whole ſurface of that fire which is accumulated in the centre; and, the communication betwixt the moſt active and moſt inert parts of the vortex being thus interrupted, the rapidity of its motion immediately begins to languiſh, and can no longer defend it from being ſwallowed up and carried away by the ſuperior violence of ſome other like circular ſtream; and in this manner, what was once a Sun becomes a planet. Thus the time was, according to this ſyſtem, when the Moon was a body of the ſame kind with the Sun, the fiery centre of a circular ſtream of ether, which flowed continually round her; but, her face having been cruſted over by a congeries of angular particles, the motion of this circular ſtream began to languiſh, and could no longer defend itſelf from being abſorbed by the more violent vortex of the Earth, which was then too a Sun, and which chanced to be placed in its neighbourhood. The Moon therefore became a planet, and revolved round the Earth. In proceſs of time, the ſame fortune, which had thus befallen the Moon, befel alſo the Earth; its face was encruſted by a groſs and inactive ſubſtance; the motion of its vortex began to languiſh, and it was abſorbed by the greater vortex of the Sun: but, though the vortex of the Earth had thus become languid, it ſtill had force enough to occaſion both the diurnal revolution of the Earth, and the monthly motion of the Moon. For a ſmall circular ſtream may eaſily be conceived as flowing round the body of the Earth, at the ſame time that it is carried along by that great ocean of ether which is continually revolving round the Sun; in the ſame manner, as in a great whirlpool of water, one may often ſee ſeveral ſmall whirlpools which revolve round centres of their own, and at the ſame time are carried round the centre of the great one. Such was the cauſe of the original formation and conſequent motions of the planetary ſyſtem. When a ſolid body is turned round its center, thoſe parts of it, which are neareſt, and thoſe which are remoteſt from the centre, complete their revolutions in one and the ſame time. But it is otherwiſe with the revolutions of a fluid: the parts of it which are neareſt the centre complete their revolutions in a ſhorter time than thoſe which are remoter. The planets therefore, all floating in that immenſe tide of ether which is continually ſetting in from weſt to eaſt round the body of the Sun, complete their revolutions in a longer or ſhorter time, according to their nearneſs or diſtance from him. There was, however, according to Des Cartes, no very exact proportion obſerved betwixt the times of their revolutions and their diſtances from the centre. For that nice analogy, which Kepler had diſcovered betwixt them, having not yet been confirmed by the obſervations of Caſſini, was, as I before took notice, entirely diſregarded by Des Cartes. According to him too their orbits might not be perfectly circular, but be longer one way than the other, and thus approach to an ellipſe. Nor yet was it neceſſary to ſuppoſe, that they deſcribed this figure with geometrical accuracy, or even that they deſcribed always preciſely the ſame figure. It rarely happens, that nature can be mathematically exact with regard to the figure of the objects ſhe produces, upon account of the infinite combinations of impulſes, which muſt conſpire to the production of each of her effects. No two planets, no two animals of the ſame kind, have exactly the ſame figure, nor is that of any one of them perfectly regular. It was in vain, therefore, that aſtronomers laboured to find that perfect conſtancy and regularity in the motions of the heavenly bodies, which is to be found in no other parts of nature. Theſe motions, like all others, muſt either languiſh or be accelerated, according as the cauſe which produces them, the revolution of the vortex of the Sun, either languiſhes, or is accelerated; and there are innumerable events which may occaſion either the one or the other of thoſe changes.

It was thus, that Des Cartes endeavoured to render familiar to the imagination, the greateſt difficulty in the Copernican ſyſtem, the rapid motion of the enormous bodies of the planets. When the fancy had thus been taught to conceive them as floating in an immenſe ocean of ether, it was quite agreeable to its uſual habits to conceive, that they ſhould follow the ſtream of this ocean, how rapid ſoever. This was an order of ſucceſſion to which it had been long accuſtomed, and with which it was therefore quite familiar. This account too of the motions of the heavens, was connected with a vaſt, an immenſe, ſyſtem, which joined together a greater number of the moſt diſcordant phænomena of nature than had been united by any other hypotheſis; a ſyſtem in which the principles of connection, though perhaps equally imaginary, were, however, more diſtinct and determinate, than any that had been known before; and which attempted to trace to the imagination, not only the order of ſucceſſion by which the heavenly bodies were moved, but that by which they, and almoſt all other natural objects, had originally been produced. The Carteſian philoſophy is now indeed almoſt univerſally rejected, while the Copernican ſyſtem continues to be univerſally received. Yet it is not eaſy to imagine, how much probability and coherence this admired ſyſtem was long ſuppoſed to derive from that exploded hypotheſis. Till Des Cartes had publiſhed his principles, the disjointed and incoherent ſyſtem of Tycho Brahe, though it was embraced heartily and completely by ſcarcely any body, was yet conſtantly talked of by all the learned, as, in point of probability, upon a level with that of Copernicus. They took notice, indeed, of its inferiority with regard to coherence and connection, expreſſing hopes however that theſe defects might be remedied by ſome future improvements. But when the world beheld that complete and almoſt perfect coherence, which the philoſophy of Des Cartes beſtowed upon the ſyſtem of Copernicus, the imaginations of mankind could no longer refuſe themſelves the pleaſure of going along with ſo harmonious an account of things. The ſyſtem of Tycho Brahe was every day leſs and leſs talked of, till at laſt it was forgotten altogether.

The ſyſtem of Des Cartes, however, though it connected together the real motions of the heavenly bodies according to the ſyſtem of Copernicus, more happily than had been done before, did ſo only when they were conſidered in the groſs; but did not apply to them, when they were regarded in the detail. Des Cartes, as was ſaid before, had never himſelf obſerved the heavens with any particular application. Though he was not ignorant of any of the obſervations which had been made before his time, yet he ſeems to have paid them no great degree of attention; which, probably proceeded from his own inexperience in the ſtudy of aſtronomy. So far therefore from accommodating his ſyſtem to all the minute irregularities, which Kepler had aſcertained in the movements of the planets; or from ſhewing particularly how theſe irregularities, and no other, ſhould ariſe from it, he contented himſelf with obſerving that perfect uniformity could not be expected in their motions, from the nature of the cauſes which produced them; that certain irregularities might take place in them, for a great number of ſucceſſive revolutions, and afterwards give way to others of a different kind: a remark which happily relieved him from the neceſſity of applying his ſyſtem to the obſervations of Kepler, and the other aſtronomers.

But when the obſervations of Caſſini had eſtabliſhed the authority of thoſe laws, which Kepler had firſt diſcovered in the ſyſtem, the philoſophy of Des Cartes, which could afford no reaſon why ſuch particular laws ſhould be obſerved, might continue to amuſe the learned in other ſciences, but could no longer ſatisfy thoſe that were ſkilled in aſtronomy. Sir Iſaac Newton firſt attempted to give a phyſical account of the motions of the planets, which ſhould accommodate itſelf to all the conſtant irregularities which aſtronomers had ever obſerved in their motions. The phyſical connection by which Des Cartes had endeavoured to bind together the movements of the planets, was the laws of impulſe; of all the orders of ſucceſſion, thoſe which are moſt familiar to the imagination; as they all flow from the inertneſs of matter. After this quality, there is no other with which we are ſo well acquainted, as that of gravity. We never act upon matter, but we have occaſion to obſerve it. The ſuperior genius and ſagacity of Sir Iſaac Newton, therefore, made the moſt happy, and, we may now ſay, the greateſt and moſt admirable, improvement that was ever made in philoſophy, when he diſcovered, that he could join together the movements of the planets by ſo familiar a principle of connection, which completely removed all the difficulties the imagination had hitherto felt in attending to them. He demonſtrated, that if the planets were ſuppoſed to gravitate towards the Sun, and to one another, and at the ſame time to have a projecting force originally impreſſed upon them, the primary ones might all deſcribe ellipſes in one of the foci of which that great luminary was placed; and the ſecondary ones might deſcribe figures of the ſame kind round their reſpective primaries, without being diſturbed by the continual motion of the centres of their revolutions. That if the force which retained each of them in their orbits, was like that of gravity, and directed towards the Sun, they would each of them deſcribe equal areas in equal times. That if this attractive power of the Sun, like all other qualities which are diffuſed in rays from a centre, diminiſhed in the ſame proportion as the ſquares of the diſtances increaſed, their motions would be ſwifteſt when neareſt the Sun, and ſloweſt when fartheſt off from him, in the ſame proportion in which, by obſervation, they are diſcovered to be; and that, upon the ſame ſuppoſition, of this gradual diminution of their reſpective gravities, their periodic times would bear the ſame proportion to their diſtances which Kepler and Caſſini had eſtabliſhed betwixt them. Having thus ſhewn, that gravity might be the connecting principle which joined together the movements of the planets, he endeavoured next to prove that it really was ſo. Experience ſhews us what is the power of gravity near the ſurface of the Earth. That it is ſuch as to make a body fall, in the firſt ſecond of its deſcent, through about fifteen Pariſian feet. The Moon is about ſixty ſemidiameters of the Earth diſtant from its ſurface. If gravity therefore was ſuppoſed to diminiſh, as the ſquares of the diſtance increaſe, a body, at the Moon, would fall towards the Earth in a minute, that is, in ſixty ſeconds, through the ſame ſpace which it falls near its ſurface in one ſecond. But the arch which the Moon deſcribes in a minute, falls, by obſervation, about fifteen Pariſian feet below the tangent drawn at the beginning of it. So far, therefore, the Moon may be conceived as conſtantly falling towards the Earth.

The ſyſtem of Sir Iſaac Newton correſponded to many other irregularities which aſtronomers had obſerved in the heavens. It aſſigned a reaſon, why the centres of the revolutions of the planets were not preciſely in the centre of the Sun, but in the common centre of gravity of the Sun and the planets. From the mutual attraction of the planets, it gave a reaſon for ſome other irregularities in their motions; irregularities, which are quite ſenſible in thoſe of Jupiter and Saturn, when thoſe planets are nearly in conjunction with one another. But of all the irregularities in the heavens, thoſe of the Moon had hitherto given the greateſt perplexity to aſtronomers; and the ſyſtem of Sir Iſaac Newton correſponded, if poſſible, yet more accurately with them than with any of the other planets. The Moon, when either in conjunction or oppoſition to the Sun, appears fartheſt from the Earth, and neareſt to it when in her quarters. According to the ſyſtem of that philoſopher, when ſhe is in conjunction with the Sun, ſhe is nearer the Sun than the Earth is; conſequently, more attracted to him, and therefore more ſeparated from the Earth. On the contrary, when in oppoſition to the Sun, ſhe is farther from the Sun than the Earth. The Earth, therefore, is more attracted to the Sun; and conſequently, in this caſe, too, farther ſeparated from the Moon. But, on the other hand, when the Moon is in her quarters, the Earth and the Moon, being both at equal diſtances from the Sun, are equally attracted to him. They would not, upon this account alone, therefore, be brought nearer to one another. As it is not in parallel lines, however, that they are attracted towards the Sun, but in lines which meet in his centre, they are thereby ſtill further approached to one another. Sir Iſaac Newton computed the difference of the forces, with which the Moon and the Earth ought, in all thoſe different ſituations, according to his theory, to be impelled towards one another; and found, that the different degrees of their approaches, as they had been obſerved by aſtronomers, correſponded exactly to his computations. As the attraction of the Sun, in the conjunctions and oppoſitions, diminiſhes the gravity of the Moon towards the Earth, and conſequently, makes her neceſſarily extend her orbit, and therefore require a longer periodical time to finiſh it. But, when the Moon and the Earth are in that part of the orbit which is neareſt the Sun, this attraction of the Sun will be the greateſt; conſequently the gravity of the Moon towards the Earth will there be moſt diminiſhed; her orbit be moſt extended; and her periodic time be therefore the longeſt. This is alſo agreeable to experience, and in the very ſame proportion, in which by computation, from theſe principles, it might be expected.

The orbit of the Moon is not preciſely in the ſame plane with that of the earth; but makes a very ſmall angle with it. The points of interſection of thoſe two planes, are called the nodes of the Moon. Theſe nodes of the Moon are in continual motion, and, in eighteen or nineteen years, revolve backwards, from eaſt to weſt, through all the different points of the ecliptic. For the Moon, after having finiſhed her periodical revolution, generally interſects the orbit of the Earth ſomewhat behind the point where ſhe had interſected it before. But, though the motion of the nodes is thus generally retrograde, it is not always ſo, but is ſometimes direct, and ſometimes they appear even ſtationary; the Moon generally interſects the plane of the Earth's orbit behind the point where ſhe had interſected it in her former revolution; but ſhe ſometimes interſects it before that point, and ſometimes in the very ſame point. It is the ſituation of thoſe nodes which determines the times of eclipſes, and their motions had, upon this account, at all times been particularly attended to by aſtronomers. Nothing however had perplexed them more, than to account for theſe ſo inconſiſtent motions, and, at the ſame time, preſerve their ſo much ſought-for regularity in the revolutions of the Moon. For they had no other means of connecting the appearances together, than by ſuppoſing the motions which produced them to be in reality perfectly regular and equable. The hiſtory of aſtronomy therefore gives an account of a greater number of theories invented for connecting together the motions of the Moon, than for connecting together thoſe of all the other heavenly bodies taken together. The theory of gravity connected, in the moſt accurate manner, by the different actions of the Sun and the Earth, all thoſe irregular motions; and it appears by calculation, that the time, the quantity, and the duration, of thoſe direct and retrograde motions of the nodes, as well as of their ſtationary appearances, might be expected to be exactly ſuch, as the obſervations of aſtronomers have determined them.

The ſame principle, the attraction of the Sun, which thus accounts for the motions of the nodes, connects too another very perplexing irregularity in the appearances of the Moon; the perpetual variation in the inclination of her orbit to that of the Earth. As the Moon revolves in an ellipſe, which has the centre of the earth in one of its foci, the longer axis of its orbit is called the *line* of its *apſides*. This line is found, by obſervation, not to be always directed towards the ſame points of the firmament, but to revolve forwards from weſt to eaſt, ſo as to paſs through all the points of the ecliptic, and to complete its period in about nine years; another irregularity which had very much perplexed aſtronomers, but which the theory of gravity ſufficiently accounted for.

The Earth had hitherto been regarded as perfectly globular, probably for the ſame reaſon which had made men imagine that the orbits of the planets muſt neceſſarily be perfectly circular. But Sir Iſaac Newton, from mechanical principles, concluded that, as the parts of the Earth muſt be more agitated by her diurnal revolution at the equator than at the poles, they muſt neceſſarily be ſomewhat elevated at the firſt, and flattened at the ſecond. The obſervation, that the oſcillations of pendulums were ſlower at the equator than at the poles, ſeeming to demonſtrate, that gravity was ſtronger at the poles and weaker at the equator, proved, he thought, that the equator was further from the centre than the poles. All the meaſures however, which had hitherto been made of the Earth, ſeemed to ſhew the contrary, that it was drawn out towards the poles, and flattened towards the equator. Newton, however, preferred his own mechanical computations to the former meaſures of geographers and aſtronomers; and in this he was confirmed by the obſervations of aſtronomers on the figure of Jupiter, whoſe diameter at the pole ſeems to be to his diameter at the equator, as twelve to thirteen; a much greater inequality than could be ſuppoſed to take place betwixt the correſpondent diameters of the Earth, but which was exactly proportioned to the ſuperior bulk of Jupiter, and the ſuperior rapidity with which he performs his diurnal revolutions. The obſervations of aſtronomers at Lapland and Peru have fully confirmed Sir Iſaac's ſyſtem, and have not only demonſtrated, that the figure of the Earth is, in general, ſuch as he ſuppoſed it; but that the proportion of its axis to the diameter of its equator is almoſt preciſely ſuch as he had computed it. And, of all the proofs that have ever been adduced of the diurnal revolution of the Earth, this perhaps is the moſt ſolid and ſatisfactory.

Hipparchus, by comparing his own obſervations with thoſe of ſome former aſtronomers, had found that the equinoxial points were not always oppoſite to the ſame part of the heavens, but that they advanced gradually eaſtward by ſo ſlow a motion, as to be ſcarcely ſenſible in one hundred years, and which would require thirty-ſix thouſand to make a complete revolution of the equinoxes, and to carry them ſucceſſively through all the different points of the ecliptic. More accurate obſervations diſcovered that this proceſſion of the equinoxes was not ſo ſlow as Hipparchus had imagined it, and that it required ſomewhat leſs than twenty-ſix thouſand years to give them a complete revolution. While the ancient ſyſtem of aſtronomy, which repreſented the earth as the immoveable centre of the univerſe, took place, this appearance was neceſſarily accounted for, by ſuppoſing that the firmament, beſides its rapid diurnal revolution round the poles of the equator, had likewiſe a ſlow periodical one round thoſe of the ecliptic. And when the ſyſtem of Hipparchus was by the ſchoolmen united with the ſolid ſphere of Ariſtotle, they placed a new cryſtalline ſphere above the firmament, in order to join this motion to the reſt. In the Copernican ſyſtem, this appearance had hitherto been connected with the other parts of that hypotheſis, by ſuppoſing a ſmall revolution in the Earth's axis from eaſt to weſt. Sir Iſaac Newton connected this motion by the ſame principle of gravity, by which he had united all the others, and ſhewed how the elevation of the parts of the Earth at the equator muſt, by by the attraction of the Sun, produce the ſame retrograde motion of the nodes of the ecliptic, which it produced on the nodes of the Moon. He computed the quantity of motion which could ariſe from this action of the Sun, and his calculations here too entirely correſponded with the obſervations of aſtronomers.

Comets had hitherto, of all the appearances in the heavens, been the leaſt attended to by aſtronomers. The rarity and inconſtancy of their appearance, ſeemed to ſeparate them entirely from the conſtant, regular, and uniform, objects in the heavens, and to make them reſemble more the inconſtant, tranſitory, and accidental, phænomena of thoſe regions that are in the neighbourhood of the Earth. Ariſtotle, Eudoxus, Hipparchus, Ptolemy, and Purbach, therefore, had all degraded them below the Moon, and ranked them among the meteors of the upper regions of the air. The obſervations of Tycho Brahe demonſtrated that they aſcended into the celeſtial regions, and were often higher than Venus or the Sun. Des Cartes, at random, ſuppoſed them to be always higher than even the orbit of Saturn; and ſeems, by the ſuperior elevation he thus beſtowed upon them, to have been willing to compenſate that unjuſt degradation which they had ſuffered for ſo many ages before. The obſervations of ſome later aſtronomers demonſtrated, that they too revolved about the Sun, and might therefore be parts of the ſolar ſyſtem. Newton accordingly applied his mechanical principle of gravity to explain the motions of theſe bodies. That they deſcribed equal areas in equal times, had been diſcovered by the obſervations of ſome later aſtronomers; and Newton endeavoured to ſhew how from this principle, and thoſe obſervations, the nature and poſition of their ſeveral orbits might be aſcertained, and their periodic times determined, ſo as even to predict the returns of them.

But of all the arguments of the Newtonian philoſophy, which would appear to be moſt above the reach of human reaſon, is that which computes the weights and denſities of the Sun, and of the ſeveral planets. This, however, was indiſpenſably neceſſary to complete the coherence of the Newtonian ſyſtem. The power of attraction which, according to the theory of gravity, each body poſſeſſes, is in proportion to the quantity of matter contained in that body. But the periodic time in which one body, at a given diſtance, revolves round another that attracts it, is ſhorter in proportion as this power is greater, and conſequently as the quantity of matter in the attracting body. If the denſities of Jupiter and Saturn were the ſame with that of the Earth, the periodic times of their ſeveral ſatellites would be ſhorter than by obſervation they are found to be, becauſe the quantity of matter, and conſequently the attracting power, of each of them, would be as the cubes of their diameters. By comparing the bulks of thoſe planets, and the periodic times of their ſtatellites, it is found that, upon the hypotheſis of gravity, the denſity of Jupiter muſt be greater than that of Saturn, and the denſity of the Earth greater than that of Jupiter. This ſeems to eſtabliſh it as a law in the ſyſtem, that the nearer the ſeveral planets approach to the Sun, the denſity of their matter is the greater: a conſtitution of things which would ſeem to be the moſt advantageous of any that could have been eſtabliſhed; as water of the ſame denſity with that of our Earth, would freeze under the equator of Saturn, and boil under that of Mercury.

Such is the ſolar ſyſtem aſſumed by Sir Iſaac Newton, a ſyſtem whoſe parts are all more ſtrictly connected together, than thoſe of any other philoſophical hypotheſis. Allow his principle, the univerſality of gravity, and that it decreaſes as the ſquares of the diſtance increaſe, and all the appearances, which he joins together by it, neceſſarily follow. Neither is their connection merely a general and looſe connection, as that of moſt other ſyſtems, in which either theſe appearances, or ſome ſuch like appearances, might indifferently have been expected. It is every where the moſt preciſe and particular that can be imagined, and aſcertains the time, the place, the quantity, the duration, of each individual phænomenon, to be exactly ſuch as, by obſervation, they had been determined to be. Neither are the principles of union, which it employs, ſuch as the imagination can find any difficulty in going along with. The gravity of matter is, of all its qualities, after its inertneſs, that which is moſt familiar to us. We never act upon it without having occaſion to obſerve this property. The law too, by which it is ſuppoſed to diminiſh as it recedes from its centre, is the ſame which takes place in all other qualities which are propagated in rays from a centre, in light, and in every thing elſe of the ſame kind. It is ſuch, that we not only find that it does take place in all ſuch qualities, but we are neceſſarily determined to conceive that, from the nature of the thing, it muſt take place. The oppoſition which was made in France, and in ſome other foreign nations, to the prevalence of this ſyſtem, did not ariſe from any difficulty which mankind naturally felt in conceiving gravity as an original and primary mover in the conſtitution of the univerſe. The Carteſian ſyſtem, which had prevailed ſo generally before it, had accuſtomed mankind to conceive motion as never beginning, but in conſequence of impulſe, and had connected the deſcent of heavy bodies, near the ſurface of the Earth and the other planets, by this more general bond of union; and it was the attachment the world had conceived for this account of things, which indiſpoſed them to that of Sir Iſaac Newton. His ſyſtem, however, now prevails over all oppoſition, and has advanced to the acquiſition of the moſt univerſal empire that was ever eſtabliſhed in philoſophy. His principles, it muſt be acknowledged, have a degree of firmneſs and ſolidity that we ſhould in vain look for in any other ſyſtem. The moſt ſceptical cannot avoid feeling this. They not only connect together moſt perfectly all the phenomena of the heavens which had been obſerved before his time, but thoſe alſo which the perſevering induſtry and more perfect inſtruments of later aſtronomers have made known to us; have been either eaſily and immediately explained by the application of his principles, or have been explained in conſequence of more laborious and accurate calculations from theſe principles, than had been inſtituted before. Can we wonder then, that it ſhould have gained the general and complete approbation of mankind, and that it ſhould now be conſidered, not as an attempt to connect in the imagination the phenomena of the heavens, but as the greateſt diſcovery that ever was made by man, the diſcovery of an immenſe chain of the moſt important and ſublime truths, all cloſely connected together by one capital fact, of the reality of which we have daily experience. See Phil. Eſſ. ſect. iv.

From the date of theſe improvements of Sir Iſaac Newton, to the era of the aſtronomical fame of Dr. Herſchel, though the intervening ſpace was long, though the number of aſtronomers was increaſed, and though aſſiduity in obſerving was aſſiſted by accuracy and perfection in the inſtruments of obſervation, yet we hear of no further addition to the Copernican ſyſtem, nor of any new diſcoveries in the phænomena of the heavens, by which the ſcience of aſtronomy could be improved or enlarged, other than the celebrated diſquiſitions of La Place and La Grange, who, guided by a moſt refined calculus, have anticipated the reſearches of future centuries, by diſcloſing thoſe beautiful cycles which bind and perpetuate the revolutions of nature. Beyond all this, however, the penetrating eye of Dr. Herſchel, on March 13, 1781, diſcovered a new planet, conſiderably more remote in the ſolar ſyſtem than that of Saturn. The attention of this able aſtronomer was firſt drawn towards it by the ſteadineſs of its light; this induced him to apply greater magnifying powers to his teleſcope, by which its diameter was increaſed, and its general appearances brought more into view. In two days he obſerved that its place was changed, and he then concluded that it was a comet; but in a little time, and, after a conſultation with other aſtronomers, he determined it to be a planet, from its vicinity to the ecliptic, and the direction of its motion; being ſtationary in the time and in ſuch circumſtances as correſpond with ſimilar appearances in other planets. With a teleſcope which magnifies about 300 times, it appears to have a very well-defined viſible diſk; but with inſtruments of a ſmaller power it can hardly be diſtinguiſhed from a fixed ſtar between the ſixth and ſeventh magnitude. In a clear night, and when the Moon is abſent, it may be ſeen with the naked eye. Dr. Herſchel has ſince ſhewn that it is attended by two ſatellites; a diſcovery that afforded him conſiderable pleaſure, as the little ſecondary planets ſeemed to give a dignity to the primary one, and to raiſe it into a more conſpicuous ſituation among the great bodies of our ſolar ſyſtem. For this diſcovery Dr. Herſchel obtained from the Royal Society the honorary recompence of Sir Godfrey Copley's medal; and his majeſty has taken him under his protection, and granted him an annual ſalary. By this princely munificence, the king wiſely gave ſcope to a very uncommon genius, which has enabled him to proſecute his aſtronomical ſtudies with unremitted ardour.

That the mind may readily embrace a clear comprehenſion of the three moſt popular ſyſtems of which we have been ſpeaking, namely, the Ptolemaic, Tychonic, and Copernican, we have in the Aſtronomical-Plate I. projected figures of each of them, and of which the following is an explanation:

Fig. 1, repreſents the Syſtem introduced by Ptolemy, in which he ſuppoſed the Earth to be at reſt in the centre, and the Sun and planets to move in circles round it. The ☽ Moon he placed firſt and neareſt, to enable her to perform her monthly revolutions. Next to the Moon was placed ☿ Mercury; next above him ♀ Venus; and then the ☉ Sun, occupying the fourth circle, whoſe complete revolution was taken to be the meaſure of the year. Next above the Sun was ♂ Mars, then ♃ Jupiter, and next ♄ Saturn, in their ſeparate and proper orbits. The firmament,

mament, or ſphere of the fixed ſtars **, was thought to be the boundary next above the orbit of Saturn; and beyond this boundary he conceived there were two ſolid or cryſtalline heavens, to which the fixed ſtars were attached. This beautiful concave ſhell or canopy he ſuppoſed to be incloſed by the *primum mobile*, which, turning round once in twenty-four hours, carried with it all the reſt. The *primum mobile* he imagined was every way encompaſſed by the empyrean heaven, which he conceived to be of a cubic form, the ſeat of bliſs, and the abode of angels and divine ſpirits.

Fig. 2, is the Syſtem aſſumed by Tycho Brahe, in which both the Sun and the Earth are made to occupy diſtinct centres. The Earth was ſuppoſed the centre of the orbits of the Sun and Moon; but the Sun was ſuppoſed to be the centre of the orbits of the five planets; ſo that the Sun, with all the planets, were in this ſcheme made to turn round the Earth, in order to ſave the motion of the Earth round its axis once in twenty-four hours. The orbit of the ſuperior planet Saturn was ſuppoſed to be externally bounded by the ſphere of the fixed ſtars. The orbits of the ſeveral planets are diſtinguiſhed in this figure by the ſame characters as in the preceding.

Fig. 3, repreſents the Copernican or Solar Syſtem, as now univerſally admitted by the aſtronomers in every part of the civiliſed world; but by this ſyſtem is meant that portion *alone* of the univerſe which comprehends the Sun, the planets with their moons or ſatelites, and the comets. The Sun is placed in or near the centre, about whom the planets continually move with different degrees of velocity, and at different diſtances. The firſt and neareſt to the Sun is Mercury, next Venus, then the Earth and Moon; next beyond theſe is Mars; after him, Jupiter; then Saturn; and above, and far remote from him, the newly-diſcovered Georgian planet. Above the obſcure orbit of this planet are the ſtarry heavens, boundleſs and immeaſurable. Each of theſe planets are diſtinguiſhed in the Plate by their proper aſtronomical mark or character, as before.

Mercury and Venus, being within the Earth's orbit, are called *inferior planets*; but Mars, Jupiter, Saturn, and the Georgium Sidus, being without or above the Earth's orbit, are called *ſuperior planets*. The Georgian planet is attended by two ſatellites or moons, Saturn by ſeven, Jupiter by four, and the Earth by one; all of theſe, excepting the laſt, are inviſible to the naked eye, on account of the ſmallneſs of their ſize, and the greatneſs of their diſtance from us.

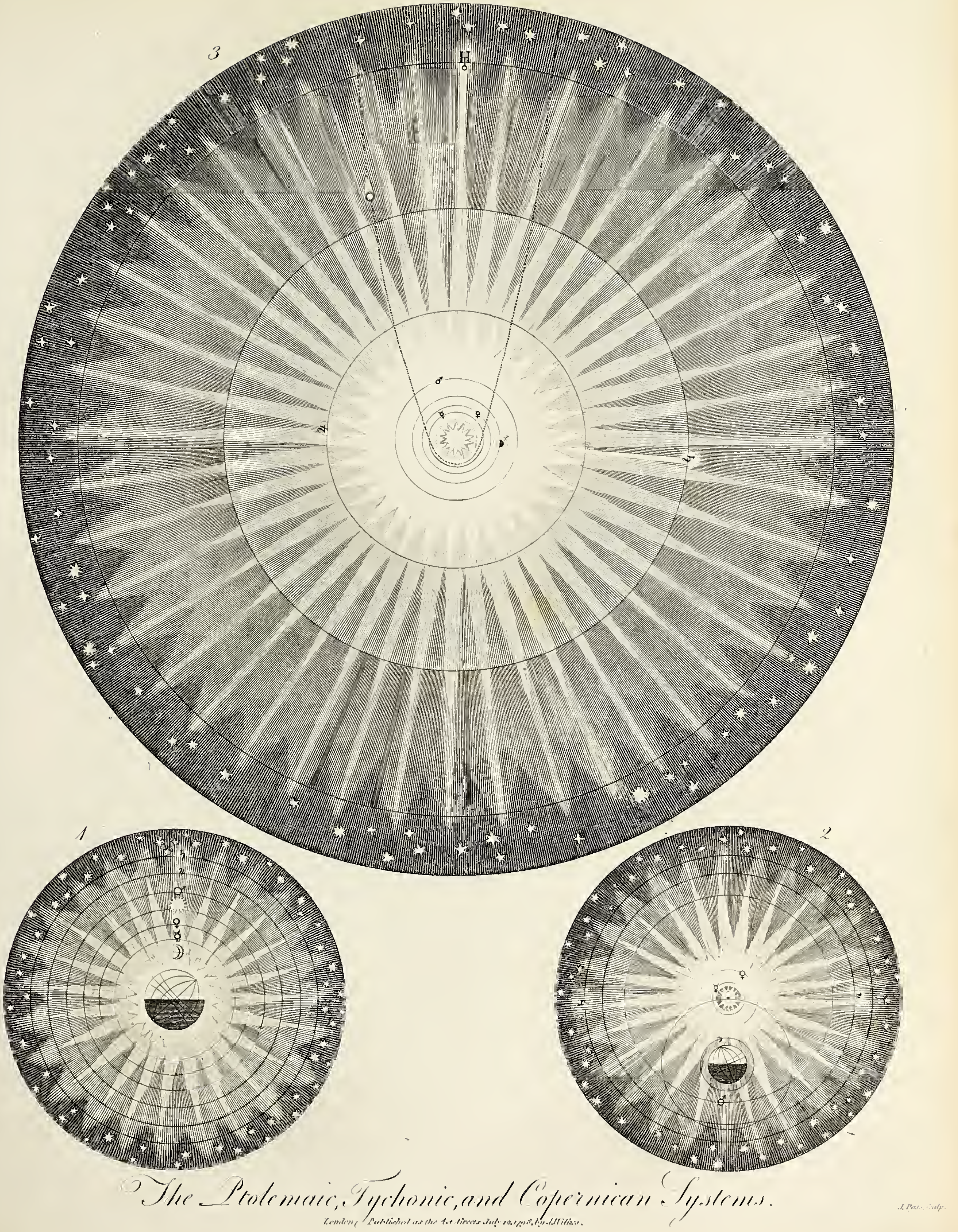
Notwithſtanding theſe planets uniformly and at all times reſpect the Sun as the centre of their motion, they do not always preſerve the ſame diſtance from him; neither do they all move in the ſame plane, though every one of them revolves in an orbit whoſe plane if extended would paſs through the ſun's centre. Each of them moves in an orbit ſomewhat elliptical; and thus ſometimes approaches nearer, and at other times recedes farther from, the Sun than before. This deviation from a circle is called the *eccentricity* of the orbit. But though the orbits of all the planets are really elliptical; yet, as the principal phenomena of the Copernican ſyſtem may be ſatisfactorily illuſtrated, by conſidering them as circular, the latter ſuppoſition is uſually adopted, in giving a general delineation or idea of the diſpoſition and motion of the heavenly bodies. The orbits of the comets are exceedingly long ovals, or ellipſes, as ſhewn by part of one in the preceding figure of the Copernican ſyſtem. They are of ſuch vaſt circumferences, that at one period of their courſe through them, they approach ſo near to the Sun, as to be almoſt melted by his heat, and then go off again to diſtances ſo immenſe, that they muſt be totally deprived both of his heat and light.

Before we enter upon an inveſtigation of the nature and properties of the celeſtial bodies which form the ſolar ſyſtem, we ſhall purſue our hiſtorical detail ſomewhat farther, in order to ſtate the recent diſcoveries of Dr. Herſchel in the region of the ſtarry heavens. Encouraged by the ſucceſs of his late ſpeculations concerning the Georgian planet, and influenced by the extenſive field which opened to his view, in conſequence of the improvements and larger powers he had communicated to the teleſcope, Dr. Herſchel, with ſingular induſtry and perſeverance, undertook the laborious taſk of making a long ſucceſſion of minute obſervations, in order more clearly to aſcertain the phenomena of the ſidereal heavens; the progreſs and reſult of which follows in his own words:

"Hitherto (ſays he) the ſidereal heavens have, not inadequately for the purpoſe deſigned, been repreſented as the concave ſurface of a ſphere, in the centre of which the eye of the obſerver is ſuppoſed to be placed. It is true, the various magnitudes of the fixed ſtars even then plainly ſuggeſted to us, and would have better ſuited, the idea of an expanded firmament of three dimenſions; but the obſervations upon which I am now going to enter, ſtill farther illuſtrate and enforce the neceſſity of conſidering the heavens in this point of view. In future therefore we ſhall look upon thoſe regions into which we penetrate by means of teleſcopes, as a naturaliſt regards a rich extent of ground or chain of mountains, containing ſtrata variouſly inclined and directed, as well as conſiſting of very different materials. A ſurface of a globe or map therefore will but ill delineate the interior parts of the heavens."

With a powerful teleſcope of twenty feet focal length, and an aperture of eighteen inches, Dr. Herſchel firſt began to ſurvey the *via lactea*, and found that it completely reſolved the whitiſh appearance into ſtars, which the teleſcopes he formerly uſed had not light enough to do. The portion he firſt obſerved was that about the hand and club of Orion; and found therein an aſtoniſhing multitude of ſtars, whoſe number he endeavoured to eſtimate by counting many fields, or ſpaces taken in at one view by his teleſcope, and computing from a mean of theſe how many might be contained in a given portion of the milky-way. In the moſt vacant place to be met with in that neighbourhood he found ſixty-three ſtars; other ſix fields contained 110, ſixty, ſeventy, ninety, ſeventy, and ſeventy-four, ſtars; a mean of all which gave ſeventy-nine for the number of ſtars to each field; and thus he found, that by allowing fifteen minutes for the diameter of his field of view, a belt of fifteen degrees long and two broad, which he had often ſeen paſs before his teleſcope in an hour's time, could not contain leſs than 50,000 ſtars, large enough to be diſtinctly numbered; beſides which, he ſuſpected twice as many more, which could be ſeen only now and then by faint glimpſes, for want of ſufficient light.

The ſucceſs he had within the milky-way ſoon induced him to turn his teleſcope to the nebulous parts of the heavens, from which a liſt of 103 nebulæ had been publiſhed in the *Connoiſſance des Temps* for 1783 and 1784, as obſerved by Meſſier and Mechain; ſome of which they could reſolve, and ſome they could not. Dr. Herſchel, however, found them all to yield to a Newtonian reflector of twenty feet focal diſtance and twelve inches aperture; which plainly diſcovered them to be compoſed of ſtars, or at leaſt to contain ſtars, and to ſhew every other indication of conſiſting of them entirely. "The nebulæ (ſays he) are arranged into ſtrata, and run on to a great length; and ſome of them I have been able to purſue, and to gueſs pretty well at their form and direction. It is probable enough that they may ſurround the whole ſtarry ſphere of the heavens, not unlike the milky-way, which undoubtedly is nothing but a ſtratum of fixed ſtars. And as this latter immenſe ſtarry bed is not of equal breadth or luſtre in every part, nor runs on in one ſtraight direction, but is curved, and even divided into two ſtreams along a very conſiderable portion of it; we may likewiſe expect the greateſt variety in the ſtrata of the cluſters of ſtars and nebulæ. One of theſe nebulous beds is ſo rich, that, in paſſing through a ſection of it in the time of only thirty-ſix minutes, I have detected no leſs than thirty-one nebulæ, all diſtinctly viſible upon a fine blue ſky. Their ſituation and ſhape, as well as condition, ſeem to denote the greateſt variety imaginable. In another ſtratum, or perhaps a different branch



The Ptolemaic, Tychonic, and Copernican Systems.

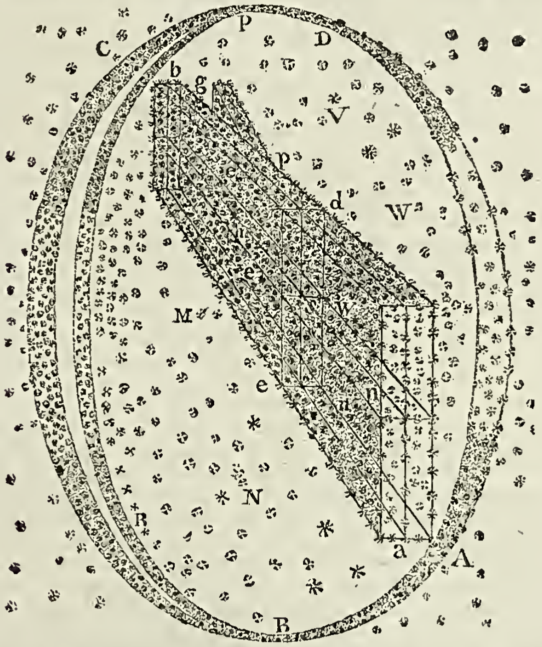
London, Published as the Act directs July 12, 1798, by J. Wilkes.

J. Pass, Sculp.

of the former, I have often ſeen double and treble nebulæ variouſly arranged; large ones with ſmall ſeeming attendants; narrow, but much extended lucid nebulæ or bright daſhes; ſome of the ſhape of a fan, reſembling an electric bruſh iſſuing from a lucid point; others of the cometic ſhape, with a ſeeming nucleus in the centre, or like cloudy ſtars, ſurrounded with a nebulous atmoſphere: a different ſort again contain a nebuloſity of the milky kind, like that wonderful inexplicable phenomenon about θ Orionis; while others ſhine with a fainter mottled kind of light, which denotes their being reſolvable into ſtars.

“ It is very probable that the great ſtratum called the *milky-way* is that in which the ſun is placed, though perhaps not in the very centre of its thickneſs. We gather this from the appearance of the galaxy, which ſeems to encompaſs the whole heavens, as it certainly muſt do if the ſun is within the ſame. For ſuppoſe a number of ſtars arranged between two parallel planes, indefinitely extended every way, but at a given conſiderable diſtance from one another, and calling this a ſidereal ſtratum, an eye placed ſomewhere within it will ſee all the ſtars in the direction of the planes of the ſtratum projected into a great circle, which will appear lucid on account of the accumulation of the ſtars, while the reſt of the heavens at the ſides will only ſeem to be ſcattered over with conſtellations, more or leſs crowded according to the diſtance of the planes or number of ſtars contained in the thickneſs or ſides of the ſtratum.

“ Thus, in the annexed figure, an eye at S within the ſtratum a b, will ſee the ſtars in the direction of its length a b, or height e d, with all thoſe in the intermediate ſituation, projected into the lucid circle ABCD; while thoſe in the ſides m e, n w, will be ſeen ſcattered over the remaining part of the heavens at MVNW. If the eye were placed ſomewhere without the ſtratum, at no very great diſtance, the appearance of the ſtars within it would aſſume the form of one of the leſſer circles of the ſphere, which would be more or leſs contracted to the diſtance of the eye; and, if this diſtance were exceedingly increaſed, the whole ſtratum might at laſt be drawn together into a lucid ſpot of any ſhape, according to the poſition, length, and height, of the ſtratum. Let us now ſuppoſe, that a branch or ſmaller ſtratum ſhould run out from the former in a certain direction, and let it alſo be contained between two parallel planes extended indefinitely onwards, but ſo that the eye may be placed in the great ſtratum ſomewhere before the ſeparation, and not far from the place where the ſtrata are ſtill united; then will this ſecond ſtratum not be projected into a bright circle like the former, but will be ſeen as a lucid branch proceeding from the firſt, and returning to it again at a certain diſtance leſs than a ſemicircle. Thus, in the ſame figure, the ſtars in the ſmall ſtratum p g, will be projected into a bright arch at PR, which, after its ſeparation from the circle CBD, unites with it again at P.



“ What has been inſtanced in parallel planes may eaſily be applied to ſtrata irregularly bounded, and running in various directions; for their projection will of conſequence vary according to the quantities of the variations in the ſtrata, and the diſtance of the eye from the ſame. And thus any kind of curvatures, as well as various degrees of brightneſs, may be produced in the projections.

“ From appearances, then, as I obſerved before, we may infer, that the Sun is moſt likely placed in one of the great ſtrata of the fixed ſtars, and very probably not far from the place where ſome ſmaller ſtratum branches out from it. Such a ſuppoſition will ſatisfactorily, and with great ſimplicity, account for all the phenomena of the milky-way; which, according to this hypotheſis, is no other than the appearance of the projection of the ſtars contained in this ſtratum and its ſecondary branch. As a farther inducement to look on the galaxy in this point of view, let it be conſidered, that we can no longer doubt of its whitiſh appearance ariſing from the mixed luſtre of the numberleſs ſtars that compoſe it. Now, ſhould we ſuppoſe it to be an irregular ring of ſtars, in the centre nearly of which we muſt then ſuppoſe the Sun to be placed, it will appear not a little extraordinary, that the Sun, being a fixed ſtar like thoſe which compoſe this imagined ring, ſhould juſt be in the centre of ſuch a multitude of celeſtial bodies, without any apparent reaſon for this ſingular diſtinction; whereas, on our ſuppoſition, every ſtar in this ſtratum, not very near the termination of its length or height, will be ſo placed as alſo to have its own galaxy, with only ſuch variations in the form and luſtre of it as may ariſe from the particular ſituation of each ſtar.

“ Various methods may be taken to obtain a knowledge of the Sun's place in the ſidereal ſtratum, one of which I have put in practice: I call it *gauging the heavens*, or the *ſtar-gauge*. It conſiſts in repeatedly taking the number of ſtars in ten fields of view of my reflector very near each other; and, by adding their ſums, and cutting off one decimal on the right, a mean of the contents of the heavens in all the parts which are thus gauged are obtained. Thus it appears, that the number of ſtars increaſes very much as we approach the milky-way; for, in the parallel from ninety-two to ninety-four degrees north polar diſtance, and right aſcenſion 15h. 10′, the ſtar-gauge runs up from 9·4 ſtars in the field to 18·6 in about an hour and an half; whereas in the parallel from ſeventy-eight to eighty degrees north polar diſtance, and R. A. 11, 12, 13, and 14, hours, it very ſeldom riſes above four. We are, however, to remember, that, with different inſtruments, the account of the gauges will be very different, eſpecially on our ſuppoſition of the Sun in a ſtratum of ſtars.

“ In my obſervations on nebulæ, I found, that I generally detected them in certain directions rather than in others: that the ſpaces preceding them were generally quite deprived of their ſtars, ſo as often to afford many fields without a ſingle ſtar in it: that the nebulæ generally appeared ſome time after among ſtars of a certain conſiderable ſize, and but ſeldom among very ſmall ſtars: that, when I came to one nebula, I generally found ſeveral more in the neighbourhood: that afterwards a conſiderable time paſſed before I came to another parcel. Theſe events being often repeated in different altitudes of my teleſcope, and ſome of them at conſiderable diſtances from each other, it occurred to me that the intermediate ſpaces between the ſweeps might alſo contain nebulæ; and I ſometimes found this to hold good. The well-known nebula of Cancer, viſible to the naked eye, is probably one belonging to a certain ſtratum, in which I ſuppoſe it to be ſo placed as to lie neareſt to us. This ſtratum I ſhall call that of Cancer. It runs ε Cancri towards the ſouth, over the ſixty-ſeventh nebula of the *Connoiſſance des Temps*, which is a very beautiful and pretty-much compreſſed cluſter of ſtars, eaſily to be ſeen by any good teleſcope; and in which I have obſerved above 200 ſtars at once in the field of view of my great reflector with a power of 157. This cluſter appearing ſo plainly with any good common teleſcope, and being ſo near to the one which may be ſeen with the naked eye, denotes it to be probably the next in diſtance to that within the quartile formed by γ, δ, η, θ. From the ſixty-ſeventh nebula the ſtratum of Cancer proceeds towards the head of Hydra; but I have not traced it farther than the equator. Another ſtratum, which perhaps approaches nearer to the ſolar ſyſtem than any of the reſt, and whoſe ſituation is nearly at rectangles with the great ſidereal ſtratum in which the Sun is placed, is that of Coma Berenices, as I ſhall call it. I ſuppoſe the Coma itſelf to be one of the cluſters in it, and that on account of its nearneſs it appears to be ſo ſcattered. It has many capital nebulæ very near it: and in all probability this ſtratum runs out a very conſiderable way. It may perhaps even make the circuit of the heavens, though very likely not in one of the great circles of the ſphere; for, unleſs it ſhould chance to interſect the great ſidereal ſtratum of the milky-way before-mentioned, in the very place in which the Sun is ſtationed, ſuch an appearance would hardly be produced. However, if the ſtratum of Coma Berenices ſhould extend ſo far as I apprehend it may, the direction of it towards the north lies probably, with ſome windings, thro' the Great Bear onwards to Caſſiopeia, thence through the Girdle of Andromeda and the Northern Fiſh, proceeding towards Cetus; while towards the ſouth it paſſes through the Virgin, probably on to the tail of Hydra and Centaurus."

By a continued ſeries of obſervations, Dr. Herſchel became more confirmed in his opinion; and in a ſucceeding paper has given a ſketch concerning the interior conſtruction of the ſidereal heavens. "That the milky-way (ſays he) is a moſt extenſive ſtratum of ſtars of various ſizes, admits no longer of the leaſt doubt; and that our Sun is one of the heavenly bodies belonging to it, is as evident. I have now viewed and gauged this ſhining zone in almoſt every direction, and find it compoſed of ſhining ſtars, whoſe number, by the account of thoſe gauges, conſtantly increaſes and decreaſes in proportion to its apparent brightneſs to the naked eye. But, in order to develope the ideas of the univerſe that have been ſuggeſted by my late obſervations, it will be beſt to take the ſubject from a point of view at a conſiderable diſtance both of ſpace and time. Let us then ſuppoſe numberleſs ſtars of various ſizes ſcattered over an indefinite portion of ſpace, in ſuch a manner as to be almoſt equally diſtributed through the whole. The laws of attraction, which no doubt extend to the remoteſt regions of the fixed ſtars, will operate in ſuch a manner as moſt probably to produce the following remarkable effects:

"Firſt, it will frequently happen, that a ſtar, being conſiderably larger than its neighbouring ones, will attract them more than they will be attracted by others that are immediately around them; by which means they will be in time, as it were, condenſed about a centre; or, in other words, form themſelves into a cluſter of ſtars of almoſt a globular figure, more or leſs regularly ſo according to the ſize and original diſtance of the ſurrounding ſtars. The perturbations of theſe mutual attractions muſt undoubtedly be very intricate, as we may eaſily comprehend, by conſidering what Sir Iſaac Newton has ſaid, *Princip.* lib. i. prob. 38, et ſeq. But, in order to apply this great author's reaſoning of bodies moving in ellipſes to ſuch as are here for a while ſuppoſed to have no other motion than what their mutual gravity has imparted to them, we muſt ſuppoſe the conjugate axes of theſe ellipſes indefinitely diminiſhed, whereby the ellipſes will become ſtraight lines.

"II. The next caſe, which will happen almoſt as frequently as the former, is where a few ſtars, though not ſuperior in ſize to the reſt, may chance to be rather nearer each other than the ſurrounding ones; for here alſo will be formed a prevailing attraction in the combined centre of gravity of them all, which will occaſion the neighbouring ſtars to draw together; not, indeed, ſo as to form a regular globular figure, but, however, in ſuch a manner as to be condenſed towards the common centre of gravity of the whole irregular cluſter. And this conſtruction admits of the utmoſt variety of ſhapes, according to the number and ſituation of the ſtars which firſt gave riſe to the condenſation of the reſt.

"III. From the compoſition and repeated conjunction of both the foregoing forms, a third may be derived, when many large ſtars, or combined ſmall ones, are ſituated in long extended regular or crooked rows, hooks, or branches; for they will alſo draw the ſurrounding ones ſo as to produce figures of condenſed ſtars coarſely ſimilar to the former, which gave riſe to theſe condenſations.

"IV. We may likewiſe admit of ſtill more extenſive combinations; when, at the ſame time that a cluſter of ſtars is forming in one part of ſpace, there may be another collecting in a different, but perhaps not far diſtant, quarter, which may occaſion a mutual approach towards their common centre of gravity.

"V. In the laſt place, as a natural conſequence of the former caſes, there will be great cavities or vacancies formed by the retreat of the ſtars towards the various centres which attract them; ſo that, upon the whole, there is evidently a field of the greateſt variety for the mutual and combined attractions of the heavenly bodies to exert themſelves in.

"From this theoretical view of the heavens, which has been taken from a point not leſs diſtant in time than in ſpace, we will now retreat to our own retired ſtation, in one of the planets attending a ſtar in its great combination with numberleſs others: and, in order to inveſtigate what will be the appearances from this contracted ſituation, let us begin with the naked eye. The ſtars of the firſt magnitude, being in all probability the neareſt, will furniſh us with a ſtep to begin our ſcale. Setting off, therefore, with the diſtance of Sirius or Arcturus, for inſtance, as unity, we will at preſent ſuppoſe, that thoſe of the ſecond magnitude are at double, thoſe of the third at treble, the diſtance, &c. Taking it for granted, then, that a ſtar of the ſeventh magnitude (the ſmalleſt ſuppoſed viſible with the naked eye) is about ſeven times as far as one of the firſt, it follows, that an obſerver who is incloſed in a globular cluſter of ſtars, and not far from the centre, will never be able, with the naked eye, to ſee to the end of it; for ſince, according to the above eſtimations, he can only extend his view to about ſeven times the diſtance of Sirius, it cannot be expected that his eyes ſhould reach the borders of a cluſter which has perhaps not leſs than fifty ſtars in depth every way around him. The whole univerſe to him, therefore, will be compriſed in a ſet of conſtellations richly ornamented with ſcattered ſtars of all ſizes. Or, if the united brightneſs of a neighbouring cluſter of ſtars ſhould, in a remarkable clear night, reach his ſight, it will put on the appearance of a ſmall, faint, whitiſh, nebulous, cloud, not to be perceived without the greateſt attention. Let us ſuppoſe him placed in a much-extended ſtratum, or branching cluſter of millions of ſtars, ſuch as may fall under the third form of nebulæ already conſidered. Here alſo the heavens will not only be richly ſcattered over with brilliant conſtellations, but a ſhining zone or milky-way will be perceived to ſurround the whole ſphere of the heavens, owing to the combined light of thoſe ſtars which are too ſmall, that is, too remote, to be ſeen. Our obſerver's ſight will be ſo confined, that he will imagine this ſingle collection of ſtars, though he does not even perceive the thouſandth part of them, to be the whole contents of the heavens. Allowing him now the uſe of a common teleſcope, he begins to ſuſpect that all the milkineſs of the bright path which ſurrounds the ſphere may be owing to ſtars,

ſtars. He perceives a few cluſters of them in various parts of the heavens, and finds alſo that there are a kind of nebulous patches; but ſtill his views are not extended to reach ſo far as to the end of the ſtratum in which he is ſituated; ſo that he looks upon theſe patches as belonging to that ſyſtem which to him ſeems to comprehend every celeſtial object. He now encreaſes his power of viſion; and, applying himſelf to a cloſer obſervation, finds that the milky-way is indeed no other than a collection of very ſmall ſtars. He perceives, that thoſe objects which had been called *nebulæ*, are evidently nothing but cluſters of ſtars. Their number increaſes upon him; and when he reſolves one nebula into ſtars, he diſcovers ten new ones which he cannot reſolve. He then forms the idea of immenſe ſtrata of fixed ſtars, of cluſters of ſtars, and of nebulæ; till, going on with ſuch intereſting obſervations, he now perceives, that all theſe appearances muſt naturally ariſe from the confined ſituation in which we are placed. Confined it may juſtly be called, though in no leſs a ſpace than what appeared before to be the whole region of the fixed ſtars, but which now has aſſumed the ſhape of a crookedly-branching nebula; not indeed one of the leaſt, but perhaps very far from being the moſt conſiderable, of thoſe numberleſs cluſters that enter into the conſtruction of the heavens.

“ To theſe arguments we may add the following conſiderations drawn from analogy. Among the great number of nebulæ which I have ſeen, there are many which in all probability are equally extenſive with that which we inhabit; and yet they are all ſeparated from each other by very conſiderable intervals. Some, indeed, there are, that ſeem to be double and treble; and, though with moſt of theſe it may be that they are at a very great diſtance from each other, yet we allow that ſome conjunctions really are to be found; but then theſe compound or double nebulæ, which are thoſe of the third and fourth forms, ſtill make a detached link in the great chain. It is alſo to be ſuppoſed, that there may be ſome thinly-ſcattered ſolitary ſtars between the large interſtices of nebulæ; which being ſituated ſo as to be nearly equally attracted by the ſeveral cluſters when they were forming, remain unaſſociated: and, though we cannot expect to ſee thoſe ſtars on account of their vaſt diſtance, yet we may well preſume that their number cannot be very conſiderable in compariſon to thoſe that are already drawn into ſyſtems; which conjecture is alſo abundantly confirmed in ſituations where the nebulæ are near enough to have their ſtars viſible; for they are all inſulated, and generally to be ſeen upon a very clear and pure ground, without any ſtar near that might be thought to belong to them. And, though I have often ſeen them in beds of ſtars, yet from the ſize of theſe latter we may be certain, that they were much nearer to us than thoſe nebulæ, and belonged undoubtedly to our own ſyſtem.”

Having thus determined that the viſible ſyſtem of nature, by us called the *univerſe*, conſiſting of all the celeſtial bodies, and many more than can be ſeen by the naked eye, is only a group of ſtars or ſuns with their planets, conſtituting one of thoſe patches called a *nebula*, and perhaps not a ten-thouſandth part of what is really the univerſe, Dr. Herſchel goes on to delineate the figure of this vaſt nebula, which he is of opinion may now be done; and for this purpoſe he gives a table, calculating the diſtance of the ſtars which form its extreme boundaries, or the length of the viſual ray in different parts, by the number of ſtars contained in the field of his teleſcope at different times. He then proceeds to offer ſome farther thoughts on the origin of the nebulous ſtrata of the heavens; in doing which he gives ſome hints concerning the antiquity of them. “ If it were poſſible, ſays he, to diſtinguiſh between the parts of an indefinitely extended whole, the nebula we inhabit might be ſaid to be one that has fewer marks of antiquity than any of the reſt. To explain this idea perhaps more clearly, we ſhould recollect, that the condenſation of cluſters of ſtars has been aſcribed to a gradual approach; and whoever reflects on the number of ages that muſt have paſſed before ſome of the cluſters that are to be found in my catalogue of them could be ſo far condenſed as we find them at preſent, will not wonder if I aſcribe a certain air of youth and vigour to many very regularly ſcattered regions of our ſidereal ſtratum. There are, moreover, many places in it in which, if we may judge from appearances, there is the greateſt reaſon to believe that the ſtars are drawing towards ſecondary centres, and will in time ſeparate into cluſters, ſo as to occaſion many ſubdiviſions. Hence we may ſurmiſe, that, when a nebulous ſtratum conſiſts chiefly of nebulæ of the firſt and ſecond forms, it probably owes its origin to what may be called the decay of a great compound nebula of the third form; and that the ſubdiviſions which happened to it in length of time, occaſioned all the ſmall nebulæ which ſprung from it to lie in a certain range, according as they were detached from the primary one. In like manner our ſyſtem, after numbers of ages, may very poſſibly become divided, ſo as to give riſe to a ſtratum of two or three hundred nebulæ; for it would not be difficult to point out ſo many beginning or gathering cluſters in it. This throws a conſiderable light upon that remarkable collection of many hundreds of nebulæ which are to be ſeen in what I have called the nebulous ſtratum in Coma Berenices. It appears from the extended and branching figure of our nebula, that there is room for the decompoſed ſmall nebulæ of a large reduced former great one to approach nearer to us in the ſides than in any other parts. Nay, poſſibly there might originally be another very large joining branch, which in time became ſeparated by the condenſation of the ſtars: and this may be the reaſon of the little remaining breadth of our ſyſtem in that very place; for the nebulæ of the ſtratum of the Coma are brighteſt and moſt crowded juſt oppoſite to our ſituation, or in the pole of our ſyſtem. As ſoon as this idea was ſuggeſted, I tried alſo the oppoſite pole; where accordingly I have met with a great number of nebulæ, though under a much more ſcattered form.

“ Some parts of our ſyſtem indeed ſeem already to have ſuſtained greater ravages of time than others; for inſtance, in the body of the Scorpion is an opening or hole, which is probably owing to this cauſe. It is at leaſt four degrees broad; but its height I have not aſcertained. It is remarkable, that the eighty *Nebuleuſe ſans Etoiles* of the *Connoiſſance des Temps*, which is one of the richeſt and moſt compreſſed cluſters of ſmall ſtars I remember to have ſeen, is ſituated juſt on the weſt border of it, and would almoſt authoriſe a ſuſpicion that the ſtars of which it is compoſed were collected from that place, and had left the vacancy. What adds not a little to this ſurmiſe is, that the ſame phenomenon is once more repeated with the fourth cluſter of the *Connoiſſance des Temps*; which is alſo on the weſtern border of another vacancy, and has moreover a ſmall miniature cluſter, or eaſily reſolvable nebula, of about two minutes and half diameter north, following it at no very great diſtance.

“ There is a remarkable purity or clearneſs in the heavens when we look out of our ſtratum at the ſides; that is, towards Leo, Virgo, and Coma Berenices, on one hand, and towards Cetus on the other; whereas the ground of the heavens becomes troubled as we approach towards the length or height of it. Theſe troubled appearances are eaſily to be explained by aſcribing them to ſome of the diſtant ſtraggling ſtars that yield hardly light enough to be diſtinguiſhed. And I have indeed often experienced this to be cauſe, by examining theſe troubled ſpots for a long while together, when at laſt I generally perceived the ſtars which occaſioned them. But when we look towards the poles of our ſyſtem, where the viſual ray does not graze along the ſide, the ſtraggling ſtars will of courſe be very few in number; and therefore the ground of the heavens will aſſume that purity which I have always obſerved to take place in thoſe regions.”

Though, in the above extracts from Dr. Herſchel's papers, the words *condenſation*, *cluſters*, &c. of ſtars frequently occur, we are by no means from thence to imagine that any of the celeſtial bodies in our nebula are nearer to one another than we are to Sirius, whoſe diſtance is ſuppoſed not to be leſs than 400,000 times that of the Sun from us, or thirty-eight millions of millions of miles. The whole extent of the nebula being in ſome places near 500 times as great, muſt be ſuch, that the light of a ſtar placed at its extreme boundary, ſuppoſing it to fly with the velocity of twelve millions of miles every minute, muſt have taken near 3000 years to reach us. Dr. Herſchel, however, is by no means of opinion, that our nebula is the moſt conſiderable in the univerſe. “As we are uſed, ſays he, to call the appearance of the heavens, where it is ſurrounded with a bright zone, the *milky-way*, it may not be amiſs to point out ſome other very remarkable nebulæ, which cannot well be leſs, but are probably much larger, than our own ſyſtem; and, being alſo extended, the inhabitants of the planets that attend the ſtars which compoſe them muſt likewiſe perceive the ſame phenomena; for which reaſon they may alſo be called *milky-ways*, by way of diſtinction.

“My opinion of their ſize is grounded on the following obſervations: there are many round nebulæ of the firſt form, of about five or ſix minutes in diameter, the ſtars of which I can ſee very diſtinctly; and, on comparing them with the viſual ray calculated from ſome of my long gauges, I ſuppoſe, by the appearance of the ſmall ſtars in thoſe gauges, that the centres of theſe round nebulæ may be 600 times the diſtance of Sirius from us.” He then goes on to tell us, that the ſtars in ſuch nebulæ are probably twice as much condenſed as thoſe of our ſyſtem; otherwiſe the centre of it would not be leſs than 6000 times the diſtance of Sirius from us; and that it is poſſible much under-rated by ſuppoſing it only 600 times the diſtance of that ſtar.

“Some of theſe round nebulæ, ſays Dr. Herſchel, have others near them, perfectly ſimilar in form, colour, and the diſtribution of ſtars, but of only half the diameter: and the ſtars in them ſeem to be doubly crowded, and only at about half the diſtance from each other. They are indeed ſo ſmall, as not to be viſible without the utmoſt attention. I ſuppoſe theſe miniature nebulæ to be at double the diſtance of the firſt. An inſtance equally remarkable and inſtructive is a caſe where, in the neighbourhood of two ſuch nebulæ as have been mentioned, I met with a third, ſimilar, reſolvable, but much ſmaller and fainter, nebula. The ſtars of it are no longer to be perceived; but a reſemblance of colour with the former two, and its diminiſhed ſize and light, may well permit us to place it at full twice the diſtance of the ſecond, or about four or five times the diſtance of the firſt. And yet the nebuloſity is not of the milky kind; nor is it ſo much as difficultly reſolvable or colourleſs. Now in a few of the extended nebulæ, the light changes gradually, ſo as from the reſolvable to approach to the milky kind; which appears to me an indication, that the milky light of nebulæ is owing to their much greater diſtance. A nebula, therefore, whoſe light is perfectly milky, cannot well be ſuppoſed to be at leſs than ſix or eight thouſand times the diſtance of Sirius; and, though the numbers here aſſumed are not to be taken otherwiſe than as very coarſe eſtimates, yet an extended nebula, which an oblique ſituation, where it is poſſibly fore-ſhortened by one-half, two-thirds, or three-fourths, of its length, ſubtends a degree or more in diameter, cannot be otherwiſe than of a wonderful magnitude, and well may outvie our milky-way in grandeur. And what great length of time muſt be required to produce the formation of nebulæ, may eaſily be conceived, when, in all probability, our whole ſyſtem, of about 800 ſtars in diameter, if it were ſeen at ſuch a diſtance that one end of it might aſſume the reſolvable nebuloſity, would not, at the other end, preſent us with the irreſolvable, much leſs with the colourleſs and milky, ſort of nebuloſities.” Great indeed muſt be the length of time requiſite for ſuch diſtant bodies to form combinations by the laws of attraction, ſince, according to the diſtances aſſumed, the light of ſome of the nebulæ muſt be thirty-ſix or forty-eight thouſand years in arriving from them to us. It would be worth while then to enquire, whether attraction is a virtue propagated in time, or not; or whether it moves quicker or ſlower than light?

In the courſe of Dr. Herſchel's obſervations, an objection occurred, that, if the different ſyſtems were formed by the mutual attractions of the ſtars, the whole would be in danger of deſtruction by the falling of them one upon another. A ſufficient anſwer to this, he thinks, is, that, if we can really prove the ſyſtem of the univerſe to be what he has ſaid, there is no doubt but that the great Author of it has amply provided for the preſervation of the whole, though it ſhould not appear to us in what manner this is effected. Several circumſtances, however, he is of opinion, manifeſtly tend to a general preſervation; as, in the firſt place, the indefinite extent of the ſidereal heavens; which muſt produce a balance that will effectually ſecure all the great parts of the whole from approaching to each other. “There remains then, ſays he, only to ſee how the particular ſtars belonging to ſeparate cluſters are prevented from ruſhing on to their centres of attraction.” This he ſuppoſes may be done by projectile forces; “the admiſſion of which will prove ſuch a barrier againſt the ſeeming deſtructive power of attraction, as to ſecure it from all the ſtars belonging to a cluſter, if not for ever, at leaſt for millions of ages. Beſides, we ought perhaps to look upon ſuch cluſters, and the deſtruction of a ſtar now and then in ſome thouſands of ages, as the very means by which the whole is preſerved and renewed. Theſe cluſters may be the laboratories of the univerſe, wherein the moſt ſalutary remedies for the decay of the whole are prepared.”

Purſuing ſtill farther this inveſtigation of the ſidereal heavens, Dr. Herſchel has diſcovered other phenomena, which he calls *nebulous ſtars*; that is, *ſingle* ſtars, ſurrounded with a *lucid* atmoſphere of conſiderable extent. He has given an account of ſeventeen of theſe ſtars, one of which he has thus deſcribed. “November 13, 1790. A moſt ſingular phenomenon! A ſtar of the eighth magnitude, with a faint luminous atmoſphere, of a circular form, and of about three minutes diameter. The ſtar is perfectly in the centre, and the atmoſphere is ſo diluted, faint, and equal throughout, that there can be no ſurmiſe of its conſiſting of ſtars; nor can there be a doubt of the evident connection between the atmoſphere and the ſtar. Another ſtar not much leſs in brightneſs, and in the ſame field of view with the above, was perfectly free from any ſuch appearance.” Hence he draws the following conſequences. Granting the connection between the ſtar and the ſurrounding nebuloſity, if it conſiſt of ſtars very remote which gives the nebulous appearance, the central ſtar, which is viſible, muſt be immenſely greater than the reſt; or if the central ſtar be no bigger than common, how extremely ſmall and compreſſed muſt be thoſe other luminous points which occaſion the nebuloſity? As, by the former ſuppoſition, the luminous central point muſt far exceed the ſtandard of what we call a ſtar, ſo, in the latter, the ſhining matter about the centre will be much too ſmall to come under the ſame denomination; we therefore either have a central body which is not a ſtar, or a ſtar which is involved in a ſhining fluid, of a nature totally unknown to us. This laſt opinion Dr. Herſchel adopts. The exiſtence of this ſhining matter, he ſays, does not ſeem to be ſo eſſentially connected with the central points, that it might not exiſt without them. The great reſemblance there is between the chevelure of theſe ſtars, and the diffuſed nebuloſity about the conſtellation of Orion, which takes up a ſpace of more than ſixty ſquare degrees, renders it highly probable that they are of the ſame nature. If this be admitted, the ſeparate exiſtence of the luminous matter is fully proved. Light reflected from the ſtar could not be ſeen at this diſtance; and beſides, the outward parts are nearly as bright as thoſe near the ſtar. In further confirmation of this, he obſerves, that a cluſter of ſtars will not ſo completely account for the milkineſs or ſoft tint of the light of theſe nebulæ, as a ſelf-luminous fluid. This luminous matter ſeems more fit to produce a ſtar by its condenſation, than to depend on the ſtar for its exiſtence. There is a teleſcopic milky way extending in right aſcenſion from 5h. 15′. 8″. to 5h. 39′. 1″. and in polar diſtance from 87°. 46′. to 98°. 10′. This, Dr. Herſchel thinks, is better accounted for by a luminous matter, than from a collection of ſtars. He obſerves, that perhaps ſome may account for theſe nebulous ſtars, by ſuppoſing that the nebuloſity may be formed by a collection of ſtars at an immenſe diſtance, and that the central ſtar may be a near ſtar accidentally ſo placed; the appearance however of the luminous part does not, in his opinion, at all favour the ſuppoſition that it is produced by a great number of ſtars; on the other hand it muſt be granted, that it is extremely difficult to admit the other ſuppoſition, when we know nothing but a ſolid body that is ſelf-luminous, or, at leaſt, that a fixed luminary muſt immediately depend upon ſuch, as the flame of a candle upon the candle itſelf. See Phil. Tranſ. 1791.

In ſpeaking of the planetary nebulæ, Dr. Herſchel ſays, " If we ſhould ſuppoſe them to be ſingle ſtars with large diameters, we ſhall find it difficult to account for their not being brighter, unleſs we ſhould admit that the intrinſic light of ſome ſtars may be very much inferior to that of the generality; which, however, can hardly be imagined to extend to ſuch a degree. We might ſuppoſe them to be comets about their aphelion, if the brightneſs, as well as magnitude of their diameters, did not oppoſe this idea: ſo that, after all, we can hardly find any hypotheſis ſo probable as that of their being nebulæ; but then they muſt conſiſt of ſtars that are compreſſed and accumulated in the higheſt degree. If it were not perhaps too hazardous to purſue a former ſurmiſe of a renewal in what I figuratively called the *laboratories of the univerſe*, the ſtars forming theſe extraordinary nebulæ, by ſome decay or waſte of nature being no longer fit for their former purpoſes, and having their projectile forces, if any ſuch they had, retarded in each others atmoſphere, may ruſh at laſt together; and, either in ſucceſſion, or by one general tremendous ſhock, unite into a new body. Perhaps the extraordinary and ſudden blaze of a new ſtar in Caſſiopeia's chair, in 1572, might poſſibly be of ſuch a nature. If a little attention to theſe bodies ſhould prove that, having no annual parallax, they belong moſt probably to the claſs of nebulæ, they may then be expected to keep their ſtation better than any one of the ſtars belonging to our ſyſtem, on account of their being probably at a very great diſtance." Thus, then, according to Dr. Herſchel, the univerſe conſiſts of *nebulæ*, or ſyſtems of innumerable collections of ſtars, and of ſingle *lucid* ſtars, each individual of which is a ſun, not only equal, but perhaps ſuperior, to ours; at leaſt if the words of Mr. Nicholſon, in his Natural Philoſophy, have any weight; for he tells us, that " each individual ſun is deſtined to give light to *hundreds* of worlds that revolve about it, but which can no more be ſeen by us, on account of their great diſtance, than the ſolar planets can be ſeen from the fixed ſtars. Yet, continues he, as in this unexplored, and perhaps unexplorable, abyſs of ſpace, it is no neceſſary condition that the planets ſhould be of the ſame magnitudes as thoſe belonging to our ſyſtem, it is not impoſſible but that planetary bodies may be diſcovered among the double and triple ſtars."

In the Philoſophical Tranſactions of 1795, Dr. Herſchel aſſerts, that the ſun is in reality a planet, ſurrounded with a lucid atmoſphere which furniſhes its light, and is richly ſtored with inhabitants. " This way of conſidering the ſun, ſays he, is of the utmoſt importance; and that ſtars are ſuns, can hardly admit of a doubt. Their immenſe diſtance would perfectly exclude them from our view, if the light they ſend us were not of the ſolar kind. Beſides, the analogy may be traced much farther. The ſun turns on its axis: ſo does the ſtar Algol. So alſo do the ſtars called β Lyræ, δ Cephei, η Antinoi, ο Ceti, and many more; moſt probably all. From what other cauſe can we ſo well account for their periodical changes? Again, our ſun has ſpots on its ſurface. So has the ſtar Algol; and ſo have the ſtars already named; and probably every ſtar in the heavens. On our ſun theſe ſpots are changeable. So they are on the ſtar ο Ceti, as evidently appears from the irregularity of its changeable luſtre, which is often broken in upon by accidental changes, while the general period continues unaltered. The ſame little deviations have been obſerved in other periodical ſtars, and ought to be aſcribed to the ſame cauſe. If then ſtars are ſuns, and ſuns are inhabitable, we ſee at once what an extenſive field for animation opens itſelf to our view.

" It is true that analogy may induce us to conclude, that ſince ſtars appear to be ſuns, and ſuns, according to the common opinion, are bodies that ſerve to enlighten, warm, and ſuſtain, a ſyſtem of planets, we may have an idea of numberleſs globes that ſerve for the habitation of living creatures. But, if theſe ſuns themſelves are primary planets, we may ſee ſome thouſands of them with our own eyes; and millions by the help of teleſcopes; when at the ſame time, the ſame analogical reaſoning ſtill remains in full force, with regard to the planets which theſe ſuns may ſupport.

" I may here, ſays Dr. Herſchel, take notice that, from other conſiderations, the idea of ſuns or ſtars being *merely* the ſupporters of ſyſtems of planets, is not abſolutely to be admitted as a general one. Among the great number of very compreſſed cluſters of ſtars I have given in my catalogues, there are ſome which open a different view of the heavens to us. The ſtars in them are ſo very cloſe together, that, notwithſtanding the great diſtance at which we may ſuppoſe the cluſter itſelf to be, it will hardly be poſſible to aſſign any ſufficient mutual diſtance to the ſtars compoſing the cluſter, to leave room for crowding in thoſe planets, for whoſe ſupport theſe ſtars have been, or might be, ſuppoſed to exiſt. It ſhould ſeem, therefore, highly probable that they exiſt for themſelves; and are, in fact, only very capital, *lucid*, primary, planets, connected together in one great ſyſtem of mutual ſupport. And as in this argument I do not proceed upon conjectures, but have actual obſervations in view, I ſhall mention an inſtance in the cluſters No. 26, 28, and 35, claſs vi. of my catalogue of nebulæ and cluſters of ſtars. In theſe the ſtars are ſo crowded, that I cannot conjecture them to be at a greater apparent diſtance from each other than five ſeconds; even after a proper allowance for ſuch ſtars, as, on a ſuppoſition of a globular form of the cluſter, will interfere with one another, has been made. Now, if we would leave as much room between each of theſe ſtars as there is between the Sun and Sirius, we muſt place theſe cluſters 42,104 times as far from us as that ſtar is from the Sun. But, in order to bring down the luſtre of Sirius to that of an equal ſtar placed at the above-mentioned diſtance, I ought to reduce the aperture of my twenty-feet teleſcope to leſs than the two-and-twenty hundredth part of an inch; when certainly I could no longer expect to ſee any ſtar at all. The ſame remark may be made with regard to the number of very cloſe double ſtars, whoſe apparent diameters being alike, and not very ſmall, do not indicate any very great mutual diſtance. From which, however, muſt be deducted all thoſe where the different diſtances may be compenſated by the real difference in their reſpective magnitudes.

" To what has been ſaid may be added, that in ſome parts of the milky-way, where yet the ſtars are not very ſmall, they are ſo crowded, that in the year 1792, Auguſt 22, I found by the gauges that, in forty-one minutes of time, no leſs than 258,000 of them had paſſed through the field of view of my teleſcope. It ſeems, therefore, upon the whole, that, in many caſes, ſtars are united in ſuch cloſe ſyſtems as not to leave much room for the orbits of planets, or comets; and that conſequently, upon this account alſo, many ſtars, unleſs we would make them mere uſeleſs brilliant points, may themſelves be *lucid* planets,

nets, perhaps unattended by ſatellites." After a variety of ſimilar remarks, and many ingenious obſervations on the probable deſtination of two thouſand diſtant nebulæ and cluſters of ſtars diſcovered by himſelf, Dr. Herſchel concludes thus: "Upon the whole, I believe, it will be found, that the foregoing theoretical view, conſidered all together, with its conſequential appearances, is no other than a drawing from nature, wherein the features of the original have been cloſely copied; and I hope the reſemblance will not be called a bad one, when it ſhall be conſidered how very limited muſt be the pencil of an inhabitant of ſo ſmall and retired a portion of an infinite ſyſtem, in attempting the picture of ſo unbounded an extent." Plate II. of Aſtronomy will furniſh ſome idea of this univerſal ſyſtem of the ſidereal heavens, and of the nebulæ and lucid ſtars; throughout the whole of which there is an evident tendency towards ſphericity, by the ſwell of the dimenſions as they draw near the moſt luminous place, denoting, as it were, a courſe, or tide of ſtars, ſetting towards a centre.

Of the BODIES which FORM the SOLAR SYSTEM.

Of the SUN.

The Sun, which was reckoned among the planets in the infancy of aſtronomy, ſhould rather be counted among the fixed ſtars. He only appears brighter and larger than they do, becauſe we keep conſtantly near him; whereas we are immenſely farther from the ſtars. But a ſpectator, placed as near to any ſtar as we are to the Sun, would probably ſee that ſtar a body as large and as bright as the Sun appears to us; and, on the other hand, a ſpectator as far diſtant from the Sun as we are from the ſtars, would ſee the Sun as ſmall as we ſee a ſtar, diveſted of all his circumvolving planets; and he would reckon it as one of the ſtars, in numbering them.

The opinions of the ancients concerning the nature and properties of the Sun, were extremely imperfect and obſcure. Anaximander and Anaximenes held, that there was a circle of fire extending throughout the heavens, called the *circle of the Sun*; between the earth and this fiery circle they imagined another circle of an opaque ſubſtance, in which was a hole like the mouth of a German flute. Through this hole they ſuppoſed the light to be tranſmitted; whence it appeared to the inhabitants of this earth as a round and diſtinct body of fire; and eclipſes of the Sun, they thought, were occaſioned by the ſtopping of this hole. Anaxagoras, however, and moſt of the ancient aſtronomers, held the Sun to be a globe of fire, of ſome ſolid ſubſtance; and many of the moderns have adopted the ſame opinion. Thoſe who have maintained that the ſubſtance of the Sun is fire, argue in the following manner: the Sun ſhines, and his rays, collected by concave mirrors, or convex lenſes, burn, conſume, and melt, the moſt ſolid bodies, or elſe convert them into aſhes, or glaſs: therefore, as the force of the ſolar rays is diminiſhed, by their divergency, in a duplicate ratio of the diſtances reciprocally taken; it is evident that their force and effect are the ſame, when collected by a burning lens, or mirror, as if we were at ſuch diſtance from the Sun, where they were equally denſe. The Sun's rays therefore, in the neighbourhood of the Sun, produce the ſame effects, as might be expected from the moſt vehement fire; conſequently the Sun is of a fiery ſubſtance. Hence it follows, that its ſurface is probably every where fluid; that being the condition of flame. Indeed, whether the whole body of the Sun be fluid, as ſome think, or ſolid, as others, they do not preſume to determine; but as there are no other marks, by which to diſtinguiſh fire from other bodies, but light, heat, a power of burning, conſuming, melting, calcining, and vitrifying; they do not ſee what ſhould hinder but that the Sun may be a globe of fire, like our fires, inveſted with flame; and, ſuppoſing that maculæ are formed out of the ſolar exhalations, they infer that the Sun is not pure fire, but that there are heterogeneous parts mixed along with it. Sir Iſaac Newton has propoſed it as a query, Whether the Sun and fixed ſtars are not great earths made vehemently hot, whoſe parts are kept from fuming away by the vaſt weight and denſity of their ſuperincumbent atmoſpheres, and whoſe heat is preſerved by the prodigious action and reaction of their parts upon one another?

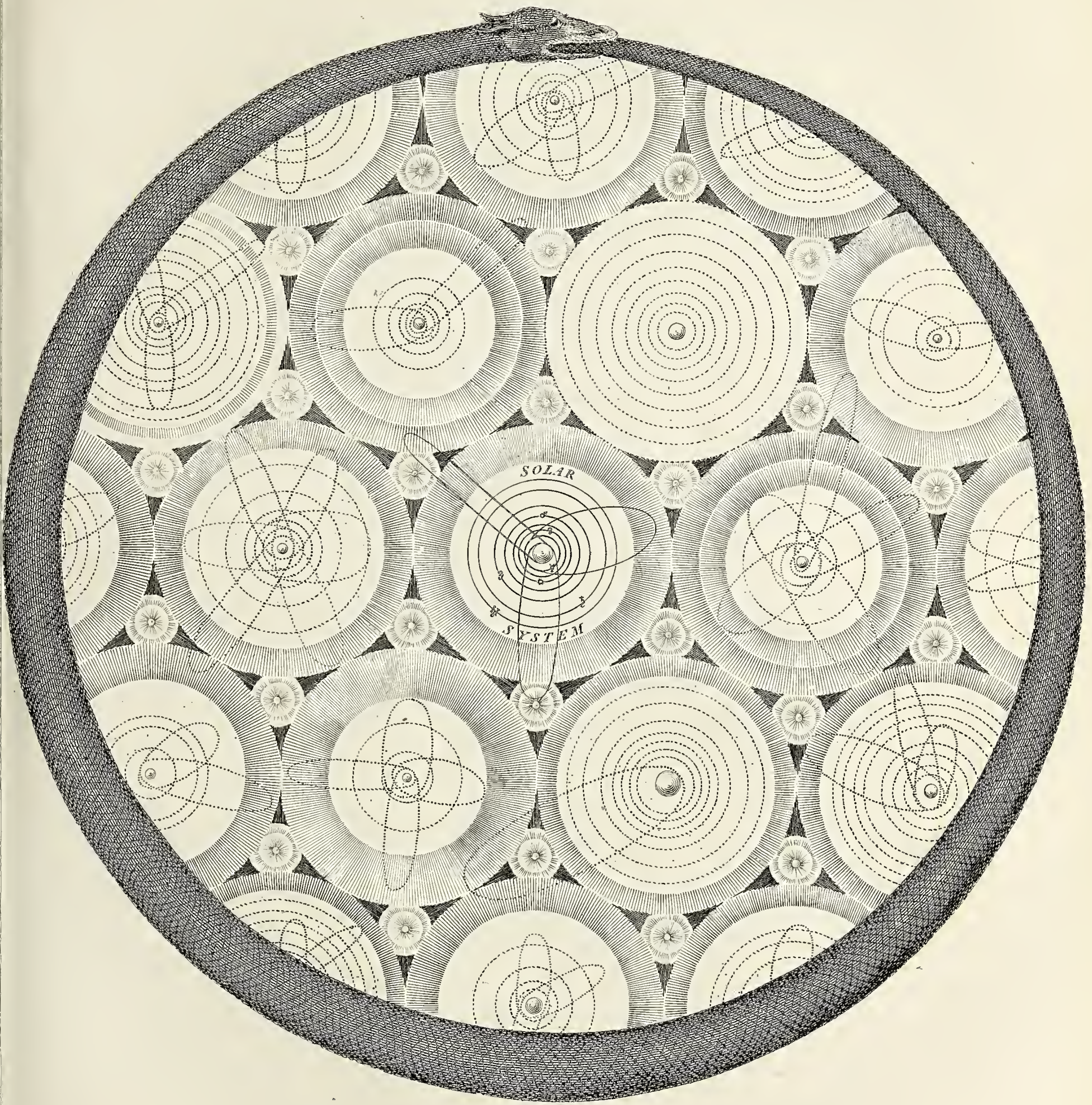
Philoſophers have been much divided alſo in their opinion with reſpect to the nature of fire, light, and heat, and the cauſes that produce them: and they have given very different accounts of the agency of the Sun, with which, whether we conſider them as ſubſtances or qualities, they are intimately connected, and on which they ſeem primarily to depend. Some, among whom we may reckon Sir Iſaac Newton, conſider the rays of light as compoſed of ſmall particles, which are emitted from ſhining bodies, and move with uniform velocities in uniform mediums, but with variable velocities in mediums of variable denſities. Theſe particles, ſay they, act upon the minute conſtituent parts of bodies, not by impact, but at ſome indefinitely ſmall diſtance; they attract and are attracted; and, in being reflected or refracted, they excite a vibratory motion in the component particles. This motion increaſes the diſtance between the particles, and thus occaſions an augmentation of bulk, or an expanſion in every dimenſion, which is the moſt certain characteriſtic of fire. This expanſion, which is the beginning of a diſunion of the parts, being increaſed by the increaſing magnitude of the vibrations proceeding from the continued agency of light, it may eaſily be apprehended, that the particles will at length vibrate beyond their ſphere of mutual attraction, and thus the texture of the body will be altered or deſtroyed; from ſolid it may become fluid, as in melted gold; or, from being fluid, it may be diſperſed in vapour, as in boiling water.

Others, as Boerhaave, repreſent fire as a ſubſtance *ſui generis*, unalterable in its nature, and incapable of being produced or deſtroyed; naturally exiſting in equal quantities in all places, imperceptible to our ſenſes, and only diſcoverable by its effects, when, by various cauſes, it is collected for a time into a leſs ſpace than that which it would otherwiſe occupy. The matter of this fire is not in any wiſe ſuppoſed to be derived from the Sun: the ſolar rays, whether direct or reflected, are of uſe only as they impel the particles of fire in parallel directions: that parallelism being deſtroyed, by intercepting the ſolar rays, the fire inſtantly aſſumes its natural ſtate of uniform diffuſion. According to this explication, which attributes heat to the matter of fire, when driven in parallel directions, a much greater degree muſt be given it when the quantity, ſo collected, is amaſſed into a focus; and yet the focus of the largeſt ſpeculum does not heat the air or medium in which it is found, but only bodies of denſities different from that medium.

M. de Luc, in his Lettres Phyſiques, is of opinion, that the ſolar rays are the principal cauſe of heat; but that they heat ſuch bodies only as do not allow them a free paſſage. In this remark he agrees with Sir Iſaac Newton; but then he differs totally from him, as well as from Boerhaave, concerning the nature of the rays of the Sun. He does not admit the emanation of any luminous corpuſcles from the Sun, or other ſelf-ſhining ſubſtances, but ſuppoſes all ſpace to be filled with an ether of great elaſticity and ſmall denſity, and that light conſiſts in the vibrations of this ether, as ſound conſiſts in the vibrations of the air. "Upon Newton's ſuppoſition, ſays an excellent writer, the cauſe by which the particles of light, and the corpuſcles conſtituting other bodies, are mutually attracted and repelled, is uncertain. The reaſon of the uniform diffuſion of fire, of its vibration, and repercuſſion, as ſtated in Boerhaave's opinion, is equally inexplicable. And in the laſt-mentioned hypotheſis, we may add to the other difficulties attending the ſuppoſition of an univerſal ether, the want of a firſt mover to make the Sun vibrate. Of theſe ſeveral opinions concerning elementary fire, it may be ſaid, as Cicero remarked upon the opinions of philoſophers con-

ASTRONOMY.

Plate II.



J. Pass sculpsit.

Universal Solar System.

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cerning the nature of the ſoul: *Harum ſententiarum quæ vera ſit, Deus aliquis viderit; quæ veriſimillima magna queſtio eſt.*" Watſon's Chem. Eſſ. vol. i. p. 164.

Although the ſurface of the Sun appears to human eyes ſo extremely bright and ſplendid, we nevertheleſs find a number of dark ſpots of different kinds moving upon it. Theſe were entirely unknown before the invention of teleſcopes, though they are ſometimes of ſufficient magnitude to be diſcerned by the naked eye. The ſpots are ſaid to have been firſt obſerved in the year 1611; and the honour of the diſcovery is diſputed betwixt Galileo and Scheiner, a German jeſuit at Ingolſtadt. There is great variety in the magnitudes of the ſpots; ſome have been ſo large, as by computation to be capable of covering the continents of Aſia and Africa; nay, the whole ſurface of the earth, or even five times its ſurface. The diameter of a ſpot, when near the middle of a diſk, is meaſured by comparing the time it takes in paſſing over a croſs hair in a teleſcope, with the time wherein the whole diſk of the Sun paſſes over the ſame hair; it may alſo be meaſured by the micrometer; and by either of theſe methods we may judge how many times the diameter of the ſpot is contained in the diameter of the Sun. Spots are ſubject to an increaſe and diminution of magnitude, and ſeldom continue long in the ſame ſtate. They are of various ſhapes; moſt of them having a deep black nucleus ſurrounded by a duſky cloud, whereof the inner parts are a little brighter than the outer. They change their ſhapes, ſomething in the manner that clouds do; though not ſo ſuddenly: thus, what is of a certain figure to-day, ſhall, to-morrow, or in a few hours, be of a different one; what is now but one ſpot, ſhall in a little time be broken into two or three; and ſometimes two or three ſpots ſhall coaleſce, and be united into one. Dr. Long, while he was viewing the image of the Sun through a teleſcope caſt upon white paper, ſaw one roundiſh ſpot, by eſtimation not much leſs than the diameter of our Earth, break into two, which receded from one another with prodigious velocity. This obſervation was ſingular at the time; for, though ſeveral writers had taken notice of this after it was done, none of them had been making any obſervation at the time it was actually doing.

The number of ſpots on the Sun is very uncertain; ſometimes there are a great many, ſometimes very few, and ſometimes none at all. Scheiner made obſervations on the Sun from 1611 to 1629; and ſays he never found the diſk quite free of ſpots, excepting a few days in December 1624. At other times he frequently ſaw twenty or thirty, and in the year 1625 he was able to count fifty ſpots on the Sun at a time. In an interval afterwards of twenty years, from 1650 to 1670, ſcarcely any ſpots were to be ſeen, and ſince that time ſome years have furniſhed a great number of ſpots, and others none at all; but, ſince the beginning of the laſt century, not a year paſſed wherein ſome were not ſeen; and at preſent, ſays M. Caſſini, in his *Elemens d' Aſtronomie*, they are ſo frequent, that the Sun is ſeldom without ſpots, and often ſhews a great number of them at a time.

From theſe phenomena, it is evident, that the ſpots are not endowed with any permanency, nor are they at all regular in their ſhape, magnitude, number, or in the time of their appearance or continuance. They all appear to have a motion which carries them acroſs the Sun's diſk. Every ſpot, if it continues long enough without being diſſolved, appears to enter the Sun's diſk on the eaſt ſide, to go from thence with the velocity continually increaſing till it has gone half its way; and then to move ſlower and ſlower, till it goes off at the weſt ſide; after which it diſappears for the ſame ſpace of time that it ſpent in croſſing the diſk, and then enters upon the eaſt ſide again, nearly in the ſame place, and croſſes it in the ſame track, and with the ſame unequal motion as before. This apparent inequality in the motion of the ſpots is purely optical, and is in ſuch proportion as demonſtrates them to be carried round equably or in a circle, the plane of which continued paſſes through or near the eye of a ſpectator upon the Earth.

The nature and formation of the ſolar ſpots have been the ſubject of much ſpeculation and conjecture. Scheiner ſuppoſed them to be ſolid bodies revolving about the Sun, very near to it; but, as they are as long viſible as inviſible, this cannot be the caſe. Moreover, we have a phyſical argument againſt this hypotheſis, which is, that moſt of them do not revolve about the Sun in a plane paſſing through its centre, which they neceſſarily muſt, if they revolved like the planets about the Sun. Galileo confuted Scheiner's opinion, by obſerving that the ſpots were not permanent; that they varied their figure; that they increaſed and decreaſed, and ſometimes diſappeared. He compared them to ſmoke and clouds. Hevelius appears to have been of the ſame opinion; for in his Cometographia, p. 360, ſpeaking of the ſolar ſpots, he ſays, "hæc materia nunc ea ipſa eſt evaporatio et exhalatio (quia aliunde minime oriri poteſt) quæ ex ipſo corpore ſolis, ut ſupra oſtenſum eſt, expiratur et exhalatur." But the permanency of moſt of the ſpots is an argument againſt this hypotheſis. M. de la Hire ſuppoſed them to be ſolid opaque bodies, which ſwim upon the liquid matter of the Sun, and which are ſometimes entirely immerſed. M. de la Lande ſuppoſed that the Sun is an opaque body, covered with a liquid fire, and that the ſpots ariſe from the opaque parts, like rocks, which, by the alternate flux and reflux of the liquid igneous matter of the Sun, are ſometimes raiſed above the ſurface. The ſpots are frequently dark in the middle, with an umbra about them; and M. de la Lande ſuppoſes that that part of the rock which ſtands above the ſurface forms the dark part in the centre, and thoſe parts which are but juſt covered by the igneous matter form the umbra. Dr. Wilſon, profeſſor of aſtronomy at Glaſgow, oppoſes this hypotheſis of M. de la Lande, by this argument: generally ſpeaking, the umbra immediately contiguous to the dark central part, or nucleus, inſtead of being very dark, as it ought to be, from our ſeeing the immerſed parts of the opaque rock through a thin ſtratum of the igneous matter, is, on the contrary, very nearly of the ſame ſplendour as the external ſurface, and the umbra grows darker the further it recedes from the nucleus; this, it muſt be acknowledged, is a ſtrong argument againſt the hypotheſis of M. de la Lande. Dr. Wilſon further obſerves, that M. de la Lande produces no optical arguments in ſupport of the rock ſtanding above the ſurface of the Sun. The opinion of Dr. Wilſon is, that the ſpots are excavations in the luminous matter of the Sun, the bottom of which forms the umbra. Beſides the dark ſpots upon the Sun, there are alſo parts of the Sun, called *faculæ, luculi*, &c. which are brighter than the general ſurface; theſe always abound moſt in the neighbourhood of the ſpots themſelves, or where ſpots recently have been. Moſt of the ſpots appear within the compaſs of a zone lying 30° on each ſide of the equator; but on July 5, 1780, M. de la Lande obſerved a ſpot 40° from the equator.

The lateſt obſervations on the ſolar ſpots, and on the nature and conſtruction of the Sun, are thoſe of Dr. Herſchel, publiſhed in the Philoſophical Tranſactions of 1795. He ſays, "There was a ſpot on the Sun in the year 1779, which was large enough to be ſeen with the naked eye. By a view of it with a 7-feet reflector, charged with a very high power, it appeared to be divided into two parts. The largeſt of the two, on the 19th of April, meaſured 1′ 8″·06 in diameter; which is equal in length to more than thirty-one thouſand miles. Both together muſt certainly have extended above fifty thouſand! The idea of its being occaſioned by a volcanic exploſion, violently driving away a fiery fluid, which on its return would gradually fill up the vacancy, and thus reſtore the Sun in that place to its former ſplendour, ought to be rejected on many accounts. To mention only one, the great extent of the ſpot is very unfavourable to that ſuppoſition. Indeed a much leſs violent and leſs pernicious cauſe may be aſſigned, to account for all the appearances of the ſpot. When we ſee a dark belt near the equator of the planet Jupiter, we do not recur to earthquakes and volcanoes for its origin.

An atmoſphere, with its natural changes, will explain ſuch belts. The ſpot in the Sun may be accounted for on the ſame principles. The Earth is ſurrounded by an atmoſphere compoſed of various elaſtic fluids. The Sun alſo has its atmoſphere, and if ſome of the fluids which enter into its compoſition ſhould be of a ſhining brilliancy, while others are merely tranſparent, any temporary cauſe which may remove the lucid fluid, will permit us to ſee the body of the Sun through the tranſparent ones. If an obſerver were placed on the Moon, he would ſee the ſolid body of our Earth only in thoſe places where the tranſparent fluids of our atmoſphere would permit him. In others, the opaque vapours would reflect the light of the Sun, without permitting his view to penetrate to the ſurface of our globe. He would probably alſo find that our planet had occaſionally ſome ſhining fluids in its atmoſphere; as, not unlikely, ſome of our northern lights might not eſcape his notice, if they happened in the unenlightened part of the Earth, and were ſeen by him in his long dark night. Nay, we have pretty good reaſon to believe, that probably all the planets emit light in ſome degree; for the illumination which remains on the Moon in a total eclipſe cannot be entirely aſcribed to the light which may reach it by the refraction of the Earth's atmoſphere. For inſtance, in the eclipſe of the Moon, which happened October 22, 1790, the rays of the Sun refracted by the atmoſphere of the Earth towards the Moon, admitting the mean horizontal refraction to be 30′ 50″·8, would meet in a focus above 189 thouſand miles beyond the Moon; ſo that conſequently there could be no illumination from rays refracted by our atmoſphere. It is however not improbable that about the polar regions of the Earth there may be refraction enough to bring ſome of the ſolar rays to a ſhorter focus. The diſtance of the Moon at the time of the eclipſe would require a refraction of 54′ 6″ equal to its horizontal parallax at that time, to bring them to a focus ſo as to throw light on the Moon. The unenlightened part of the planet Venus has alſo been ſeen by different perſons, and, not having a ſatellite, thoſe regions that are turned from the Sun cannot poſſibly ſhine by a borrowed light; ſo that this faint illumination muſt denote ſome phoſphoric quality of the atmoſphere of Venus. In the inſtance of the above large ſpot on the Sun, I concluded from appearances that I viewed the real ſolid body of the Sun itſelf, of which we rarely ſee more than its ſhining atmoſphere.

"In the year 1783, I obſerved a fine large ſpot, and followed it up to the edge of the Sun's limb. Here I took notice that the ſpot was plainly depreſſed below the ſurface of the Sun; and that it had very broad ſhelving ſides. I alſo ſuſpected ſome part at leaſt of the ſhelving ſides to be elevated above the ſurface of the Sun; and obſerved that, contrary to what uſually happens, the margin of that ſide of the ſpot, which was fartheſt from the limb, was the broadeſt. The luminous ſhelving ſides of a ſpot may be explained by a gentle and gradual removal of the ſhining fluid, which permits us to ſee the globe of the ſun. As to the uncommon appearance of the broadeſt margin being on that ſide of the ſpot which was fartheſt from the limb when the ſpot came near the edge of it, we may ſurmiſe that the Sun has inequalities on its ſurface, which may poſſibly be the cauſe of it. For, when mountainous countries are expoſed, if it ſhould chance that the higheſt parts of the landſcape are ſituated ſo as to be near that ſide of the margin, or penumbra of the ſpot, which is towards the limb, it may partly intercept our view of it, when the ſpot is ſeen very obliquely. This would require elevations at leaſt five or ſix hundred miles high; but conſidering the great attraction exerted by the Sun upon bodies at its ſurface, and the ſlow revolution it has upon its axis, we may readily admit inequalities to that amount. From the centrifugal force at the Sun's equator, and the weight of bodies at its ſurface, I compute that the power of throwing down a mountain by the exertion of the former, balanced by the ſuperior force of keeping it in its ſituation of the latter, is near ſix and a half times leſs on the Sun than on our equatorial regions; and as an elevation ſimilar to one of three miles on the Earth would not be leſs than 334 miles on the Sun, there can be no doubt but that a mountain much higher would ſtand very firmly. The little denſity of the ſolar body ſeems alſo to be in favour of the height of its mountains; for, *cæteris parabus*, denſe bodies will ſooner come to their level than rare ones. The difference in the vaniſhing of the ſhelving ſide, inſtead of explaining it by mountains, may alſo, and perhaps more ſatisfactorily, be accounted for from the real difference of the extent, the arrangement, the height, and the intenſity of the ſhining fluid, added to the occaſional changes that may happen in theſe particulars, during the time in which the ſpot approaches to the edge of the diſk. However, by admitting large mountains on the ſurface of the Sun, we ſhall account for the different opinions of the two eminent aſtronomers; one of whom believed the ſpots depreſſed below the Sun, while the other ſuppoſed them elevated above it. For it is not improbable that ſome of the ſolar mountains may be high enough occaſionally to project above the ſhining elaſtic fluid, when, by ſome agitation or other cauſe, it is not of the uſual height; and this opinion is much ſtrengthened by the return of ſome remarkable ſpots, which ſerved Caſſini to aſcertain the period of the Sun's rotation. A very high country or chain of mountains may oftener become viſible, by the removal of the obſtructing fluid, than the lower regions, on account of its not being ſo deeply covered with it.

"In the year 1791, I examined a large ſpot in the Sun, and found it evidently depreſſed below the level of the ſurface; about the dark part was a broad margin, or plane of conſiderable extent, leſs bright than the Sun, and alſo lower than its ſurface. This plane ſeemed to riſe, with ſhelving ſides, up to the place where it joined the level of the ſurface. In confirmation of theſe appearances, I carefully remarked that the diſk of the Sun was viſibly convex; and the reaſon of my attention to this particular, was my being already long acquainted with a certain optical deception, that takes place now and then when we view the Moon; which is, that all the elevated ſpots on its ſurface will ſeem to be cavities, and all cavities will aſſume the ſhape of mountains. But then at the ſame time the Moon, inſtead of having the convex appearance of a globe, will ſeem to be a large concave portion of an hollow ſphere. As ſoon as, by the force of imagination, you drive away the fallacious appearance of a concave Moon, you reſtore the mountains to their protuberance, and ſink the cavities again below the level of the ſurface. Now, when I ſaw the ſpot lower than the ſhining matter of the Sun, and an extended plane alſo depreſſed, with ſhelving ſides riſing up to the level, I alſo found that the Sun was convex, and appeared in its natural globular ſtate. Hence I conclude that there could be no deception in thoſe appearances. How very ill would this obſervation agree with the ideas of ſolid bodies bobbing up and down in a fiery liquid? with the ſmoke of volcanoes, or ſcum upon an ocean? And how eaſily is it explained upon the foregoing theory! The removal of the ſhining atmoſphere, which permits us to ſee the Sun, muſt naturally be attended with a gradual diminution on its borders; an inſtance of a ſimilar kind we have daily before us, when through the opening of a cloud we ſee the ſky, which generally is attended by a ſurrounding hazineſs of ſome ſhort extent; and ſeldom tranſits, from a perfect clearneſs, at once to the greateſt obſcurity.

"Auguſt 26, 1792, I examined the Sun with ſeveral powers, from 90 to 500. It appears evidently that the black ſpots are the opaque ground, or body of the Sun; and that the luminous part is an atmoſphere, which, being interrupted or broken, gives us a tranſient glimpſe of the Sun itſelf. My 7-feet reflector repreſents the ſpots, as it always uſed to do, much depreſſed below the ſurface of the luminous part.

"September 2, 1792. I ſaw two ſpots in the Sun with the naked eye. In the teleſcope I found they were cluſters of ſpots, with many ſcattered ones beſides. Every one of them was certainly below the ſurface of the luminous diſk.

"September 8, 1792. Having made a ſmall ſpeculum, merely brought to a perfect figure upon hones, without poliſh, I found, that, by ſtifling a great part of the ſolar rays, my object ſpeculum would bear a greater aperture, and thus enable me to ſee with more comfort and leſs danger. The ſurface of the Sun was unequal; many parts of it being elevated, and others depreſſed. This is here to be underſtood of the ſhining ſurface only, as the real body of the Sun can probably be ſeldom ſeen, otherwiſe than in its black ſpots. It may not be impoſſible, as light is a tranſparent fluid, that the Sun's real ſurface alſo may now and then be perceived; as we ſee the ſhape of the wick of a candle through its flame, or the contents of a furnace in the midſt of the brighteſt glare of it; but this, I ſhould ſuppoſe, will only happen where the lucid matter of the Sun is not very accumulated.

"September 9, 1792. I found one of the dark ſpots in the Sun drawn pretty near the preceding edge. In its neighbourhood I ſaw a great number of elevated bright places, making various figures: I ſhall call them *faculæ*. I ſee theſe faculæ extended, on the preceding ſide, over about one-ſixth part of the Sun; but, ſo far from reſembling torches, they appear to me like the ſhrivelled elevations upon a dried apple extended in length, and moſt of them are joined together, making waves, or waving lines. By ſome good views in the afternoon, I find that the reſt of the ſurface of the Sun does not contain any faculæ, except a few on the following and equatorial part of the Sun. Towards the north and ſouth I ſee no faculæ; there is all over the Sun a great unevenneſs in the ſurface, which has the appearance of a mixture of ſmall points of an unequal light; but they are evidently an unevenneſs or roughneſs of high and low parts.

"September 16, 1792. The Sun contains many large faculæ, on the following ſide of its equator, and alſo ſeveral on the preceding ſide. I perceive none about the poles. They ſeem generally to accompany the ſpots, and probably, as the faculæ certainly are elevations, a great number of them may occaſion neighbouring depreſſions: that is to ſay, dark ſpots. The faculæ being elevations, very ſatisfactorily explains the reaſon why they diſappear towards the middle of the Sun, and reappear on the other margin; for, about the place where we loſe them, they begin to be edgeways to our view; and, if between the faculæ ſhould lie dark ſpots, they will moſt frequently break out in the middle of the Sun, becauſe they are no longer covered by the ſide views of theſe faculæ.

"February 23, 1794. By an experiment juſt now tried, I find it confirmed that the Sun cannot be ſo diſtinctly viewed with a ſmall aperture and faint darkening glaſſes, as with a large aperture and ſtronger ones; this latter is the method I always uſe. One of the black ſpots on the preceding margin, which was greatly below the ſurface of the Sun, had, next to it, a protuberant lump of ſhining matter, a little brighter than the reſt of the Sun. About all the ſpots the ſhining matter ſeems to have been diſturbed, and is uneven, lumpy, and zig-zagged, in an irregular manner. I call the ſpots black, not that they are entirely ſo, but merely to diſtinguiſh them; for there is not one of them to-day which is not partly, or entirely, covered over with whitiſh and unequally-bright nebuloſity, or cloudineſs. This, in many of them, comes near to an extinction of the ſpot; and, in others, ſeems to bring on a ſubdiviſion.

"September 28, 1794. There is a dark ſpot on the Sun on the following ſide. It is certainly depreſſed below the ſhining atmoſphere, and has ſhelving ſides of ſhining matter, which riſe up higher than the general ſurface, and are brighteſt at the top. The preceding ſhelving ſide is rendered almoſt inviſible, by the overhanging of the preceding elevations, while the following is very well expoſed; the ſpot being apparently ſuch in figure as denotes a circular form, viewed in an oblique direction. Near the following margin are many bright elevations, cloſe to viſible depreſſions. The depreſſed parts are leſs bright than the common ſurface. The *penumbra*, as it is called, about this ſpot, is a conſiderable plane, of leſs brightneſs than the common ſurface, and ſeems to be as much depreſſed below that ſurface as the ſpot is below the plane. Hence, if the brightneſs of the Sun is occaſioned by the lucid atmoſphere, the intenſity of the brightneſs muſt be leſs where it is depreſſed; for light, being tranſparent, muſt be more intenſe the more it is deep.

"It will now (ſays Dr. Herſchel) be eaſy to bring the reſult of theſe obſervations into a very narrow compaſs. That the Sun has an extenſive atmoſphere cannot be doubted; and that this atmoſphere conſiſts of various elaſtic fluids, that are more or leſs lucid and tranſparent, and of which the lucid one is that which furniſhes us with light, ſeems alſo to be fully eſtabliſhed by all the phenomena of its ſpots, of the faculæ, and of the lucid ſurface itſelf. There is no kind of variety in theſe appearances but what may be accounted for with the greateſt facility from the continual agitation which we may eaſily conceive muſt take place in the regions of ſuch extenſive elaſtic fluids. It will be neceſſary, however, to be a little more particular, as to the manner in which I ſuppoſe the lucid fluid of the Sun to be generated in its atmoſphere. An analogy that may be drawn from the generation of clouds in our own atmoſphere, ſeems to be a very proper one, and full of inſtruction. Our clouds are probably decompoſitions of ſome of the elaſtic fluids of the atmoſphere itſelf, when ſuch natural cauſes, as in this grand chemical laboratory are generally at work, act upon them; we may therefore admit, that in the very extenſive atmoſphere of the Sun, from cauſes of the ſame nature, ſimilar phenomena will take place; but with this difference, that the continual and very extenſive decompoſitions of the elaſtic fluids of the Sun are of a phoſphoric nature, and attended with lucid appearances, by giving out light.

"If it ſhould be objected, that ſuch violent and unremitting decompoſitions would exhauſt the Sun, we may recur again to our analogy, which will furniſh us with the following reflections. The extent of our own atmoſphere, we ſee, is ſtill preſerved, notwithſtanding the copious decompoſitions of its fluids, in clouds and falling rain; in flaſhes of lightning, in meteors, and other luminous phenomena; becauſe there are freſh ſupplies of elaſtic vapours continually aſcending, to make good the waſte occaſioned by thoſe decompoſitions. But it may be urged, that the caſe with the decompoſition of the elaſtic fluids in the ſolar atmoſphere would be very different, ſince light is emitted, and does not return to the Sun, as clouds do to the earth when they deſcend in ſhowers of rain. To which I anſwer, that in the decompoſition of the phoſphoric fluids every other ingredient but light may alſo return to the body of the Sun. And that the emiſſion of light muſt waſte the Sun, is not a difficulty that can be oppoſed to our hypotheſis. For, as it is an evident fact that the Sun does emit light, the ſame objection, if it could be one, would equally militate againſt every other aſſignable way to account for the phenomenon.

"There are moreover conſiderations that may leſſen the preſſure of this alleged difficulty. We know the exceeding ſubtilty of light to be ſuch, that in ages of time its emanation from the Sun cannot very ſenſibly leſſen the ſize of this great body. To this may be added, that, very poſſibly, there may alſo be ways of reſtoration to compenſate for what it loſt by the emiſſion of light; though the manner in which this can be brought about ſhould not appear to us. Many of the operations of nature are carried on in her great laboratory, which we cannot comprehend; but now and then we ſee ſome of the tools with which ſhe is at work. We need not wonder that their conſtruction ſhould be ſo ſingular as to induce us to confeſs our ignorance of the method of employing them, but we may reſt aſſured that they are not a mere *luſus naturæ*. I allude to the great number of ſmall teleſcopic comets that have been obſerved; and to the far greater number that ſtill are probably much too ſmall for being noticed by our moſt diligent ſearchers after them. This throws a myſtery over their deſtination, which ſeems to place them in the allegorical view of tools, probably deſigned for ſome ſalutary purpoſes to be wrought by them; and, whether the reſtoration of what is loſt to the Sun by the emiſſion of light, the poſſibility of which we have been mentioning above, may not be one of theſe purpoſes, I ſhall not preſume to determine. The motion of the comet diſcovered by Mr. Meſſier in June, 1770, plainly indicated how much its orbit was liable to be changed, by the perturbations of the planets; from which, and the little agreement that can be found between the elements of the orbits of all the comets that have been obſerved, it appears clearly that they may be directed to carry their ſalutary influence to any part of the heavens.

“ My hypotheſis, however, ſays Dr. Herſchel, does not lay me under any obligation to explain how the Sun can ſuſtain the waſte of light, nor to ſhew that it will ſuſtain it for ever; and I ſhould alſo remark, that, as in the analogy of generating clouds I merely allude to their production as owing to a decompoſition of ſome of the elaſtic fluids of our atmoſphere, that analogy, which firmly reſts upon the fact, will not be leſs to my purpoſe, to whatever cauſe theſe clouds may owe their origin. It is the ſame with the lucid clouds, if I may ſo call them, of the Sun. They plainly exiſt, becauſe we ſee them; the manner of their being generated may remain an hypotheſis; and mine, till a better can be propoſed, may ſtand good; but whether it does or not, the conſequences I am going to draw from what has been ſaid will not be affected by it.

“ Before I proceed, I ſhall only point out that according to the above theory, a dark ſpot in the Sun is a place in its atmoſphere which happens to be free from luminous decompoſitions; and that faculæ are, on the contrary, more copious mixtures of ſuch fluids as decompoſe each other. The penumbra which attends the ſpots, being generally depreſſed more or leſs to about half way between the ſolid body of the Sun and the upper part of thoſe regions in which luminous decompoſitions take place, muſt of courſe be fainter than other parts. No ſpot favourable for taking meaſures having lately been on the Sun, I can only judge from former appearances, that the regions in which the luminous ſolar clouds are formed, adding thereto the elevation of the faculæ, cannot be leſs than 1843, nor much more than 2765, miles in depth. It is true that in our atmoſphere the extent of the clouds is limited to a very narrow compaſs; but we ought rather to compare the ſolar ones to the luminous decompoſitions which take place in our *aurora borealis*, or luminous arches, which extend much farther than the cloudy regions. The denſity of the luminous ſolar clouds, though very great, may not be exceedingly more ſo than that of our *aurora borealis*. For, if we conſider what would be the brilliancy of a ſpace two or three thouſand miles deep, filled with ſuch corruſcations as we ſee now and then in our atmoſphere, their apparent intenſity, when viewed at the diſtance of the Sun, might not be much inferior to that of the lucid ſolar fluid.

“ From the luminous atmoſphere of the Sun I proceed to its opaque body, which by calculation from the power it exerts upon the planets we know to be of great ſolidity; and from the phenomena of the dark ſpots, many of which, probably on account of their high ſituations, have been repeatedly ſeen, and otherwiſe denote inequalities in their level, we ſurmiſe that its ſurface is diverſified with mountains and vallies.

“ What has been ſaid enables us to come to ſome very important concluſions, by remarking, that this way of conſidering the Sun and its atmoſphere, removes the great diſſimilarity we have hitherto been uſed to find between its condition and that of the reſt of the great bodies of the ſolar ſyſtem. The Sun, viewed in this light, appears to be nothing elſe than a very eminent, large, and lucid, planet, evidently the firſt, or in ſtrictneſs of ſpeaking the only primary one, of our ſyſtem; all others being truly ſecondary to it. Its ſimilarity to the other globes of the ſolar ſyſtem with regard to its ſolidity, its atmoſphere, and its diverſified ſurface; the rotation upon its axis, and the fall of heavy bodies, leads us on to ſuppoſe that it is moſt probably alſo inhabitated, like the reſt of the planets, by beings whoſe organs are adapted to the peculiar circumſtances of that vaſt globe.

“ Whatever fanciful poets might ſay, in making the Sun the abode of bleſſed ſpirits, or angry moraliſts deviſe, in pointing it out as a fit place for the puniſhment of the wicked, it does not appear that they had any other foundation for their aſſertions than mere opinion and vague ſurmiſe; but ſays Dr. Herſchel, I think myſelf authorized, upon aſtronomical principles, to propoſe the Sun as an inhabitable world, and am perſuaded that the foregoing obſervations, with the concluſions I have drawn from them, are fully ſufficient to anſwer every objection that may be made againſt it. It may, however, not be amiſs to remove a certain difficulty, which ariſes from the effect of the Sun's rays upon our globe. The heat which is here, at the diſtance of ninety-five millions of miles, produced by theſe rays, is ſo conſiderable, that it may be objected, that the ſurface of the globe of the Sun itſelf muſt be ſcorched up beyond all conception. This may be very ſubſtantially anſwered by many proofs drawn from natural philoſophy, which ſhew that heat is produced by the Sun's rays only when they act upon a calorific medium; they are the cauſe of the production of heat, by uniting with the matter of fire, which is contained in the ſubſtances that are heated: as the colliſion of flint and ſteel will inflame a magazine of gunpowder, by putting all the latent fire it contains into action. But an inſtance or two of the manner in which the ſolar rays produce their effect, will bring this home to our moſt common experience.

“ On the tops of mountains of a ſufficient height, at an altitude where clouds can very ſeldom reach, to ſhelter them from the direct rays of the Sun, we always find regions of ice and ſnow. Now if the ſolar rays themſelves conveyed all the heat we find on this globe, it ought to be hotteſt where their courſe is leaſt interrupted. Again, our aëronatus all confirm the coldneſs of the upper regions of the atmoſphere; and ſince, therefore, even on our Earth the heat of any ſituation depends upon the aptneſs of the medium to yield to the impreſſion of the ſolar rays, we have only to admit, that on the Sun itſelf, the elaſtic fluids compoſing its atmoſphere, and the matter on its ſurface, are of ſuch a nature as not to be capable of any exceſſive affection from its own rays; and indeed, this ſeems to be proved by the copious emiſſion of them; for if the elaſtic fluids of the atmoſphere, or the matter contained on the ſurface of the Sun, were of ſuch a nature as to admit of an eaſy chemical combination with its rays, their emiſſion would be much impeded. Another well-known fact is, that the ſolar focus of the largeſt lens, thrown into the air, will occaſion no ſenſible heat in the place where it has been kept for a conſiderable time, although its power of exciting combuſtion, when proper bodies are expoſed, ſhould be ſufficient to fuſe the moſt refractory ſubſtances.” From theſe, and the foregoing arguments, Dr. Herſchel finally concludes, that the Sun is a planet, abundantly ſtored with inhabitants.

As to the figure of the Sun, this, like the planets, is not perfectly globular, but ſpheroidical, being higher about the equator than at the poles. The reaſon of which is this: the Sun has a motion about his own axis; and therefore the ſolar matter will have an endeavour to recede from the axis, and that with the greater force as their diſtances from it, or the circles they move in, are greater: but the equator is the greateſt circle; and the reſt, towards the poles, continually decreaſe; therefore the ſolar matter, though at firſt in a ſpherical form, will endeavour to recede from the centre of the equator farther than from the centres of the parallels. Conſequently, ſince the gravity, by which it is retained in its place, is ſuppoſed to be uniform throughout the whole Sun, it will really recede from the centre more at the equator than at any of the parallels; and hence the Sun's diameter will be greater through the equator than through the poles; that is, the Sun's figure is not perfectly ſpherical, but ſpheroidical.

As to the apparent *motion* of the Sun, as ſeen from the Earth, the firſt and moſt obvious phenomenon is, his daily riſing in the eaſt, and his ſetting in the weſt; after which the Moon and ſtars appear, ſtill keeping the ſame weſterly courſe, till we loſe ſight of them altogether. Theſe appearances give riſe to what is called the apparent diurnal motion of the heavens. This cannot be long obſerved, before we muſt alſo perceive, that the Sun does not always riſe exactly at the ſame point of the heavens, his motions deviating conſiderably at particular ſeaſons from thoſe they perform at other times. Sometimes we perceive him very high in the heavens, as if he would come directly over our heads; at other times he is almoſt ſunk in the ſouthern part of the heavens. If we commence our obſervations of the Sun, for inſtance, in the beginning of March, we ſhall find him appear to riſe more to the northward every day, to continue longer above the horizon, to be more vertical, or higher, at mid-day; this continues till towards the end of June, when he moves backward in the ſame manner, and continues this retrograde motion till near the end of December, when he begins again to move forwards. It is this change in the Sun's place, that occaſions him to riſe and ſet in different parts of the horizon at different times of the year. It is from hence that his height is ſo much greater in ſummer than in winter. In a word, the change of the Sun's place, as it regards the Earth, is the cauſe of the different length in the days and nights, and the viciſſitudes of the ſeaſons. Hence a knowledge of the Sun's *apparent* motion is abſolutely neceſſary, in order to form a true idea of the phenomena of the heavens. If on an evening we take notice of ſome fixed ſtar near the place where the Sun ſets, and obſerve it for ſeveral ſucceſſive evenings, we ſhall find that it approaches the Sun from day to day, till at laſt it will diſappear, being effaced by his light, though but a few days before it was at a ſufficient diſtance from him. That it is *apparently* the Sun which approaches the ſtars, and not the ſtars the Sun, is plain, from this reaſon; the ſtars always riſe and ſet every day at the ſame points of the horizon, oppoſite to the ſame terreſtrial objects, and are always at the ſame diſtance from each other; whereas the Sun is continually changing both the place of its riſing and ſetting, and its diſtance from the ſtars. The Sun advances nearly one degree every day, moving from weſt to eaſt; ſo that in 365 days we ſee the ſame ſtar near the ſetting Sun, as was obſerved to be near him on the ſame day in the preceding year. In other words, the Sun has returned to the place from whence he ſet out, or made what we call his annual revolution.

Thoſe who are not accuſtomed to aſtronomical calculation, will be ſurprized at the real magnitude of this luminary; which, on account of its diſtance from us, appears to the eye not much larger than the Moon, which is only an attendant on our Earth. When looking at the Sun, we are viewing a globe, whoſe diameter is 890,000 Engliſh miles; whereas the Earth is not more in diameter than 7,970 miles: ſo that the Sun is about 1,392,500 times bigger than the Earth. Thus as it is the fountain of light and heat to all the planets, ſo it alſo far ſurpaſſes them in its bulk. If the Sun were every where equally bright, his rotation on his axis would not be perceptible; but by means of the ſpots, which are viſible on his ſurface, we are enabled to diſcover this motion. And by this motion we likewiſe diſcover not only the time the Sun employs in turning round his axis, but alſo the inclination of his axis to the plane of the ecliptic.

By the Sun's atmoſphere, is occaſioned that appearance which is termed the *zodiacal light*. This light is ſeen at ſome ſeaſons of the year, either a little after ſun-ſet, or a little before ſun-riſe. It is faintly bright, and of a whitiſh colour, reſembling the milky-way. In the morning it becomes brighter and larger, as it riſes above the horizon, till the approach of day, which diminiſhes its ſplendour, and renders it at laſt inviſible. Its figure is that of a flat or lenticular ſpheroid, ſeen in profile. The direction of its longer axis coincides with the plane of the Sun's equator; but its length is ſubject to great variation, ſo that the diſtance of its ſummit from the Sun varies from forty-five to 120 degrees. It is ſeen to the beſt advantage about the ſolſtices. It was firſt deſcribed and named by Caſſini, in 1683; but it had been noticed by Childrey, about the year 1650.

Several particulars of the Sun, related by Newton, in his Principia, are as follow: 1. That the denſity of the Sun's heat, which is proportional to his light, is ſeven times as great at Mercury as with us; and therefore our water there would be all carried off and boil away: for he found by experiments of the thermometer, that a heat but ſeven times greater than that of the ſun-beams in ſummer, will ſerve to make water boil.

2. That the quantity of matter in the Sun is to that in Jupiter, nearly as 1100 to 1; and that the diſtance of that planet from the Sun, is in the ſame ratio to the Sun's ſemi-diameter.

3. That the matter in the Sun is to that in Saturn, as 2360 to 1; and the diſtance of Saturn from the Sun is in a ratio but little leſs than that of the Sun's ſemi-diameter. And hence, that the common centre of gravity of the Sun and Jupiter is nearly in the ſuperficies of the Sun; of the Sun and Saturn, a little within it.

4. And by the ſame mode of calculation it will be found, that the common centre of gravity of all the planets, cannot be more than the length of the ſolar diameter diſtant from the centre of the Sun. This common centre of gravity he proves is at reſt; and therefore though the Sun, by reaſon of the various poſitions of the planets, may be moved every way, yet it cannot recede far from the common centre of gravity, and this, he thinks, ought to be accounted the centre of our world. Book iii. prop. 12.

5. By means of the ſolar ſpots it hath been diſcovered, that the Sun revolves round his own axis, without moving conſiderably out of his place, in about twenty-five days, and that the axis of this motion is inclined to the ecliptic in an angle of 87° 30′ nearly. The Sun's apparent diameter being ſenſibly longer in December than in June, the Sun muſt be proportionably nearer to the Earth in winter than in ſummer; in the former of which ſeaſons therefore will be the perihelion, in the latter the aphelion: and this is alſo confirmed by the Earth's motion being quicker in December than in June, as it is by about one-fifteenth part. For, ſince the Earth always deſcribes equal areas in equal times, whenever it moves ſwifter, it muſt needs be nearer to the Sun: and for this reaſon there are about eight days more from the Sun's vernal equinox to the autumnal, than from the autumnal to the vernal.

6. That the Sun's diameter is equal to 100 diameters of the Earth; and therefore the body of the Sun muſt be 1,000,000 times greater than that of the Earth. Mr. Azout aſſures us, that he obſerved, by a very exact method, the Sun's diameter to be no leſs than 21′ 45″ in his apogee, and not greater than 32′ 45″ in his perigee.

7. According to Newton, in his theory of the Moon, the mean apparent diameter of the Sun is 32′ 12″. The Sun's horizontal parallax is now fixed at $8'' \frac{6}{10}$.

8. If we divide 360 degrees (the whole ecliptic) by the quantity of the ſolar year, it will give 59′ 8″, &c. which therefore is the medium quantity of the Sun's daily motion: and if this 59′ 8″ be divided by 24, we have the Sun's horary motion equal to 2′ 28″: and if this laſt be divided by 60, it will give his motion in a minute, &c. And in this way the tables of the Sun's mean motion are conſtructed, as placed in books of aſtronomical tables and calculations.

Of MERCURY.

Mercury is the ſmalleſt of the inferior planets, and the neareſt to the Sun, about which it is carried with a very rapid motion. Hence it was, that the Greeks called this planet after the name of the nimble meſſenger of the gods, and repreſented it by the figure of a youth with wings at his head and feet; from whence is derived ☿, the character in preſent uſe for this planet. It is from his proximity to the Sun, that he is ſo ſeldom within the ſphere of our obſervation, being loſt in the ſplendour of the ſolar brightneſs; yet he emits a very bright white light. This planet is oftener ſeen in thoſe parts of the world which are more ſouthward than that which we inhabit; and oftener to us than thoſe which live nearer the north pole; for, the more oblique the ſphere is, the leſs is the planet's elevation above the horizon.

The mean diſtance of Mercury from the Sun, is to that of the Earth from the Sun, as 387 to 1000, and therefore his diſtance is about thirty-ſix millions of miles, or little more than one-third of the Earth's diſtance, from the Sun. Hence the Sun's diameter will appear at Mercury near three times as large as at the Earth; and hence alſo the Sun's light and heat received there is about ſeven times thoſe at the Earth; a degree of heat ſufficient to make water boil. Such a degree of heat therefore muſt render Mercury not habitable to creatures of our conſtitution: and if bodies on its ſurface be not inflamed, and ſet on fire, it muſt be becauſe their degree of denſity is proportionably greater than that of ſuch bodies is with us. The diameter of Mercury is alſo nearly one-third of the diameter of the Earth, or about 2600 miles. Hence the ſurface of Mercury is nearly one-ninth, and his magnitude or bulk 1-27th, of that of the Earth.

The inclination of his orbit to the plane of the ecliptic, is 6° 54′; his period of revolution round the Sun, is eighty-ſeven days twenty-three hours, which conſequently is the length of his year; the year of each planet being that ſpace of time which it occupies in going round the Sun. His greateſt elongation from the Sun is 28°; the eccentricity of his orbit one-fifth of his mean diſtance, which is far greater than that of any of the other planets; and he moves in his orbit about the Sun at the amazing rate of 95,000 miles an hour.

The place of his aphelion is in Sagittarius 23° 8′; place of aſcending node is in Taurus 14° 43′, and conſequently that of the deſcending node is in Scorpio 14° 43′. His length of day or rotation on his axis, inclination of axis to his orbit, gravity on his ſurface, denſity, and quantity of matter, are all unknown.

Mercury changes his phaſes, like the Moon, according to his various poſitions with regard to the Earth and Sun; except only, that he never appears quite full, becauſe his enlightened ſide is never turned directly towards us, unleſs when he is ſo near the Sun as to be loſt to our ſight in his beams. And, as his enlightened ſide is always towards the Sun, it is plain that he ſhines not by any light of his own; for, if he did, he would conſtantly appear round.

The beſt obſervations of this planet are thoſe made when it is ſeen on the Sun's diſk, called its *tranſit*; for, in its lower conjunction, it ſometimes paſſes before the Sun like a little ſpot, eclipſing a ſmall part of the Sun's body, only obſervable with a teleſcope. That node from which Mercury aſcends northward above the ecliptic, is in the fifteenth degree of Taurus, and the oppoſite in the fifteenth degree of Scorpio. The Earth is in thoſe parts on the 6th of November, and 4th of May, new ſtyle; and, when Mercury comes to either of his nodes at his inferior conjunction about theſe times, he will appear in this manner to paſs over the diſk of the Sun. But, in all other parts of his orbit, his conjunctions are inviſible, becauſe he goes either above or below the Sun. As we neither know the time in which this planet revolves round its axis, nor the inclination of that axis to the plane of its orbit, we are neceſſarily ignorant of the length of its day and night, or the variety of ſeaſons it may be liable to.

The periodic time of Mercury may be very accurately determined from its tranſits over the Sun's diſk; for, as they have frequently been obſerved, we have an opportunity of chooſing ſuch as will give us a very accurate concluſion. From the obſervations of the conjunction of Mercury on November 6, 1631, Caſſini found the time of the conjunction to be at 19h. 50′, and the true place of Mercury 1ſ. 14° 41′ 35″. On November 9, 1723, at 5h. 29′, the conjunction was in 1ſ. 16° 47′ 20″, only 2° 5′ 45″ beyond the place at the firſt obſervation. Now, according to the Tables of Caſſini, this difference is juſt equal to the motion of the aphelion of Mars in the ſame time; conſequently Mercury was in the ſame place in its orbit at each time, and therefore the equation was the ſame. Alſo, the conjunctions happening very nearly at the ſame time of the year, the equation of time was very nearly the ſame, and therefore the difference of the apparent times is the ſame as of the true. Hence, in the interval of ninety-two years, (of which twenty-two were biſſextiles,) and 2d. 9h. 39′, Mercury (from firſt finding nearly the time of a revolution by two conjunctions near each other) is found to have made 382 revolutions 2° 5′ 45″; hence, by proportion, the time of a tropical revolution is 87d. 23h. 14′ 20″·9; and the mean annual motion comes out 1ſ. 23° 43′ 11″ 39‴. Caſſini, in his Tables, makes it 1ſ. 23° 43′ 11″. Dr. Halley makes it 1ſ. 23° 43′ 2″, and De la Lande 1ſ. 23° 43′ 3″.

Of VENUS.

Venus is one of the inferior planets, but the brighteſt, and to appearance the largeſt, of all the planets. She is eaſily diſtinguiſhed by her whiteneſs and brightneſs, in which ſhe exceeds all the reſt, even Jupiter himſelf, and which is ſo conſiderable, that in a duſky place ſhe cauſes an object to project a ſenſible ſhadow, and ſhe is often viſible in the day-time. Her place in the ſyſtem is the ſecond from the Sun, and in magnitude ſhe is about equal to the Earth, or rather a little larger, according to Dr. Herſchel's obſervations. As Venus moves round the Sun, in a circle beneath that of the Earth, ſhe is never ſeen in oppoſition to him, nor indeed very far from him; but ſeems to move backward and forward, paſſing him from ſide to ſide, to the diſtance of about forty-ſeven or forty-eight degrees, both ways, which is her greateſt elongation. When ſhe appears weſt of the Sun, which is from her inferior conjunction to her ſuperior, ſhe riſes before him, or is a morning ſtar, and is called *phoſphorus*, *lucifer*, or the *morning ſtar*; and when ſhe is eaſtwards from the ſun, which is from her ſuperior conjunction to her inferior, ſhe ſets after him, or is an evening ſtar, and is called *heſperus*, *veſper*, or the *evening ſtar*: being each of thoſe in its turn for 290 days. The inhabitants of Venus ſee the planet Mercury always accompanying the Sun; and he is to them, by turns, an evening or a morning ſtar, as Venus is to us. To the ſame inhabitants the Sun will appear almoſt twice as large as he does to us.

The real diameter of Venus is nearly equal to that of the Earth, being about 7900 miles; her apparent mean diameter ſeen from the Earth 59″, ſeen from the Sun, or her horizontal parallax, 30″; but as ſeen from the Earth 18″·79, according to Dr. Herſchel: her diſtance from the Sun ſeventy millions of miles; her eccentricity $\frac{7}{1000}$ths of the ſame, or 490,000 miles; the inclination of her orbit to the plane of the ecliptic 3° 23′; the points of their interſection or nodes are 14° of Gemini and Sagittarius; the place of her aphelion is in Aquarius, 4° 20′; her axis inclined to her orbit 75° 0′; her periodical courſe round the ſun is performed in 224 days 17 hours, moving at the rate of 80,995 per hour; the diurnal rotation round her axis is very uncertain, being according to Caſſini only twenty-three hours, but according to the obſervations of Bianchini it is in twenty-four days eight hours; though Dr. Herſchel thinks it cannot be ſo much.

Venus, when viewed through a teleſcope, is rarely ſeen to ſhine with a full face, but has phaſes and changes juſt like thoſe of the Moon, being increaſing, decreaſing, horned, ed, gibbous, &c. her illuminated part being conſtantly turned toward the Sun, or directed towards the eaſt when ſhe is a morning ſtar, and towards the weſt when an evening ſtar.

Caſſini and Campani, in the years 1665 and 1666, diſcovered ſpots in the face of Venus: from the appearances of which the former aſcertained her motion round her axis; concluding that this revolution was performed in leſs than a day; or at leaſt that the bright ſpot which he obſerved finiſhed its period either by revolution or libration in about twenty-three hours. And De la Hire, in 1700, through a teleſcope of ſixteen feet, diſcovered ſpots in Venus; which he found to be larger than thoſe in the Moon. The next obſervations of the ſame kind that occur, are thoſe of Signior Bianchini at Rome, in 1726, 1727, and 1728, who, with Campani's glaſſes, diſcovered ſeveral dark ſpots in the diſk of Venus, of which he gave an account and a repreſentation in his book entitled Heſperi et Phoſphori Nova Phenomena, publiſhed at Rome in 1728. From ſeveral ſucceſſive obſervations Bianchini concludes, that a rotation of Venus about her axis was not completed in twenty-three hours, as Caſſini imagined, but in $24\frac{1}{3}$ days; that the north pole of this rotation faced the twentieth degree of Aquarius, and was elevated 15° above the plane of the ecliptic, and that the axis kept parallel to itſelf, during the planet's revolution about the Sun. Caſſini the ſon, though he admits the accuracy of Bianchini's obſervations, diſputes the concluſion drawn from them, and finally obſerves, that if we ſuppoſe the period of the rotation of Venus to be 13h. 20′ it agrees equally well with the obſervations both of his father and Bianchini; but, if ſhe revolve in 24d. 8h. then his father's obſervations muſt be rejected as of no conſequence.

In the Philoſ. Tranſ. 1792, are publiſhed the reſults of a courſe of obſervations on the planet Venus, begun in the year 1780, by Mr. Schroeter, of Lilienthal, Bremen. From theſe obſervations, the author infers that Venus has an atmoſphere in ſome reſpects ſimilar to that of our Earth, but far exceeding that of the Moon in denſity, or power to weaken the rays of the Sun: that the diurnal period of this planet is probably much longer than that of the other planets: that the Moon alſo has an atmoſphere, though leſs denſe and high than that of Venus: and that the mountains of this planet are five or ſix times as high as thoſe on the Earth. Dr. Herſchel too, between the years 1777 and 1793, has made a long ſeries of obſervations on this planet, accounts of which are given in the Philoſ. Tranſ. for 1793. The reſults of theſe obſervations are: that the planet revolves about its axis, but the time of it is uncertain: that the poſition of its axis is alſo very uncertain: that the planet's atmoſphere is very conſiderable: that the planet has probably hills and inequalities on its ſurface, but he has not been able to ſee much of them, owing perhaps to the great denſity of its atmoſphere; as to the mountains of Venus, no eye, he ſays, which is not conſiderably better than his, or aſſiſted by much better inſtruments, will ever get a ſight of them: and that the apparent diameter of Venus, at the mean diſtance from the Earth, is 18″·79; from whence it may be inferred, that this planet is ſomewhat larger than the Earth, inſtead of being leſs, as former aſtronomers have imagined.

In 1672 and 1686, Caſſini, with a teleſcope of thirty-four feet, thought he ſaw a ſatellite move round this planet, at the diſtance of about three-fifths of Venus's diameter. It had the ſame phaſes as Venus, but without any well-defined form; and its diameter ſcarcely exceeded one-fourth of the diameter of Venus. Dr. Gregory (Aſtron. lib. vi. prop. 3.) thinks it more than probable that this was a ſatellite; and ſuppoſes that the reaſon why it is not more frequently ſeen, is the unfitneſs of its ſurface to reflect the rays of the Sun's light; as is the caſe of the ſpots in the Moon; for, if the whole diſk of the Moon were compoſed of ſuch, he thinks ſhe could not be ſeen ſo far as to Venus.

Mr. Short, in 1743, with a reflecting teleſcope of $16\frac{1}{2}$ inches focus, perceived a ſmall ſtar near Venus: with another teleſcope of the ſame focus, magnifying fifty or ſixty times, and fitted with a micrometer, he found its diſtance from Venus about 10′; and, with a magnifying power of 240, he obſerved the ſtar aſſume the ſame phaſes with Venus; its diameter ſeemed to be about one-third, or ſomewhat leſs, of the diameter of Venus; its light not ſo bright and vivid, but exceeding ſharp and well-defined. He viewed it for the ſpace of an hour; but never had the good fortune to ſee it after the firſt morning. Philoſ. Tranſ. No. cccclix. p. 646, or Abr. vol. viii. p. 208.

M. Montaign, of Limoges in France, preparing for obſerving the tranſit of 1761, diſcovered in the preceding month of May a ſmall ſtar, about the diſtance of 20′ from Venus, the diameter being about one-fourth of that of the planet. Others have alſo thought they ſaw a like appearance. And indeed it muſt be acknowledged, that Venus may have a ſatellite, though it is difficult for us to ſee it. Its enlightened ſide can never be fully turned towards us, but when Venus is beyond the Sun; in which caſe Venus herſelf appears little bigger than an ordinary ſtar, and therefore her ſatellite may be too ſmall to be perceived at ſuch a diſtance. When ſhe is between us and the Sun, her Moon has its dark ſide turned towards us; and, when Venus is at her greateſt elongation, there is but half the enlightened ſide of the Moon turned towards us, and even then it may be too far diſtant to be ſeen by us. But it was preſumed, that the two tranſits of 1761, and 1769, would afford opportunity for determining this point; and yet we do not find, although many obſervers directed their attention to this object, that any ſatellite was then ſeen in the Sun's diſk; unleſs we except two perſons, viz. an anonymous writer in the London Chronicle of May 18, who ſays, that he ſaw the ſatellite of Venus on the Sun the day of the tranſit, at St. Neot's in Huntingdonſhire; that it moved in a track parallel to that of Venus, but nearer the ecliptic; that Venus quitted the Sun's diſk at thirty-one minutes after eight, and the ſatellite at ſix minutes after nine; and M. Montaign of Limoges, whoſe account of his obſervations is in the Memoirs of the Academy of Paris, from whence the following certificate is extracted:

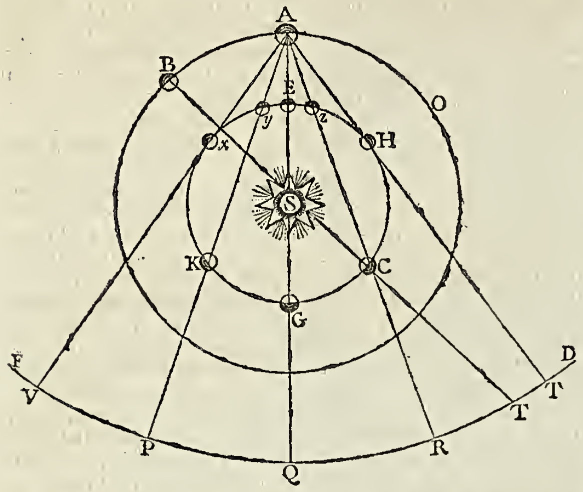
Certificate. "We having examined, by order of the academy, the remarks of M. Baudouin on a new obſervation of the ſatellite of Venus, made at Limoges the 11th of May by M. Montaign—This fourth obſervation, of great importance for the theory of the ſatellite, has ſhewn that its revolution muſt be longer than appeared by the firſt three obſervations. M. Baudouin believes it may be fixed at twelve days; as to its diſtance, it appears to him to be fifty ſemi-diameters of Venus; whence he infers, that the maſs of Venus is equal to that of the Earth. This maſs of Venus is a very eſſential element to aſtronomy, as it enters into many computations, and produces different phenomena, &c. Signed, *l'Abbé de la Caille.*
De la Lande."

Of the Phenomena peculiar to the inferior Planets, Venus and Mercury.

There are two different ſituations, in which an inferior planet will appear in conjunction with the Sun; one when the planet is between the Sun and the Earth, and the other when the Sun is between the Earth and the planet. Let A, in the following figure, be the Earth in its orbit; E, the place of Venus in her orbit EHG; S, the Sun; and FVPQRTD, an arc in the ſtarry heavens. In this ſituation the Sun and Venus are on the ſame ſide of the Earth, and will appear in the ſame point of the heavens, ſo as to be in conjunction. If the Earth is at A, and Venus at G, they will alſo appear to be in conjunction. If the Earth is at A, the Sun at S, the planet at E, nearer to the Earth than the Sun, it is called its *inferior* conjunction. But, if the Earth is at A, and the planet at G, farther from the Earth than the Sun, this is called the *ſuperior* conjunction of the planet.

If an inferior planet is at E, the Earth at A, and the

Sun at S, the elongation is nothing, the planet being then in its inferior conjunction. As the planet moves from E to *y*, its elongation increaſes; for, when it is at *y*, it appears in the line A*y*P, while the Sun appears in the line ASQ; ſo that PAQ will be its elongation. When the planet is arrived at *x*, it appears in the line A*x*V, which is a tangent to its orbit; and then its elongation is VAQ, which is the greateſt that can be on that ſide the Sun; for, after this, the elongation decreaſes. When the planet is at K, its elongation is PAQ; when at G, it is nothing, becauſe it is then in its ſuperior conjunction; as the planet moves on from G, its elongation again increaſes; for, when it comes to C, it appears in the line ACR, and its elongation is RAQ. When the planet comes to H, a line drawn from the Earth through the planet is a tangent to the orbit, and the elongation is TAQ, the greateſt it can have when it is on the other ſide of the Sun; for, after this, the elongation again decreaſes. Hence it is clear, that the inferior planets can never appear far from the Sun, but muſt always accompany it in its apparent motion through the ecliptic. And when we ſee either Venus or Mercury, it is either in the evening in the weſt, ſoon after the ſun has ſet; or in a morning, a little before the Sun riſes.



When the inferior planets are paſſing from their greateſt elongation, on one ſide of the Sun, through their ſuperior conjunction, to their greateſt elongation on the other ſide, their motion, as viewed from the Earth, is direct. In order to explain this propoſition, we ſhall firſt ſuppoſe the Earth to be at reſt at A, in the preceding figure, and correct this ſuppoſition afterwards, by ſhewing that the apparent motion of Venus, or Mercury, ſeen from the Earth, is the ſame in this reſpect, whether the Earth moves in its orbit, or reſts at A. The propoſition to be explained is this: that as Venus, for inſtance, moves from *x*, its greateſt elongation on one ſide of the Sun, through G its ſuperior conjunction to H its greateſt elongation on the other ſide, it will appear to a ſpectator upon the Earth, to move from weſt to eaſt according to the order of the ſigns; that is, its geocentric motion will be direct.

The planets move round the Sun from weſt to eaſt, and conſequently, if there were a ſpectator at the Sun, they would appear to him to move through the zodiac, according to the order of the ſigns; or, in other words, the heliocentric motion of Venus is direct. Now, if the Sun and the Earth A, are both on the ſame ſide of the planet, a ſpectator at the Earth is in the ſame ſituation, with reſpect to the planet and its motion, as if he had been at the Sun: for, whilſt the planet is moving from *x*, through G, to H, a ſpectator either at A or S is on the concave ſide of the planet's orbit, and conſequently the planet will appear to move in the ſame manner from either; but the apparent motion of the planet, when ſeen from the Sun, is direct, and conſequently its motion when ſeen from the Earth will alſo be direct. For, when Venus is at *x*, it appears to a ſpectator on the Earth at A, to be in the line A*x*V, or is ſeen among the ſtars at V; when Venus has moved to K, it is ſeen among the fixed ſtars at P; when it has moved to G, it is in its ſuperior conjunction; when it has moved to C, it appears among the fixed ſtars at R; and, when it is come to H, it appears among the fixed ſtars at T. Thus whilſt Venus has moved in its orbit from *x*, its greateſt elongation on one ſide of the Sun, through G its ſuperior conjunction, to H its greateſt elongation on the other ſide, it appears to have deſcribed the arc VPQRT in the concave ſphere of the heavens; but the letters *x*KGCH lie from weſt to eaſt, becauſe they lie in the ſame direction that the planet moves round the Sun; and the letters VPQRT lie in the ſame direction with *x*KGCH. Therefore, as the planet ſeems to a ſpectator on the Earth to deſcribe the arc VPQRT, its apparent motion ſeen from the Earth is direct, or from weſt to eaſt.

The ſecond propoſition is this: that while the inferior planets move from their greateſt elongation on one ſide of the Sun, through their inferior conjunction, to their greateſt elongation on the other ſide, their geocentric motion is retrograde. Or, in other words, whilſt Venus is moving from its greateſt elongation H, through its inferior conjunction E, to its other greateſt elongation *x*, it appears to a ſpectator upon the Earth at A to move backwards, or from eaſt to weſt, contrary to the order of the ſigns.

A ſpectator at the Sun is on the concave ſide of the planet's orbit, viewing it from within ſide. But, whilſt Venus is moving from its greateſt elongation H on one ſide, through E its inferior conjunction, to *x* its greateſt elongation on the other ſide, a ſpectator upon the Earth is on the convex ſide of its orbit, viewing it from without. Therefore, if a ſpectator at the Sun S would ſee the planet move one way, a ſpectator at the Earth A will ſee it move the contrary way; or the geocentric motion will be contrary to its heliocentric motion, and therefore retrograde; for, as ſeen from the Sun, its motion is always direct. That two ſpectators, one at the Earth, the other at the Sun, as they are on contrary ſides of the arc HE*x*, will ſee the planet apparently move contrary ways; which may be rendered more plain by the following familiar conſideration: if two men ſtand with their faces towards each other, and a ball is rolled along between them upon the ground, this ball will move from the right hand of one of the men towards his left, and from the left hand of the other towards his right. In like manner, if one man is at the earth A, and the other at the Sun S, then whilſt the planet is deſcribing the arc HE*x*, which is between them, it will appear to move from the right hand of the man at S towards his left, and from the left hand of the man at A towards his right. Whilſt the motion of Venus is direct, or while it is deſcribing the arc *x*GH, it appears to move from V to T, among the fixed ſtars. But, after it has been carried in its orbit from H to Q, it appears in the line A*z*R, and is ſeen among the fixed ſtars at R. When it comes to E, it appears at Q; and, when at *y*, its apparent place in the heavens is at P. Thus as the planet paſſes from its greateſt elongation H on one ſide of the Sun, through its inferior conjunction E, to its greateſt elongation *x* on the other ſide, it apparently runs back from T to V, or its motion is retrograde.

The third propoſition is, that Venus is ſtationary, or has no apparent motion for ſome time, when it is at its greateſt elongation; that is, when it is at H or *x*, and its apparent place is either at T or V. For, when either of the inferior planets, Venus for inſtance, is at its greateſt elongation H or *x*, a line drawn from the Earth through the planet, as AHT, or A*x*V, is a tangent to the orbit. Now though a right line touches a circle but in one point, yet ſome part of the circle greater than a point is ſo near to the tangent, as not to be diſtinguiſhed from it. Conſequently, while the planet is deſcribing this arc, no other change will be made in its geocentric place, than if it was to move in the tangent. But the geocentric place of the planet would not be altered, if the planet was to move in the tangent. For, if it was to move from T towards A, or from A to V, the apparent place of it in the heavens would in one caſe be at T, in the other caſe at V. Therefore, while the planet is at its greateſt elongation, and is deſcribing a ſmall arc in its orbit, that nearly coincides with the tangent, its geocentric place does not ſeem to alter, but it appears to continue for ſome time in the ſame part of the heavens, or is ſtationary.

We have hitherto ſuppoſed the Earth to be at reſt, and upon that ſuppoſition have explained the progreſs and regreſs, the conjunctions and ſtations, of the inferior planets. If this ſuppoſition was true, VT, or the arc which the planet at any time deſcribes in its progreſs, and TV, the arc which it deſcribes in its regreſs, would always be in the ſame part of the heavens. The planet, when in conjunction, would always appear at Q, among the ſame fixed ſtars; and at its elongation, or when it is ſtationary, it would always appear among the ſame fixed ſtars at T on one ſide of the Sun, and at V on the other ſide. But this ſuppoſition is not true: for the Earth revolves in its orbit ABO round the Sun. Now if the Earth is at A, at the time of either conjunction, the planet at this conjunction would appear among the fixed ſtars at Q, and the arcs of the greateſt elongation QV and QT would be on each ſide of thoſe ſtars. But if the Earth is at B, at the time of either of the conjunctions, then at the time of this conjunction the planet will appear in the line BST, and be ſeen among the fixed ſtars at T, and the arcs of the greateſt elongation will be on each ſide of theſe ſtars; that is, the conjunctions and elongations will happen in a different part of the heavens, when the Earth is at B, from what they would when the Earth is at A. In other reſpects, the foregoing phenomena will be much the ſame, notwithſtanding the motion of the Earth, only the planet will be more direct in the fartheſt part of the orbit, and leſs retrograde in the neareſt.

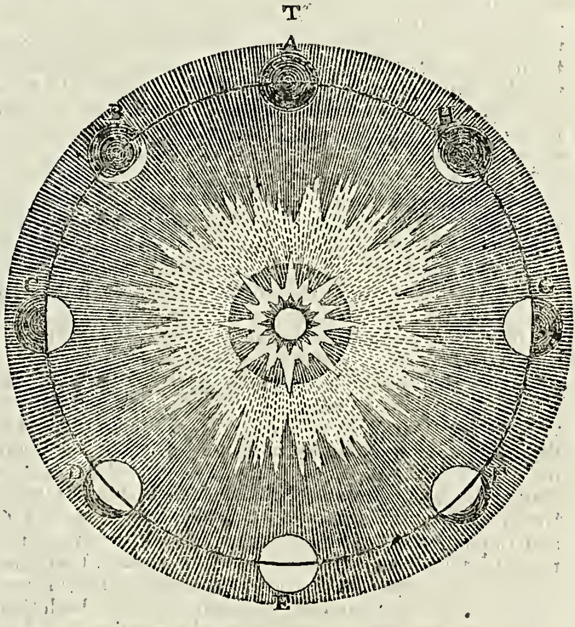
The inferior planets, Venus and Mercury, always appear very near the Sun; but, by the motion of the Earth in its orbit, the Sun appears in different parts of the heavens, in different times of the year. Therefore the inferior planets, as they are always very near the Sun, will alſo appear in different parts of the heavens at different times of the year. And conſequently their conjunctions and greateſt elongations will ſometimes happen when they are in one part of the heavens, and ſometimes when they are in another part. Venus, ſeen from the Earth, will appear to vibrate in an arc VT, half of which is on one ſide of the Sun's apparent place, and half on the other ſide. Hence, when an inferior planet, viewed from a ſuperior, moves apparently retrograde, the ſuperior planet has alſo an apparently retrograde motion. And when a ſuperior planet, viewed from an inferior, appears ſtationary, the inferior planet, viewed at the ſame time from the ſuperior, is alſo ſtationary.

Of the PHASES of VENUS and MERCURY.

That the planets are opaque bodies, and conſequently ſhine only by the light they receive from the Sun, is plain, becauſe they are not viſible when they are in ſuch parts of their orbits as are between the Sun and Earth, that is, when their illuminated ſide is turned from us. The Sun enlightens only half a planet at once; the illuminated hemiſphere is always that which is turned towards the Sun, the other hemiſphere of the planet is dark. To ſpeak with accuracy, the Sun, being larger than any of the planets, will illuminate rather more than half; but this difference, on account of the great diſtance of the Sun from any of the planets, is ſo ſmall, that its light may be conſidered as coming to them in lines phyſically parallel. Like other opaque bodies, they caſt a ſhadow behind them, which is always oppoſite to the Sun. The line in the planet's body, which diſtinguiſhes the lucid from the obſcure part, appears ſometimes ſtraight, ſometimes crooked. The convex part of the curve is ſometimes towards the ſplendid, and the concave towards that which is obſcure, and *vice verſa*, according to the ſituation of the eye with reſpect to the planet, and of the Sun which enlightens it. Hence the inferior planets going round the Sun in leſs orbits than the Earth does, will ſometimes have more, ſometimes leſs, of their illuminated ſide towards us; and, as it is the illuminated part only which is viſible to us, Mercury and Venus will, through a good teleſcope, exhibit the ſeveral appearances of the Moon, from a fine thin creſcent to an enlightened hemiſphere.

If we view Venus through a teleſcope, when ſhe follows the Sun's rays on the eaſtern ſide, and appears above the horizon after ſun-ſet, we ſhall ſee her appear nearly round, and but ſmall; ſhe is at that time beyond the Sun, and preſents to us an enlightened hemiſphere. As ſhe departs from the Sun towards the eaſt, ſhe augments in her apparent ſize; and, on viewing her through a teleſcope, is ſeen to alter her figure, abating of her apparent roundneſs, and appearing ſucceſſively like the Moon, in the different ſtages of her decreaſe. At length, when ſhe is at her greateſt elongation, ſhe is like the Moon in her firſt quarter, and appears as ſhe does when from a full ſhe has decreaſed to a half moon.

After this, as ſhe approaches to the Sun, ſhe appears concave in her illuminated part, as the Moon when ſhe forms a creſcent; thus ſhe continues till ſhe is hid entirely in the Sun's rays, and preſents to us her whole dark hemiſphere, as the Moon does in her conjunction, no part of the planet being then viſible. When ſhe departs out of the Sun's rays on the weſtern ſide, we ſee her in the morning, juſt before day-break. It is in this ſituation that Venus is called the *morning ſtar*, as in the other ſhe is called the *evening ſtar*. She at this time appears very beautiful, like a fine thin creſcent; a ſmall verge of ſilver light is juſt ſeen on her edge. From this period ſhe grows more and more enlightened every day, till ſhe is arrived at her greateſt digreſſion or elongation, when ſhe again appears as a half-moon, or as the Moon in her firſt quarter; from this time, if continued to be viewed with a teleſcope, ſhe is found to be more and more enlightened, though ſhe is all the while decreaſing in magnitude, and thus continues growing ſmaller and rounder till ſhe is again hid or loſt in the Sun's rays.



The annexed figure repreſents the orbit of Venus, with the Sun in the centre; and the planet being drawn in the eight different ſituations above deſcribed, if we ſuppoſe the Earth to be at T, when Venus is at A, her dark hemiſphere is towards the Earth, and ſhe is therefore inviſible, except the conjunction happens in her node, for then ſhe appears like a dark ſpot upon the diſk of the Sun, which is called a *tranſit*. When Venus is at B, a little of her enlightened ſide is turned towards the Earth, and therefore ſhe appears ſharp-horned; when ſhe is at C, half her enlightened hemiſphere is turned towards the Earth, and ſhe appears like an half-moon; at D, more than half her enlightened hemiſphere is towards us, and ſhe appears like the Moon about three days before it is full; at E, the whole enlightened hemiſphere is towards the Earth, and Venus is then either behind the Sun, or ſo very near him, that ſhe can hardly be ſeen; but, if ſhe could, ſhe would appear round, like the full-moon. At F, ſhe is like the Moon three days after the full; at G, like a half-moon again; at H, like a creſcent, with the points of the horn turned the contrary way to what they were at B; all which phenomena are equally applicable to the planet Mercury. Hence Venus and Mercury have the ſame phaſes from their inferior to their ſuperior conjunction, as the Moon has from the new to the full; and the ſame from the ſuperior to the inferior conjunction, as the Moon has from the full to the new.

The inferior planets do not ſhine brighteſt when they are full; thus Venus does not appear brighteſt in her ſuperior conjunction, though her illuminated hemiſphere be then turned towards us. Her ſplendour is more diminiſhed by her being at a greater diſtance from us, than the conſpicuous part of her illuminated diſk is increaſed. Dr. Halley has ſhewn, that Venus is brighteſt when her elongation from the Sun is about 40°. Mercury is in his greateſt brightneſs when very near his utmoſt elongation.

Of the TRANSITS of VENUS and MERCURY.

The principal uſe of the obſervations upon theſe tranſits is accurately to determine the Sun's parallax, or diſtance from the Earth, which aſtronomers have in vain attempted to find by various other methods; for the minuteneſs of the angles required eaſily eludes the niceſt inſtruments. But in obſerving the ingreſs of theſe planets, particularly that of Venus into the Sun, and her egreſs from the ſame, the ſpace of time between the moments of the internal contacts, obſerved to a ſecond of time, may be obtained by the aſſiſtance of a moderate teleſcope, and a good pendulum-clock. And from two ſuch obſervations rightly made, in proper places, the diſtance of the Sun from the Earth, to within a 500th part, may be certainly found. Dr. Halley, while at St. Helena, obſerved a tranſit of Mercury over the Sun's diſk; and, by means of a good teleſcope, it appeared to him that he could determine the time of the ingreſs and egreſs, without its being ſubject to an error of a ſingle ſecond; upon which he immediately concluded, that the Sun's parallax might be determined by ſuch obſervations, from the difference of the times of the tranſit over the Sun, at different places upon the Earth's ſurface. But this difference is ſo ſmall in Mercury, that it would render the concluſion ſubject to a great degree of inaccuracy; in Venus however, whoſe parallax is nearly four times as great as that of the Sun, there will be a very conſiderable difference between the times of the tranſits ſeen from different parts of the Earth, by which the accuracy of the concluſion might be proportionably increaſed. Hence Dr. Halley propoſed to determine the Sun's parallax from the tranſit of Venus over the Sun's diſk, obſerved at different places on the Earth; and, as it was not probable that he himſelf ſhould live to obſerve the next tranſits, which happened in 1761 and 1769, he very earneſtly recommended the attention of them to the aſtronomers who ſhould be alive at that time. Aſtronomers were therefore ſent from England and France to the moſt proper parts of the Earth to obſerve both theſe tranſits, from the reſult of which, the parallax has been determined to a very great degree of accuracy.

Kepler was the firſt perſon who predicted the tranſits of Venus and Mercury over the Sun's diſk; he foretold the tranſit of Mercury in 1631, and the tranſits of Venus in 1631 and 1761. The firſt time Venus was ever ſeen upon the Sun was in the year 1639, on November 24, at Hoole near Liverpool, by our countryman Mr. Horrox. He was employed in calculating an Ephemeris from the Lanſberge Tables, which gave, at the conjunction of Venus with the Sun on that day, its apparent latitude leſs than the ſemidiameter of the Sun. But, as theſe tables had ſo often deceived him, he conſulted the tables conſtructed by Kepler, according to which, the conjunction would be at 8h. 1′. A. M. at Mancheſter, and the planet's latitude 14′ 10″ ſouth; but, from his own corrections, he expected it to happen at 3h. 57′. P. M. with 10′ ſouth latitude. He accordingly gave this information to his friend Mr. Crabtree at Mancheſter, deſiring him to obſerve it; and he himſelf alſo prepared to make obſervations upon it, by tranſmitting the Sun's image through a teleſcope into a dark chamber. He deſcribed a circle of about ſix inches diameter, and divided the circumference into 360°, and the diameter into 120 equal parts, and cauſed the Sun's image to fill up the circle. He began to obſerve on the 23d, and repeated his obſervations on the 24th till one o'clock, when he was unfortunately called away by buſineſs; but, returning at fifteen minutes after three o'clock, he had the ſatisfaction of ſeeing Venus upon the Sun's diſk, juſt wholly entered on the left ſide, ſo that the limbs perfectly coincided. At thirty-five minutes after three, he found the diſtance of Venus from the Sun's centre to be 13′ 30″; and, at forty-five minutes after three, he found it to be 13′; and the Sun ſetting at fifty minutes after three o'clock, put an end to his obſervations. From theſe obſervations, Mr. Horrox endeavoured to correct ſome of the elements of the orbit of Venus. He found Venus had entered upon the diſk at about 62° 30′ from the vertex towards the right on the image, which, by the teleſcope, was inverted. He meaſured the diameter of Venus, and found it to be to that of the Sun, as 1·12 : 30, as near as he could meaſure. Gaſſendus obſerved the tranſit of Mercury which happened on November 7, 1631, and this was the firſt which had ever been obſerved; he made his obſervations in the ſame manner that Horrox did after him. Since his time, ſeveral tranſits of Mercury have been obſerved, as they frequently happen; whereas only two tranſits of Venus have happened ſince the time of Horrox. If we know the time of the tranſit at one node, we can determine, in the following manner, when they will probably happen again at the ſame node.

The mean time from one conjunction to another of Venus or Mercury being known, and the time of one mean conjunction, we ſhall know the time of all the future mean conjunctions; obſerve therefore thoſe which happen near to the node, and compute the geocentric latitude of the planet at the time of conjunction, in which caſe, if it be leſs than the apparent ſemidiameter of the Sun, there will be a tranſit of the planet over the Sun's diſk; and we may determine the periods when ſuch conjunctions happen, in the following manner: Let $P=$ the periodic time of the Earth, p that of Venus or Mercury. Now, in order that a tranſit may happen again at the ſame node, the Earth muſt perform a certain number of complete revolutions in the ſame time that the planet performs a certain number, for then they muſt come into conjunction again at the ſame point of the Earth's orbit, or nearly in the ſame poſition with reſpect to the node. Let the Earth perform x revolutions, whilſt the planet performs y revolutions; then will $Px=py$, therefore $\frac{x}{y}=\frac{p}{P}$. Now $P=365,256$, and for Mercury $p=87,968$; therefore $\frac{x}{y}=\frac{p}{P}=\frac{87,968}{365,256}=$ (by reſolving it into its continual fractions) $\frac{1}{4}, \frac{6}{26}, \frac{7}{29}, \frac{13}{54}, \frac{33}{137}, \frac{46}{191}$, &c. That is, 1, 6, 7, 13, 33, 46, &c. revolutions of the Earth are nearly equal to 4, 25, 29, 54, 137, 191, &c. revolutions of Mercury, approaching nearer to a ſtate of equality the farther we go. The firſt period, or that of one year, is not ſufficiently exact; the period of ſix years will ſometimes bring on a return of the tranſit at the ſame node; that of ſeven years more frequently; that of thirteen years ſtill more frequently, and ſo on. Now there was a tranſit of Mercury at its deſcending node, in May 1786; hence, by continually adding 6, 7, 13, 33, 46, &c. to it, are found all the years when the tranſit may be expected to return at that node. In 1789 there was a tranſit at the aſcending node, and therefore, by adding the ſame numbers to that year, we aſcertain the years in which the tranſits may be expected to happen at that node. The next tranſits of Mercury at the deſcending node will happen in 1799, 1832, 1845, 1878, 1891; and, at the aſcending node, in 1802, 1815, 1822, 1835, 1848, 1861, 1868, 1881, 1894. For Venus, $p = 224{\cdot}7$; hence $\frac{x}{y} = \frac{p}{P} = \frac{224{\cdot}7}{365{\cdot}256} = \frac{8}{13}, \frac{235}{382}, \frac{718}{1159}$, &c. Therefore the periods are 8, 235, 713, &c. years. The tranſits at the ſame node will therefore ſometimes return at eight years, but oftener in 235, and ſtill oftener in 713, &c. Now in 1769 a tranſit of Venus happened at the deſcending node in June, and the next tranſits at the ſame node will be in the years 2004, 2012, 2247, 2255, 2490, 2498, 2733, 2741, and 2984. In 1639 a tranſit happened at the aſcending node in November, and the next tranſits at the ſame node will be in the years 1874, 1882, 2117, 2125, 2360, 2368, 2603, 2611, 2846, and 2854. Theſe tranſits are found to happen, by continually adding the periods, and finding the years when they may be expected, and then computing, for each time, the ſhorteſt geocentric diſtance of Venus from the Sun's centre at the time of conjunction, and, if it be leſs than the ſemidiameter of the Sun, there will be a tranſit.

In the tranſit in 1761, the Rev. Mr. Hirſt, F. R. S. at Madras, obſerved a kind of penumbra, or duſky ſhade, which preceded the firſt external contact two or three ſeconds of time, and was ſo remarkable, that he was thereby aſſured that the contact was near, which happened accordingly. In the tranſit in 1769, Dr. Maſkelyne was very attentive to obſerve if this circumſtance took place, but he could perceive no ſuch effect. When Venus was a little more than half immerged into the Sun's diſk, he ſaw its whole circumference completed, by means of a vivid, but narrow, ill-defined, border of light, which illuminated that part of its circumference which was off the Sun; but this diſappeared about two or three minutes before the internal contact. In the tranſit in 1769, Mr. Hirſt had warning of the approach of Venus to the external contact, by the ſudden appearance of a violent corruſcation, ebullition, or agitation, of the upper edge of the Sun, five or ſix minutes before the limb of Venus broke in upon the Sun. This he thinks might be owing to the atmoſphere of Venus. He did not, however, obſerve any kind of penumbra, as in the other tranſit. Some obſervers perceived, at the firſt external contact, a kind of watery pointed ſhadow, appearing to give a tremulous motion to that part of the Sun's limb. Moſt of the obſervers took notice of a tremulous motion of the Sun's limb, which rendered the true time of the contact uncertain to ſeveral ſeconds. Some aſtronomers, at the laſt tranſit, obſerved a luminous creſcent at the times of the ingreſs and egreſs, which enlightened that part of Venus's circumference which was off the Sun, ſo that the whole circumference was viſible. At the internal contact, the limb of Venus ſeemed, to moſt of the obſervers, to be united to the Sun's limb by a black protuberance or ligament, which was not broken by the thread of light, till ſome ſeconds after the regular circumference of Venus ſeemed to have coincided with the Sun's. Others obſerved that the thread of light between the limbs did not break inſtantaneouſly, the points of the threads darting into each other, and parting again, in a quivering manner, ſeveral times before they finally adhered. Perhaps the beſt way to aſcertain the time of the internal contact, is to judge by the eye, from that part of the circumference of Venus which is not diſturbed, when the regular circumference of Venus would juſt touch the Sun's limb. Hence it appears, that Dr. Halley was miſtaken, in ſuppoſing that the contacts could be obſerved to a ſecond of time; and accordingly the obſervations made by different obſervers, and reduced to the ſame meridian, differed more than was expected. The mean of all the obſervations, however, have counterbalanced this, and rendered the determination of the parallax of the Sun to be depended upon to very great accuracy.

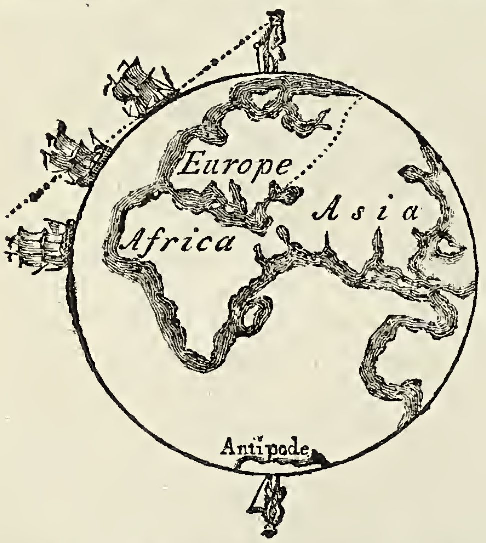
The parallax of the Sun being thus determined, from the difference of the times of the tranſits at two places, the concluſion will be moſt accurate when that difference is the greateſt poſſible. The places therefore to be choſen for the two obſervations ſhould be upon oppoſite meridians, and ſuch, that the middle of the tranſit may be when the Sun is upon the meridian; for, under theſe circumſtances, the ingreſs at one place will be accelerated and the egreſs retarded, increaſing thereby the time of the tranſit, and the ingreſs at the other place will be retarded and the egreſs accelerated, by which the time of the tranſit will be diminiſhed; the difference therefore of the times of the tranſits at the two places will thus become the greateſt. As the tranſit muſt be obſerved under oppoſite meridians, it muſt happen in the day at one of the places, and at night at the other; the place therefore where it happens in the night muſt be ſo near the north or ſouth pole, according as the declination of the Sun is north or ſouth, that the ingreſs may be obſerved before the Sun ſets, and the egreſs next morning after it riſes. Hence the tranſits of Venus which happen in June are more convenient than thoſe which happen in December, becauſe there is a great choice of ſituations towards the north pole, which is not the caſe towards the ſouth. Dr. Halley made a miſtake by ſetting off the axis of the planet's orbit on the ſame ſide of the ecliptic that the axis of the equator was ſituated, inſtead of the contrary ſide. By uſing therefore the difference of theſe two angles inſtead of their ſum, he made the difference of the times of the tranſit in 1761, ſeen at the Ganges and Port-Nelſon (two places recommended by him for obſerving this tranſit), longer by 29″ than it ought, as computed by Dr. Hornſby. See the Philoſophical Tranſactions for 1763.

Of the EARTH.

Tellus, the Earth, is characteriſed by ⊖; and revolves next above Venus. Small as it really is when compared to ſome of the other planets, it is nevertheleſs to us of the higheſt importance: we wiſh only to obtain a knowledge of others, that we may find out their relation to this, and from thence learn our connection with the univerſe at large. The Earth's orbit is placed between thoſe of Venus and Mars, having the orbits of Venus and Mercury within its own, or between it and the Sun, in the centre; and thoſe of Mars, Jupiter, Saturn, and the Georgian planet, without or above it, which are therefore called ſuperior planets, and the others the inferior ones. Its diſtance from the Sun is ninety-ſix millions of miles, and it moves at the rate of 68,856 miles per hour.

With reſpect to the *figure* of the Earth, the ancients had various opinions. Some, as Anaximander and Leucippus, held it to be cylindrical, or in form of a drum; but the moſt general opinion was, that it was flat; that the viſible horizon was the bounds of the Earth, and the ocean the bounds of the horizon; that the heavens and earth above this ocean were the whole viſible univerſe; and that all below the ocean was *hades*; and of this opinion were alſo ſome of the Chriſtian fathers, as Lactantius, St. Auguſtine, &c. Some, however, among the ſages of antiquity, concluded, that the Earth muſt neceſſarily be of a ſpherical figure, becauſe that figure was, on many accounts, the moſt convenient for the Earth, as an habitable world: they alſo argued, that this figure was the moſt natural, becauſe

cauſe any body expoſed to forces, which tend to one common centre, as is the caſe with the Earth, would neceſſarily aſſume a round figure. The aſſent, however, of the modern philoſopher to this truth, was not determined by ſpeculative reaſoning; but on evidence, derived from facts and actual obſervation. It is known, from the laws of optics and perſpective, that if any body, in all ſituations, and under all circumſtances, project a circular ſhadow, that body muſt be a globe. It is alſo known, that eclipſes of the Moon are cauſed by the ſhadow of the Earth. And we find, that whether the ſhadow be projected towards the eaſt or the weſt, the north or the ſouth, under every circumſtance it is circular: the body, therefore, that caſts the ſhadow, which is the Earth, muſt be of a globular figure. We ſhall obtain another convincing proof of the globular ſhape of the Earth, by inquiring in what manner a perſon ſtanding upon the coaſt of the ſea, and waiting for a veſſel which he knows is to arrive, ſees that veſſel. We ſhall find, that he firſt of all, and at the greateſt diſtance, ſees the top of the maſt riſing out of the water; and the appearance is, as if the ſhip was ſwallowed up in the water. As he continues to obſerve the object, more and more of the maſt appears; at length he begins to ſee the top of the deck, and by degrees the whole body of the veſſel. On the other hand, if the ſhip be departing from us, we firſt loſe ſight of the hull, at a greater diſtance the main-ſails diſappear, at a ſtill greater the top-ſail. But, if the ſurface of the ſea were a plane, the body of the ſhip, being the largeſt part of it, would be ſeen firſt, and from the greateſt diſtance, and the maſts would not be viſible till it came nearer.



Theſe facts are clearly illuſtrated in the annexed figure; but to render this, if poſſible, ſtill clearer, let us conſider two ſhips meeting at ſea, the top-maſt of each are the parts firſt diſcovered by both, the hull, &c. being concealed by the convexity of the globe which riſes between them. The ſhips may, in this inſtance, be reſembled to two men, who approach each other on the oppoſite ſides of a hill; their heads will be firſt ſeen, and gradually, as they approach, the body will come entirely in view. From hence is derived a rational method of eſtimating the diſtance of a ſhip, which is in uſe amongſt ſea-faring people, namely, of obſerving 'how low they can bring her down,' that is to ſay, the man at the maſt-head fixes his eyes on the veſſel in ſight, and ſlowly deſcends by the ſhrouds, till ſhe becomes no longer viſible. The leſs the diſtance, the lower he may deſcend before ſhe diſappears. If obſervations of this kind be made with a teleſcope, the effect is ſtill more remarkable; as the diſtance increaſes or diminiſhes, the ſhip in ſight will appear to become more and more immerſed, or to riſe gradually out of the water. This truth is fully evinced by the following conſideration: that ſhips have ſailed round the Earth, have gone out to the weſtward, and have come home from the eaſtward; or, in other words, the ſhips have kept the ſame courſe, and yet returned from the oppoſite ſide into the harbour whence they firſt ſailed. Now we are certain that this could not be the caſe, if the Earth were a plane; for then a perſon, who ſhould ſet out from any one point, and go on ſtraight forward, without ſtopping, would be continually going farther from the point from whence he ſet out.

This argument is fully confirmed by the Earth having been often ſailed round: the firſt time was in the year 1519, when Ferd. Magellan made the tour of the whole globe in 1124 days. In the year 1557 Francis Drake performed the ſame in 1056 days: in the year 1586 Sir Thomas Cavendiſh made the ſame voyage in 777 days; Simon Cordes, of Rotterdam, in the year 1590; in the year 1598, Oliver Noort, a Hollander, in 1077 days; Van Schouten, in the year 1615, in 749 days; Jac. Heremites and Joh. Huygens, in the year 1623, in 802 days: and many others have ſince performed the ſame navigation, particularly Anſon, Bougainville, and Cook; ſometimes ſailing round by the eaſtward, ſometimes to the weſtward, till at length they arrived again in Europe, from whence they ſet out; and, in in the courſe of their voyage, obſerved that all the phenomena, both of the heavens and Earth, correſpond to, and evince, this ſpherical figure, which is made more obvious by the riſing and ſetting of the Sun, Moon, and ſtars; all which happen ſooner to thoſe who live to the eaſt, and later to thoſe who live weſtwardly; and the more or leſs ſo, according to the diſtance and roundneſs of the Earth. So alſo, going or ſailing to the northward, the north pole and northern ſtars become more elevated, and the ſouth pole and ſouthern ſtars more depreſſed; the elevation northerly increaſing equally with the depreſſion ſoutherly, and either of them in proportion to the diſtance gone. The ſame thing uniformly happens in going ſouthward. Beſides, the oblique aſcenſions, deſcenſions, emerſions, and amplitudes, of the riſing and ſetting of the Sun and ſtars in every latitude, are agreeable to the ſuppoſition of the Earth's being of a ſpherical form: all which could not happen if it was of any other figure. This globular figure may alſo be inferred from the operation of levelling, or the art of conveying water from one place to another; for, in this proceſs, it is found neceſſary to make an allowance between the true and apparent level; or, in other words, for the ſpherical figure of the Earth. For the true level is not a ſtraight line, but a curve which falls below the ſtraight line about eight inches in a mile, four times eight in two miles, nine times eight in three miles, ſixteen times eight in four miles, always increaſing in exact ratio to the ſquares of the diſtance. The natural cauſe of this ſphericity of the globe is, according to Sir Iſaac Newton, the great principle of attraction, which the Creator has ſtamped on all the matter of the univerſe; and by which all bodies, and all the parts of bodies, mutually attract one another. And the ſame is the cauſe of the ſphericity of the drops of rain, quickſilver, &c.

What the Earth loſes of its ſphericity by mountains and valleys, is nothing conſiderable; the higheſt eminence being ſcarcely equivalent to the minuteſt protuberance on the ſurface of an orange. Its difference from a perfect ſphere however is more conſiderable in another reſpect, by which it approaches nearly to the flatted form of an orange, or to an oblate ſpheroid, being a little flatted at the poles, and raiſed about the equatorial parts, ſo that the axis from pole to pole is leſs than the equatorial diameter. What gave the firſt occaſion to the diſcovery of this figure of the Earth, was the obſervations of ſome French and Engliſh philoſophers in the Eaſt Indies, and other parts, who found that pendulums, the nearer they came to the equator, performed their vibrations ſlower: from whence it follows, that the velocity of the deſcent of bodies by gravity, is leſs in the countries near to the equator; and conſequently that thoſe parts are farther removed

moved from the centre of the Earth, or from the common centre of gravity. See the Hiſtory of the Royal Academy of Sciences, by Du Hamel, p. 110, 156, 206; and l'Hiſt. de l'Acad. Roy. 1700 and 1701.

This circumſtance put Huygens and Sir Iſaac Newton upon finding out the cauſe, which they attributed to the revolution of the Earth about its axis. If the Earth were in a fluid ſtate, its rotation round its axis would neceſſarily make it put on ſuch a figure, becauſe, the centrifugal force being greateſt towards the equator, the fluid would there riſe and ſwell moſt; and that its figure really ſhould be ſo now, ſeems neceſſary, to keep the ſea in the equinoctial regions from overflowing the Earth about thoſe parts. See this ſubject well handled by Huygens, in his diſcourſe De Cauſa Gravitatis, p. 154, where he ſtates the ratio of the polar diameter to that of the equator as 577 to 578. And Newton, in his Principia, firſt publiſhed in 1686, demonſtrates, from the theory of gravity, that the figure of the Earth muſt be that of an oblate ſpheroid generated by the rotation of an ellipſe about its ſhorteſt diameter, provided all the parts of the Earth were of an uniform denſity throughout, and that the proportion of the polar to the equatorial diameter of the Earth, would be that of 689 to 692, or nearly that of 229 to 230, or as ·9956522 to 1.

This proportion of the two diameters was calculated by Newton in the following manner: Having found that the centrifugal force at the equator is $\frac{1}{289}$ of gravity, he aſſumes, as an hypotheſis, that the axis of the Earth is to the diameter of the equator as 100 to 101, and thence determines what muſt be the centrifugal force at the equator to give the Earth ſuch a form, and finds it to be $\frac{4}{505}$ of gravity: then, by the rule of proportion, if a centrifugal force equal to $\frac{4}{505}$ of gravity would make the Earth higher at the equator than at the poles by $\frac{1}{100}$ of the whole height at the poles, a centrifugal force that is the $\frac{1}{289}$ of gravity will make it higher by a proportionable exceſs, which by calculation is $\frac{1}{229}$ of the height at the poles; and thus he diſcovered that the diameter at the equator is to the diameter at the poles, or the axis, as 230 to 229. But this computation ſuppoſes the Earth to be every where of an uniform denſity; whereas, if the Earth is more denſe near the centre, then bodies at the poles will be more attracted by this additional matter being nearer; and therefore the exceſs of the ſemi-diameter of the equator above the ſemi-axis, will be different. According to this proportion between the two diameters, Sir Iſaac Newton farther computes, from the different meaſures of a degree, that the equatorial diameter will exceed the polar by $34\frac{1}{5}$ miles.

Nevertheleſs, Meſſrs. Caſſini, both father and ſon, the one in 1701, and the other in 1713, attempted to prove, in the Memoirs of the Royal Academy of Sciences, that the Earth was an oblong ſpheroid; and, in 1718, M. Caſſini again undertook, from obſervations, to ſhew that, on the contrary, the longeſt diameter paſſes through the poles; which gave occaſion for Mr. John Bernouilli, in his Eſſai d'une Nouvelle Phyſique Celeſte, printed at Paris in 1735, to triumph over the Britiſh philoſopher, apprehending that theſe obſervations would invalidate what Newton had demonſtrated. And, in 1720, M. de Mairan advanced arguments, ſuppoſed to be ſtrengthened by geometrical demonſtrations, farther to confirm the aſſertions of Caſſini. But in 1753 two companies of mathematicians were employed, one for a northern and another for a ſouthern expedition, the reſult of whoſe obſervation and meaſurement plainly proved that the Earth was flatted at the poles. The proportion of the equatorial diameter to the polar, as ſtated by the gentlemen employed on the northern expedition for meaſuring a degree of the meridian, is as 1 to 0·9891; by the Spaniſh mathematicians as 266 to 165, or as 1 to 0·99624; by M. Bouguer as 179 to 178, or as 1 to 0·99441.

As to all concluſions however deduced from the length of pendulums in different places, it is to be obſerved that they proceed upon the ſuppoſition of the uniform denſity of the Earth, which is a very improbable circumſtance; as juſtly obſerved by Dr. Horſley in his letter to Capt. Phipps. "You finiſh your article, he concludes, relating to the pendulum with ſaying, 'that theſe obſervations give a figure of the Earth nearer to Sir Iſaac Newton's computation, than any others that have hitherto been made;' and then you ſtate the ſeveral figures given, as you imagine, by former obſervations, and by your own. Now it is very true, that *if* the meridians be ellipſes, or *if* the figure of the Earth be that of a ſpheroid generated by the revolution of an ellipſis, turning on its ſhorter axis, the particular figure, or the ellipticity of the generating ellipſis, which your obſervations give, is nearer to what Sir Iſaac Newton ſaith it ſhould be, if the globe were homogeneous, than any that can be derived from former obſervations. But yet it is not what you imagine. Taking the gain of the pendulum in latitude 79° 50′ exactly as you ſtate it, the difference between the equatorial and the polar diameter is about as much leſs than the Newtonian computation makes it, and the hypotheſis of homogeneity would require, as you reckon it to be greater. The proportion of 212 to 211 ſhould indeed, according to your obſervations, be the proportion of the force that acts upon the pendulum at the poles, to the force acting upon it at the equator. But this is by no means the ſame with the proportion of the equatorial diameter to the polar. If the globe were homogeneous, the equatorial diameter would exceed the polar by $\frac{1}{230}$ of the length of the latter; and the polar force would alſo exceed the equatorial by the like part. But, if the difference between the polar and equatorial force be greater than $\frac{1}{230}$, (which may be the caſe in an heterogeneous globe, and ſeems to be the caſe in ours,) then the difference of the diameters ſhould, according to theory, be leſs than $\frac{1}{230}$, and *vice verſa*.

"I confeſs this is by no means obvious at firſt ſight; ſo far otherwiſe, that the miſtake, which you have fallen into, was once very general. Many of the beſt mathematicians were miſled by too implicit a reliance upon the authority of Newton, who had certainly confined his inveſtigations to the homogeneous ſpheroid, and had thought about the heterogeneous only in a looſe and general way. The late Mr. Clairault was the firſt who ſet the matter right, in his elegant and ſubtle treatiſe on the figure of the Earth. That work hath now been many years in the hands of mathematicians, among whom I imagine there are none, who have conſidered the ſubject attentively, that do not acquieſce in the author's concluſions.

"In the ſecond part of that treatiſe, it is proved, that putting P for the polar force, Π for the equatorial, δ for the true ellipticity of the Earth's figure, and ε for the ellipticity of the homogeneous ſpheroid,

$$\frac{P-\Pi}{\Pi}=2\varepsilon-\delta;\ \text{therefore}\ \delta=2\varepsilon-\frac{P-\Pi}{\Pi};$$

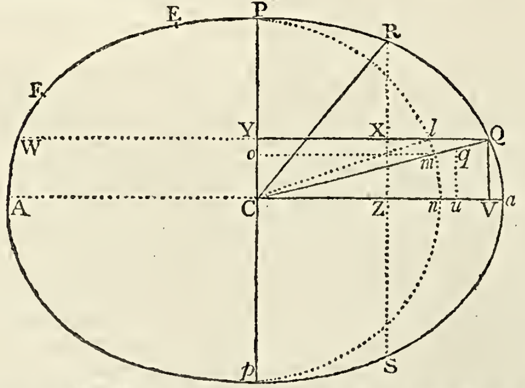
and therefore, according to your obſervation, $\delta=\frac{1}{251}$. This is the juſt concluſion from your obſervations of the pendulum, taking it for granted, that the meridians are ellipſes: which is an hypotheſis, upon which all the reaſonings of theory have hitherto produced. But, plauſible as this may ſeem, I muſt ſay, that there is much reaſon from experiment to call it in queſtion. If it were true, the increment of the force which actuates the pendulum, as we approach the poles, ſhould be as the ſquare of the ſine of the latitude; or, which is the ſame thing, the decrement, as we approach the equator, ſhould be as the ſquare of the coſine of the latitude. But whoever takes the pains to compare together ſuch of the obſervations of the pendulum in different latitudes, as ſeem to have been made with the greateſt care, will find that the increments and decrements do by no means follow theſe proportions; and, in thoſe which I have examined, I find a regularity in the deviation which little reſembles the mere error of obſervation. The unavoidable concluſion is, that the true figure of the meridians is not elliptical. If the meridians are not ellipſes, the difference of the diameters may indeed, or it may not, be proportional to the difference between the polar and the equatorial force; but it is quite an uncertainty, what relation ſubſiſts between the one quantity and the other; our whole theory, except ſo far as it relates to the homogeneous ſpheroid, is built upon falſe aſſumptions, and there is no ſaying what figure of the Earth any obſervations of the pendulum give."

He then lays down the following Table, which ſhews the different reſults of obſervations made in different latitudes; in which the firſt three columns contain the names of the ſeveral obſervers, the places of obſervation, and the latitude of each; the fourth column ſhews the quantity of P—Π in ſuch parts as Π is 100,000, as deduced from comparing the length of the pendulum at each place of obſervation, with the length of the equatorial pendulum as determined by M. Bouguer, upon the ſuppoſition that the increments and decrements of force, as the latitude is increaſed or lowered, obſerve the proportion which theory aſſigns. Only the ſecond and the laſt value of P—Π are concluded from compariſons with the pendulum at Greenwich and at London, not at the equator. The fifth column ſhews the value of δ correſponding to every value of P—Π, according to Clairault's theorem:

Obſervers.	*Places.*	*Latitudes.*	P—Π	δ
Bouguer	Equator	0° 0'		
Bouguer	Porto Bello	9 34	741·8	$\frac{1}{784}$
Green	Otaheite	17 29	563·2	$\frac{1}{326}$
Bouguer	St. Domingo	18 27	591·0	$\frac{1}{358}$
Abbé de la Caille	Cape of Good Hope	33 55	731·5	
- - - - -	Paris	48 50	585·1	$\frac{1}{351}$
The Academicians	Pello	66 48	565·9	$\frac{1}{329}$
Capt. Phipps	- - - - - -	79 50	471·2	$\frac{1}{251}$

"By this Table it appears, that the obſervations in the middle parts of the globe, ſetting aſide the ſingle one at the Cape, are as conſiſtent as could reaſonably be expected; and they repreſent the ellipticity of the Earth as about $\frac{1}{340}$. But, when we come within ten degrees of the equator, it ſhould ſeem that the force of gravity ſuddenly becomes much leſs, and within the like diſtance of the poles much greater than it could be in ſuch a ſpheroid."

The following Problem, communicated by Dr. Leatherland to Dr. Pemberton, and publiſhed by Mr. Robertſon, ſerves for finding the proportion between the axis and the equatorial diameter, from meaſures taken of a degree of the meridian in two different latitudes, ſuppoſing the Earth an oblate ſpheroid.



Let AP*ap* be an ellipſe repreſenting a ſection of the Earth through the axis P*p*; the equatorial diameter, or the greater axis of the ellipſe, being A*a*; let E and F be two places where the meaſure of a degree has been taken; theſe meaſures are proportional to the radii of curvature in the ellipſe at thoſe places; and if CQ, CR, be conjugates to the diameters whoſe vertices are E and F, CQ will be to CR in the ſubtriplicate ratio of the radius of curvature at E to that at F, by Cor. 1, prop. 4, part 6, of Milnes's Conic Sections, and therefore in a given ratio to one another; alſo the angles QCP, RCP, are the latitudes of E and F; ſo that, drawing QV parallel to P*p*, and QXYW to A*a*, theſe angles being given, as well as the ratio of CQ to CR, the rectilinear figure CVQXRY is given in ſpecies; and the ratio of $\mathrm{VC}^2-\mathrm{ZC}^2$ $(=\mathrm{QX}\times\mathrm{XW})$ to $\mathrm{RZ}^2-\mathrm{QV}^2$ $(=\mathrm{RX}\times\mathrm{XS})$ is given, which is the ratio of CA^2 to CP^2; therefore the ratio of CA to CP is given. Hence, if the ſine and coſine of the greater latitude be each augmented in the ſubtriplicate ratio of the meaſure of the degree in the greater latitude to that in the leſſer, then the difference of the ſquares of the augmented ſine, and the ſine of the leſſer latitude, will be to the difference of the ſquares of the coſine of the leſſer latitude and the augmented coſine, in the duplicate ratio of the equatorial to the polar diameter. For, C*q* being taken in CQ equal to CR, and *qv* drawn parallel to QV, C*v* and *vq*, CZ and ZR will be the ſines and coſines of the reſpective latitudes to the ſame radius; and CV, VQ, will be the augmentations of C*v* and C*q* in the ratio named.

Hence, to find the ratio between the two axes of the Earth, let E denote the greater, and F the leſſer, of the two latitudes, M and N, the reſpective meaſures taken in each; and let P denote $\sqrt[3]{\frac{\mathrm{M}}{\mathrm{N}}}$: then $\sqrt{\frac{\text{coſ.}^2\,\mathrm{F}-\mathrm{P}^2\times\text{coſ.}^2\,\mathrm{E}}{\mathrm{P}^2\times\text{ſin.}^2\,\mathrm{E}-\text{ſin.}^2\,\mathrm{F}}}$ is $=\frac{\text{leſſer axis}}{\text{greater axis}}$.

It alſo appears by the above problem, that, when one of the degrees meaſured is at the equator, the coſine of the latitude of the other being augmented in the ſubtriplicate ratio of the degrees, the tangent of the latitude will be to the tangent anſwering to the augmented coſine, in the ratio of the greater axis to the leſs. For ſuppoſing E the place out of the equator; then, if the ſemicircle P*lmnp* be deſcribed, and *l*C joined, and *mo* drawn parallel to *a*C: C*o* is the coſine of the latitude to the radius CP, and CY that coſine augmented in the ratio before named; YQ being to Y*l*, that is, C*a* to C*n* or CP, as the tangent of the angle YCQ, the latitude of the point E, to the tangent of the angle YC*l*, belonging to the augmented coſine. Thus, if M repreſent the meaſure in a latitude denoted by E, and N the meaſure at the equator, let A denote an angle whoſe meaſure is $\text{coſ. E}\times\sqrt[3]{\frac{\mathrm{M}}{\mathrm{N}}}$. Then $\frac{\text{tan. A}}{\text{tan. E}}$ is $=\frac{\text{leſſer axis}}{\text{greater axis}}$.

But M, or the length of a degree, obtained by actual menſuration in different latitudes, is known from the following Table:

Names.	*Latitudes.*	*Value of M.*	
	° '	toiſes	
Maupertuis and Aſſoc.	66 20	M=57438	
Caſſini and La Caille	49 22	M=57074	
	45 00	M=57050	
Boſcovich	43 00	M=56972	
De la Caille	33 18	M=57037	
Juan and Ulloa	00 00	M=56768	At the equator.
Bouguer	00 00	M=56753	
Condamine	00 00	M=56749	

Now, by comparing the firſt with each of the following ones; the ſecond with each of the following; and in like manner the third, fourth, and fifth, with each of the following; there will be obtained twenty-five reſults, each ſhewing the relation of the axes or diameters; the arithmetical means of all of which will give that ratio as 1 to ·9951989. If the meaſures of the latitudes of 49° 22', and of 45°, which fall within the meridian line drawn thro' France, and which have been re-examined and corrected ſince the northern and ſouthern expedition, be compared with thoſe of Maupertuis and his aſſociates in the north, and that of Bouguer at the equator, there will reſult ſix different values of the ratio of the two axes, the arithmetical mean of all which is that of 1 to 0·9953467, which may be conſidered as the ratio of the greater axis to the leſs; which is as 230 to 228·92974, or 215 to 214, or very near the ratio as aſſigned by Newton.

Now, the magnitude as well as the figure of the Earth, that is, the polar and equatorial diameters, may be deduced from the foregoing problem. For, as half the latus rectum of the greater axis A*a* is the radius of curvature of A, it is given in magnitude from the degree meaſured there, and thence the axes themſelves are given. Thus, the circular arc whoſe length is equal to the radius being 57·29578 degrees, if this number be multiplied by 56753 toiſes, the meaſure of a degree at the equator, as Bouguer has ſtated it, the product will be the radius of curvature there, or half the latus rectum of the greater axis; and this is to half the ſmaller axis in the ratio of the leſs axis to the greater, that is, as 0·9953467 to 1; whence the two axes are 6533820 and 6564366 toiſes, or 7913 and 7950 Engliſh miles; and the difference between the two axes about thirty-ſeven miles. And very nearly the ſame ratio is deduced from the lengths of pendulums vibrating in the ſame time, in different latitudes; provided it be again allowed that the meridians are real ellipſes, or the Earth a true ſpheroid, which however can only take place in the caſe of an uniform gravity in all parts of the Earth.

Thus, in the new Peterſburgh Acts, for the years 1788 and 1789, are accounts and calculations of experiments relative to this ſubject, by M. Krafft. Theſe experiments were made at different times and in various parts of the Ruſſian empire. This gentleman has collected and compared them, and drawn the proper concluſions from them: thus he infers that the length x of a pendulum that ſwings ſeconds in any given latitude λ, and in a temperature of ten degrees of Reaumur's thermometer, may be determined by this equation:

$x = 439{\cdot}178 + 2{\cdot}321 \text{ ſine } ^2\lambda$, lines of a French foot,
or $x = 39{\cdot}0045 + 0{\cdot}206 \text{ ſine } ^2\lambda$; in Engliſh inches,
in the temperature of 53 of Fahrenheit's thermometer.

This expreſſion nearly agrees, not only with all the experiments made on the pendulum in Ruſſia, but alſo with thoſe of Mr. Graham in England, and thoſe of Mr. Lyons in 79° 50′ north latitude, where he found its length to be 431·38 lines. It alſo ſhews the augmentation of gravity from the equator to the parallel of a given latitude λ: for, putting g for the gravity under the equator, G for that under the pole, and y for that under the latitude λ, M. Krafft finds $y = (1 + 0{\cdot}0052848 \text{ ſine } ^2\lambda)\, g$; and therefore $G = 1{\cdot}0052848g$.

From this proportion of gravity under different latitudes, the ſame author infers that, in caſe the Earth is a homogeneous ellipſoid, its oblateneſs muſt be $\frac{1}{191}$; inſtead of $\frac{1}{230}$, which ought to be the reſult of this hypotheſis: but, on the ſuppoſition that the Earth is a heterogeneous ellipſoid, he finds its oblateneſs, as deduced from theſe experiments, to be $\frac{1}{297}$; which agrees with that reſulting from the meaſurement of ſome of the degrees of the meridian. This confirms an obſervation of M. de la Place, that, if the hypotheſis of the Earth's homogenity be given up, then theory, the meaſurement of degrees of latitude, and experiments with the pendulum, all agree in their reſult with reſpect to the oblateneſs of the Earth. See Memoires de l'Acad. 1783, p. 17. In the Philoſ. Tranſ. for 1791, Mr. Dalby has given ſome calculations on meaſured degrees of the meridian, from whence he infers, that thoſe degrees meaſured in middle latitudes, will anſwer nearly to an ellipſoid whoſe axes are in the ratio aſſigned by Newton, viz. that of 230 to 229. And as to the deviations of ſome of the others, viz. towards the poles and equator, he thinks they are cauſed by the errors in the obſerved celeſtial arcs.

Tacquet draws ſome ingenious inferences, in the form of paradoxes, from the round figure of the Earth; as, 1ſt, That, if any part of the ſurface of the Earth were quite a plane, a man could no more walk upright upon it than on the ſide of a mountain. 2d, That the traveller's head goes a greater ſpace than his feet; and a horſeman than a footman; as moving in a greater circle. 3d, That a veſſel, full of water, being raiſed perpendicularly, ſome of the water will be continually flowing out, yet the veſſel ſtill remain full; and, on the contrary, if a veſſel of water be let perpendicularly down, though nothing flow out, yet it will ceaſe to be full: conſequently there is more water contained in the ſame veſſel at the foot of a mountain, than on the top; becauſe the ſurface of the water is compreſſed into a ſegment of a ſmaller ſphere below than above. *Tac. Aſtron.* lib. i. cap. 2. We may here obſerve, with reſpect to the round figure of the Earth, that the equatorial diameter being but little more than thirty-four miles longer than the diameter from pole to pole, it conſtitutes a difference too ſmall to be repreſented on globes. Hence the difference between the equatorial and polar dimenſions, when compared with the Earth's ſemidiameter, is but an inconſiderable quantity, amounting in the whole to an elevation of little more than 16½ of 3970; that is, to leſs than a 240th part of the diſtance from the ſurface of the Earth to the centre. If a meridional ſection of ſuch a ſpheroid were laid down upon paper, the eye would not diſtinguiſh it from a perfect circle.

Mr. Boyle ſuſpects that there are great, though ſlow, internal changes in the maſs of the Earth. He argues from the varieties obſerved in the change of the magnetic needle, and from the obſerved changes in the temperature of climates. But, as to the latter, there is reaſon to doubt that he could not have diaries of the weather ſufficient to direct his judgment. The notion of the magnetiſm of the Earth was ſtarted by Gilbert; and Boyle ſuppoſes magnetic effluvia moving from one pole to the other. See his Works abr. vol. i. p. 285, 290.

Dr. Knight thinks that the Earth may be conſidered as a great loadſtone, whoſe magnetical parts are diſpoſed in a very irregular manner; and that the ſouth pole of the Earth is analogous to the north pole in magnets, that is, the pole by which the magnetical ſtream enters. He obſerves, that all the phenomena attending the direction of the needle, in different parts of the Earth, in a great meaſure correſpond with what happens to a needle when placed upon a large terella; if we make allowances for the different diſpoſitions of the magnetical parts, with reſpect to each other, and conſider the ſouth pole of the Earth as a north pole with regard to magnetiſm. The Earth might become magnetical by the iron ores it contains, for all iron ores are capable of magnetiſm. It is true, the globe might notwithſtanding have remained unmagnetical, unleſs ſome cauſe had exiſted capable of making that repellent matter producing magnetiſm move in a ſtream through the Earth. Now the doctor thinks that ſuch a cauſe does exiſt. For, if the Earth revolves round the Sun in an ellipſis, and the ſouth pole of the Earth is directed towards the Sun, at the time of its deſcent towards it, a ſtream of repellent matter will thence be made to enter at the ſouth pole, and iſſue out at the north. And he ſuggeſts, that the Earth's being in its perihelion in winter may be one reaſon why magnetiſm is ſtronger in this ſeaſon than in ſummer. This cauſe here aſſigned for the Earth's magnetiſm muſt continue, and perhaps improve it, from year to year. Hence the doctor thinks it probable, that the Earth's magnetiſm has been improving ever ſince the creation, and that this may be one reaſon why the uſe of the compaſs was not diſcovered ſooner. See Dr. Knight's Attempt to demonſtrate, that all the phenomena in nature may be explained by Attraction and Repulſion, prop. 87.

With reſpect to the *magnitude* of the Earth, this has been variouſly determined by different authors, both ancient and modern. The uſual way has been, to meaſure the length of one degree of the meridian, and multiply it by 360, for the whole circumference. Diogenes Laertius informs us, that Anaximander, a ſcholar of Thales, who lived about 550 years before the birth of Chriſt, was the firſt who gave an account of the circumference of the ſea and land; and it ſeems his meaſure was uſed by the ſucceeding mathematicians, till the time of Eratoſthenes. Ariſtotle, at the end of lib. ii. de Cœlo, ſays, that mathematicians who have attempted to meaſure the circuit of the Earth, make it 40,000 ſtadiums: which it is thought is the number determined by Anaximander.

Eratoſthenes, who lived about 200 years before Chriſt, was the next who undertook this buſineſs; which, as Cleomedes relates, he performed by taking the Sun's zenith diſtances, and meaſuring the diſtance between two places under the ſame meridian; by which he deduced for the whole circuit about 250,000 ſtadiums, which Pliny ſtates at 31,500 Roman miles, reckoning each at 1000 paces. But this meaſure was accounted falſe by many of the ancient mathematicians, and particularly by Hipparchus, who lived 100 years afterwards, and who added 25000 ſtadiums to the circuit of Eratoſthenes.

Poſſidonius, in the time of Cicero and Pompey the Great, next meaſured the Earth, viz. by means of the altitudes of a ſtar, and meaſuring a part of a meridian; and he concluded the circumference at 240,000 ſtadiums according to Cleomedes, but only at 180,000 according to Strabo. Ptolemy, in his Geography, ſays, that Marinus, a celebrated geographer, attempted ſomething of the ſame kind; and, in lib. i. cap. 3, he mentions, that he himſelf had tried to perform the buſineſs in a way different from any other before him, which was by means of places under different meridians: but he does not ſay how much he made the number; for he ſtill made uſe of the 180,000, which had been found out before him.

Snellius relates, from the Arabian geographer Abelfedea, who lived about the 1300th year of Chriſt, that about the 800th year of Chriſt, Almaimon, an Arabian king, having collected together ſome ſkilful mathematicians, commanded them to find out the circumference of the Earth. Accordingly theſe made choice of the fields of Meſopotamia, where they meaſured under the ſame meridian from north to ſouth, till the pole was depreſſed one degree lower: which meaſure they found equal to fifty-ſix miles, or fifty-ſix and a half: ſo that according to them the circuit of the Earth is 20,160 or 20,340 miles.

It was a long time after this before any more attempts were made in this buſineſs. At length, however, the ſame Snell, above-mentioned, profeſſor of mathematics at Leyden, about the year 1620, with great ſkill and labour, by meaſuring large diſtances between two parallels, found one degree equal to 28,500 perches, each of which is twelve Rhinland feet, amounting to nineteen Dutch miles, and ſo the whole periphery 6840 miles; a mile being, according to him, 1500 perches, or 18,000 Rhinland feet. See his treatiſe called *Eratoſthenes Batavus*.

The next that undertook this meaſurement, was Rich. Norwood, who, in the year 1635, by meaſuring the diſtance from London to York with a chain, and taking the Sun's meridian altitude, June 11, old ſtyle, with a ſextant of about five feet radius, found a degree contained 367,200 feet, or ſixty-nine miles and a half and fourteen poles; and thence the circumference of a great circle of the Earth is a little more than 25,036 miles, and the diameter a little more than 7966 miles.

The meaſurement of the Earth by Snell, though very ingenious and troubleſome, and much more accurate than any of the ancients, being ſtill thought by ſome French mathematicians as liable to certain ſmall errors, the buſineſs was renewed, after Snell's manner, by Picard and other mathematicians, by the king's command; uſing a quadrant of $3\frac{1}{6}$ French feet radius; by which they found a degree contained 342,360 French feet. M. Caſſini the younger, in the year 1700, by the king's command alſo, renewed the buſineſs with a quadrant of ten feet radius, for taking the latitude, and another of $3\frac{1}{8}$ feet for taking the angles of the triangles; and found a degree, from his calculation, contained 57,292 toiſes, or almoſt ſixty-nine Engliſh miles and a half. From the mean of all which, the following dimenſions of the Earth may be taken as near the truth:

The circumference	25,000	miles,
The diameter	$7957\frac{3}{4}$	miles,
The ſuperfices	198,944,206	ſquare miles,
The ſolidity	263,930,000,000	cubic miles.

Alſo the ſeas and unknown parts of the Earth, by a meaſurement of the beſt maps, contain 160,522,026 ſquare miles; the inhabited parts, 38,922,180: of which Europe contains 4,456,065; Aſia, 10,768,823; Africa, 9,654,807; and America, 14,110,874 ſquare miles.

The ſubſtance or body of the Earth is diſtinguiſhed into three parts or regions, viz. 1ſt, The external part or cruſt, being that from which vegetables ſpring and animals are nurſed. 2d, The middle, or intermediate part, which is poſſeſſed by foſſils, extending farther than human labour ever yet penetrated. 3d, The internal or central part, which is utterly unknown to us, though by many authors ſuppoſed of a magnetic nature; by others, a maſs or ſphere of fire; by others, an abyſs or collection of waters, ſurrounded by the ſtrata of Earth; and by others, a hollow empty ſpace, inhabited by animals, who have their Sun, Moon, planets, and other conveniences, within the ſame. But others divide the body of the globe into two parts, viz. the external part, called the cortex, including the internal, which they call the nucleus, being of a different nature from the former, and poſſeſſed by fire, water, or more probably by a conſiderable portion of metals, as it has been found, by calculation, that the mean denſity of the whole Earth is near double the denſity of common ſtone. The external part of the globe either exhibits inequalities, as mountains and valleys; or it is plane and level; or dug in channels, fiſſures, beds, &c. for rivers, lakes, ſeas, &c. Theſe inequalities in the face of the Earth moſt naturaliſts ſuppoſe have ariſen from a rupture or ſubverſion of the Earth, by the force either of the ſubterraneous fires or waters. The Earth, in its natural and original ſtate, it has been ſuppoſed by Des Cartes, and after him Burnet, Steno, Woodward, Whiſton, and others, was perfectly round, ſmooth, and equable; and they account for its preſent rude and irregular form, principally from the great deluge.

In the external or cortical part of the Earth, there appear various ſtrata, ſuppoſed the ſediments of ſeveral floods; the waters of which, being replete with matters of divers kinds, as they dried up, or oozed through, depoſited theſe different matters, which in time hardened into ſtrata of ſtone, ſand, coal, clay, &c. Dr. Woodward has conſidered the circumſtances of theſe ſtrata with great attention, viz. their order, number, ſituation with reſpect to the horizon, depth, interſections, fiſſures, colour, conſiſtence, &c. He aſcribes the origin and formation of them all, to the great flood or cataclyſmus. At that terrible revolution he ſuppoſed that all ſorts of terreſtrial bodies had been diſſolved and mixed with the waters, forming all together a chaos or confuſed maſs. This maſs of terreſtrial particles, intermixed with water, he ſuppoſes was at length precipitated to the bottom; and that generally, according to the order of gravity, the heavieſt ſinking firſt, and the lighteſt afterwards. By ſuch means were the ſtrata formed of which the Earth conſiſts; which, attaining their ſolidity and hardneſs by degrees, have continued ſo ever ſince. Theſe ſediments, he farther concludes, were at firſt all parallel and concentrical; and the ſurface of the Earth, formed of them, perfectly ſmooth and regular; but, that, in courſe of time, divers changes happening, from earthquakes, volcanoes, &c. the order and regularity of the ſtrata were diſturbed and broken, and the ſurface of the Earth by ſuch means brought to the irregular form in which it now appears.

M. de Buffon ſurmiſes that the Earth, as well as the other planets, are parts ſtruck off from the body of the Sun by the colliſion of comets; and that, when the Earth aſſumed its form, it was in a ſtate of liquefaction by fire. But that could not be the method of producing the planets; for, if they were ſtruck off from the body of the Sun, they would move in orbits that would always paſs through the Sun, inſtead of having the Sun for their focus, or centre, as they are now found; ſo that having been ſtruck off they would fall down into the Sun again, terminating their career as it were after one revolution only.

Although the relative denſities of the Earth and moſt of the other planets have been known a conſiderable time, it is but very lately that we have come to the knowledge of the abſolute gravity or denſity of the whole maſs of the Earth. This was calculated by Dr. Hutton, and deduced from the obſervations made by Dr. Maſkelyne, aſtronomer royal, at the mountain Schehallein, in the years 1774, 5, and 6. The attraction of that mountain on a plummet, being obſerved on both ſides of it, and its maſs being computed from a number of ſections in all directions, and conſiſting of ſtone; theſe data, being then compared with the known attraction and magnitude of the Earth, gave by proportion its mean denſity, which is to that of water as 9 to 2, and to common ſtone as 9 to 5: from which very conſiderable mean denſity, it may be preſumed that the internal parts contain great quantities of metals.

From the denſity now found its quantity of matter becomes known, being equal to the product of its denſity by its magnitude. From various experiments too we know, that its attractive force, at the ſurface, is ſuch, that bodies fall there through a ſpace of $16\frac{1}{12}$ feet in the firſt ſecond of time: from whence the force at any other place, either within or without it, becomes known; for the force at any part within it, is directly as its diſtance from the centre; but the forces of any part without it, reciprocally as the ſquare of its diſtance from the centre.

As to the *motion* of the Earth, it is now univerſally agreed, that, beſides the ſmall motion which cauſes the preceſſion of the equinoxes, the Earth has two great and independent motions; the one diurnal round its own axis in the ſpace of twenty-four hours, which conſtitutes the natural day or nycthemeron; the other annual, about the Sun, in an elliptical orbit or track, in 365 days and nearly ſix hours, conſtituting the year. From the former ariſe the diverſities of night and day; and, from the latter, the viciſſitudes of ſeaſons, ſpring, ſummer, autumn, and winter.

Of the Diurnal Motion of the Earth.

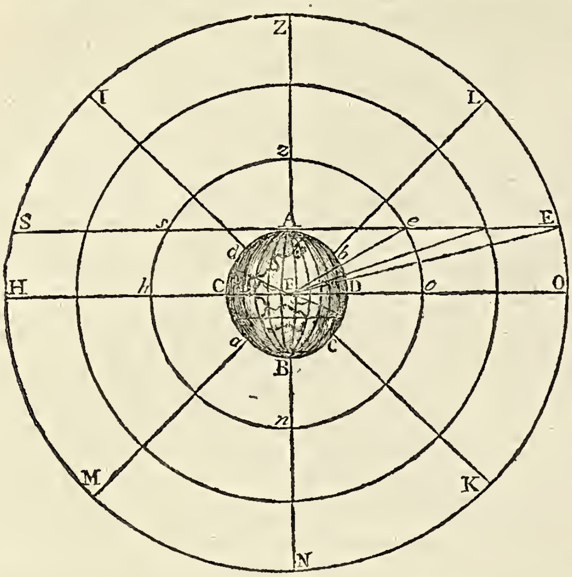
Though it is this motion which gives us the grateful viciſſitudes of day and night, adjuſted to the times of labour and reſt; yet many people find a difficulty in conceiving that the Earth moves; and the more ſo, becauſe, in order to allow it, they muſt give up, in a great meaſure, the evidence of their exterior ſenſes, of which the impreſſions are exceeding ſtrong and lively. It will therefore be neceſſary to prove, that we ought by no means to infer that the Earth is at reſt, becauſe it appears ſo; but, by a variety of facts, to ſhew, that reaſon was given to correct all ſuch fallacies of the ſenſes. To this end we ſhall point out ſome inſtances, where apparent motion is produced in a body at reſt, by the real motion of the ſpectator. Let us ſuppoſe a man in a ſhip to be carried along by a briſk gale, in a direction parallel to a ſhore, at no great diſtance from him; while he keeps his eye on the deck, the maſt, the ſails, or any thing about the ſhip, that is to ſay, while he ſees nothing but ſome part of the veſſel on-board of which he is, and conſequently every part of which moves with him, he will not perceive the ſhip moves at all. Let him, after this, look to the ſhore, and he will ſee the houſes, trees, and hills, run from him in a direction contrary to the motion of the veſſel; and, ſuppoſing him to have received no previous information on the ſubject, he might naturally conclude, that the apparent motion of theſe bodies was real. In a ſimilar ſituation to this we may conceive the inhabitants of the Earth; who, in early times, knew nothing of the true ſtructure or laws of the univerſe, ſaw the Sun, the ſtars, and the planets, riſe and ſet, and perform an apparent revolution about the Earth. They had no idea of the motion of the Earth, and therefore all this appearance ſeemed reality. But as it is highly reaſonable to ſuppoſe, that as ſoon as the ſlighteſt hint ſhould be given to the man, of the motion of the veſſel, he would begin to form a new opinion, and conceive it to be more rational, that ſo ſmall a thing as the ſhip ſhould move, rather than all that part of the Earth which was open to his view; ſo, in the ſame manner, no ſooner was an idea formed of the vaſt extent and greatneſs of the univerſe, with reſpect to this Earth, than mankind began to conceive it would be more rational that the Earth ſhould move than the whole fabric of the heavens.

By another familiar inſtance it will be eaſy to ſhew, that, as the eye does not perceive its own motion, it always judges from appearances. Let a perſon go into a common windmill, and deſire the miller to turn the mill round, while he is ſitting within it with his eyes fixed on the upright poſt in the centre; this poſt, though at reſt, will appear to him to turn round with conſiderable velocity; the real motion of the mill being the cauſe of the apparent motion of the ſwivel-poſt. Sea-faring people are furniſhed with various inſtances to illuſtrate this ſubject; thoſe who are buſy in the hold of a ſhip at anchor, cannot by any perception determine whether the ſhip has ſwung round or not by the turn of the tide. When a ſhip firſt gets under way with a light breeze, ſhe may be going at a good rate before thoſe who are between decks can perceive it. Having thus obviated the objections which ariſe from the teſtimony of the ſenſes, we may proceed to conſider the arguments which tend more directly to prove the motion of the Earth. All the celeſtial motions will, on this ſuppoſition, be incomparably more ſimple and moderate. This opinion is alſo much more agreeable to our notions of final cauſes, and our knowledge of the œconomy of nature; for, if the earth be at reſt, and the ſtars, &c. move round it once in twenty-four hours, their velocity muſt be immenſe; and it is certainly more agreeable to reaſon, that one ſingle body, and that one of the ſmalleſt, ſhould revolve on its own axis in twenty-four hours, than that the whole univerſe ſhould be carried round it in the ſame time, with inconceivable velocity.

The rotation of the Earth round its axis is analogous to what is obſerved in the Sun, and moſt of the planets; it being highly probable, that the Earth, which is itſelf one of the planets, ſhould have the ſame motion as they have, for producing the ſame effect: and it would be as abſurd in us to contend for the motion of the whole heavens round us in twenty-four hours, rather than allow a diurnal motion to our globe, as it would be for the inhabitants of Jupiter to inſiſt that our globe and the whole heavens muſt revolve round them in ten hours, that all its parts might ſucceſſively enjoy the light, rather than grant a diurnal motion to their habitation. All the phenomena relative to this ſubject, are as eaſily ſolved on the ſuppoſition of the Earth's motion, as on the contrary hypotheſis. Beſides the foregoing conſiderations, there are ſeveral arguments to be deduced from the higher parts of aſtronomy, which demonſtrably prove the diurnal motion of the Earth.

Though the globe of the Earth appears ſo large to thoſe who inhabit it, yet it is ſo minute a ſpeck, when compared to the immenſe ſphere of the heavens, that at that diſtance the planes of the rational and ſenſible horizons coincide: or, in other words, the diſtance between them in the ſphere of the heavens, is too ſmall for admeaſurement.

To illuſtrate this, let ACBD, in the following figure, repreſent the Earth; *zhno*, the ſphere of the ſtarry heaven. If an inhabitant of the Earth ſtand upon the point A, his ſenſible horizon is *se*, his rational one *ho*; the diſtance between the planes of theſe two horizons is AF, the ſemidiameter of the Earth, which is meaſured in a great circle upon the ſphere of the heaven, by the angle *eFo*, or or the arc *eo*; this arc in ſo ſmall a circle as *zhno*, would amount to ſeveral degrees, and conſequently the difference between the ſenſible and rational horizon would be great enough to be meaſured by obſervation. But, if we repreſent the ſphere of the heaven by a larger circle ZHNO, the ſemi diameter of the Earth AF, meaſured in this circle, will amount to fewer degrees; for the arc EO is leſs than the arc *eo*; and the larger the ſphere of the heaven is, in proportion to the globe of the Earth, the leſs ſenſible is the difference between the two horizons. Now, as the ſphere of the Earth is but as a point when compared to the ſtarry heaven, the difference between the ſenſible and rational horizon will be inſenſible. From what has been ſaid, it appears, that the only diſtinction between the ſenſible and rational horizon ariſes from the diſtance of the object we are looking at.



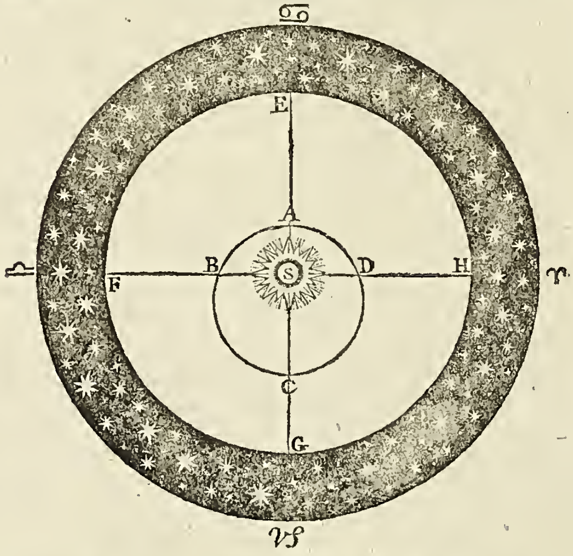
As the rational horizon divides the apparent celeſtial ſphere into two equal hemiſpheres, and ſerves as a boundary, from which to meaſure the elevation or depreſſion of celeſtial objects; thoſe in the upper or viſible hemiſphere are ſaid to be high, or elevated above the horizon; and thoſe in the other hemiſphere are called low, or below the horizon. The Earth being a ſpherical body, the horizon, or limits of our view, muſt change as we change our place; and therefore every place upon the Earth has a different horizon. Thus, if a man lives at A, in the above figure, his horizon is HO; if he lives at *b*, his horizon is IK; if at D, it is ZN; if at *c*, it is LM, &c. From hence we obtain another proof of the ſphericity of the Earth; for, if it were flat, all the inhabitants thereof would have the ſame horizon.

Again, as that point in the heavens, which is directly over the head of a ſpectator, is the zenith; and that point directly under his feet, is the nadir; therefore, if a man lives at A, his zenith is Z, his nadir N; if he lives at *b*, his zenith is L, his nadir M; and ſo on. Conſequently the zenith and horizon of an obſerver remains fixed in the heavens, ſo long as he continues in the ſame place; but he no ſooner changes his poſition, than the horizon touches the Earth in another point, and his zenith anſwers to a different point in the heavens.

Of the Annual Motion of the Earth.

It is owing to the induſtry of modern aſtronomers, that the annual motion of the Earth has been fully evinced; for, though this motion had been known to and adopted by many among the ancient philoſophers, yet they were not able to give their opinions that degree of probability which is attainable from modern diſcoveries, much leſs the evidence ariſing from thoſe demonſtrative proofs of which we are now in poſſeſſion.

The apparent motion of the Sun, ariſing from the Earth's annual motion round it, is the ſame as when a perſon ſails along the ſea-coaſt, the ſhore, villages, and other remarkable places on land, appear to change their ſituation, and to paſs by him. To a ſpectator upon the Earth, as its moves along its orbit, or ſails as it were through celeſtial ſpace, the Sun, the planets, and the fixed ſtars, appear to change their places. Apparent change of place is of two ſorts: the one is that of bodies at reſt, the change of whoſe place pends ſolely on that of the ſpectator; the other is that of bodies in motion, whoſe apparent change of place depends as well on their own motion as on that of the ſpectator. We ſhall firſt conſider only that apparent change which takes place in thoſe which are at reſt, and which is owing wholly to the motion of the Earth, and ſhew that the Sun, when ſeen from the Earth, will appear to move in the ſame manner, whether it revolves round the Earth, or whether the Earth revolves round the Sun. Let us ſuppoſe the Earth at reſt, without any motion of its own, and let the Sun be ſuppoſed to revolve round it in the orbit ABCD, in the annexed figure; and let EFGH be a circle in the concave ſphere of the ſtarry heavens; as the Sun moves in the order of the letters ABCD in its orbit, it will appear to a ſpectator on the Earth to have deſcribed the circle EFGH. When the Sun is at A, it will appear as if it was among the fixed ſtars that are at E; when it is at B, it will appear among the fixed ſtars at F; when at C, among thoſe at G; and, when it is at D, it will appear among the fixed ſtars at H. Indeed, the fixed ſtars and the Sun are not ſeen at the ſame time; but we may tell in what part of the heavens the Sun is, or what fixed ſtars it is near, by knowing thoſe which are oppoſite to it, or come to the ſouth at midnight. Therefore, if we find that any ſet of ſtars, as thoſe at H for inſtance, come to the ſouth at midnight, we may be ſure that they are oppoſite to the Sun; and conſequently, if we could ſee the ſtars in that part of the heaven where the Sun is, we ſhould find them to be thoſe at F.



Secondly, let us ſuppoſe that S is the Sun, having no motion of its own, that its reſts within the orbit ABCD, in which we ſhall now ſuppoſe the Earth to move, in the order of the letters ABCD. Upon this ſuppoſition, when the Earth is at A, the Sun will appear in that part of the heavens where the ſtars G are; when the Earth is at B, the Sun will appear in that part of the heavens where the ſtars H are; when the Earth is at C, the Sun will appear in that part of the heavens where the ſtars E are; and, as the Earth revolves round the Sun in the orbit ABCD, the Sun will appear to a ſpectator on the Earth to deſcribe the circle GHEF. Thus, whether the Earth be at reſt, and the Sun revolves in the orbit ABCD; or the Sun be at

Fig. 1.

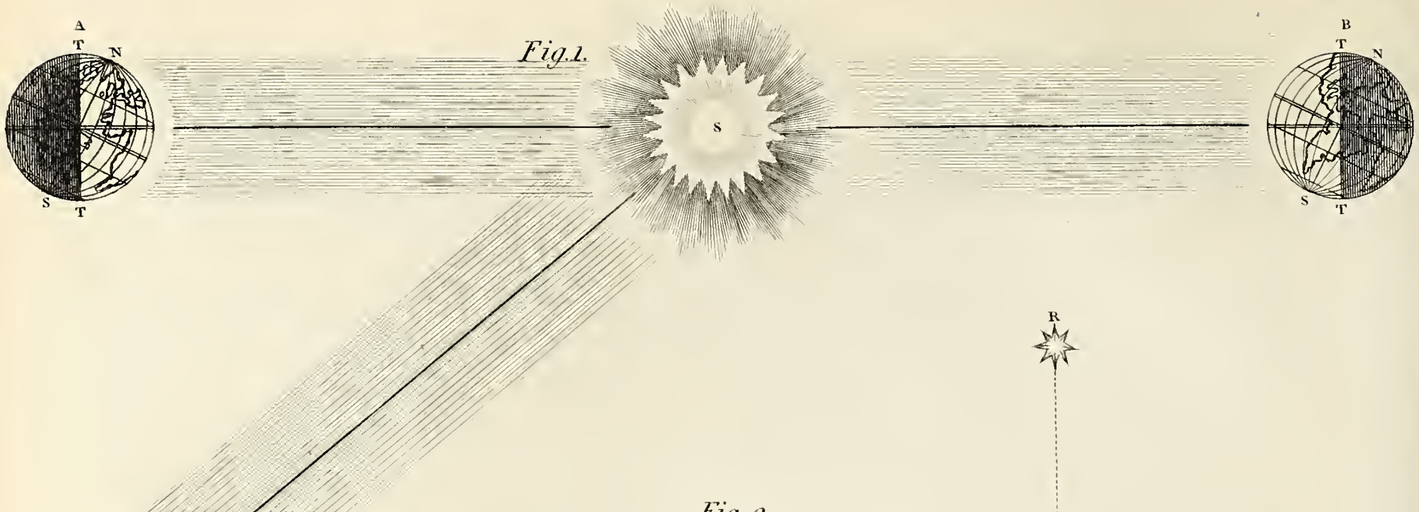


Fig. 2.

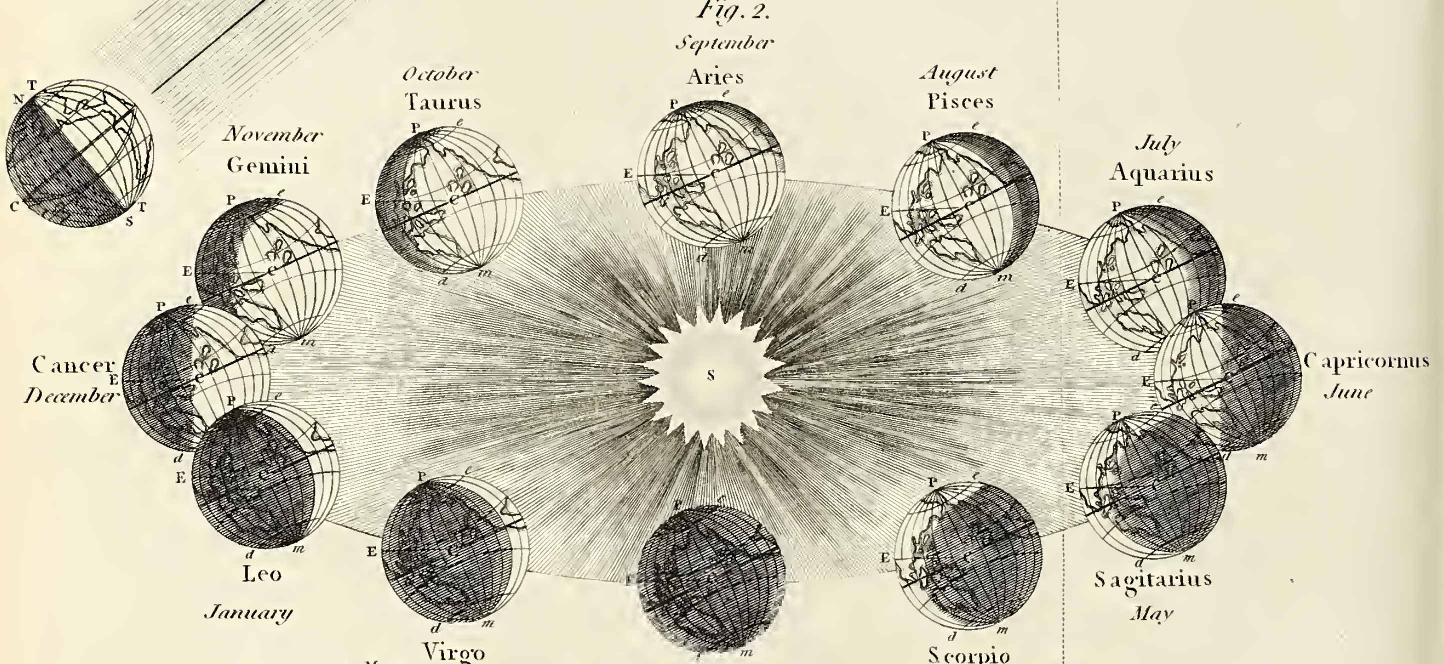


Fig. 3.

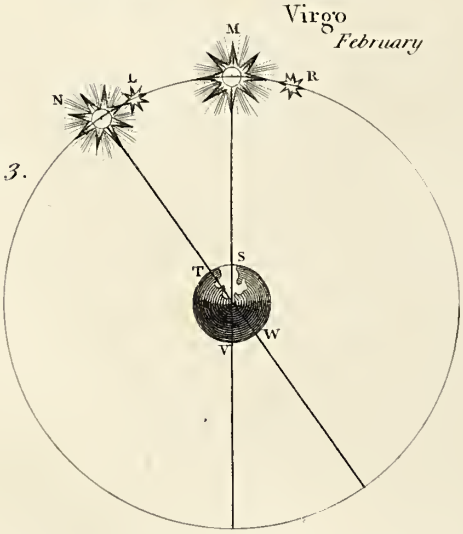
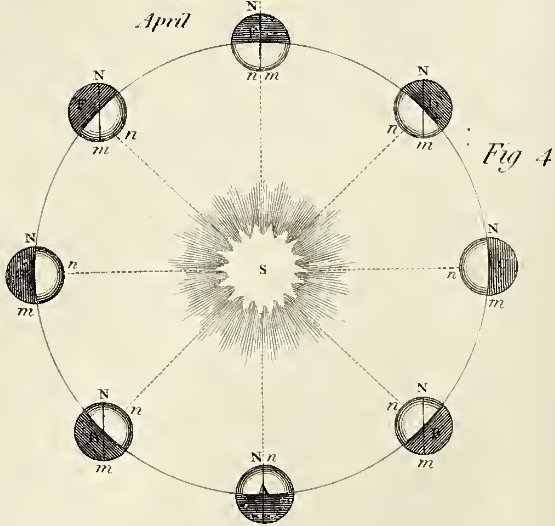


Fig. 4.



Phenomena of the Earth.

J. Pass sculp.

London Published as the Act directs, May 16. 1798 by J. Wilkes

at reſt, and the Earth revolves in the ſame orbit, a ſpectator on the Earth will ſee the Sun deſcribe the ſame circle EFGH, in the concave ſphere of the heavens. Hence, if the plane of the Earth's orbit be imagined to be extended to the heavens, it would cut the ſtarry firmament in that very circle, in which a ſpectator in the Sun would ſee the Earth revolve every year: while an inhabitant of the Earth would obſerve the Sun to go through the ſame circle, and in the ſame ſpace of time, that the ſolar ſpectator would ſee the Earth deſcribe it.

The inhabitants of all the other planets will obſerve juſt ſuch motions in the Sun as we do, and for the very ſame reaſons; and the Sun will be ſeen from every planet to deſcribe the ſame circle, and in the ſame ſpace of time, that a ſpectator in the Sun would obſerve the planet to do. For example, an inhabitant of Jupiter would think that the Sun revolved round him, deſcribing a circle in the heavens in the ſpace of twelve years; this circle would not be the ſame with our ecliptic, nor would the Sun appear to paſs through the ſame ſtars which he does to us. On the ſame account, the Sun, ſeen from Saturn, will appear to move in another circle, diſtinct from either of the former; and will not ſeem to finiſh his period in leſs time than thirty years. Now, as it is impoſſible that the Sun can have all theſe motions really in itſelf, we may ſafely affirm, that none of them are real, but that they are all apparent, and ariſe from the motions of the reſpective planets.

One phenomenon ariſing from the annual motion of the Earth, which has already been ſlightly touched upon, may now be more fully explained; for, as from this motion the Sun appears to move from weſt to eaſt in the heavens, if a ſtar riſes or ſets along with the Sun at any time, it will in the courſe of a few days riſe or ſet before it, becauſe the Sun's apparent place in the heavens will be removed to the eaſtward of that ſtar. Hence thoſe ſtars, which at one time of the year ſet with the Sun, and therefore do not appear at all, ſhall at another time of the year riſe when the Sun ſets, and ſhine all the night. And as any one ſtar ſhifts its place with reſpect to the Sun, and in conſequence of that with reſpect to the hour of the night, ſo do all the reſt. Hence it is that all thoſe ſtars, which at one time of the year appear on any one ſide of the pole ſtar in the evening, ſhall in half a year appear on the contrary ſide thereof.

The phenomena occaſioned by the annual and diurnal motions of the Earth, we ſhall now explain; and firſt, thoſe that ariſe from the diurnal motion. As the Earth is of a ſpherical figure, that part of it which comes at any time under the confined view of an obſerver, will ſeem to be extended like a plane; and the heavens will appear as a concave ſpherical ſuperficies, divided by the aforeſaid plane into two equal parts, one of which is viſible, the other concealed from us by the opacity of the Earth. Now the Earth, by its revolution round its axis, carries the ſpectator and the aforeſaid plane from weſt to eaſt; therefore all thoſe bodies to the eaſt, which could not be ſeen becauſe they were below the plane of the horizon, will become viſible, or riſe above it, when, by the rotation of the Earth, the horizon ſinks as it were below them. On the other hand, the oppoſite part of the plane, towards the weſt, riſing above the ſtars on that ſide, will hide them from the ſpectator, and they will appear to ſet, or go below the horizon.

As the Earth, together with the horizon of the ſpectator, continues moving to the eaſt, and about the ſame axis, all ſuch bodies as are ſeparated from the Earth, and which do not partake of that motion, will ſeem to move uniformly in the ſame time, but in an oppoſite direction, that is, from eaſt to weſt; excepting the celeſtial poles, which will appear to be at reſt. Therefore, when we ſay, that the whole concave ſphere of the heavens appears to turn round upon the axis of the world, whilſt the Earth is performing one rotation round its own axis, we muſt be underſtood to except the two poles of the world, for theſe do not partake of this apparent motion. It is, therefore, on account of the revolution of the Earth round its axis, that the ſpectator imagines the whole ſtarry firmament, and every point of the heaven (excepting the two celeſtial poles), to revolve about the Earth from eaſt to weſt every twenty-four hours, each point deſcribing a greater or ſmaller circle, as it is more or leſs remote from one of the celeſtial poles.

The Earth is made to revolve on its axis, in order to give alternate night and day to every part of its ſurface. But, although every place on the ſurface is illuminated by all the ſtars which are above the horizon of that place; yet, when the Sun is above the horizon, his light is ſo ſtrong, that it quite extinguiſhes the faint light of the ſtars, and produces day. When the Sun goes below the horizon, or, more properly, when our horizon gets above the Sun, the ſtars give their light, and we are in that ſtate called night. Now, as the Earth is an opaque ſpherical body, at a great diſtance from the Sun, one half of it will always be illuminated thereby, while the other half will remain in darkneſs. The circle which diſtinguiſhes or divides the illuminated face of the Earth from the dark ſide, and is the boundary between light and darkneſs, is generally called the *terminator*. A line drawn from the centre of the Sun to the centre of the Earth, is perpendicular to the plane of this circle. Hence it is plain, that, when any given place on the globe firſt gets into the enlightened hemiſphere, the Sun is juſt riſen to that part; when it gets half-way, or to its greateſt diſtance from the terminator, it is then noon; and, when it leaves the enlightened hemiſphere, it is then ſun-ſet.

Here it will be neceſſary to premiſe a few conſiderations: Firſt, that, on account of the immenſe diſtance of the Sun from the Earth, the rays which proceed from it may be conſidered as parallel to each other. Secondly, that only one-half of a globe can be illuminated by parallel rays, and therefore only one-half of the Earth will be enlightened by the Sun at one time. Theſe conſiderations will be rendered more obvious, by referring to the Aſtronomical-Plate III. where, at *fig.* 1, S repreſents the Sun, from which we ſuppoſe parallel rays to flow in all directions. At A, B, C, are repreſented three different poſitions of the globe of the Earth, the bright part being that which is illuminated by the rays proceeding from the Sun, and the ſhaded part the portion of the globe which is in darkneſs; of courſe the line TT is the terminator, or boundary of light and darkneſs. In the globe at C, the poles coincide with the terminator. In the globe at A, the north pole is in the enlightened portion, and the ſouth pole in the dark hemiſphere; while in the oppoſite globe at B, the ſouthern pole is in the illuminated part, and the north pole in obſcurity. It is evident, that it is day in any given place on the globe, ſo long as that place continues in the enlightened hemiſphere; but when, by the diurnal rotation of the Earth on its axis, it is carried into the dark hemiſphere, it becomes night to that place.

The length of the day and the night depend therefore on the poſition of the terminator, with reſpect to the axis of the Earth. If the poles of the Earth be ſituated in the terminator, as at C, every parallel will be divided into two equal parts; and, as the uniform motion of the Earth cauſes any given place to deſcribe equal parts of its parallel in equal times, the day and night would be equal on every parallel of latitude, that is, all over the globe, except at the poles, where the Sun would neither riſe nor ſet, but continue in the horizon. But if, as at A and B, the axis be not in the plane of the terminator, the terminator will divide the equator into two equal parts, but all the circles parallel to it into unequal parts; thoſe circles that are ſituated towards the enlightened pole will have a greater part of their circumference in the enlightened than in the dark hemiſphere, while ſimilar parallels towards the other pole will have a greater part of their circumference in the dark hemiſphere. Whence it follows, that the firſt-mentioned parallels will enjoy longer days than nights; and the contrary will happen to the latter, where the days will be the ſhorteſt, and the nights the longeſt; while, at the equator, the days will be always of the ſame length. Having thus ſhewn that the viciſſitudes in the length of the days and nights are occaſioned by the poſition of the terminator with reſpect to the axis of the Earth, we have now to explain what occaſions theſe various poſitions; which is the more important, as on theſe depend the diverſity in the ſeaſons.

Of the Seasons of the Year.

In conſidering this ſubject, we ſhall find further proofs of that divine wiſdom which pervades all the works of the univerſe, and ſee, that no other conformation of the ſyſtem could have given ſuch commodious diſtributions of light and heat, or imparted fertility and pleaſure to ſo great a part of the revolving globe.

The changes in the poſition of the terminator are occaſioned, 1. By the inclination of the Earth's axis to the plane of the ecliptic, or orbit in which it moves. 2. Becauſe, through the whole of its annual courſe, the axis of the Earth preſerves its poſition, or continues parallel to itſelf; that is, if a line be conceived as drawn parallel to the axis, while the Earth is in any one point of its orbit, the axis will in every other poſition of the Earth be parallel to the ſaid line. It muſt be evident, that the paralleliſm of the axis muſt occaſion conſiderable differences. By a bare inſpection of the globes at A and B, *fig.* 1, of the above-mentioned Plate, we ſee, that, when the Earth is in one poſition of its orbit, the north pole will be turned towards the Sun, but in the oppoſite part it will be turned from him. But the abſence of the Sun's light produces a proportionable degree of cold; hence the ſeaſons are, in the northern and ſouthern parts of the globe, diſtinctly marked by different degrees of heat and cold. It it is this annual turning of the poles towards the Sun, that occaſions the very long days in the northern and ſouthern parts. It is owing to the ſame cauſe, that the Sun ſeems to riſe higher in the heavens during ſummer than in winter; and this alternate ſinking and riſing is perceptible over the whole globe.

If the axis of the Earth were perpendicular to the plane of its orbit, the equator and the orbit (or ecliptic) would coincide; and, as the Sun is always in the plane of the ecliptic, it would in this caſe be always over the equator, as ſhewn in the globe at C, and the two poles would be in the terminator, and there would be no diverſity in the days and nights, and but one ſeaſon of the year; but, as this is not the caſe, we may fairly infer, that the axis of the Earth is not perpendicular to the plane of its orbit. But, if the Earth's axis be inclined to the plane of the ecliptic, when the Earth is in the ſituation repreſented at A, the pole N will be towards the Sun, and the pole S will be turned from it; but juſt the contrary will happen, when the Earth, by going half round the Sun, has arrived at the oppoſite point in its orbit. Hence the Sun will not always be in the equator, but at one time of the year it will appear nearer to one of the poles, and at the oppoſite ſeaſon it will appear nearer to the other. Here then is the cauſe of the change of ſeaſons; for, when the Sun leaves the equator, and approaches to one of the poles, it will be ſummer on that ſide of the equator, and when the Sun departs from thence, and approaches to the other pole, it will be winter.

Theſe ideas may be ſtrengthened, and a clearer notion obtained of the effect produced by the inclination of the Earth's axis, by conſidering *fig.* 2, in the ſame Plate; in which the ellipſis is ſuppoſed to repreſent the Earth's orbit, the eye ſomewhat elevated above the plane thereof. The Earth is here repreſented in the firſt point of each of the twelve ſigns of the ecliptic, as marked in the figure with the twelve correſponding months annexed; P is the north pole of the globe, *Pm* its axis, round which the Earth performs its diurnal revolution from weſt to eaſt; this axis is exhibited as parallel to itſelf in every part of the orbit; PCE ſhews the angle of its inclination, *e* the pole, *ed* the axis of the ecliptic, perpendicular to the plane of the orbit. In March, when the Earth is in the firſt point of Libra, the Sun appears in the oppoſite point of the ecliptic at Aries. In September, when the Earth is in the firſt point of Aries, the Sun will be in Libra. At theſe times the terminator paſſes through the poles of the world, and divides every parallel into two equal parts, (ſee C, *fig.* 1,) conſequently the nocturnal and diurnal arches, or the length of day and night, will be equal in all places over the world.

Conceive the Earth to have moved from Libra to Capricorn in June, the axis *Pm* preſerving its paralleliſm by this motion, the north pole will have gradually advanced into the enlightened hemiſphere; ſo that the whole northern polar circle will be therein, while the ſouthern pole is immerged in obſcurity; the northern parts of the world will enjoy long days, while they are ſhort in the ſouthern parts. While the Earth is moving from Libra through Capricorn to Aries, the north pole remains in the illuminated hemiſphere, and will therefore have ſix months continual day. But in the other half year, while the Earth is moving from Aries through Cancer to Libra, the north pole is turned from the Sun, and therefore in darkneſs, but the ſouth pole is in the illuminated hemiſphere. When the Earth is at Cancer, the ſun is at Capricorn; at this ſeaſon the nights to us will as much exceed the days, as the days exceeded the nights when the Earth was in the oppoſite point of her orbit. Hence it is eaſy to perceive, that the inhabitants of the ſouthern hemiſphere have the ſame viciſſitudes with thoſe of the northern, though not at the ſame time, it being winter in one hemiſphere when it is ſummer in the other. During this courſe of the Earth through her orbit, there are four days particularly to be remarked; theſe aſtronomers have diſtinguiſhed by the names of the *ſolſtitial* and *equinoctial* days. The ſolſtitial days are thoſe on which the Sun appears moſt to the northward and the ſouthward: the equinoctial days are thoſe on which he appears in the equator, and the days are equal to the nights.

The annual motion of the Earth occaſions a daily apparent change in the declination of the Sun. Thus, about the 22d of December, when the Earth is in Cancer, the Sun will be over the tropic of Capricorn; and conſequently, by the Earth's rotation on its axis, the inhabitants of every part of this circle will ſucceſſively have the Sun in their zenith, or, in other words, he will be vertical to them that day at noon. About the 21ſt of March, the Earth is at Libra, and the Sun will then appear in Aries; a central ſolar ray will terminate upon the ſurface of the Earth, in the equator; and therefore the Sun appears to be carried round in the celeſtial equator, and is ſucceſſively vertical to thoſe who live under that circle. About the 21ſt of June, when the Earth is in Capricorn, a central ſolar ray terminates on the ſurface of the Earth, in the northern tropic, and for that day the Sun appears to be carried round in the tropic of Cancer, and is vertical to thoſe who live under that circle. About the 22d of September, the Earth is in Aries, and the Sun in Libra, and the central ſolar ray again terminates at the equator; conſequently the Sun again appears in the celeſtial equator, and is vertical to thoſe who live under it.

We have ſeen, that, as the Sun moves in the ecliptic from the vernal equinox to the tropic of Cancer, it gets to the north of the equator, or its declination towards our pole increaſes. Therefore, from the vernal equinox, when the days and nights are equal, till the Sun comes to the tropic of Cancer, our days lengthen, and our nights ſhorten; but, when the Sun comes to the tropic of Cancer, it is then in its utmoſt northern limit, and returns in the ecliptic to the equator again. During this return of the Sun, its declination towards our pole decreaſes, and conſequently the days decreaſe, and the nights increaſe, till the Sun is arrived in the equator again, and is in the autumnal equinoctial point, when the days and nights will again be equal. As the Sun moves from thence towards the tropic of Capricorn, it gets to the ſouth of the equator; or its declination towards the ſouth pole increaſes. Therefore, at that time of year, our days ſhorten, and our nights lengthen, till the Sun arrives at the tropic of Capricorn; but, when the Sun is arrived there, it is then at its utmoſt ſouthern limit, and returns in the ecliptic to the equator again. During this return, its diſtance from our pole leſſens, and conſequently the days will lengthen, as the nights will ſhorten, till they become equal, when the Sun is come round to the vernal equinoctial point.

Our ſummer is nearly eight days longer than the winter. By ſummer is meant here the time that paſſes between the vernal and autumnal equinoxes; by winter, the time between the autumnal and vernal equinox. The ecliptic is divided into ſix northern and ſix ſouthern ſigns, and interſects the equator at the firſt of Aries and the firſt of Libra. In our ſummer, the Sun's apparent motion is through the ſix northern, and in winter through the ſix ſouthern, ſigns; yet the Sun is 186 da. 11h. 51′. in paſſing through the ſix firſt; and only 178 da. 17h. 58′. in paſſing through the ſix laſt. Their difference, 7 da. 17h. 53′. is the length of time by which our ſummer exceeds the winter.

This may be farther illuſtrated by referring back to the laſt figure in page 368, where ABCD repreſents the Earth's orbit, and S the Sun in one of its foci. When the Earth is at B, the Sun appears at H, in the firſt point of ♈; and, whilſt the Earth moves from B through C to D, the Sun appears to run through the ſix northern ſigns, from ♈ through ♋ to ♎ at F. When the Earth is at D, the Sun appears at F, in the firſt point of ♎; and, as the Earth moves from D through A to B, the Sun appears to move through the ſix ſouthern ſigns, from ♎ through ♑ to ♈ at H. Hence the line FH, drawn from the firſt point of ♈ through the Sun at S, to the firſt point of ♎, divides the ecliptic into two equal parts; but the ſame line divides the Earth's elliptical orbit into two unequal parts. The greater part, BCD, is that which the Earth deſcribes in the ſummer, while the Sun appears in the northern ſigns. The leſſer part is DAB, which the Earth deſcribes in winter, while the Sun appears in the ſouthern ſigns. C, the Earth's aphelion, where it moves ſloweſt, is in the greater part; A, its perihelion, is in the leſſer part, where the Sun moves faſteſt. There are, therefore, two reaſons why our ſummer is longer than our winter; firſt, becauſe the Sun continues in the northern ſigns, while the Earth is deſcribing the greater part of its orbit; and ſecondly, becauſe the Sun's apparent motion is ſlower while it appears in the northern ſigns, than whilſt it appears in the ſouthern ones.

The Sun's apparent diameter is greater in our winter than in ſummer, becauſe the Earth is nearer to the Sun when at A in the winter, than it is when at C in the ſummer. The Sun's apparent diameter, in winter, is 32′ 47″; in ſummer, 31′ 40″. But, if the Earth is farther from the Sun in ſummer than in winter, it may be aſked, Why our winters are ſo much colder than our ſummers? To this it may be anſwered, that our ſummer is hotter than the winter, firſt, on account of the greater height to which the Sun riſes above our horizon in the ſummer; ſecondly, the greater length of the days. The Sun is much higher at noon in ſummer than in winter; and conſequently, as its rays in ſummer are leſs oblique than in winter, more of them will fall upon the ſurface of the Earth. In the ſummer the days are very long, and the nights very ſhort; therefore the Earth and air are heated by the Sun in the day-time more than they are cooled in the night; and, upon this account, the heat will keep increaſing in the ſummer, and for the ſame reaſon will decreaſe in winter, when the nights lengthen.

It would exceed the limits of this treatiſe, were we to inquire into the ſeveral concurring cauſes of the temperatures that obtain in various climates; it may be ſufficient, therefore, to obſerve what a remarkable proviſion is made in the world, and the ſeveral parts of it, to keep up a perpetual change in the degrees of heat and cold. Theſe two are antagoniſts, or, as lord Bacon calls them, 'the very hands of nature with which ſhe chiefly worketh;' the one expanding, the other contracting, bodies, ſo as to maintain an oſcillatory motion in all their parts; and ſo ſerviceable are theſe changes in the natural world, that they are promoted every year, every hour, every moment. From the oblique poſition of the ecliptic, the Earth continually preſents a different face to the Sun, and never receives his rays two days together in the ſame direction. In the day and night the differences are ſo obvious, that they need not be mentioned, though they are moſt remarkable in thoſe climates where the Sun at his ſetting makes the greateſt angle with the horizon. Every hour of the day, the heat varies with the Sun's altitude, is altered by the interpoſition of clouds, and the action of winds; and there is little room to doubt, but that the various changes that thus take place concur in producing many of the ſmaller and greater phenomena of nature. Be this as it may, it is certain that the various irregularities and intemperature of the elements, which ſeem to deſtroy nature in one ſeaſon, ſerve to revive it in another: the immoderate heats of ſummer, and the exceſſive cold of winter, prepare the beauties of the ſpring, and the rich fruits of autumn. Theſe viciſſitudes, which ſeem to ſuperficial minds the effects of a fortuitous concourſe of irregular cauſes, are regulated according to weight and meaſure by the ſovereign wiſdom, who weighs the Earth as a grain of ſand, the ſea as a drop of water!

Of Solar and Siderial Time.

We have ſhewn, that the daily motion of the Sun from eaſt to weſt is not a real, but an apparent, one, which is owing to the rotation of the Earth round its axis. Now, if the Sun had no other motion but this apparent one, it would ſeem to go once round the Earth, in the time of one complete rotation, or in 23h. 56′; which is the caſe with any of the fixed ſtars, and is therefore the length of a ſiderial day. But the Sun is found to take up a longer time to complete its apparent revolution; for, if it is in the ſouth of any particular place at twelve o'clock at noon to-day, it will not complete an apparent revolution, ſo as to return to the ſouth of that place again, till twelve o'clock at noon on the next day, and conſequently the time of this apparent revolution is twenty-four hours. We ſhall render this ſubject clearer, by defining, in other words, the nature of the ſolar and ſiderial day.

The *ſolar* day is that ſpace of time which intervenes between the Sun's departing from any one meridian, and its return to the ſame circle again; which ſpace is alſo called a *natural* day; or it is the time from the noon of one day to the noon of the next. The *ſiderial* day is the ſpace of time which happens between the departure of a ſtar from, and its return to, the ſame meridian again. We are now to ſee why theſe days differ in length, or why the time, that the Sun takes up to complete one revolution, is longer than the time that the Earth takes to revolve once upon its axis.

This difference ariſes from the Sun's annual motion. For the Sun does not continue always in the ſame place in the heavens, as the fixed ſtars do: but, if it is ſeen at M, *fig.* 3, in the preceding Aſtronomical-Plate III. on one day, near the fixed ſtar R, it will have ſhifted its place the next day, and will be near to ſome other fixed ſtar at L. This motion of the Sun is from weſt to eaſt, and one entire revolution is completed in a year. Suppoſe, therefore, that the Sun, when at M, near to the fixed ſtar R, appears in the ſouth of any particular place S; and then imagine the Earth to turn once round upon its axis from weſt to eaſt, or in the direction STVW, ſo that the place may be returned to the ſame ſituation; after this rotation is completed, the ſtar R will be in the ſouth of the place as before; but the Sun having, in the mean time, moved eaſtwards, and being near to the ſtar L, or to the eaſt of R, will not be in the ſouth of the place S, but to the eaſtward of it: upon this account, the place S muſt move on a little farther, and muſt come to T, before it will be even with the Sun again, or before the Sun will appear exactly in the ſouth. This may be illuſtrated by the following inſtance: The two hands of a watch are cloſe together, or even with one another, at twelve; they both turn round the ſame way, but the minute-hand turns round in a ſhorter time than the hour-hand; when the minute-hand has completed one rotation, and is come round to twelve, the hour-hand will be before it, or will be at one; ſo that the minute-hand muſt move more than once round, in order to overtake the hour-hand, and be even with it again.

As this ſubject is of ſome importance, we ſhall endeavour to render it more clear, by placing it in a different point of view. The diameter of the Earth's orbit is but a phyſical point in proportion to the diſtance of the ſtars; for which reaſon, and the Earth's uniform motion round its axis, any given meridian will revolve from any ſtar to the ſame ſtar again, in every abſolute turn of the Earth upon its axis, without the leaſt perceptible difference of time being ſhewn by a clock which goes exactly true. If the Earth had only a diurnal, without an annual, motion, any given meridian would revolve from the Sun to the Sun again in the ſame quantity of time as from any ſtar to the ſame ſtar again; becauſe the Sun would never change his place with reſpect to the ſtars. But as the Earth advances almoſt a degree eaſtward in its orbit, in the time that it turns eaſtward round its axis, whatever ſtar paſſes over the meridian on any day with the Sun, will paſs over the ſame meridian on the next day, when the Sun is almoſt a degree ſhort of it, that is, 3′ 56″ ſooner. If the year contained only 360 days, the Sun's apparent place, ſo far as his motion is equable, would change a degree every day, and then the ſidereal days would be juſt four minutes ſhorter than the ſolar.

Let ABCDEFGH, *fig.* 4, in the ſame Plate, be the Earth's orbit, in which it goes round the Sun every year, according to the order of the letters, that is, from weſt to eaſt, and turns round its axis the ſame way, from the Sun to the Sun again in every twenty-four hours. Let S be the Sun, and R a fixed ſtar conceived to be at an immenſe diſtance, ſo that the diameter GC of the Earth's orbit bears no ſenſible proportion to that diſtance; N*mn*, the Earth in different points of its orbit. Let N*m* be any particular meridian of the Earth, and N a given point, or place, lying under that meridian. When the Earth is at A, the Sun S hides the ſtar R, which would always be hid if the Earth never moved from A; and conſequently, as the Earth turns round its axis, the point N would always come round to the Sun and the ſtar at the ſame time. But, when the Earth has advanced through the eighth part of its orbit, or from A to B, its motion round its axis will bring the point N an eighth part of a day, or three hours, ſooner to the ſtar than to the Sun. For the ſtar will come to the meridian in the ſame time as though the Earth had continued in its former ſituation at A, but the point N muſt revolve from N to N, before it can have the Sun upon its meridian. The arc N*n* being therefore the ſame part of a whole circle as the arc AB, it is plain that any ſtar which comes to the meridian at noon, with the Sun, when the Earth is at A, will come to it at nine o'clock in the forenoon, when the Earth is at B. When the Earth has paſſed from A to C, one-fourth part of its orbit, the point N will have the ſtar upon its meridian, or at ſix in the morning, ſix hours ſooner than it comes round to the Sun: but the point N muſt revolve ſix hours more before it has mid-day by the Sun: for now the angle ASD is a right angle, and ſo is ND*n*; i. e. the Earth has advanced 90° on its axis, to carry the point N from the ſtar to the Sun; for the ſtar always comes to the meridian when N*m* is parallel to RSA; becauſe DS is but a point in reſpect to RS. When the Earth is at D, the ſtar comes to the meridian at three in the morning at E, the Earth having gone half round its orbit; N points to the ſtar at midnight, it being then directly oppoſite to the Sun; and, therefore, by the Earth's diurnal motion, the ſtar comes to the meridian twelve hours before the Sun, and then goes on, till at A it comes to the meridian with the Sun again.

Thus it is plain, that one abſolute revolution of the Earth on its axis (which is always completed when any particular ſtar comes to be parallel to its ſituation at any time of the day before) never brings the ſame meridian round from the Sun to the Sun again; but that the Earth requires as much more than one turn on its axis, to finiſh a natural day, as it has gone forward in that time, which, at a mean ſtate, is a 365th part of a circle.

From hence we obtain a method of knowing by the ſtars whether a clock goes true or not: for, if through a ſmall hole in a window-ſhutter, or in a thin plate of metal fixed to a window, we obſerve at what time any ſtar diſappears behind a chimney, or corner of a houſe, at a little diſtance; and, if the ſame ſtar diſappears the next night 3′ 56″ ſooner, by the clock, and on the ſecond 7′ 52″ ſooner, the third night 11′ 48″ ſooner, and ſo on every night, it is an infallible ſign that the machine goes true; otherwiſe it does not, and muſt be regulated accordingly. This method may be depended on to nearly half a ſecond.

The ſum of what has been ſtated amounts to this: that the ſidereal or *aſtral* year, is the time in which the Sun completes its revolution amongſt the fixed ſtars, or in the ecliptic; and conſiſts of 365 da. 6h. 9′. 17″. And that the ſolar or *tropical* year, is the time the Sun takes in paſſing through the zodiac, from one tropic or equinoctial point till it comes to the ſame again, which it performs in 365 da. 5h. 48′. 48″. This is the true or natural year, and on which the return of the ſeaſons depends.

Of the ANOMALISTIC YEAR.

The year, called the *anomaliſtic* year, is ſometimes uſed by aſtronomers, and is the time from the Sun's leaving its apogee till it returns to it. Now, the motion of the Sun's apogee is 1′ 2″ every year, in longitude, or in reſpect to the equinox, according to M. de la Lande, therefore $1' 2'' - 50''\cdot 25 = 11''\cdot 75$, the progreſſive motion of the apogee in a year; and hence the anomaliſtic muſt be longer than the ſiderial year by the time the Sun takes in moving over $11''\cdot 75$ of longitude at his apogee; but, when the Sun is in its apogee, its motion in longitude is 58′ 13″ in twenty-four hours; hence $58' 13'' : 11''\cdot 75 :: 24\text{h} : 4' 50\frac{2}{3}''$, which added to $365\text{d}.\ 6\text{h}.\ 9'.\ 11\frac{1}{2}''$. gives $365\text{d}.\ 6\text{h}.\ 14'.\ 2\frac{1}{6}''$. for the length of the anomaliſtic year. M. de la Lande determined this motion of the apogee, from the obſervations of M. de la Hire and thoſe of Dr. Maſkelyne. Caſſini made it the ſame. Mayer made it 1′ 6″ in his Tables.

Of the PRECESSION of the EQUINOXES.

The preceſſion of the equinoxes is a very ſlow motion, by which they change their place, going from eaſt to weſt, or backward, *in antecedentia*, or contrary to the order of the ſigns. From the late improvements in aſtronomy it appears, that the pole, the ſolſtices, the equinoxes, and all the other points of the ecliptic, have a retrograde motion, and are conſtantly moving from eaſt to weſt, or from Aries towards Piſces, &c. by means of which, the equinoctial points are carried farther and farther back, among the preceding ſigns or ſtars, at the rate of about $50\frac{1}{4}''$ each year; which retrograde motion is called the *preceſſion*, *receſſion*, or *retroceſſion*, of the equinoxes. Hence, as the ſtars remain immoveable, and the equinoxes go backward, the ſtars will ſeem to move more and more eaſtward with reſpect to them; for which reaſon the longitudes of all the ſtars, being reckoned from the firſt point of Aries, or the vernal equinox, are continually increaſing. From this cauſe it is, that the conſtellations ſeem all to have changed the places aſſigned to them by the ancient aſtronomers. In the time of Hipparchus, and the oldeſt aſtronomers, the equinoctial points were fixed to the firſt ſtars of Aries and Libra: but the ſigns do not now anſwer to the ſame points; and the ſtars which were then in conjunction with the Sun when he was in the equinox, are now a whole ſign, or thirty degrees, to the eaſtward of it: ſo, the firſt ſtar of Aries is now in the portion of the ecliptic called Taurus, and the ſtars of Taurus are now in Gemini, and ſo on.

This ſeeming change of place in the ſtars was firſt obſerved by Hipparchus of Rhodes, who, 128 years before

Chriſt, found that the longitudes of the ſtars in his time were greater than they had been before obſerved by Tymochares, and than they were in the ſphere of Eudoxus, who wrote 380 years before Chriſt. Ptolemy alſo perceived the gradual change in the longitudes of the ſtars; but he ſtated the quantity at too little, making it but one degree in 100 years, which is at the rate only of 36″ per year. Y-hang, a Chineſe, in the year 721, ſtated the quantity of this change at one degree in eighty-three years, which is at the rate of 43⅓″ per year. Other more modern aſtronomers have made this preceſſion ſtill more, but with ſome ſmall differences from each other; and it is now uſually taken at 50¼″ per year. All theſe rates are deduced from a compariſon of the longitude of certain ſtars as obſerved by more ancient aſtronomers, with the later obſervations of the ſame ſtars, viz. by ſubtracting the former from the latter, and dividing the remainder by the number of years in the interval between the dates of the obſervations. Thus, by a medium of a great number of compariſons, the quantity of the annual change has been fixed at 50¼″, according to which rate it will require 25791 years for the equinoxes to make their revolution weſtward quite round the circle, and return to the ſame point again.

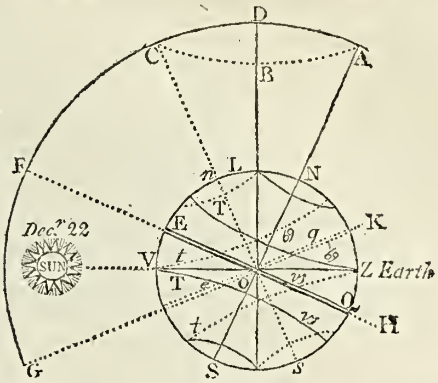
Thus, by taking the longitudes of the principal ſtars eſtabliſhed by Tycho Brahe, for the beginning of 1586, and comparing them with the ſame as determined for the year 1750, by M. de la Caille, for that interval of 164 years, there will be obtained the following differences of longitude of ſeveral ſtars, viz.

γ Arietatis	2°	17′	37″
Aldebaran	2	17	45
μ Geminorum	2	17	1
β Geminorum	2	15	26
Regulus	2	16	32
α Virginis	2	18	18
α Aquilæ	2	19	1
α Pegaſi	2	16	12
β Libræ	2	17	52
Antares	2	16	28
ε Tauri	2	17	58
γ Geminorum	2	18	38
γ Cancri	2	19	12
γ Leonis	2	19	38
γ Capricorni	2	16	10
Medium of theſe fifteen ſtars	2	17	35

Which divided by 164, the interval of years, gives 50·336″, or nearly 50⅓″, or after the rate of 1° 23′ 53⅓″ in 100 years, or 25,748 years for the whole revolution, or circle of 360 degrees. And nearly the ſame concluſion reſults from the longitudes of the ſtars in the Britannic catalogue, compared with thoſe of ſtill later catalogues.

The ancients, and even ſome of the moderns, have taken the equinoxes to be immoveable; and aſcribed that change in the diſtance of the ſtars from it, to a real motion of the orb of fixed ſtars, which they ſuppoſed had a ſlow revolution about the poles of the ecliptic; ſo as that all the ſtars perform their circuits in the ecliptic, or its parallels, in the ſpace of 25,791 years; after which they ſhould all return again to their former places. This period the ancients called the Platonic or great year; and imagined, that at its completion every thing would begin as at firſt, and all things come round in the ſame order as they have done before.

The phenomena of this retrograde motion of the equinoxes, or interſections of the equinoctial with the ecliptic, and conſequently of the conical motion of the Earth's axis, by which the pole of the equator deſcribes a ſmall circle in the ſame period of time, may be underſtood and illuſtrated by a ſcheme, as follows: Let NZSVL be the Earth, SONA its axis produced to the ſtarry heavens, and terminating in A, the preſent north pole of the heavens, which is vertical to N, the north pole of the Earth. Let EOQ be the equator, T♋Z the tropic of Cancer, and VT♑ the tropic of Capricorn; VOZ the ecliptic; and BO its axis, both of which are immoveable among the ſtars. But, as the equinoctial points recede in the ecliptic, the Earth's axis SON is in motion upon the Earth's centre O, in ſuch a manner as to deſcribe the double cone NO*n* and SO*s*, round the axis of the ecliptic BO, in the time that the equinoctial points move round the ecliptic, which is 25,791 years; and, in that length of time, the north pole of the Earth's axis, produced, deſcribes the circle ABCDA in the ſtarry heavens, round the pole of the ecliptic, which keeps immoveable in the centre of that circle. The Earth's axis being now 23° 28′ inclined to the axis of the ecliptic, the circle ABCDA, deſcribed by the north pole of the Earth's axis produced to A, is 46° 56′ in diameter, or double the inclination of the Earth's axis. In conſequence of this, the point A, which is at preſent the north pole of the heavens, and near to a ſtar of the ſecond magnitude in the end of the Little Bear's Tail, muſt be deſerted by the Earth's axis; which moving backwards one degree every 71⅔ years nearly, will be directed towards the ſtar or point B in 6447¾ years hence; and in double of that time, or in 12,895½ years, it will be directed towards the ſtar or point C; which will then be the north pole of the heavens, although it is at preſent 8½ degrees ſouth of the zenith of London L. The preſent poſition of the equator EOQ will then be changed to *eOq*, the tropic of Cancer T♋Z into V*t*♋, and the tropic of Capricorn VT♑ into *t*♑Z; as is evident by the figure. And the Sun, in the ſame part of the heavens where he is now over the earthly tropic of Capricorn, and makes the ſhorteſt days and longeſt nights in the northern hemiſphere, will then be over the earthly tropic of Cancer, and make the days longeſt and the nights ſhorteſt. So that it will require 12,895½ years yet more, or from that time, to bring the north pole N quite round, ſo as to be directed toward that point of the heavens which is vertical to it at preſent. And then, and not till then, the ſame ſtars which at preſent deſcribe the equator, tropics, and polar circles, &c. by the Earth's diurnal motion, will deſcribe them over again.



From this ſhifting of the equinoctial points, and with them all the ſigns of the ecliptic, it follows, that thoſe ſtars which in the infancy of aſtronomy were in Aries, are now found in Taurus; thoſe of Taurus in Gemini, &c. Hence likewiſe it is, that the ſtars which roſe or ſet at any particular ſeaſon of the year, in the times of Heſiod, Eudoxus, Virgil, Pliny, by no means anſwer at this time to their deſcriptions.

As to the phyſical cauſe of the preceſſion of the equinoxes, Sir Iſaac Newton demonſtrates, that it ariſes from the broad or flat ſpheroidical figure of the Earth; which itſelf ariſes from the Earth's rotation about its axis: for, as more matter has thus been accumulated all round the equatorial parts than any where elſe on the Earth, the Sun and Moon, when on either ſide of the equator, by attracting this redundant matter, bring the equator ſooner under them, in every return towards it, than if there was no ſuch accumulation. Sir Iſaac Newton in determining the quantity of the annual preceſſion from the theory of gravity, on ſuppoſition that the equatorial diameter of the Earth is to the polar diameter as 230 to 229, finds the Sun's action ſufficient to produce a preceſſion of $9\frac{1}{8}''$ only; and, collecting from the tides the proportion between the Sun's force and the Moon's to be as 1 to $4\frac{1}{2}$, he ſettles the mean preceſſion, reſulting from their joint actions, at $50''$; which, its muſt be owned, is nearly the ſame as it has ſince been found by the beſt obſervations; and yet ſeveral other mathematicians have ſince objected to the truth of Sir Iſaac Newton's computation. Indeed, to determine the quantity of the preceſſion ariſing from the action of the Sun, is a problem that has been much agitated among modern mathematicians; and, although they ſeem to agree as to Newton's miſtake in the ſolution of it, they have yet generally diſagreed from one another. M. d'Alembert, in 1749, printed a treatiſe on this ſubject, and claims the honour of having been the firſt who rightly determined the method of reſolving problems of this kind. The ſubject has been alſo conſidered by Euler, Friſius, Silvabelle, Walmeſley, Simpſon, Emerſon, La Place, La Grange, Landen, Milner, and Vince.

M. Silvabelle, ſtating the ratio of the Earth's axis to be that of 178 to 177, makes the annual preceſſion cauſed by the Sun $13'' 52'''$, and that of the Moon $34'' 17'''$; making the ratio of the lunar force to the ſolar to be that of 5 to 2; alſo the nutation of the Earth's axis cauſed by the Moon, during the time of a ſemi-revolution of the pole of the Moon's orbit, i. e. in $9\frac{1}{3}$ years, he makes $17'' 51'''$. M. Walmeſley, on the ſuppoſition that the ratio of the Earth's diameters is that of 230 to 229, and the obliquity of the ecliptic to the equator $23^\circ 28' 30''$, makes the annual preceſſion, owing to the Sun's force, equal to $10{\cdot}383''$; but, ſuppoſing the ratio of the diameters to be that of 178 to 177, that preceſſion will be $13{\cdot}675''$. Mr. Simpſon, by a different method of calculation, determines the whole annual preceſſion of the equinoxes, cauſed by the Sun, at $21'' 6'''$; and he has pointed out the errors of the computations propoſed by M. Silvabelle and M. Walmeſley. Mr. Milner's deduction agrees with that of Mr. Simpſon, as well as Mr. Vince's; and their papers contain beſides ſeveral curious particulars relative to this ſubject.

As to the effect of the planets upon the equinoctial points, M. de la Place, in his new reſearches on this article, finds that their action cauſes thoſe points to advance by $0{\cdot}2016''$ in a year, along the equator, or $0{\cdot}1849''$ along the ecliptic; from whence it follows, that the quantity of the luni-ſolar preceſſion muſt be $50{\cdot}4349''$, ſince the total obſerved preceſſion is $50\frac{1}{4}''$, or $50{\cdot}25''$.

To find the Preceſſion in right aſceenſion and declination.—Put $d =$ the declination of a ſtar, and $a =$ its right aſcenſion; then their annual variations of preceſſions will be nearly as follow, viz.

$20{\cdot}084'' \times \text{cof. } a =$ the annual precef. in declinat.

And $46{\cdot}0619'' + 20{\cdot}084'' \times \text{ſin. } a \times \text{tang. } d =$ that of right aſcenſion. See the Connoiſſance des Temps for 1792, p. 206, &c.

Of the OBLIQUITY of the ECLIPTIC.

The ecliptic is a great circle of the ſphere conceived to paſs through the middle of the zodiac. It is ſometimes called the *via Solis*, or 'Sun's path,' being the track which he appears to deſcribe among the fixed ſtars; though more properly it is the apparent path of the Earth, as viewed from the Sun, and thence called the heliocentric circle of the Earth. It is called the ecliptic, becauſe all the eclipſes of the Sun or Moon happen when the Moon croſſes it, or is nearly in one of thoſe two parts of her orbit where it croſſes the ecliptic, which points are the Moon's nodes. Upon the ecliptic are marked and counted the twelve celeſtial ſigns, Aries, Taurus, Gemini, &c. and upon it is counted the longitude of the planets and ſtars. It is placed obliquely with reſpect to the equator, which it cuts in two oppoſite points, viz. the beginning of Aries and Libra, which are directly oppoſite to each other, and called the equinoxes, making the one-half of the ecliptic to the north, and the other half on the ſouth ſide of the equator; the two extreme points of it, to the north and ſouth, which are oppoſite to each other, and at a quadrant diſtance from the equinoctial points both ways, are called the ſolſtices, or ſolſtitial points, or alſo the two tropics, which are at the beginning of Cancer and Capricorn, and which are at the fartheſt diſtance of any points of it from the equator, which diſtance is the meaſure of the Sun's greateſt declination, which is the ſame with the obliquity of the ecliptic, or the angle it makes with the equator.

This obliquity of the ecliptic is not permanent, but is continually diminiſhing, by the ecliptic approaching nearer and nearer to a paralleliſm with the equator, at the rate of half a ſecond in a year nearly, or from $50''$ to $55''$ in 100 years, as is deduced from ancient and modern obſervations compared together; and as the mean obliquity of the ecliptic was $23^\circ 28'$ about the end of the year 1788, or beginning of 1789, by adding half a ſecond for each preceding year, or ſubtracting the ſame for each following year, the mean obliquity will be found nearly for any year either before or ſince that period. The quantity however of this change is variouſly ſtated by different authors, from $50''$ to $60''$ or $70''$ for each century or 100 years. Hipparchus, almoſt two thouſand years ſince, obſerved the obliquity of the ecliptic, and found it about $23^\circ 51'$; and all ſucceeding aſtronomers, to the preſent time, having obſerved the ſame, have found it always leſs and leſs; being now rather under $23^\circ 28'$; a difference of about $23'$ in 1950 years; which gives a medium of $70''$ in 100 years. There is reaſon however to think that the diminution is variable.

This diminution of the obliquity of the ecliptic to the equator, according to Mr. Long and ſome others, is chiefly owing to the unequal attraction of the Sun and Moon on the protuberant matter about the Earth's equator. For if it be conſidered, ſay they, that the Earth is not a perfect ſphere, but an oblate ſpheroid, having its axis ſhorter than its equatorial diameter; and that the Sun and Moon are conſtantly acting obliquely upon the greater quantity of matter about the equator, drawing it, as it were, towards a nearer and nearer coincidence with the ecliptic; it will not appear ſtrange that theſe actions ſhould gradually diminiſh the angle between the planes of thoſe two circles. Nor is it leſs probable that the mutual attractions of all the planets ſhould have a tendency to bring their orbits to a coincidence: though this change is too ſmall to become ſenſible in many ages. It is now however well known, that this change in the obliquity of the ecliptic is wholly owing to the actions of the planets upon the Earth, and eſpecially the planets Venus and Jupiter, but chiefly the former. See La Grange's excellent paper upon this ſubject in the Memoirs of the French Academy for 1774; Caſſini's in 1778; and La Lande's Aſtron. vol. iii. According to La Grange, who proceeds upon theory, the annual change of obliquity is variable, and has its limits: about 2000 years ago, he thinks it was after the rate of about $38''$ in 100 years; that it is now, and will be for 400 years to come, $56''$ per century; but 2000 years hence, $49''$ per century. According to Caſſini, who computes from obſervations of the obliquity between the years 1739 and 1778, the annual change at preſent is $60''$ or $1'$ in 100 years. But according to La Lande, the diminution is at the rate of $88''$ per century; while Dr. Maſkelyne makes it only $50''$ in the ſame time.

Beſides the regular diminution of the obliquity of the ecliptic, at the rate of near $50''$ in a century, or half a ſecond a year, which ariſes from a change of the ecliptic itſelf, it is ſubject to two periodical inequalities, the one produced by the unequal force of the Sun in cauſing the preceſſion of the equinoxes, and the other depending on the nutation of the Earth's axis. See the Explanation and Uſe of Dr. Maſkelyne's Tables and Obſervations, p. 6, where we are ſhewn how to calculate thoſe inequalities, and where he ſhews that, from his own obſervations, the mean obliquity of the ecliptic to the beginning of the year 1769, was 23° 28′ 9·7″.

To find the obliquity of the ecliptic, or the greateſt declination of the Sun: about the time of the ſummer ſolſtice obſerve very carefully the Sun's zenith diſtance for ſeveral days together; then the difference between this diſtance and the latitude of the place will be the obliquity ſought, when the Sun and equator are both on one ſide of the place of obſervation; but their ſum will be the obliquity when they are on different ſides of it. Or, it may be found by obſerving the meridian altitude, or zenith diſtance, of the Sun's centre, on the days of the ſummer and winter ſolſtice; then the difference of the two will be the diſtance between the tropics, the half of which will be the obliquity ſought.

By the ſame method too, the declination of the Sun from the equator for any other day may be found; and thus a table of his declination for every day in the year might be conſtructed. Thus alſo the declination of the ſtars might be found.

Authors' Names.	Years before Chriſt.	Obliquity.		
		°	′	″
Pytheas	324	23	49	23
Eratoſthenes and Hipparchus	230 & 140	23	51	20
	After Chriſt.			
Ptolemy	140	23	48	45
Almaimon	832	23	35	
Albategnius	880	23	35	
Thebat	911	23	33	30
Abul Waſi and Hamed	999	23	35	
Perſian Tables in Chryſococea	1004	23	35	
Albatrnnius	1007	23	35	
Arzachel	1104	23	33	30
Almæon	1140	23	33	30
Choja Naſſir Oddin	1290	23	30	
Prophatius the Jew	1300	23	32	
Ebn Shattir	1363	23	31	
Purbach and Regiomontanus	1460	23	30	
Ulugh Beigh	1463	23	30	17
Walther	1476	23	30	
Do. corrected by refraction, &c	——	23	29	8
Werner	1510	23	28	30
Copernicus	1525	23	28	24
Egnatio Danti	1570	23	29	
Prince of Heſſe	1570	23	31	
Rothman and Byrge	1570	23	30	20
Tycho Brahe	1584	23	31	30
Ditto corrected	——	23	29	
Wright	1594	23	30	
Kepler	1627	23	30	30
Gaſſendus	1630	23	31	
Rieciolus	1646	23	30	20
Ditto corrected	1655	23	29	
Hevelius	1653	23	30	20
Ditto corrected	1661	23	28	52
Caſſini	1655	23	29	15
Montons, corrected, &c.	1660	23	29	3
Richer, corrected	1672	23	28	52
De la Hire	1686	23	29	
Ditto corrected	——	23	29	28
Flamſteed	1690	23	29	
Bianchini	1703	23	28	25
Roemer	1706	23	28	41
Louville	1715	23	28	24
Godin	1730	23	28	20
Bradley	1750	23	28	18
Mayer	1756	23	28	16
Maſkelyne	1769	23	28	10
Hornſby	1772	23	28	8

The obſervations of aſtronomers of all ages, on the obliquity of the ecliptic, have been collected together; and, although ſome of them may not be quite accurate, yet they ſufficiently ſhew the gradual and continual decreaſe of the obliquity from the times of the earlieſt obſervations down to the preſent time. The chief of thoſe obſervations may be ſeen in the foregoing Table; where the firſt column contains the name of the obſerver or author, the ſecond the year before or after Chriſt, and the third the obliquity of the ecliptic for that time.

According to an ancient tradition of the Egyptians, mentioned by Herodotus, the ecliptic had formerly been perpendicular to the equator: they were led into this notion by obſerving, for a long ſeries of years, that the obliquity was continually diminiſhing; or, which amounts to the ſame thing, that the ecliptic was continually approaching to the equator. From thence they took occaſion to ſuſpect that thoſe two circles, in the beginning, had been as far off each other as poſſible, that is, perpendicular to each other. Diodorus Siculus relates, that the Chaldeans reckoned 403,000 years from their firſt obſervations to the time of Alexander's entering Babylon. This enormous account may have ſome foundation, on the ſuppoſition that the Chaldeans built on the diminution of the obliquity of the ecliptic at the rate of a minute in 100 years. M. de Louville, taking the obliquity ſuch as it muſt have been at the time of Alexander's entrance into Babylon, and going back to the time when the ecliptic, at that rate, muſt have been perpendicular to the equator, actually finds 402,942 Egyptian or Chaldean years; which is only fifty-eight years ſhort of that epocha. Indeed there is no way of accounting for the fabulous antiquity of the Egyptians, Chaldeans, &c. ſo probable, as from the ſuppoſition of long periods of very ſlow celeſtial motions, a ſmall part of which they had obſerved, and from which they calculated the beginning of the period, making the world and their own nation to commence together. Or perhaps they ſometimes counted months or days for years. Should the diminution always continue at the rate it has lately done, viz. at 50″ or 56″ a century, it would take 96,960 years, from the year 1788, to bring the ecliptic exactly to coincide with the equator. For particulars concerning the diviſion of time, the alteration of the ſtyle, &c. &c. ſee the article YEAR.

Of the MOON.

The Moon is a ſatellite, or ſecondary planet of the Earth, conſidered as a primary one, about which ſhe revolves in an elliptic orbit, or rather the Earth and Moon revolve about a common centre of gravity, which is as much nearer to the Earth's centre than to the Moon's, as the maſs of the former exceeds that of the latter.

Next to the Sun, ſhe is the moſt ſplendid and ſhining globe in the heavens; and by diſſipating, in ſome meaſure, the darkneſs and the horrors of the night, ſubdividing the year into months, and regulating the flux and reflux of the ſea, ſhe not only becomes a pleaſing, but a welcome, object; affording much for ſpeculation to the contemplative mind, and of real uſe to the navigator, the traveller, and the huſbandman. The Hebrews, the Greeks, the Romans, and, in general, all the ancients, uſed to aſſemble at the time of the new Moon, to diſcharge the duties of piety and gratitude for its manifold uſes.

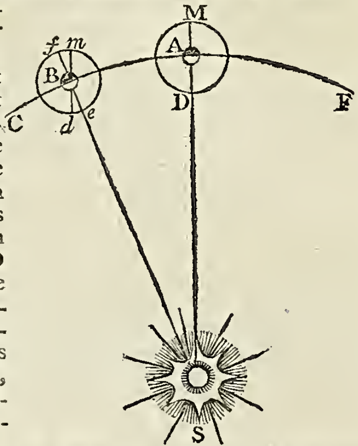
That the Moon appears ſo much larger than the other planets, is owing to her vicinity to us; for to a ſpectator in the Sun ſhe would be ſcarcely viſible, without the aſſiſtance of a teleſcope. Her diſtance is but ſmall from us, when compared with that of the other heavenly bodies; for among theſe, the leaſt abſolute diſtance, when put down in numbers, will appear great, and the ſmalleſt magnitude immenſe. If the Moon were a body poſſeſſing native light, we ſhould not perceive any diverſity of appearance; but as ſhe ſhines entirely by light received from the Sun, and reflected by her ſurface, it follows, that, according to the ſituation of the beholder with reſpect to the illuminated part, he will ſee more or leſs of her reflected beams, for only one half of a globe can be enlightened at once. Hence, while ſhe is making her revolution round the heavens, ſhe undergoes great changes in her appearance. In every revolution of the Moon about the Earth, ſhe turns once round upon her axis, and therefore always preſents the ſame face to our view; and as, during her courſe round the Earth, the Sun enlightens ſucceſſively every part of her globe only once, conſequently ſhe has but one day in all that time, and her day and night together are as long as our lunar month. As we ſee only one ſide of the Moon, we are therefore inviſible to the inhabitants on the oppoſite ſide, unleſs they take a journey to that ſide which is next to us, for which purpoſe ſome of them muſt travel more than 1500 miles. And as the Earth, from one half of the Moon, is never ſeen; ſo, from the middle of the other half, it is always ſeen over head, turning round almoſt thirty times as quick as the Moon does. To her inhabitants, the Earth ſeems to be the largeſt body in the univerſe, about thirteen times as large to them as ſhe does to us. As the Earth turns round its axis, the ſeveral continents and iſlands appear to the Lunarians as ſo many ſpots, of different forms; by theſe ſpots, they may determine the time of the Earth's annual motion; by theſe ſpots they may, perhaps, meaſure their time: they cannot have a better dial.

The mean time of a revolution of the Moon about the Earth, from one new Moon to another, when ſhe overtakes the Sun again, is 29d. 12h. 44′. 3″. 11‴. but ſhe moves once round her own orbit in 27d. 7h. 43′. 8″. moving about 2290 miles every hour. The mean diſtance of the Moon from the Earth is $60\frac{1}{2}$ radii, or $30\frac{1}{4}$ diameters, of the Earth; which is about 240,000 miles. The mean excentricity of her orbit is $\frac{55}{1000}$, or $\frac{1}{18}$ nearly, of her mean diſtance, amounting to about 13,000 miles.

The Moon's diameter is to that of the Earth, as 20 to 73, or nearly as 3 to 11, or 1 to $3\frac{2}{3}$; and therefore it is equal to 2180 miles: her mean apparent diameter is 31′ $16\frac{1}{2}$″, that of the Sun being 32′ 12″. The ſurface of the Moon is to the ſurface of the Earth, as 1 to $13\frac{1}{3}$, or as 3 to 40; ſo that the Earth reflects thirteen times as much light upon the Moon as ſhe does upon the Earth; and the ſolid content to that of the Earth, as 3 to 146, or as 1 to $48\frac{2}{3}$. The denſity of the Moon's body is to that of the Earth, as 5 to 4; and therefore her quantity of matter to that of the Earth, as 1 to 39 very nearly: the force of gravity on her ſurface, is to that on the Earth, as 100 to 293. The Moon appears in the ecliptic only when ſhe is in one of her nodes; in all other parts of her orbit ſhe is either in north or ſouth latitude, ſometimes nearer to, ſometimes farther removed from, the ecliptic, according as ſhe happens to be more or leſs diſtant from the nodes. When the place, in which the Moon appears to an inhabitant of the Earth, is the ſame with the Sun's place, ſhe is ſaid to be in *conjunction*. When the Moon's place is oppoſite to the Sun's place, ſhe is ſaid to be in *oppoſition*. When ſhe is a quarter of a circle diſtant from the Sun, ſhe is ſaid to be in *quadrature*. Both the conjunction and oppoſition of the Moon are termed *ſyzygies*. The common lunar month, or the time that paſſes between any new Moon and the next that follows, is called a *ſynodical month*, or a *lunation*. A *periodic* month is the time the Moon takes up to deſcribe her orbit; or, in other words, the time in which the Moon performs one entire revolution about the Earth, from any point in the zodiac to the ſame again. If the Earth had no revolution round the Sun, or the Sun had no apparent motion in the ecliptic, the periodical and ſynodical month would be the ſame; but, as this is not the caſe, the Moon takes up a longer time from one conjunction to the next than to deſcribe its whole orbit; or the time between one new Moon and the next is longer than the Moon's periodical time.

The Moon revolves round the Earth from weſt to eaſt, and the Sun apparently revolves round the Earth the ſame way. Now at the new Moon, or when the Sun and Moon are in conjunction, they both ſet out from the ſame place, to move the ſame way round the Earth; but the Moon moves much faſter than the Sun, and conſequently will overtake it; and, when the Moon does overtake it, it will be a new Moon again. If the Sun had no apparent motion in the ecliptic, the Moon would come up to it, or be in conjunction again, after it had gone once round in its orbit; but, as the Sun moves forward in the ecliptic whilſt the Moon is going round, the Moon muſt move a little more than once round, before it comes even with the Sun again, or before it comes to conjunction. Hence it is that the time between one conjunction and the next in ſucceſſion is ſomething more than the time the Moon takes up to go once round its orbit; or a ſynodical month is longer than a periodical one. This may be illuſtrated by the following figure:

Let S be the Sun, CF a part of the Earth's orbit, MD a diameter of the Moon's orbit when the Earth is at A, and *md* another diameter parallel to the former when the Earth is at B. Whilſt the Earth is at A, if the Moon be at D, ſhe will be in conjunction; and if the Earth was to continue at A, when the Moon had gone once round its orbit, from D through M, ſo as to return to D again, it would again be in conjunction. Therefore, upon the ſuppoſition that the Earth has no motion in its orbit, the periodical and ſynodical months would be equal to one another. But, as the Earth does not continue at A, it will move forward in its orbit, during the revolution of the Moon from A to B; and, as the Moon's orbit moves with it, the diameter MD will then be in the poſition *md*; therefore, when the Moon has deſcribed its orbit, it will be at *d* in this diameter *md*; but if the Moon is at *d*, and the Sun at S, the Moon will not be in conjunction, conſequently the periodical month is completed before the ſynodical. The Moon, in order to come to conjunction, when the Earth is at B, muſt be at *e*, in the diameter *ef*; or, beſides going once round its orbit, it muſt alſo deſcribe the arc *de*. The ſynodical month is therefore longer than the periodical, by the time the Moon takes up to deſcribe the arc *de*.



The *motions* of the Moon in general are moſt of them irregular, and very conſiderably ſo. The only equable motion ſhe has, is her revolution on her own axis, in the ſpace of a month, or time in which ſhe moves round the Earth; which is the reaſon that ſhe always turns the ſame face towards us. This expoſure of the ſame face is not, however, ſo uniform, but that ſhe turns ſometimes a little more of the one ſide, and ſometimes of the other, called the Moon's *libration*; and alſo ſhews ſometimes a little more towards one pole, and ſometimes towards the other, by a motion like a kind of wavering, or vacillation. The former of theſe motions happens from this: the Moon's rotation on her axis is equable or uniform; while her motion in her orbit is unequal, being quickeſt when the Moon is in her perigee, and ſloweſt when in the apogee, like all other planetary motions; which cauſes that ſometimes more of one ſide is turned to the earth, and ſometimes of the other. And the other irregularity ariſes from this: that the axis of the Moon is not perpendicular, but a little inclined to the plane of her orbit: and as this axis maintains its paralleliſm, in the Moon's motion round the Earth; it muſt neceſſarily change its ſituation, in reſpect of an obſerver on the Earth; whence it happens that ſometimes the one and ſometimes the other pole of the Moon becomes viſible.

The very orbit of the Moon is changeable, and does not always perſevere in the ſame figure: for though her orbit be elliptical, or nearly ſo, having the Earth in one focus, the eccentricity of the ellipſe is varied, being ſometimes increaſed, and ſometimes diminiſhed; viz. being greateſt when the line of the apſes coincides with that of the ſyzygies, and leaſt when theſe lines are at right angles to each other. Nor is the apogee of the Moon without an irregularity; being found to move forward, when it coincides with the line of the ſyzygies; and backward, when it cuts that line at right angles. Neither is this progreſs or regreſs uniform; for in the conjunction or oppoſition, it goes briſkly forward; and in the quadratures, it either moves ſlowly forward, ſtands ſtill, or goes backward. The motion of the nodes is alſo variable; being quicker and ſlower in different poſitions.

The phyſical cauſe of the Moon's motion about the Earth, is the ſame as that of all the primary planets about the Sun, and of the ſatellites about their primaries, viz. the mutual attraction between the Earth and Moon. As for the particular irregularities in the Moon's motion, to which the Earth and other planets are not ſubject, they ariſe from the Sun, which acts on and diſturbs her in her ordinary courſe through her orbit; and are all mechanically deducible from the ſame great law by which her general motion is directed, viz. the law of gravitation and attraction. The other ſecondary planets, as thoſe of Jupiter, Saturn, &c. are alſo ſubject to the like irregularities with the Moon; as they are expoſed to the ſame perturbating or diſturbing force of the Sun; but their diſtance ſecures them from being ſo greatly affected as the Moon is, and alſo from being ſo well obſerved by us. For a familiar idea of this matter, it muſt firſt be conſidered, that if the Sun acted equally on the Earth and Moon, and always in parallel lines, this action would ſerve only to reſtrain them in their annual motions round the Sun, and no way affect their actions on each other, or their motions about their common centre of gravity. But becauſe the Moon is nearer the Sun, in one half of her orbit, than the Earth is, but farther off in the other half of her orbit; and becauſe the power of gravity is always leſs at a greater diſtance; it follows, that in one half of her orbit the Moon is more attracted than the Earth towards the Sun, and leſs attracted than the Earth in the other half: and hence irregularities neceſſarily ariſe in the motions of the Moon; the exceſs of attraction in the firſt caſe, and the defect in the ſecond, becoming a force that diſturbs her motion: and beſides, the action of the Sun, on the Earth and Moon, is not directed in parallel lines, but in lines that meet in the centre of the Sun; which makes the effect of the diſturbing force ſtill the more complex and embarraſſing. And hence, as well as from the various ſituations of the Moon, ariſe the numerous irregularities in her motions, and the equations, or corrections, employed in calculating her places, &c.

Sir Iſaac Newton, as well as others, has computed the quantities of theſe irregularities from their cauſes. He finds that the force added to the gravity of the Moon in her quadratures, is to the gravity with which ſhe would revolve in a circle about the Earth, at her preſent mean diſtance, if the Sun had no effect on her, as 1 to $178\frac{29}{40}$: he finds that the force ſubducted from her gravity in the conjunctions and oppoſitions, is double of this quantity; and that the area deſcribed in a given time in the quarters, is to the area deſcribed in the ſame time in the conjunctions and oppoſitions, as 10973 to 11073: and he finds that, in ſuch an orbit, her diſtance from the Earth in her quarters, would be to her diſtance in the conjunctions and oppoſitions, as 70 to 69. As to the figure of the Moon, ſuppoſing her at firſt to have been a fluid, like the ſea, Sir Iſaac calculates, that the Earth's attraction would raiſe the water there near ninety feet high, as the attraction of the Moon raiſes our ſea twelve feet: whence the figure of the Moon muſt be a ſpheroid, whoſe greateſt diameter extended will paſs through the centre of the Earth; and will be longer than the other diameter, perpendicular to it, by 180 feet; and hence it comes to paſs, that we always ſee the ſame face of the Moon; for ſhe cannot reſt in any other poſition, but always endeavours to conform herſelf to this ſituation: Princip. lib. 3, prop. 38. The denſity of the Moon he concludes is to that of the Earth, as 9 to 5 nearly; and that the maſs, or quantity of matter, in the Moon, is to that of the Earth, as 1 to 26 nearly.

The plane of the Moon's orbit is inclined to that of the ecliptic, and makes with it an angle of about five degrees: but this inclination varies, being greateſt when ſhe is in the quarters, and leaſt when in her ſyzygies. As to the inequality of the Moon's motion, ſhe moves ſwifter, and by the radius drawn from her to the Earth deſcribes a greater area in proportion to the time, alſo has an orbit leſs curved, and by that means comes nearer to the Earth, in her ſyzygies or conjunctions, than in the quadratures, unleſs the motion of her eccentricity hinders it: which eccentricity is the greateſt when the Moon's apogee falls in the conjunction, but leaſt when this falls in the quadratures: her motion is alſo ſwifter in the Earth's aphelion than in its perihelion. The apogee alſo goes forward ſwifter in the conjunction, and goes ſlower at the quadratures: but her nodes are at reſt in the conjunctions, and recede ſwifteſt of all in the quadratures. The Moon alſo perpetually changes the figure of her orbit, or the ſpecies of the ellipſe ſhe moves in.

There are likewiſe ſome other inequalities in the motion of this planet, which it is very difficult to reduce to any certain rule: as the velocities or horary motions of the apogee and nodes, and their equations, with the difference between the greateſt eccentricity in the conjunctions, and the leaſt in the quadratures; and that inequality which is called the *variation* of the Moon. Theſe increaſe and decreaſe annually, in a triplicate ratio of the apparent diameter of the Sun: and this variation is increaſed and diminiſhed in a duplicate ratio of the time between the quadratures; as is proved by Newton in many parts of his Principia. He alſo found that the apogees in the Moon's ſyzygies go forward, in reſpect of the fixed ſtars, at the rate of 23′ each day; and backwards in the quadratures $16\frac{1}{3}'$ per day: and therefore the mean annual motions he eſtimates at forty degrees.

The gravity of the Moon towards the Earth is increaſed by the action of the Sun, when the Moon is in the quadratures, and diminiſhed in the ſyzygies: and, from the ſyzygies to the quadrature, the gravity of the Moon towards the Earth is continually increaſed, and ſhe is continually retarded in her motion: but from the quadrature to the ſyzygy, the Moon's motion is perpetually diminiſhed, and the motion in her orbit is accelerated. The Moon is leſs diſtant from the Earth at the ſyzygies, and more at the quadratures. As radius is to $\frac{3}{2}$ of the ſine of double the Moon's diſtance from the ſyzygy, ſo is the addition of gravity in the quadratures, to the force which accelerates or retards the Moon in her orbit. And as radius is to the ſum or difference of $\frac{1}{2}$ the radius and $\frac{3}{2}$ the coſine of double the diſtance of the Moon from the ſyzygy, ſo is the addition of gravity in the quadratures to the decreaſe or increaſe of the gravity of the Moon at that diſtance.

The apſes of the Moon go forward when ſhe is in the ſyzygies, and backward in the quadratures. But, in a whole revolution of the Moon, the progreſs exceeds the regreſs. In a whole revolution, the apſes go forward the faſteſt of all when the line of the apſes is in the nodes; and in the ſame caſe they go back the ſloweſt of all in the ſame revolution. When the line of the apſes is in the quadratures, the apſes are carried in conſequentia, the leaſt of all in the ſyzygies; but they return the ſwifteſt in the quadratures; and in this caſe the regreſs exceeds the progreſs, in one entire revolution of the Moon. The eccentricity of the orbit undergoes various changes every revolution. It is the greateſt of all when the line of the apſes is in the ſyzygies, and the leaſt when that line is in the quadratures.

Conſidering one entire revolution of the Moon, cæteris paribus, the nodes move in antecedentia ſwifteſt of all when ſhe is in the ſyzygies; then ſlower and ſlower, till they are at reſt, when ſhe is in the quadratures. The line of nodes acquires ſucceſſively all poſſible ſituations in reſpect of the Sun; and every year it goes twice through the ſyzygies, and twice through the quadratures. In one whole revolution of the Moon, the nodes go back very faſt when they are in the quadratures; then ſlower till they come to reſt, when the line of nodes is in the ſyzygies. The inclination of the plane of the orbit is changed by the ſame force with which the nodes are moved; being increaſed as the Moon recedes from the node, and diminiſhed as ſhe approaches it. The inclination of the orbit is the leaſt of all when the nodes are come to the ſyzygies. For in the motion of the nodes from the ſyzygies to the quadratures, and in one entire revolution of the Moon, the force which increaſes the inclination exceeds that which diminiſhes it; therefore the inclination is increaſed; and it is the greateſt of all when the nodes are in the quadratures.

The Moon's motion being conſidered in general: her gravity towards the Earth is diminiſhed coming nearer the Sun, and the periodical time is the greateſt: as alſo the diſtance of the Moon, cæteris paribus, is the greateſt when the Earth is in the perihelion. All the errors in the Moon's motion are ſomething greater in the conjunction than in the oppoſition. All the diſturbing forces are inverſely as the cube of the diſtance of the Sun from the Earth; which when it remains the ſame, they are at the diſtance of the Moon from the Earth. Conſidering all the diſturbing forces together, the diminution of gravity prevails.

The figure of the Moon's path about the Earth, is, as has been ſaid, nearly an ellipſe; but her path, in moving together with the Earth about the Sun, is made up of a ſeries or repetition of epicycloids, and is in every point concave towards the Earth. With reſpect to the Moon's *acceleration*, it is a term uſed to expreſs the increaſe of the Moon's mean motion from the Sun, compared with the diurnal motion of the Earth; by which it appears that, from ſome uncertain cauſe, it is now a little quicker than it was formerly. Dr. Halley was led to the diſcovery, or ſuſpicion, of this acceleration, by comparing the ancient eclipſes obſerved at Babylon, &c. and thoſe obſerved by Albategnius in the ninth century, with ſome of his own time. He could not however aſcertain the quantity of the acceleration, becauſe the longitudes of Bagdat, Alexandria, and Aleppo, where the obſervations were made, had not been accurately determined. But ſince his time the longitude of Alexandria has been aſcertained by Chazelles; and Babylon, according to Ptolemy's account, lies 50′ eaſt of Alexandria. From theſe data, Mr. Dunthorne, vol. xlvi. Philoſ. Tranſactions, compared the recorded times of ſeveral ancient and modern eclipſes, with the calculations of them by his own tables, and thereby verified the ſuſpicion that had been ſtarted by Dr. Halley; for he found that the ſame tables gave the Moon's place more backward than her true place in ancient elipſes, and more forward than her true place in later eclipſes; and thence he juſtly inferred that her motion in ancient times was ſlower, and in later times quicker, than the tables gave it. Not content however with barely aſcertaining the fact, he proceeded to determine, as well as the obervations would allow, the quantity of the acceleration; and by means of the moſt authentic eclipſe, of which any good account remains, obſerved at Babylon in the year 721 before Chriſt, he found that the obſerved beginning of this eclipſe was about an hour and three quarters ſooner than the beginning by the tables; and that therefore the Moon's true place preceded her place by computation by about 50′ of a degree at that time. Then admitting the acceleration to be uniform, and the aggregate of it as the ſquare of the time, it will be at the rate of about 10″ in 100 years.

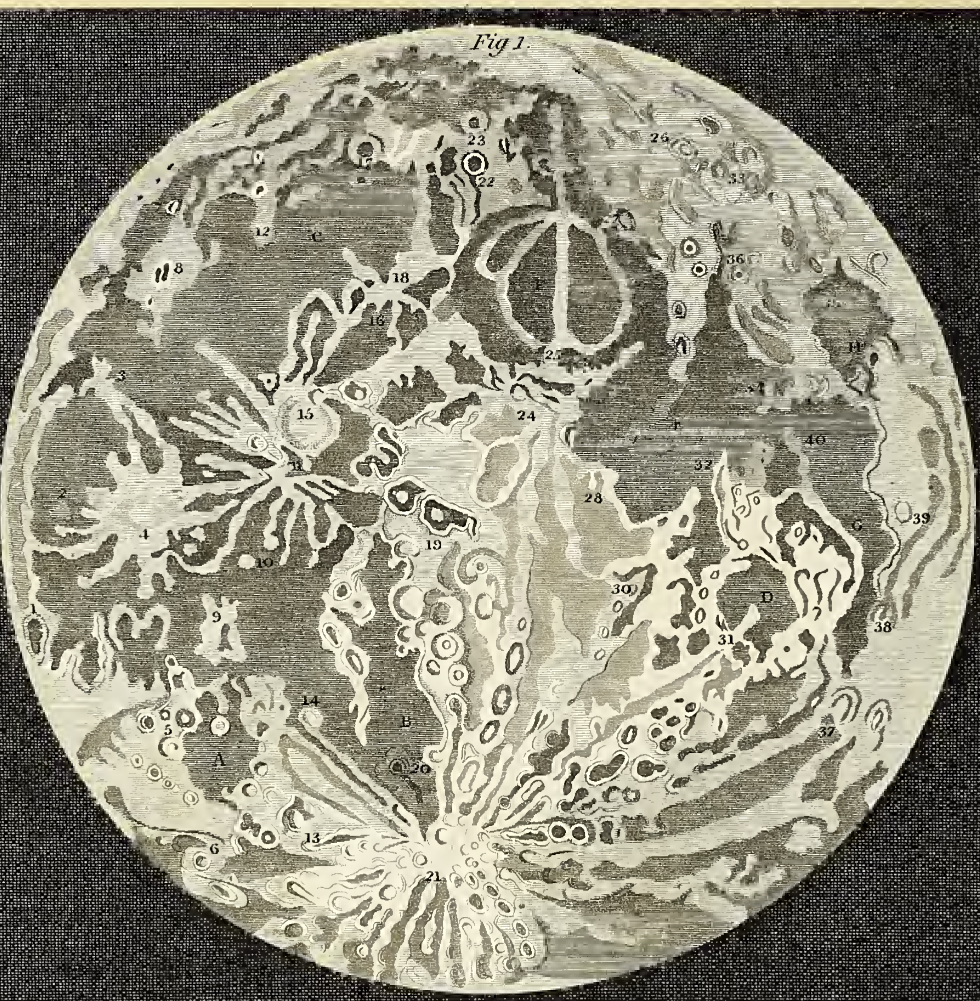
Dr. Long, vol. ii. p. 436 of his Aſtronomy, enumerates the following cauſes, from ſome one or more of which he ſuppoſes the acceleration may ariſe. Either 1ſt, the annual and diurnal motion of the Earth continuing the ſame, the Moon is really carried about the Earth with a greater velocity than formerly: or, 2dly, the diurnal motion of the Earth, and the periodical revolution of the Moon, continuing the ſame, the annual motion of the Earth about the Sun is retarded; which makes the Sun's apparent motion in the ecliptic a little ſlower than formerly; and conſequently the Moon, in paſſing from any conjunction with the Sun, takes up a leſs time before ſhe again overtakes the Sun, and forms a ſubſequent conjunction: in both theſe caſes, the motion of the Moon from the Sun is really accelerated, and the ſynodical month actually ſhortened: or, 3dly, the annual motion of the Earth, and the periodical revolution of the Moon, continuing the ſame, the rotation of the Earth upon its axis is a little retarded; in this caſe, days, hours, minutes, &c. by which all periods of time muſt be meaſured, appear of a longer duration; and conſequently the ſynodical month will appear to be ſhortened, though it really contain the ſame quantity of abſolute time as it always did. If the quantity of matter in the body of the Sun be leſſened, by the particles of light continually ſtreaming from it, the motion of the Earth about the Sun may become ſlower: if the Earth increaſes in bulk, the motion of the Moon about the Earth may thereby be quickened.

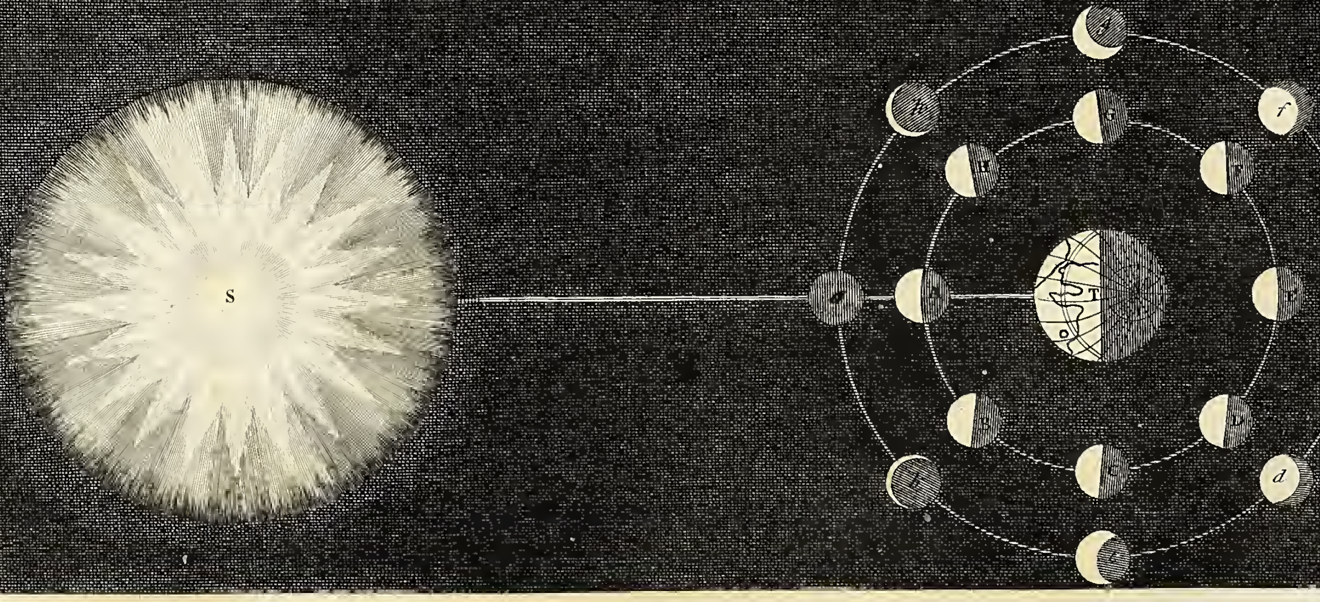
M. de la Place, however, in the Mem. de l'Acad. Roy. des Scien. for 1786, has ſhewn, that this acceleration of the Moon's motion ariſes from the action of the Sun upon the Moon, combined with the variation of the eccentricity of the Earth's orbit. The eccentricity of the Earth's orbit is, at preſent, diminiſhing, and this ariſes from the action of the planets upon the Earth. The major axis of the Earth's orbit is not altered by this, but the eccentricity is. The mean force of the Sun to dilate and contract the orbit of the Moon depends on the ſquare of the eccentricity of the Earth's orbit. By the diminution of the eccentricity, the Moon's mean motion is accelerated, and this is a circumſtance which takes place at preſent. When the eccentricity is come to its *minimum*, the acceleration of the mean motion will ceaſe; after which the eccentricity will increaſe and the Moon's mean motion will be retarded. This therefore cauſes a ſecular equation of the Moon's mean motion, the period of which is very long. If n be the number of centuries from 1700, M. de la Place has computed the ſecular equation to be $+11'',135n^2+0'',04398n^3$; this however cannot be true whatever be the value of n, becauſe the acceleration would then continually increaſe; but it may be extended back to the moſt ancient obſervations of the Moon, and for 1000 or 1200 years to come, without any ſenſible error. M. de la Lambre, from comparing the modern obſervations at about the diſtance of a century, found that the ſecular mean motion of the Moon in the laſt Tables of Mayer was too great by 25″; and that the place of the Moon, calculated by theſe tables, ought to be corrected by the quantity $-25''n+2'',135n^2+0''004398n^3$. If the ancient obſervations of the Moon be compared with the places calculated by Mayer's Tables with this correction, the errors will be comparatively very ſmall, and no greater than what might ariſe from the inaccuracy of their obſervations. M. de la Lande, in his Tables of the Moon, has thus corrected Mayer's Tables. Hence it appears, that the preſent acceleration of the Moon is nothing more than an equation, the period of which is very long; it will be accelerated and retarded by the ſame quantity, and therefore, if the mean motion be taken for the whole time of acceleration or retardation, it will be found never to vary.

The mean motion of the nodes and apogee of the Moon's orbit is ſubject to a ſecular equation. The ſecular equation of the nodes is $-2'',784n^2-0''010995n^3$, which being negative ſhews that it is to be applied contrary to their mean motion. This ſecular equation is $\frac{1}{4}$ of the ſecular equation of the mean motion. The ſecular equation of the apogee is $\frac{7}{4}$ of the ſecular equation of the mean motion, and is therefore $-19'',486n^2-0'',07697n^3$, where the negative ſign ſhews that it is to be applied contrary to its mean motion. Hence all the irregularities of the Moon are but ſo many equations, which return again in their regular order; and the ſame is ſhewn to be true of the irregularities of Jupiter and Saturn; alſo as the major axes of

their

Fig 1.





J.Pass sculp.

Phenomena of the Moon.

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their orbits remain undiſturbed, it is manifeſt that the ſyſtem can never be deſtroyed, all the irregularities being periodical, and confined to ſuch ſmall limits as to produce no inconvenience. Theſe are circumſtances which furniſh great matter for our attention; the ſtability of the ſyſtem ſhews the power and wiſdom of the framer.

Of the PHASES of the MOON.

As the Moon revolves round the Earth in a much ſmaller orbit than that in which the Earth revolves round the Sun, ſometimes more, ſometimes leſs, and ſometimes no part, of her enlightened half will be towards us; hence ſhe is inceſſantly varying her appearance; ſometimes ſhe looks full upon us, and her viſage is all luſtre; ſometimes ſhe ſhews only half her enlightened face, ſoon ſhe appears as a radiant creſcent, in a little time all her brightneſs vaniſhes, and ſhe becomes a beamleſs orb. The *full* Moon, or oppoſition, is that ſtate in which her whole diſk is enlightened, and we ſee it all bright, and of a circular figure. The *new* Moon is when ſhe is in conjunction with the Sun; in this ſtate, the whole ſurface turned towards us is dark, and is therefore inviſible to us. The firſt quarter of the Moon ſhe appears in the form of a ſemicircle, whoſe circumference is turned towards the weſt. At the laſt quarter ſhe appears again under the form of a ſemicircle, but with the circumference turned towards the eaſt. Theſe phaſes may be illuſtrated in a very pleaſing manner, by expoſing an ivory ball to the Sun, in a variety of poſitions, by which it may preſent a greater or ſmaller part of its illuminated ſurface to the obſerver. If it be held nearly in oppoſition, ſo that the eye of the obſerver be almoſt immediately between it and the Sun, the greateſt part of the enlightened ſide will be ſeen; but if it be moved in a circular orbit, towards the Sun, the viſible enlightened part will gradually decreaſe, and at laſt diſappear, when the ball is held directly towards the Sun. Or to apply the experiment more immediately to our purpoſe; if the ball, at any time when the Sun and Moon are both viſible, be held directly between the eye of the obſerver and the Moon, that part of the ball on which the Sun ſhines, will appear exactly of the ſame figure as the Moon itſelf.

The phaſes of the Moon, like thoſe of Venus, may alſo be illuſtrated by a diagram; thus, in *fig.* 2, of the Aſtronomical-Plate IV. let S repreſent the Sun, T the Earth, and ABCD, &c. the Moon's orbit. Now, when the Moon is at A, in conjunction with the Sun S, her dark ſide being entirely towards the Earth, ſhe will be inviſible, as at *a*, and is then called the new Moon. When ſhe comes to her firſt octant at B, or has run through the eighth part of her orbit, a quarter of her enlightened hemiſphere will be turned towards the Earth, and ſhe will then appear horned, as at *b*. When ſhe has run through the quarter of her orbit, and arrived at C, ſhe ſhews us the half of her enlightened hemiſphere, as at *c*, when it is ſaid ſhe is one half full. At D ſhe is in her ſecond octant, and, by ſhewing us more of her enlightened hemiſphere than at C, ſhe appears gibbous, as at *d*. At her oppoſition at E, her whole enlightened ſide is turned towards the Earth, when ſhe appears round, as at *e*, and ſhe is ſaid to be full; having increaſed all the way round from A to E. On the other ſide ſhe decreaſes again all the way from E to A: thus, in her third octant at F, part of her dark ſide being turned towards the Earth, ſhe again appears gibbous, as at *f*. At G ſhe appears ſtill farther decreaſed, ſhewing again juſt one half of her illuminated ſide, as at *g*. But when ſhe comes to her fourth octant at H, ſhe preſents only a quarter of her enlightened hemiſphere, and ſhe again appears horned, as at *h*. And at A, having now completed her courſe, ſhe again diſappears or becomes a new Moon again, as at firſt.

As the Moon, by reflected light from the Sun, illuminates the Earth, ſo the Earth does more than repay her kindneſs, in enlightning the ſurface of the Moon, by the Sun's reflex light, which ſhe diffuſes more abundantly upon the Moon, than the Moon does upon us; for the ſurface of the Earth is conſiderably greater than that of the Moon, and conſequently, if both bodies reflect light in proportion to their ſize, the Earth will reflect much more light upon the Moon, than it receives from it. In the new Moon, the illuminated ſide of the Earth is fully turned towards the Moon, and the Lunarians will have a full Earth, as we, in a ſimilar poſition, have a full Moon. And from thence ariſes that dim light which is obſerved in the old and new Moons, whereby, beſides the bright and ſhining horns, we can perceive the reſt of her body behind them, though but dark and obſcure. Now, when the Moon comes to be in oppoſition to the Sun, the Earth, ſeen from the Moon, will apper in conjunction with him, and its dark ſide will be turned towards the Moon, in which poſition the Earth will be inviſible to the Lunarians; after this, the Earth will appear to them as a creſcent. In a word, the Earth exhibits the ſame appearance to the inhabitants of the Moon, as the Moon does to us.

To determine the periodical and ſynodical months, or the period of the Moon's revolution about the Earth, and the period between one oppoſition or conjunction and another, obſerve as follows: in the middle of a lunar eclipſe, the Moon is in oppoſition to the Sun: compute therefore the time between two ſuch eclipſes, at ſome conſiderable diſtance of time from each other; and divide this by the number of lunations that have paſſed in the mean time; ſo ſhall the quotient be the quantity of the ſynodical month. Compute alſo the Sun's mean motion during the time of this ſynodical month, which add to 360°. Then, as the ſum is to 360°, ſo is the ſynodical to the periodical month. For example, Copernicus obſerved two eclipſes of the Moon, the one at Rome on November 6, 1500, at twelve at night, and the other at Cracow on Auguſt 1, 1523, at 4h 25′. the difference of meridians being 0h. 29′. hence the quantity of the ſynodical month is thus determined:

2d Obſervation	1523y.	237d.	4h.	25m.
1ſt Obſervation	1500	310	0	29
Difference	22	292	3	56
Add intercalary days		5		
Exact interval	22	297	3	56

which divided by 282, the number of lunations in that time, gives the ſynodical month 29d. 12h. 41m.

From two other obſervations of eclipſes, the one at Cracow, the other at Babylon, the ſame author determines more accurately the quantity of the ſynodical month to be 29d. 12h. 43m. &c. and from other obſervations, probably more accurate ſtill, the ſame is fixed at 29d. 12h. 44m.

The Sun's mean motion in that time 29° 6′ 24″ 18‴, added to 360°, gives the Moon's motion 389° 6′ 24″ 18‴; therefore the periodical month is 27d. 7h. 43′. 5″.

According to the obſervations of Kepler, the mean ſynodical month is 29d. 12h. 44′. 3″. 2‴, and the mean periodical month 27d. 7h. 43′. 8″.

Hence, 1, the quantity of the periodical month being given, by the Rule of Three are found the Moon's diurnal or horary motion, &c. and thus may tables of the mean motion of the Moon be conſtructed. 2. If the mean diurnal motion of the Sun be ſubtracted from that of the Moon, the remainder will give the Moon's diurnal motion from the Sun: and thus may a table of this motion be conſtructed. 3. Since the Moon is in the node at the time of a total eclipſe, if the Sun's place be found for that time, and ſix ſigns be added to the ſame, the ſum will give the place of that node. 4. By comparing the ancient obſervations with the modern, it appears, that the nodes have a motion, and that they proceed in antecedentia, or backwards from Taurus to Aries, from Aries to Piſces, &c. Therefore if the diurnal motion of the nodes be added to the Moon's diurnal motion, the ſum will be the motion of the Moon from the node; and thence by the Rule of Three, may be found in what time the Moon goes 360° from the Dragon's Head, or aſcending node, or in what time ſhe goes from, and returns to it; that is, the quantity of the Dracontic month. 5. If the motion of the apogee be ſubtracted from the mean motion of the Moon, the remainder will be the Moon's mean motion from the apogee; and hence, by the Rule of Three, the quantity of the anomaliſtic month is determined.

Thus, according to Kepler's obſervations,

The mean ſynodical month is	29d.	12h.	44′.	3″.	2‴.
The periodical month	27	7	43	8	
The place of the apogee for the year 1700, Jan. 1, old ſtyle, was	11ſ.	8°.	57′.	1″.	
The place of the aſcending node	4	27	39	17	
Mean diurnal motion of the Moon	.	13	10	35	
Diurnal motion of the apogee	.	.	6	41	
Diurnal motion of the nodes	.	.	3	11	
Therefore diurnal motion from the latter	.	13	13	46	
And the diurnal motion from the apogee	.	13	3	54	

Laſtly, the eccentricity is 4362, of ſuch parts as the ſemidiater of the eccentric is 100,000.

To find nearly the Moon's Age or Change.—To the epact add the number and day of the month; their ſum, abating thirty if it be above, is the Moon's age; and her age taken from thirty ſhews the day of the change. The numbers of the months, or monthly epacts, are the Moon's age at the beginning of each month, when the ſolar and lunar years begin together; and are thus:

0	2	1	2	3	4	5	6	8	8	10	10
Jan.	Feb.	Mar.	Ap.	Ma.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Ex. To find the Moon's age the 14th of Oct. 1783.

Here, the epact is	26
Number of the month	8
Day of the month	14
The ſum is	48
Subtract or abate	30
Leaves Moon's age	18
Taken from	30
Days till the change	12
Anſwering to Oct.	26

To find nearly the Moon's Southing, or coming to the Meridian.—Take $\frac{4}{5}$ or $\frac{8}{10}$ of her age, for her ſouthing nearly; after noon, if it be leſs than twelve hours; but, if greater, the exceſs is the time after laſt midnight.

Ex. October 14, 1783:

The Moon's age is 18 days
$\frac{8}{10}$ of which is 14·4 or 14h. 24′.
Subtract 12 00
Rem. Moon's ſouthing 2 24 in the morning.

Mr. Ferguſon, in his Select Exerciſes, p. 135, &c. has given very eaſy tables and rules for finding the new and full Moons near enough the truth for any common almanac. But the Nautical Almanac, which is now always publiſhed for ſeveral years before hand, in a great meaſure ſuperſedes the neceſſity of theſe and other ſuch calculations.

Of the SPOTS and MOUNTAINS, &c. in the MOON.

The face of the Moon is greatly diverſified with inequalities, and parts of different colours, ſome brighter and ſome darker than the other parts of her diſk. When viewed through a teleſcope, her face is evidently diverſified with hills and valleys: and the ſame is alſo ſhewn by the edge or border of the Moon appearing jagged, when ſo viewed, eſpecially about the confines of the illuminated part when the Moon is either horned or gibbous. The aſtronomers Florenti, Langreni, Hevelius, Grimaldi, Riccioli, Caſſini, and De la Hire, &c. have drawn the face of the Moon as viewed through teleſcopes; noting all the more ſhining parts, and, for the better diſtinction, marking them with ſome proper name; ſome of theſe authors calling them after the names of philoſophers, aſtronomers, and other eminent men; while others denominate them from the known names of the different countries, iſlands, and ſeas, on the Earth. The names adopted by Riccioli however, are moſtly followed, as the names of Hipparchus, Tycho, Copernicus, &c. In the Aſtronomical-Plate IV. *fig.* 1. is given an accurate repreſentation of the full Moon in her mean libration, with the numbers referring to the principal ſpots according to Riccioli, Caſſini, Mayer, &c. which denote the names in the following liſt.

1	Grimaldi
2	Galileo
3	Ariſtarchus
4	Kepler
5	Gaſſendi
6	Shikard
7	Harpalus
8	Heraclides
9	Lanſberg
10	Reinhold
11	Copernicus
12	Helicon
13	Capuanus
14	Bulliald
15	Eratoſthenes
16	Timocharis
17	Plato
18	Archimedes
19	Inſula Sinus Medii
20	Pitatus
21	Tycho
22	Eudoxus
23	Ariſtotle
24	Manilius
25	Menelaus
26	Hermes
27	Poſſidonius
28	Dionyſius
29	Pliny
30	Catharina Cyrillus, Theophilus
31	Fracaſtor
32	Promontorium acutum, Cenſorinus
33	Meſſala
34	Promontorium Somnii
35	Proclus
36	Cleomedes
37	Snell and Furner
38	Petavius
39	Langrenus
40	Taruntius
A	Mare Humorum
B	Mare Nubium
C	Mare Imbrium
D	Mare Nectaris
E	Mare Tranquillitatis
F	Mare Serenitatis
G	Mare Fœcunditatis
H	Mare Criſium

That the ſpots in the Moon, which are taken for mountains and valleys, are really ſuch, is evident from their ſhadows. For in all ſituations of the Moon, the elevated parts are conſtantly found to caſt a triangular ſhadow in a direction from the Sun; and, on the contrary, the cavities are always dark on the ſide next the Sun, and illuminated on the oppoſite one; which is exactly conformable to what we obſerve of hills and valleys on the Earth. And, as the tops of theſe mountains are conſiderably elevated above the other parts of the ſurface, they are often illuminated when they are at a conſiderable diſtance from the confines of the enlightened hemiſphere, and by this means afford us a method of determining their heights.

Thus Riccioli obſerved the top of the hill called St. Catherine, on the fourth day after the new Moon, to be illuminated when it was diſtant from the confines of the enlightened hemiſphere about 1-16th part of the Moon's diameter; and he thence concluded its height muſt be near nine miles. It is probable, however, that this determination is too much. Indeed, Galileo makes it only five miles and a half, and Hevelius only three and a quarter miles, and probably it ſhould be ſtill leſs than either of theſe; for they are greatly reduced by the obſervations of Dr. Herſchel, whoſe method of meaſuring them may be ſeen in the Philoſ. Tranſ. an. 1780, p. 507. This gentleman meaſured the height of many of the lunar prominences, and draws the following concluſions:—"From theſe obſervations I believe it is evident, that the height of the lunar mountains in general is greatly over-rated; and that, when we have excepted a few, the generality do not exceed half a mile in their perpendicular elevation."

M. Schroeter, however, of the Royal Society of Gottingen, in the year 1792, ſeems to have taken great pains to inveſtigate the truth of this matter. According to him, the ſurface of the Moon appears to be much more unequal than that of our Earth; and theſe inequalities have great variety both in form and magnitude. There are large irregular plains, on which are obſerved long and narrow ſtrata of hills running in a ſerpentine direction: ſome of the mountains form extenſive chains; others, which are in general the higheſt, ſtand alone, and are of a conical ſhape: ſome have craters; others form a circular ring incloſing a plain; and, in the centre of many of theſe plains, as well as in the middle of ſome of the craters, other mountains are found, which have likewiſe their craters. Theſe mountains are various with reſpect to colour, ſome being much darker than others. The moſt lofty mountain on the ſurface of our globe is ſuppoſed to be Chimboraco, which is not 20,000 feet in height: but there are many in the Moon which are much higher; that which is diſtinguiſhed by the name of *Leibnitz*, is not leſs than 25,000 feet. This elevation will appear more extraordinary, if compared with the Moon's diameter, of which it is $\frac{1}{214}$; whereas Chimboraco is not above $\frac{1}{1017}$ of that of the Earth: thus conſidered, the lunar mountains are near five times as high as any on our globe.

The craters of the Moon are circular, and ſurrounded with an annular bank of hills: they are remarkable for their width, many of them being from four to fifteen geographical miles in diameter: ſome are not deeper than the level of the Moon's ſurface; others are 9000, 12,000, and 15,000, feet in depth: that of one, which M. Schroeter calls *Bernouilli*, is above 18,000 feet. The height of the annular bank is ſeldom equal to the depth of the crater which it ſurrounds; but the quantity of matter in the one appears to be in general nearly equal to the capacity of the other. The principal mountains and cavities ſeem to be connected by a ſeries of others of leſs magnitude; and ſometimes by hilly ſtrata, which, like the radii of a circle, may be traced to a common centre; this is generally either a mountain or crater, though not of the greateſt height or depth. Theſe hilly ſtrata, which, through ſmaller teleſcopes, appear like veins on the Moon's ſurface, have often been miſtaken for torrents of lava; none of which, M. Schroeter ſays, he could ever diſcover.

From all the preceding circumſtances, this author concludes, that, whatever may have been the cauſe of the inequalities of the Moon's ſurface, it muſt not only have operated with great violence, but alſo have met with great reſiſtance; which inclines him to think, that the ſubſtance of this planet muſt originally have been very hard and refractory. He is of opinion that theſe mountains and cavities muſt have been produced in conſequence of ſome great revolution occaſioned by the action of a force directed from the centre towards the ſurface, and in this reſpect ſimilar to that which gave birth to our volcanoes: but he obſerves, that we have no reaſon to ſuppoſe that it originated from fire. In ſome places, this force has only elevated the ſurface, and thus formed hills and mountains; in others the ground has yielded to its violence, and has either been thrown up as a bank round the crater thus formed, or elſe, falling into other cavities, has in part filled them up; after having exerted its greateſt violence in theſe mountainous accumulations, it has diffuſed itſelf in various directions, and produced the hilly ſtrata which are obſerved to diverge from them, like the radii of a circle from the centre. In ſupport of this hypotheſis, it is alleged, that the largeſt craters have the leaſt depth, and that in the deepeſt there is the moſt equal proportion between the capacity of the crater and the volume of the annular bank around it: but, beſides the grand revolution here ſuppoſed, M. Schroeter is of opinion that there have been others of later date and leſs extent; to theſe he aſcribes the formation of ſecondary mountains, which ariſe either from the middle of the craters of the primary, or from the centre of a plain ſurrounded by a circle of hills; many of theſe have alſo craters, and, like the primary mountains, are connected by a ſeries of cavities and hilly ſtrata, that mark the progreſs of the cauſe by which they were produced. The new crater thus diſcovered in the ſpot Hevelius, together with other circumſtances here enumerated, ſeem to indicate that the ſurface of Moon is far from being permanently ſettled and quieſcent. The author's obſervations confirm the opinion that the cavities viſible on the lunar ſurface do not contain water: hence he concludes, that there can be no extenſive ſeas and oceans, like thoſe which cover a great part of the Earth; but he allows that there may be ſprings and ſmall rivers.

As the Moon has on her ſurface mountains and valleys in common with the Earth, ſome aſtronomers have diſcovered a ſtill greater ſimilarity, viz. that ſome of theſe are really volcanoes, emitting fire as thoſe on the Earth do. An appearance of this kind was diſcovered ſome few years ago by Don Ulloa in an eclipſe of the Sun. It was a ſmall bright ſpot like a ſtar near the margin of the Moon, and which he at that time ſuppoſed to be a hole or valley with the Sun's light ſhining through it. Succeeding obſervations, however, have induced aſtronomers to attribute appearances of this kind to the eruption of volcanic fire; and, on April 19, 1787, Dr. Herſchel diſcovered three volcanoes in the dark part of the Moon; two of them ſeemed to be almoſt extinct, but the third ſhewed an actual eruption of fire, or luminous matter, reſembling a ſmall piece of burning charcoal covered by a very thin coat of white aſhes; it had a degree of brightneſs about as ſtrong as that with which ſuch a coal would be ſeen to glow in faint daylight. The adjacent parts of the volcanic mountain ſeemed faintly illuminated by the eruption. A ſimilar eruption appeared on May 4, 1783. On March 7, 1794, a few minutes before eight o'clock in the evening, Mr. Wilkins of Norwich, an eminent architect, obſerved, with the naked eye, a very bright ſpot upon the dark part of the Moon; it was there when he firſt looked at the Moon; the whole time he ſaw it, it was a fixed ſteady light, except the moment before it diſappeared, when its brightneſs increaſed; he conjectures that he ſaw it about five minutes. The ſame phenomenon was obſerved by Mr. T. Stretton, in St. John's-ſquare, Clerkenwell, London. *Phil. Tranſ.* 1794. On April 13, 1793, and on February 5, 1794, M. Piazzi, aſtronomer-royal at Palermo, obſerved a bright ſpot upon the dark part of the Moon, near Ariſtarchus. Several other aſtronomers have obſerved the ſame phenomenon. See Memoirs de Berlin, for 1778.

It has been diſputed whether the Moon has any atmoſphere or not; and the following arguments have been urged by thoſe who deny it. 1. The Moon, ſay they, conſtantly appears with the ſame brightneſs when our atmoſphere is clear; which could not be the caſe if ſhe were ſurrounded with an atmoſphere like ours, ſo variable in its denſity, and ſo often obſcured by clouds and vapours. 2. In an appulſe of the Moon to a ſtar, when ſhe comes ſo near it that a part of her atmoſphere comes between our eye and the ſtar, refraction would cauſe the latter to ſeem to change its place, ſo that the Moon would appear to touch it later than by her own motion ſhe would do. 3. Some philoſophers are of opinion, that becauſe there are no ſeas or lakes in the Moon, there is therefore no atmoſphere, as there is no water to be raiſed up in vapours.

All theſe arguments have been anſwered by other aſtronomers in the following manner: It is denied that the Moon appears always with the ſame brightneſs, even when our atmoſphere appears equally clear. Hevelius relates, that he has ſeveral times found in ſkies perfectly clear, when even ſtars of the ſixth and ſeventh magnitude were viſible, that at the ſame altitude of the Moon with the ſame elongation from the Sun, and with the ſame teleſcope, the Moon and her maculæ do not appear equally lucid, clear, and conſpicuous, at all times; but are much brighter and more diſtinct at ſome times than at others. And hence it is inferred, that the cauſe of this phenomenon is neither in our air, in the tube, in the Moon, nor in the ſpectator's eye; but muſt be looked for in ſomething exiſting about the Moon. An additional argument is drawn from the different appearances of the Moon in total eclipſes, which it is ſuppoſed are owing to the different conſtitutions of the lunar atmoſphere.

To the ſecond argument Dr. Long replies, that Newton has ſhewn (Princip. prop. 37, cor. 5), that the weight of any body upon the Moon is but a third part of what the weight of the ſame would be upon the Earth: now, the expanſion of the air is reciprocally as the weight that compreſſes it; therefore the air ſurrounding the Moon, being preſſed together by a weight of one-third, or being attracted towards the centre of the Moon by a force equal only to one-third of that which attracts our air towards the centre of the Earth, it thence follows, that the lunar atmoſphere is only one-third as denſe as that of the Earth, which is too little to produce any ſenſible refraction of the ſtar's light. Other aſtronomers have contended, that ſuch refraction was ſometimes very apparent. M. Caſſini ſays, that he often obſerved that Saturn, Jupiter, and the fixed ſtars, had their circular figures changed into an elliptical one, when they approached either to the Moon's dark or illuminated limb, though they own that, in other occultations, no ſuch change could be obſerved. And, with regard to the fixed ſtars, it has been urged that, granting the Moon to have an atmoſphere of the ſame nature and quantity as ours, no ſuch effect as a gradual diminution of light ought to take place; at leaſt none that we could be capable of perceiving. At the height of forty-four miles, our atmoſphere is ſo rare as to be incapable of refracting the rays of light: this height is the 180th part of the Earth's diameter; but ſince clouds are never obſerved higher than four miles, it appears that the vaporous or obſcure part is only the 1980th part. The mean apparent diameter of the Moon is 31′ 29″, or 1889″: therefore the obſcure parts of her atmoſphere, when viewed from the Earth, muſt ſubtend an angle of leſs than one ſecond; which ſpace is paſſed over by the Moon in leſs than two ſeconds of time. It can therefore hardly be expected that obſervation ſhould generally determine whether the ſuppoſed obſcuration takes place or not.

As to the third argument, it concludes nothing, becauſe it is not known that there is no water in the Moon; nor, tho' this could be proved, would it follow, that the lunar atmoſphere anſwers no other purpoſe than the raiſing of water into vapour. There is, however, a ſtrong argument in favour of the exiſtence of a lunar atmoſphere, taken from the appearance of a luminous circle round the Moon in the time of total ſolar eclipſes; a circumſtance that has been obſerved by many aſtronomers; eſpecially in the total eclipſe of the Sun which happened May 1, 1706.

M. Schroeter likewiſe adduces a variety of proofs in ſupport of a lunar atmoſphere. He alſo makes a number of obſervations on ſeveral of its relative properties, compared with the ſame in our atmoſphere; ſuch as its greater dryneſs, rarity, and clearneſs, which, however, do not prevent its refracting the ſolar rays, having pointed out the circumſtance, that the mountains in the dark hemiſphere of the Moon, near its luminous border, which are of ſufficient height to receive the light of the Sun, are the more feebly illuminated the more diſtant they are from that border: from which proofs of a refracting atmoſphere, he alſo deduced the probability of the exiſtence of a faint twilight, though his long ſeries of obſervations had not yet fully evinced it. He had, however, aſcertained the exiſtence of a twilight on Venus; and, as one fortunate diſcovery often leads to another, he had no ſooner ſucceeded in his obſervations on that planet, than he was induced to direct his attention, for a ſimilar purpoſe, to the Moon. In doing this, he applied the calculations and inferences he there made to ſome appearances he had already noticed on this ſatellite. It occurred to him, that if in fact there were a twilight on the Moon, as there is on Venus and our Earth, it could not, conſidering the greater rarity of its atmoſphere, be ſo conſiderable: that the veſtiges of it, allowing for the brightneſs of the luminous part of the Moon, the ſtrong light that is thence thrown upon the field of the teleſcope, and in ſome meaſure the reflected light of our Earth, could only be traced on the limb, particularly at the cuſps; and even this only at the time when our own twilight is not ſtrong, but the air very clear, and when the Moon, in one of its leaſt phaſes, is in a high altitude, either in the ſpring, following the Sun two days after a new Moon; or in the autumn, preceding the Sun in the morning, with the ſame aſpect: in a word, that the projection of this twilight will be the greater and more perceptible the more falcated the phaſe, and the higher the Moon above the horizon, and out of our own twilight.

All the requiſite circumſtances do not often coincide. M. Schroeter, however, was ſo fortunate as to be favoured with a combination of them on the 24th of February 1792: and the obſervation proved in every reſpect ſo complete, and the inferences deducible from it appeared to him ſo new and intereſting, that he could not with-hold the immediate communication of it from the public. His obſervations concerning both the Moon and Venus were accordingly detailed in a paper ſent to the Royal Society of London, and inſerted in their Tranſactions for 1792.

Of the HARVEST MOON.

It is remarkable that the Moon, during the week in which ſhe is full about the time of harveſt, riſes ſooner after ſun-ſetting, than ſhe does in any other full-moon week in the year. By this means ſhe affords an immediate ſupply of light after ſun-ſet, which is very beneficial for the harveſt, and for gathering in the fruits of the Earth; and hence this full-moon is diſtinguiſhed from all others in the year, by calling it the *harveſt-moon*.

To conceive the reaſon of this phenomenon, it may firſt be conſidered, that the Moon is always oppoſite to the Sun when ſhe is full; that ſhe is full in the ſigns Piſces and Aries in our harveſt months, thoſe being the ſigns oppoſite to Virgo and Libra, the ſigns occupied by the Sun about the ſame ſeaſon; and becauſe thoſe parts of the ecliptic riſe in a ſhorter ſpace of time than others, as may be ſhewn and illuſtrated by the celeſtial globe: conſequently, when the Moon is about her full in harveſt, ſhe riſes with leſs difference of time, or more immediately after ſun-ſet, than when ſhe is full at any other ſeaſon of the year.

The following Table ſhews in what years the harveſt-moons are leaſt beneficial as to the times of their riſing, and in what years they are moſt beneficial, from the year 1790 to 1861: the column of years under the letter L, are thoſe in which the harveſt-moons are leaſt of all beneficial, becauſe they fall about the deſcending node; and thoſe under the letter M are the moſt of all beneficial, becauſe they fall about the aſcending node.

Harveſt-Moons.

L	M	L	M	L	M	L	M
1790	1798	1807	1816	1826	1835	1844	1853
1791	1799	1808	1817	1827	1836	1845	1854
1792	1800	1809	1818	1828	1837	1846	1855
1793	1801	1810	1819	1829	1838	1847	1856
1794	1802	1811	1820	1830	1839	1848	1857
1795	1803	1812	1821	1831	1840	1849	1858
1796	1804	1813	1822	1832	1841	1850	1859
1797	1805	1814	1823	1833	1842	1851	1860
	1806	1815	1824	1834	1843	1852	1861
			1825				

In our winter, the Moon is in Piſces and Aries about the time of her firſt quarter, when ſhe riſes about noon; but her riſing is not then noticed, becauſe the Sun is above the horizon. In ſpring, the Moon is in Piſces and Aries about the time of her change; at which time, as ſhe gives no light, and riſes with the Sun, her riſing cannot be perceived. In ſummer, the Moon is in Piſces and Aries about the time of her laſt quarter; and then, as ſhe is on the decreaſe, and riſes not till midnight, her riſing uſually paſſes unobſerved. But, in autumn, the Moon is in Piſces and Aries at the time of her full, and riſes ſoon after ſun-ſet for ſeveral evenings ſucceſſively; which makes her regular riſing very conſpicuous at that time of the year.

And this would always be the caſe, if the Moon's orbit lay in the plane of the ecliptic. But, as her orbit makes an angle of 5° 18′ with the ecliptic, and croſſes it only in the two oppoſite points, or nodes, her riſing when in Piſces and Aries will ſometimes not differ above 1h. 40′ through the whole of ſeven days; and at other times, in the ſame two ſigns, ſhe will differ three hours and a half in the time of her riſing in a week, according to the different poſitions of the nodes with reſpect to theſe ſigns; which poſitions are conſtantly changing, becauſe the nodes go backward through the whole ecliptic in eighteen years and 225 days. This revolution of the nodes will cauſe the harveſt-moons to go through a whole courſe of the *moſt* and *leaſt* beneficial ſtates, with reſpect to the harveſt, every nineteen years.

Of the Horizontal Moon.

The phenomenon of the horizontal moon is this, that it appears larger in the horizon than in the meridian; whereas, from its being nearer to us in the latter caſe than in the former, it ſubtends a greater angle. Gaſſendus thought that, as the Moon was leſs bright in the horizon, we looked at it there with a greater pupil of the eye, and therefore it appeared larger. But this is contrary to the principles of optics, the image of an object upon the retina not depending upon the pupil. This opinion was ſupported by a French abbé, who ſuppoſed that the opening of the pupil made the cryſtalline humour flatter, and the eye longer, and thereby increaſed the image. But there is no connection between the muſcles of the iris and the other parts of the eye, to produce theſe effects. Des Cartes thought, that the Moon appeared largeſt in the horizon, becauſe, when comparing its diſtance with the intermediate objects, it appeared then fartheſt off; and, as we judge its diſtance greateſt in that ſituation, we of courſe think it larger, ſuppoſing that it ſubtends the ſame angle. This opinion was ſupported by Dr. Wallis in the Phil. Tranſ. No. clxxxvii. Dr. Berkley accounts for it thus: Faintneſs ſuggeſts the idea of greater diſtance; the Moon appearing moſt faint in the horizon, ſuggeſts the idea of greater diſtance, and, ſuppoſing the viſual angle the ſame, that muſt ſuggeſt the idea of a greater tangible object. He does not ſuppoſe the viſible extenſion to be greater, but that the idea of a greater tangible extenſion is ſuggeſted, by the alteration of the appearance of the viſible extenſion. He ſays, 1. That which ſuggeſts the idea of greater magnitude muſt be ſomething perceived; for what is not perceived can produce no effect. 2. It muſt be ſomething which is variable, becauſe the Moon does not always appear of the ſame magnitude in the horizon. 3. It cannot lie in the intermediate objects, they remaining the ſame; alſo, when theſe objects are excluded from ſight, it makes no alteration. 4. It cannot be the viſible magnitude, becauſe that is leaſt in the horizon; the cauſe therefore muſt lie in the viſible appearance, which proceeds from the greater paucity of rays coming to the eye, producing faintneſs. Mr. Rowning ſuppoſes, that the Moon appears fartheſt from us in the horizon, becauſe the portion of the ſky, which we ſee, appears, not an entire hemiſphere, but only a portion of one; and, in conſequence of this, we judge the Moon to be fartheſt from us in the horizon, and therefore to be then largeſt. Dr. Smith, in his Optics, gives the ſame reaſon. He makes the apparent diſtance in the horizon to be to that in the zenith as 10 to 3, and therefore the apparent diameters in that ratio. The ſame circumſtance alſo takes place in the Sun, which appears much larger in the horizon than in the zenith. Alſo, if we take two ſtars near each other in the horizon, and two other ſtars near the zenith at the ſame angular diſtance from each other, the two former will appear at a much greater diſtance from each other than the two latter. Upon this account, people are in general very much deceived in eſtimating the altitudes of the heavenly bodies above the horizon, judging them to be much greater than they are. Dr. Smith found, that, when a body was about 23° above the horizon, it appeared to be half-way between the zenith and horizon, and therefore at that real altitude it would be eſtimated to be 45° high. Upon the ſame principle, the lower part of a rainbow appears broader than the upper part. And this may be conſidered as an argument that the phenomenon cannot depend entirely upon the greater degree of faintneſs in the object when in the horizon, becauſe the lower part of the bow frequently appears brighter than the upper part, at the ſame time that it appears larger; alſo this cauſe could have no effect upon the diſtance of the ſtars; and, as the difference of the apparent diſtance of two ſtars, whoſe angular diſtance is the ſame, in the horizon and zenith, ſeems to be fully ſufficient to account for the apparent variation of the Moon's diameter in theſe ſituations, it may be doubtful, whether the faintneſs of the object enters into any part of the cauſe.

With reſpect to the nature and conſtruction of the Moon, and the probability of its being inhabited, Dr. Herſchel, in his papers publiſhed in the Philoſophical Tranſactions of 1795, concludes as follows: "The Moon is a ſecondary planet, the ſurface of which is diverſified, like that of the Earth, by mountains and vallies. Its ſituation, with reſpect to the Sun, is much like that of the Earth; and, by a rotation on its axis, it enjoys an agreeable variety of ſeaſons, and of day and night. To the Moon, our globe will appear to be a very capital ſatellite; undergoing the ſame regular changes of illuminations as the Moon does to the Earth. The Sun, the planets, and the ſtarry conſtellations of the heavens, will riſe and ſet as they do here; and heavy bodies will fall on the Moon as they do on the Earth. There ſeems only to be wanting, in order to complete the analogy, that it ſhould be inhabited like the Earth.

"To this it may be objected, that we perceive no large ſeas in the Moon; that its atmoſphere (the exiſtence of which has even been doubted by many) is extremely rare, and unfit for the purpoſes of animal life; that its climates, its ſeaſons, and the length of its days, totally differ from ours; that without denſe clouds (which the Moon has not) there can be no rain; perhaps no rivers, no lakes. In ſhort, that, notwithſtanding the ſimilarity which has been pointed out, there ſeems to be a decided difference in the two planets we have compared. My anſwer to this will be, that that very difference which is now objected will rather ſtrengthen the force of my argument than leſſen its value: we find, even upon our globe, that there is the moſt ſtriking difference in the ſituation of the creatures that live upon it. While man walks upon the ground, the birds fly in the air, and fiſhes ſwim in water; we can certainly not object to the conveniences afforded by the Moon, if thoſe that are to inhabit its regions are fitted to their conditions as well as we on this globe are to ours. An abſolute or total ſameneſs ſeems rather to denote imperfections, ſuch as nature never expoſes to our view; and, on this account, I believe the analogies that have been mentioned fully ſufficient to eſtabliſh the high probability of the Moon's being inhabited like the Earth.

"To proceed, we will now ſuppoſe an inhabitant of the Moon, who has not properly conſidered ſuch analogical reaſonings as might induce him to ſurmiſe that our Earth is inhabited, were to give it as his opinion, that the uſe of that great body, which he ſees in his neighbourhood, is to carry about his little globe, that it may be properly expoſed to the light of the Sun, ſo as to enjoy an agreeable and uſeful variety of illumination, as well as to give it light by reflection from the Sun, when direct day-light cannot be had. Suppoſe alſo, that the inhabitants of the ſatellites of Jupiter, Saturn, and the Georgian planet, were to look upon the primary ones, to which they belong, as mere attractive centres, to keep together their orbits, to direct their revolution round the Sun, and to ſupply them with reflected light in the abſence of direct illumination. Ought we not to condemn their ignorance, as proceeding from want of attention and proper reflection? It is very true that the Earth, and thoſe other planets that have ſatellites about them, perform all the offices that have been named, for the inhabitants of theſe little globes; but to us, who live upon one of theſe planets, their reaſonings cannot but appear very defective; when we ſee what a magnificent dwelling-place the Earth affords to numberleſs intelligent beings."

As to the *influence* of the Moon on the changes of the weather, and the conſtitution of the human body, it may be obſerved, that the vulgar doctrine concerning it is very ancient, and has alſo gained much credit among the learned, as may be ſeen under the article ASTROLOGY. The common opinion is, that the Lunar influence is chiefly exerted about the time of the full and change, but more eſpecially the latter; and it would ſeem that long experience has in ſome degree eſtabliſhed the fact: hence, perſons obſerved at thoſe times to be a little deranged in their intellects, are called Lunatics; and hence many perſons anxiouſly look for the new Moon to bring a change in the weather. The Moon's influence on the ſea, in producing tides, being agreed upon on all hands, it is argued that ſhe muſt alſo produce ſimilar changes in the atmoſphere, but in a much higher degree; which changes and commotions there, muſt, it is inferred, have a conſiderable influence on the weather, and on the human body.

Beſides the obſervations of the ancients, which tend to eſtabliſh this doctrine, ſeveral among the modern philoſophers have defended the ſame opinion, and that upon the ſtrength of experience and obſervation; while others as ſtrenuouſly deny the fact. The celebrated Dr. Mead was a believer in the influence of the Sun and Moon on the human body, and he publiſhed a book to this purpoſe, intitled, De Imperio Solis ac Lunæ in Corpore Humano. The exiſtence of ſuch influence is however oppoſed by Dr. Horſley, biſhop of Rocheſter, in a learned paper upon this ſubject in the Philoſ. Tranſ. for the year 1775; where he gives a ſpecimen of arranging tables of meteorological obſervations, ſo as to deduce from them facts, that may either confirm or refute this popular opinion; recommending it to the learned, to collect a large ſeries of ſuch obſervations, as no concluſions can be drawn from one or two only. On the other hand, profeſſor Toaldo, and ſome French philoſophers, take the oppoſite ſide of the queſtion; and, from the authority of a long ſeries of obſervations, pronounce decidedly in favour of the Lunar influence.

Of MARS.

Mars is the leaſt bright and elegant of all the planets; its orbit lies between thoſe of the Earth and Jupiter, but very diſtant from both. He appears of a fiery reddiſh hue; and, from the duſkineſs of his appearance, many have conjectured that he is encompaſſed with a thick cloudy atmoſphere; his light is by no means ſo bright as that of Venus, though he ſometimes appears nearly equal to her in ſize. He is denoted by this character ♂, being the mark for iron, rudely formed from a man holding a ſpear protruded, repreſenting the god of war of the ſame name.

The mean diſtance of Mars from the Sun, is 1524 of thoſe parts, of which the diſtance of the Earth from the Sun is 1000; his eccentricity 141; and his real diſtance 145 millions of miles. The inclination of his orbit to the plane of the ecliptic, is 1° 52′; the length of his year, or the period of one revolution about the Sun, is $686\frac{23}{24}$ of our days, or $667\frac{3}{4}$ of his own days, which are forty minutes longer than ours, the revolution on his axis being performed in 24h. 40′. He moves at the rate of 55,287 miles per hour. His mean diameter is 4444 miles; and the ſame ſeen from the Sun is 11″: the place of the aphelion is ♍ 32′; place of his aſcending node ♉ 17° 17′; and his parallax, according to Dr. Hook and Mr. Flamſteed, is ſcarce 30″.

Galileo firſt diſcovered the phaſes of Mars; after which, ſome Italians, in 1636, had an imperfect view of a ſpot. But in 1666, Dr. Hook and M. Caſſini diſcovered ſome well-defined ſpots; and the latter determined the time of its rotation to be 24h. 40′. Soon after, M. Maraldi obſerved ſome ſpots, and determined the time of rotation to be 24h. 39′. He alſo obſerved a very bright part near the ſouthern pole, appearing like a polar zone; this, he ſays, has been obſerved for ſixty years; it is not of equal brightneſs, more than one half of it being brighter than the reſt; and that part which is leaſt bright, is ſubject to great changes, and has ſometims diſappeared. Something like this has been ſeen about the north pole. The rotation is made according to the order of the ſigns. Dr. Herſchel makes the time of a ſiderial revolution to be 24h. 39′. 21·67″. without the probability of a greater error than 2·34″. He propoſes to find the time of a ſiderial revolution of Mars, in order to diſcover, by future obſervations, whether there is any alteration in the time of the revolution of the Earth, or of the planets, about their axes; for a change of either would thus be diſcovered. He choſe Mars, becauſe its ſpots are permanent. From farther obſervations upon Mars, which he publiſhed in 1784, he makes its axis to be inclined to the eliptic 59° 42′, and 61° 18′ to its orbit; and the north pole to be directed to 17° 47′ of Piſces upon the ecliptic, and 19° 28′ on its orbit. He makes the ratio of the diameters of Mars to be as 16 to 15. Dr. Maſkelyne however, has carefully obſerved Mars at the time of oppoſition, but could not perceive any difference in its diameters. In the acronical riſing of this planet, or when in oppoſition to the Sun, it is five times nearer to us than when in conjunction with him; and hence appears much larger and brighter than at other times.

Mars, having his light from the Sun, and revolving round it, has an increaſe and decreaſe like the Moon: it may alſo be obſerved almoſt biſected, when in the quadratures, or in perigæon; but is never ſeen cornicular, as the inferior planets. All which ſhews both that his orbit includes that of the Earth within it, and that he ſhines not by his own light.

The analogy between Mars and the Earth is by far the greateſt in the whole ſolar ſyſtem; their diurnal motion is nearly the ſame; the obliquities of their reſpective ecliptics not very different. Of all the ſuperior planets, therefore, Mars is by far neareſt like the Earth: nor will the Martial year appear ſo diſſimilar to ours, when we compare it with the long duration of the years of Jupiter, Saturn, and the Georgium Sidus. It probably has a conſiderable atmoſphere; for beſides the permanent ſpots on its ſurface, Dr. Herſchel has often perceived occaſional changes of partial bright belts, and alſo once a darkiſh one in a pretty high latitude; alterations which we can attribute to no other cauſe than the variable diſpoſition of clouds and vapours floating in the atmoſphere of the planet. A ſpectator in Mars, will rarely, if ever, ſee Mercury, except when he ſees it paſſing over the Sun's diſk. Venus will appear to him at about the ſame diſtance from the Sun, as Mercury appears to us. The Earth will appear about the ſize of Venus, and never above forty-eight degrees from the Sun; and will be, by turns, a morning and evening ſtar to the inhabitants of Mars.

Of JUPITER.

Jupiter, the thunderer, or chief of the ancient gods, is marked ♃, to repreſent the thunder-bolts, denoting the ſame as tin, from his pure white brightneſs. He is ſituated high in the ſyſtem, revolving round the Sun between Mars and Saturn. It is the largeſt of all the planets, and eaſily diſtinguiſhed from them by his peculiar magnitude and light. His diameter is more than ten times the diameter of the Earth, and his magnitude is more than a thouſand times. His annual revolution about the Sun is performed in 11y. 314d. 12h. 20′. 9″. going at the rate of more than 25,000 miles per hour; and he revolves about his own axis, by which his equatorial parts are carried round at the amazing rate of 26,000 miles per hour, which is about twenty-five times faſter than the like parts of our Earth revolve.

Jupiter is ſurrounded by faint ſubſtances, called zones or belts, in which ſo many changes appear, that they are generally aſcribed to clouds: for ſome of them have been firſt interrupted and broken, and then have vaniſhed entirely. They have ſometimes been obſerved of different breadths, and afterwards have all become nearly of the ſame breadth. Large ſpots have been ſeen in theſe belts; and, when a belt vaniſhes, the contiguous ſpots diſappear with it. The broken ends of ſome belts have often been obſerved to revolve in the ſame time with the ſpots: only thoſe nearer the equator in ſomewhat leſs time than thoſe nearer the poles; perhaps on account of the Sun's greater heat near the equator, which is parallel to the belts and courſe of the ſpots. Several large ſpots, which appear round at one time, grow oblong by degrees, and then divide into two or three round ſpots. From theſe ſpots, the time of the rotation of Jupiter can be very accurately aſcertained. M. Caſſini found the time of the rotation to be 9h. 56′. from a remarkable ſpot which he obſerved in the year 1665. In October 1691, he obſerved two bright ſpots almoſt as broad as the belts; and at the end of the month he ſaw two more, and found them to revolve in 9h. 51′. he alſo obſerved ſome other ſpots near Jupiter's equator, which revolved in 9h. 50′. M. Maraldi, from a great many obſervations of the ſpot obſerved by Caſſini in 1665, found the time of rotation to be 9h. 56′. and concluded that the ſpots had a dependence upon the contiguous belt, as the ſpot had never appeared without the belt, though the belt had without the ſpot. It continued to appear and diſappear till 1694, and was not ſeen any more till 1708; hence he concluded, that the ſpot was ſome effuſion from the belt upon a fixed place of Jupiter's body, for it always appeared in the ſame place. Dr. Herſchel found the time of rotation of different ſpots to vary; and that the time of revolution of the ſame ſpot diminiſhed; for the ſpot obſerved in 1778 revolved as follows. From Feb. 25, to March 2, in 9h. 55′. 20″. from March 2 to 14, in 9h. 54′. 58″. from April 7 to 12, in 9h. 51′. 35″. Alſo, from a ſpot obſerved in 1779, its rotation was, from April 14 to the 19th, in 9h. 51′. 45″. from April 19 to the 23d, in 9h. 50′. 48″. This, he obſerves, is agreeable to the theory of equinoctial winds, as it may be ſome time before the ſpot can acquire the velocity of the wind; and, if Jupiter's ſpots ſhould be obſerved in different parts of its year to be accelerated and retarded, it would amount almoſt to a demonſtration of its monſoons, and their periodical changes. M. Schroeter makes the time of rotation 9h. 55′. 36·6″. he obſerved the ſame variations as Dr. Herſchel. The belts of Jupiter are generally parallel to its equator, which is very nearly parallel to the ecliptic; they are ſubject to ſo many variations, both in reſpect to their number and figure, that it is probable they do not adhere to the body of Jupiter, but exiſt in its atmoſphere.

The axis of Jupiter is ſo nearly perpendicular to his orbit, that he has no ſenſible change of ſeaſons; which is a great advantage, and wiſely ordered by the Author of nature. For, if the axis of this planet were inclined any conſiderable number of degrees, juſt ſo many degrees round each pole would in their turn be almoſt ſix years together in darkneſs. And, as each degree of a great circle on Jupiter contains about 706 miles, it is eaſy to judge what vaſt tracts would be rendered uninhabitable by any conſiderable inclination of his axis.

The difference between the equatorial and polar diameters of Jupiter, is upwards of 6000 miles; the former being to the latter as 13 to 12: ſo that his poles are more than 3000 miles nearer his centre than the equator is. This happens from his quick motion round his axis; for the fluids, together with the light particles, which they can carry or waſh away with them, recede from the poles which are at reſt, towards the equator where the motion is quickeſt, until there be a ſufficient number accumulated to make up the deficiency of gravity loſt by the centrifugal force, which always ariſes from a quick motion round an axis: and, when the deficiency of weight or gravity of the particles is made up by a ſufficient accumulation, there is then an equilibrium, and the equatorial parts riſe no higher.

Jupiter's orbit is 1° 20′ inclined to the ecliptic. The place of his aphelion 9° 10′ of Libra; the place of his aſcending node 7° 29′ of Cancer; and that of his ſouth or deſcending node 7° 29′ of Capricorn. The eccentricity of his orbit is $\frac{1}{20}$ of his mean diſtance from the Sun. The Sun appears to Jupiter but the 48th part ſo large as to us; and his light and heat are in the ſame ſmall proportion; but this is compenſated by the ſhortneſs of his nights, and by four moons or ſatellites, ſome of them nearly as large as our Earth, which revolve about him; ſo that there is ſcarcely any part of this huge planet but what is during the whole night enlightened by one or more of theſe moons, except his poles, whence only the fartheſt Moons can be ſeen, and where their light is not wanted, becauſe the Sun conſtantly circulates in or near the horizon, and is very probably kept in view of both poles by the refraction of Jupiter's atmoſphere, which, if it be like ours, has certainly refractive power enough for that purpoſe. This planet, ſeen from its neareſt Moon, appears 1000 times as large as our Moon does to us; increaſing and waning in all her monthly ſhapes every $42\frac{1}{2}$ hours.

Though there be four primary planets below Jupiter, yet an eye placed on his ſurface would never perceive any of them; unleſs perhaps as ſpots paſſing over the Sun's diſk, when they happen to come between the eye and the Sun. The parallax of the Sun, viewed from Jupiter, will ſcarcely be ſenſible, being not much above twenty ſeconds; and the Sun's apparent diameter in Jupiter, but about ſix minutes. Dr. Gregory adds, that an aſtronomer in Jupiter would eaſily diſtinguiſh two kinds of planets, four nearer him, viz. his ſatellites, and two more remote, viz. the Sun and Saturn: the former however will fall vaſtly ſhort of the Sun in brightneſs, notwithſtanding the great diſproportion in the diſtances and apparent magnitude.

Of the SATELLITES of JUPITER.

The words moon and ſatellite are ſometimes uſed indifferently: thus we ſay, either Jupiter's moons, or Jupiter's ſatellites; but uſually we diſtinguiſh, reſtraining the term Moon to the Earth's attendant, and applying the term ſatellite to the moons more recently diſcovered about Jupiter, Saturn, and the Georgian planet. Theſe ſatellites move round their primary planets, as their centres, by the ſame laws as thoſe primary ones do round their centre the Sun, viz. in ſuch manner that, in the ſatellites of the ſame planet, the ſquares of the periodic times are proportional to the cubes of their diſtances from the primary planet. There are four of theſe ſatellites, or ſecondary planets, performing their revolutions about Jupiter, as that planet does about the Sun. Simon Marius, mathematician of the elector of Brandenburg, about the end of November 1609, firſt obſerved three of them; and in January 1610, he found a fourth. In January 1610 Galileo alſo obſerved the ſame in Italy, and in the ſame year publiſhed his obſervations. Theſe ſatellites were alſo obſerved in the ſame month of January 1610, by Thomas Harriot, the celebrated author of a work upon algebra, and who made conſtant obſervations of theſe ſatellites, from that time till the 26th of February 1612; as appears by his curious aſtronomical papers, lately diſcovered by Dr. Zach, at the ſeat of the earl of Egremont, near Petworth in Suſſex.

Anthony Maria Schyrlæus di Rieta, a capuchin of Cologne, imagined that, beſides the four known ſatellites of Jupiter, he had diſcovered five more, on December 29, 1642. But the obſervation being communicated to Gaſſendus, who had obſerved Jupiter on the ſame day, he ſoon perceived that the monk had miſtaken five fixed ſtars, in the effuſion of the water of Aquaries, marked in Tycho's catalogue 24, 25, 26, 27, 28, for ſatellites of Jupiter.

When Jupiter comes into a line between any of his ſatellites and the Sun, the ſatellite diſappears, being then eclipſed, or involved in his ſhadow. When the ſatellite goes behind the body of Jupiter with reſpect to an obſerver on the Earth, it is then ſaid to be *occulted*, being hid from our ſight by his body, whether in his ſhadow or not. And, when the ſatellite comes into a poſition between Jupiter and the Sun, it caſts a ſhadow upon the face of that planet, which we ſee as an obſcure round ſpot. And, laſtly, when the ſatellite comes into a line between Jupiter and us, it is ſaid to *tranſit* the diſk of the planet. It is not often, however, that a ſatellite can be diſcovered upon the diſk of Jupiter, even by the beſt teleſcopes, excepting at its firſt entrance, when, by reaſon of its being more directly illuminated by the rays of the Sun than the planet itſelf, it appears like a lucid ſpot upon it; ſometimes, however, a ſatellite is ſeen paſſing over the diſk like a dark ſpot; this has been attributed to ſpots on the ſurface of the ſatellite, and that the more probably, as the ſame ſatellite has been known to paſs over the diſk at one time as a dark ſpot, and at another time to be ſo luminous, as only to be diſtinguiſhed from the planet at its ingreſs and egreſs.

The periods or revolutions of Jupiter's ſatellites are found out from their conjunctions with that planet; after the ſame manner, as thoſe of the primary planets are diſcovered from their oppoſitions to the Sun. And their diſtances from the body of Jupiter, are meaſured by a micrometer, and eſtimated in ſemidiameters of that planet, and thence in miles. By the lateſt and moſt exact obſervations, the periodical times and diſtances of theſe ſatellites, and the angles under which their orbits are ſeen from the Earth, at its mean diſtance from Jupiter, are as follow:

Satellites.	Periodic Times.	Diſtances in		Angles of Orbit.
		Semidiameters.	Miles.	
1	1d. 18h. 27′. 34″	$5\frac{2}{3}$	266,000	3′ 55″
2	3 13 13 42	$9\frac{1}{59}$	423,000	6 14
3	7 3 42 36	$14\frac{5}{13}$	676,000	9 58
4	16 16 32 9	$25\frac{3}{10}$	1,189,000	17 30

The eclipſes of the ſatellites of Jupiter are of very great uſe in aſtronomy. Firſt, in determining pretty exactly the diſtance of Jupiter from the Earth. A ſecond advantage ſtill more conſiderable, is the proof which they give of the progreſſive motion of light. It is demonſtrated by theſe eclipſes, that light does not come to us in an inſtant, as the Carteſians pretended, although its motion is extremely rapid. For if the motion of light were infinite, or came to us in an inſtant, it is evident that we ſhould ſee the commencement of an eclipſe of a ſatellite at the ſame moment, at whatever diſtance we might be from it; but, on the contrary, if light move progreſſively, then it is as evident, that, the farther we are from a planet, the later we ſhall be in ſeeing the moment of its eclipſe, becauſe the light will take up a longer time in arriving at us; and ſo it is found in fact to happen, the eclipſes of theſe ſatellites appearing always later and later than the true computed times, as the Earth removes farther and farther from the planet. When Jupiter and the Earth are at their neareſt diſtance, being in conjunction both on the ſame ſide of the Sun, then the eclipſes are ſeen to happen the ſooneſt; and when the Sun is directly between Jupiter and the Earth, they are at their greateſt diſtance aſunder, the diſtance being more than before by the whole diameter of the Earth's annual orbit, or by double the Earth's diſtance from the Sun, then the eclipſes are ſeen to happen the lateſt of any, and later than before by about a quarter of an hour. Hence therefore it follows, that light takes up a quarter of an hour in travelling acroſs the orbit of the Earth, or near eight minutes in paſſing from the Sun to the Earth; which gives us about 12,000,000 of miles per minute or 200,000 miles per ſecond, for the velocity of light. A diſcovery that was firſt made by M. Roemer.

The third and greateſt advantage derived from obſerving the eclipſes of the ſatellites, is the knowlege of the longitudes of the places on the Earth. Suppoſe two obſervers of ſuch an eclipſe, the one, for example, at London, the other at the Canaries; it is certain that the eclipſe will appear at the ſame moment to both obſervers; but, as they are ſituated under different meridians, they count different hours, being perhaps nine o'clock to the one, when it is only eight to the other; by which obſervations of the true time of the eclipſe, on communication, they find the difference of their longitudes to be one hour in time, which anſwers to fifteen degrees of longitude.

The ſyſtem of Jupiter and his ſatellites is very large in itſelf; yet, on account of its immenſe diſtance from us, it appears to occupy but a ſmall ſpace in the ſphere of the ſtarry heavens, and conſequently every ſatellite of Jupiter appears to us always near its primary, and to have an oſcillatory motion, like that of a pendulum, going alternately from its greateſt digreſſion on one ſide of the planet, to its greateſt on the other, ſometimes in a ſtraight line, at others in an elliptic curve. When a ſatellite is in its ſuperior ſemicircle, or that half of its orbit that is more diſtant from the Earth, its motion appears direct to us; when a ſatellite is in its inferior ſemicircle, neareſt to the Earth, the apparent motion of it is retrograde. Both theſe motions ſeem quickeſt, when the ſatellite is neareſt the centre of the primary, and ſlower when they are more diſtant; at the greateſt diſtance they appear ſtationary for a ſhort time. Theſe ſatellites muſt afford a pleaſing ſpectacle to the inhabitants of Jupiter; for ſometimes they will riſe all together, ſometimes be all together on the meridian, ranged one under another, beſides their frequent eclipſes. The moſt diſtant ſatellite, or that revolving in the outermoſt orbit, will appear to the inhabitants of Jupiter nearly as large as the Moon does to us; and from the four ſatellites, the inhabitants of Jupiter will have four different kinds of months, and the number of them in their year not leſs than 4,500.

Of SATURN.

Before the diſcovery of the Georgian Sidus, Saturn was reckoned the moſt remote planet in our ſyſtem; he is expreſſed by ♄, the mark for lead, denoting an old man ſupporting himſelf with a ſtaff, repreſenting the ancient god Saturn. He ſhines but with a pale feeble light, leſs bright than Jupiter and leſs ruddy than Mars. The uninformed eye imagines not, when it is directed to this little ſpeck of light, that it is viewing a large and glorious globe, one of the moſt ſtupendous of the planets. We need not, however, be ſurprized at the vaſt bulk of Saturn, and its diſproportion to its appearance in the heavens; for we are to conſider that all objects decreaſe in their apparent magnitude, in proportion to their diſtance from us. This planet is perhaps one of the moſt engaging objects that aſtronomy offers to our view; it is ſurrounded with a double ring, one without the other, and beyond theſe by ſeven ſatellites, all in the plane of the rings; the rings and planets being all dark and denſe bodies, like Saturn himſelf, theſe bodies caſting their ſhadows mutually one upon another; though the reflected light of the rings is uſually brighter than that of the planet itſelf. Saturn was ſuſpected by Caſſini and Fato, in 1683, to have a revolution about its axis; for they one day ſaw a bright ſtreak, which diſappeared the next, when another came into view near the edge of its diſk; theſe ſtreaks are called *belts*, like thoſe of Jupiter. In 1719, when the ring diſappeared, Caſſini ſaw its ſhadow upon the body of the planet, and a belt on each ſide parallel to the ſhadow. When the ring was viſible, he perceived their curvature was ſuch as agreed with the elevation of the eye above the plane of the ring. He conſidered them as ſimilar to our clouds floating in the atmoſphere; and, having a curvature ſimilar to the exterior circumference of the ring, he concluded that they ought to be nearly at the ſame diſtance from the planet, and conſequently the atmoſphere of Saturn extends to the ring. Dr. Herſchel found that the arrangement of the belts always followed the direction of the ring; thus, as the ring opened, the belts began to ſhew an incurvature anſwering to it. And during his obſervations on June 19, 20, and 21, 1780, he ſaw the ſame ſpot in three different ſituations. He conjectured therefore, that Saturn revolved about an axis perpendicular to the plane of its ring. The truth of his conjecture he has now verified, having determined that Saturn revolves about its axis in 10h. 16′. 0·4″. Phil. Tranſ. 1794. The rotation is according to the order of the ſigns.

Concerning the figure of Saturn; we find that Galileo firſt perceived that his figure is not round: but Huygens ſhewed that this was owing to the poſitions of his ring; for his ſpheroidical form could only be ſeen by Herſchel's teleſcope; though indeed Caſſini, in an obſervation made

June

ASTRONOMY.

Fig. 3.

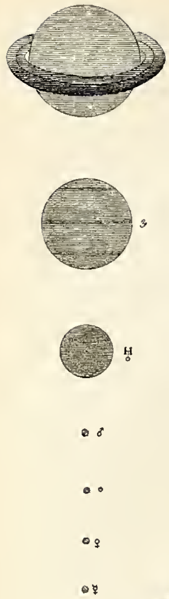


Fig. 1.

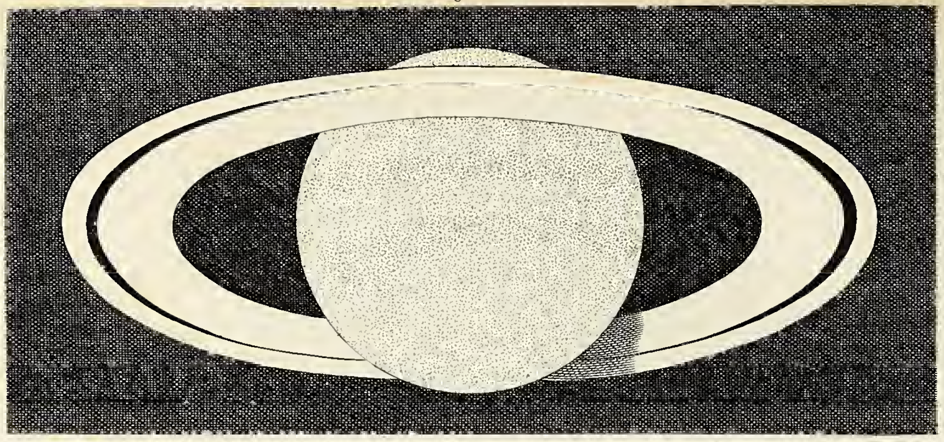


Fig. 4.

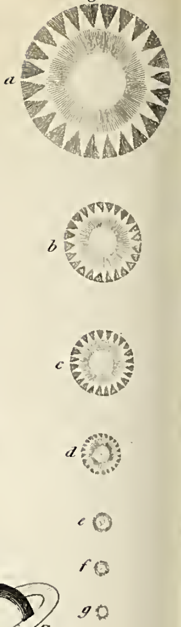
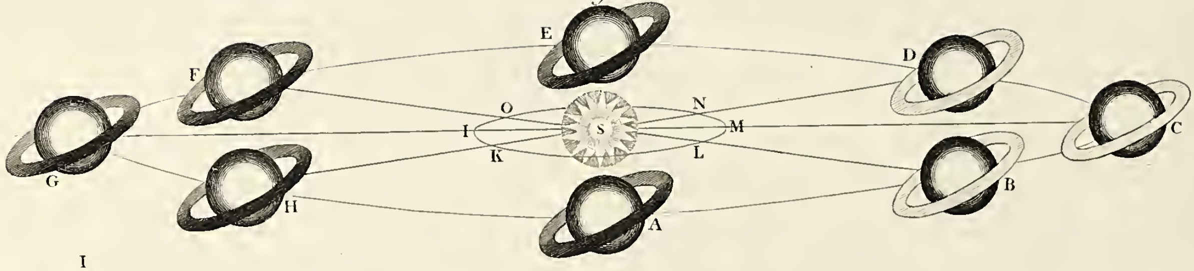


Fig. 2.



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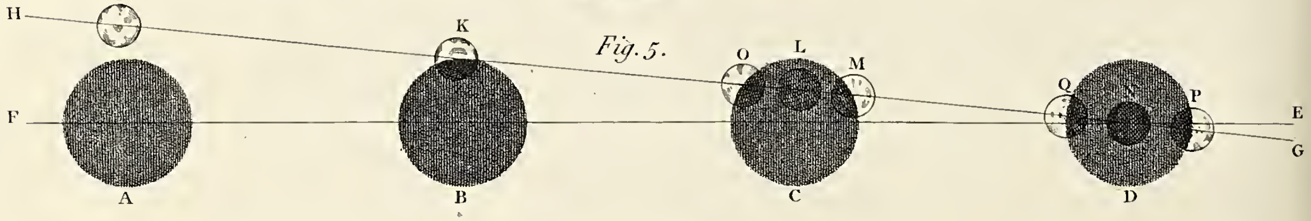

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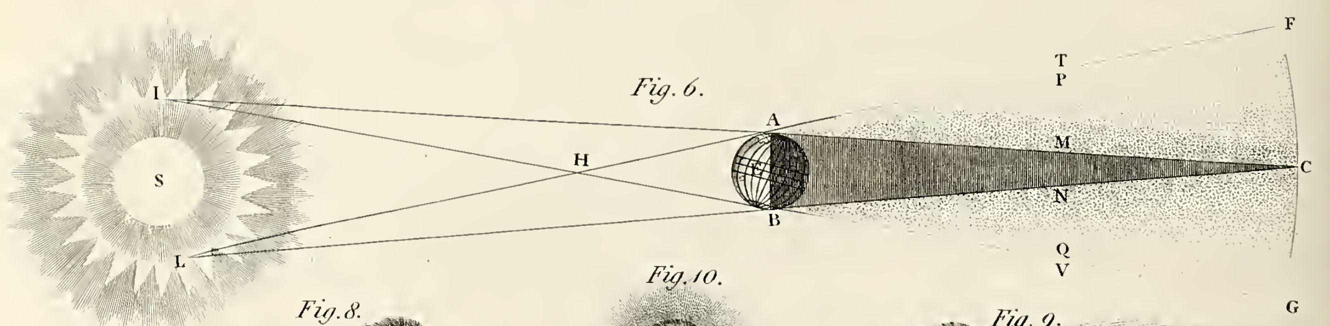

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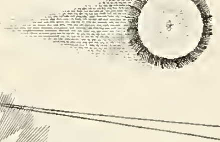


Fig. 10.

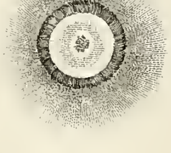


Fig. 9.

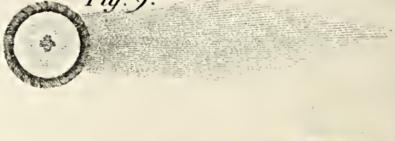
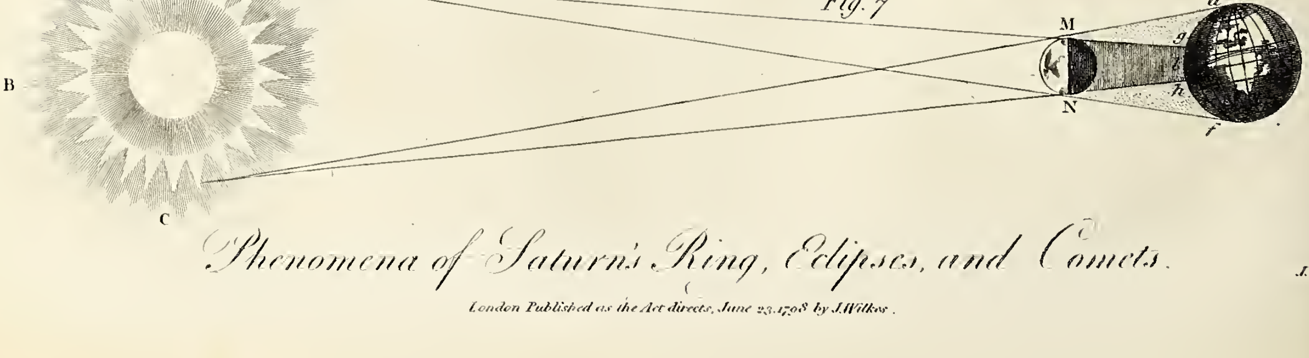


Fig. 7



Phenomena of Saturn's Ring, Eclipses, and Comets.

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J. Pass sculp.

June 19, 1692, ſaw the oval figure of Saturn's ſhadow upon his ring. Mr. Bugge determines (Philoſ. Tranſ. 1787, p. 42) the heliocentric longitude of Saturn's deſcending node to be 9ſ. 21°. 5′. 8½″. and that the planet was in that node Auguſt 21, 1784, at 18h. 10′. 10″. time at Copenhagen.

The annual period of Saturn about the Sun, is 10759d. 7h. or almoſt thirty years; and his diameter is about 67000 miles, or near 8½ times the diameter of the Earth; alſo his diſtance is about 9½ times that of the Earth. Hence ſome have concluded that his light and heat are entirely unfit for rational inhabitants. But that their light is not ſo weak as we imagine is evident from their brightneſs in the night-time. Beſides, allowing the Sun's light to be 45000 times as ſtrong, with reſpect to us, as the light of the Moon when full, the Sun will afford 500 times as much light to Saturn as the full Moon does to us, and 1600 times as much to Jupiter. So that theſe two planets, even without any Moon, would be much more enlightened than we at firſt imagine. Their heat, ſo far as it depends on the force of the Sun's rays, is certainly much leſs than ours; to which no doubt the bodies of their inhabitants are as well adapted as ours are to the ſeaſons we enjoy. And if it be conſidered that Jupiter never has any winter, even at his poles, which probably is alſo the caſe with Saturn, the cold cannot be ſo intenſe on theſe two planets as is generally imagined. To this may be added, that there may be ſomething in the nature of their mould warmer than in that of our Earth; and we find that all our heat does not depend on the rays of the Sun; for, if it did, we ſhould always have the ſame months equally hot or cold at their annual return, which is very far from being the caſe.

Of the Ring of Saturn.

The ring of Saturn is a broad circular arch, encompaſſing the body of that planet, without touching it, ſomewhat ſimilar to the wooden horizon of an artificial globe; only that the interior ſpace occupied by the planet is very conſiderable. Galileo was the firſt perſon who diſcovered it. The planet appeared to him like a large globe between two ſmall ones. In the year 1610 he announced this diſcovery. He continued his obſervations till 1612, when he was ſurprized to find only the middle globe; but ſome time after he diſcovered the globes on each ſide, which, in proceſs of time, appeared to change their form; ſometimes appearing round, ſometimes oblong like an acorn, ſometimes ſemicircular, then with horns towards the globe in the middle, and growing by degrees ſo long and wide as to encompaſs it, as it were, with an oval ring. Upon this Huygens ſet about improving the art of grinding object-glaſſes; and made teleſcopes which magnified two or three times more than any which had been made before, with which he diſcovered very clearly the ring of Saturn appearing like anſæ handles, ariſing from the body of the planet in a right line; and, having obſerved this phenomenon for ſome time, he publiſhed the diſcovery in 1656. He made the ſpace between the globe and the ring equal to, or rather bigger than, the breadth of the ring; and the greateſt diameter of the ring to that of the globe as 9 to 4. But Mr. Pound, with a micrometer applied to Huygens's teleſcope of 123 feet long, more correctly determined the ratio to be as 7 to 3. Mr. Whiſton, in his Memoirs of the Life of Dr. Clark, relates, that the doctor's father once ſaw a fixed ſtar between the ring and the body of Saturn. In the year 1675, M. Caſſini ſaw the ring, and obſerved upon it a dark elliptical line dividing it as it were into two rings, the inner of which appeared brighter than the outer. He alſo obſerved a dark belt upon the planet, parallel to the major axis of the ring. Mr. Hadley obſerved that the outer part of the ring ſeemed narrower than the inner part; and that the dark line was fainter towards its upper edge; he alſo ſaw two belts, and obſerved the ſhadow of the ring upon Saturn. In October 1714, when the plane of the ring very nearly paſſed through the Earth, and was approaching to it, M. Maraldi obſerved, that, while the arms of the ring were decreaſing both in length and breadth, the eaſtern arm appeared a little larger than the other for three or four nights; and yet it vaniſhed firſt, for, after two nights interruption by clouds, he ſaw the weſtern arm alone. This inequality of the ring made him ſuſpect that it was not bounded by exactly parallel planes, and that it turned about its axis. But the beſt deſcription of this ſingular phenomenon is that given by Dr. Herſchel in the Philoſ. Tranſ. for 1790, who by his extraordinary teleſcopes has diſcovered many circumſtances which had eſcaped all other obſervers. We ſhall here give the ſubſtance of his account. *Fig.* 1, in the Aſtronomical-Plate V. is a view of Saturn and its ring, as they appeared to him on June 20, 1778.

The black diſk, or belt, upon the ring of Saturn is not in the middle of its breadth; nor is the ring ſubdivided by many ſuch lines, as has been repreſented by ſome aſtronomers; but there is one ſingle dark conſiderably broad line, belt, or zone, as in the figure, which he has conſtantly found on the north ſide of the ring. As this dark belt is ſubject to no change whatever, it is probably owing to ſome permanent conſtruction of the ſurface of the ring. This conſtruction cannot be owing to the ſhadow of a chain of mountains, ſince it is viſible all round on the ring; for at the ends of the ring there could be no ſhade; and the ſame argument will hold againſt any ſuppoſed caverns. It is moreover pretty evident, that this dark zone is contained between two concentric circles, as all the phenomena anſwer to the projection of ſuch a zone. The nature of the ring is unoubtedly no leſs ſolid than the planet itſelf; and it is obſerved to caſt a ſtrong ſhadow upon the planet. The light of the ring is alſo generally brighter than that of the planet; for the ring appears ſufficiently bright, when the teleſcope affords ſcarcely light enough for Saturn. Dr. Herſchel from a ſeries of obſervations upon luminous points of the ring, alſo diſcovered that it has a rotation about its axis, the time of which is 10h. 32′. 15·4″. The Sun ſhines almoſt fifteen of our years together on one ſide of Saturn's ring without ſetting, and as long on the other in its turn; ſo that the ring is viſible to the inhabitants of that planet for almoſt fifteen of our years, and as long inviſible, by turns, if its axis has no inclination to its ring; but if the axis of the planet be inclined to the ring, ex. gr. about thirty degrees, the ring will appear and diſappear once every natural day to all the inhabitants within thirty degrees of the equator, on both ſides, frequently eclipſing the Sun in a Saturnian day. Moreover, if Saturn's axis be ſo inclined to his ring, it is perpendicular to his orbit; by which the inconvenience of different ſeaſons to that planet is avoided.

The ring, ſeen from Saturn, appears like a large luminous arch in the heavens, as if it did not belong to the planet. To us, it is inviſible when its plane paſſes through the Sun, the Earth, or between them; in the firſt caſe, the Sun ſhines only upon its edge, which is too thin to reflect ſufficient light to render it viſible; in the ſecond caſe, the edge only being oppoſed to us, it is not viſible for the ſame reaſon; in the third caſe, the dark ſide of the ring is expoſed to us, and therefore, the edge being the only luminous part which is towards the Earth, it is inviſible on the ſame account as before. The phenomena of Saturn's ring are illuſtrated in *fig.* 2, of the Aſtronomical-Plate V. Let S be the Sun, ABCDEFGH Saturn's orbit, and IKLMNO the Earth's orbit. Both Saturn and the Earth move according to the order of the letters; and when Saturn is at A, his ring is turned edgewiſe to the Sun S, and he is then ſeen from the Earth as if he had loſt his ring, let the Earth be in any part of its orbit whatever, except between N and O; for, whilſt it deſcribes that ſpace, Saturn is apparently ſo near the Sun as to be hid in his beams. As Saturn goes from A to C, his ring appears more and more open to the Earth; at C the ring appears moſt open of all; and ſeems to grow narrower and narrower as Saturn goes from C to E; and, when he comes to E, the ring is again turned edgewiſe both to the Sun and Earth; and, as neither of its ſides is illuminated, it is inviſible to us, becauſe its edge is too thin to be perceptible; and Saturn appears again as if he had loſt his ring. But, as he goes from E to G, his ring opens more and more to our view on the under ſide; and ſeems juſt as open at G as it was at C, and may be ſeen in the night-time from the Earth in any part of its orbit, except about M, when the Sun hides the planet from our view. As Saturn goes from G to A, his ring turns more and more edgewiſe to us, and, therefore, it ſeems to grow narrower and narrower; and at A it diſappears as before. Hence, while Saturn goes from A to E, the Sun ſhines on the upper ſide of his ring, and the under ſide is dark; and, whilſt he goes from E to A, the Sun ſhines on the under ſide of his ring, and the upper ſide is dark. The ring diſappears twice in every annual revolution of Saturn, viz. when he is in the nineteenth degree of Piſces and of Virgo, and when Saturn is in the middle between theſe points, or in the nineteenth degree either of Gemini or of Sagittarius, his ring appears moſt open to us; and then its longeſt diameter is to its ſhorteſt as 9 to 4. On January 29, 1790, the ring paſſed through the Earth; and the Earth paſſing from the northern or dark, to the ſouthern or enlightened, ſide of the ring, the ring then became viſible, and will continue ſo till 1803.

Obſervers have differed ten or twelve days in the time of the ring's becoming inviſible, owing to the difference of the teleſcopes, and of the ſtate of the atmoſphere. Dr. Herſchel obſerves, that the ring was ſeen in his teleſcope when we were turned towards the unenlightened ſide; ſo that he either ſaw the light reflected from the edge, or elſe the reflection of the light of Saturn upon the dark ſide of the ring, as we ſometimes ſee the dark part of the Moon. He cannot, however, ſay which of the two might be the caſe; eſpecially as there are very ſtrong reaſons to think, that the edge of the ring is of ſuch a nature as not to reflect much light. M. de la Lande thinks, that the ring is juſt viſible with the beſt teleſcopes in common uſe, when the Sun is elevated three minutes above its plane, or three days before its plane paſſes through the Sun; and, when the Earth is elevated 2′ 30″ above the plane, or one day from the Earth's paſſing it. The total diſappearance of the ring ſeems only to be owing to the imperfections of the teleſcopes in common uſe among aſtronomers; for Dr. Herſchel, with his large teleſcopes, has been able to ſee it in every ſituation. He thinks the edge of the ring is not flat, but ſpherical or ſpheroidical.

In a paper in the Phil. Tranſ. for 1790, Dr. Herſchel ventured to hint at a ſuſpicion that the ring was divided; this conjecture was ſtrengthened by future obſervations, after he had had an opportunity of ſeeing both ſides of the ring. His reaſons are theſe: 1. The black diviſion upon the ſouthern ſide of the ring is in the ſame place, of the ſame breadth, and at the ſame diſtance, from the outer edge, that it always appeared upon the northern ſide. 2. With his 7-feet reflector, and an excellent ſpeculum, he ſaw the diviſion on the ring, and the open ſpace between the ring and the body, equally dark, and of the ſame colour with the heavens about the planet. 3. The black diviſion is equally broad on each ſide of the ring. From theſe obſervations, Dr. Herſchel thinks himſelf authorized to ſay, that Saturn has two concentric rings, ſituated in one plane, which is probably not much inclined to the equator of the planet. The dimenſions of the two rings are in the following proportions, as nearly as they could be aſcertained:

Inſide diameter of the ſmaller ring	5900 parts.
Outſide diameter	7510
Inſide diameter of the larger ring	7740
Outſide diameter	8300
Breadth of the inner ring	805
Breadth of the outer ring	280
Breadth of the ſpace between the rings	115

In the Mem. de l'Acad. at Paris, 1787, M. de la Place ſuppoſes, that the ring may have many diviſions; but Dr. Herſchel remarks, that no obſervations will juſtify this ſuppoſition. From the mean of a great many meaſures of the diameter of the larger ring, Dr. Herſchel makes it 46·677″ at the mean diſtance of Saturn. Hence its diameter is to the diameter of the Earth as 25·8914 is to 1. From the above proportions, therefore, the diameter of this ring muſt be 204,883 miles, and the diſtance of the two rings 2839 miles.

The ring, being a circle, appears elliptical merely from its oblique poſition. Dr. Herſchel adds, "Some theories and obſervations of other perſons lead us to conſider the queſtion, Whether the conſtruction of this ring is of a nature ſo as permanently to remain in its preſent ſtate? or Whether it be liable to continual and frequent changes, in ſuch a manner as, in the courſe of not many years, to be ſeen ſubdivided into narrow ſlips, and then again as united into one or two circular planes only? Now, without entering into a diſcuſſion, the mind ſeems to revolt, even at firſt ſight, againſt an idea of the chaotic ſtate in which ſo large a maſs as the ring of Saturn muſt needs be, if phenomena like theſe can be admitted. Nor ought we to indulge a ſuſpicion of this being a reality, unleſs repeated and well-confirmed obſervations had proved, beyond a doubt, that this ring was actually in ſo fluctuating a condition." But, from his own obſervations, he concludes, "It does not appear to me that there is a ſufficient ground for admitting the ring of Saturn to be of a very changeable nature, and I gueſs that its phenomena will hereafter be ſo fully explained as to reconcile all obſervations. In the mean while, we muſt withhold a final judgment of its conſtruction, till we can have more obſervations. Its diviſion, however, into two very unequal parts, can admit of no doubt."

Of the SATELLITES of SATURN.

In the year 1655, Huygens diſcovered the fourth ſatellite of Saturn; and publiſhed a Table of its mean motion in 1659. In 1671, M. Caſſini diſcovered the fifth, and the third in 1672; and, in 1684, the firſt and ſecond; and afterwards publiſhed Tables of their motions. He called them Sidera Lodoicea, in honour of Louis le Grand, in whoſe reign, and obſervatory, they were firſt diſcovered. Dr. Halley found by his own obſervations in 1682, that Huygens's Tables had conſiderably run out, they being about fifteen degrees in twenty years too forward; and therefore he compoſed new Tables from more correct elements. He alſo reformed M. Caſſini's Tables of the mean motions; and about the year 1720, publiſhed them a ſecond time, corrected from Mr. Pound's obſervations. He obſerves, that the four innermoſt ſatellites deſcribe orbits very nearly in the plane of the ring, which he ſays is, as to ſenſe, parallel to our equator; and that the orbit of the fifth is a little inclined to them.

On June 9, 1749, at 10h. Mr. Pound found the diſtance of the fourth ſatellite to be 3′ 7″ with a teleſcope of 123 feet, and an excellent micrometer fixed to it; and the ſatellite was at that time very near its greateſt eaſtern digreſſion. Hence, at the mean diſtance of the Earth from Saturn, that diſtance becomes 2′ 58·21″; Sir Iſaac Newton makes it 3′ 4″.

By comparing the ſatellites with the ring in different points of their orbits, and the greateſt minor axes of the ellipſes which they appear to deſcribe compared with the major axes, the planes of the orbits of the firſt four are found to be very nearly in the plane of the ring, and therefore are inclined to the orbit of Saturn about thirty degrees; but the orbit of the fifth, according to M. Caſſini, jun. makes an angle with the ring of about 15°.

M. Caſſini places the node of the ring, and conſequently thoſe of the four firſt ſatellites, in 5ſ. 22°. upon the orbit of Saturn, and 5ſ. 21°. upon the ecliptic. M. Huygens had determined it to be in 5ſ. 20°. 30′. M. Maraldi in 1716 determined the longitude of the node of the ring upon the orbit of Saturn to be 5ſ. 19°. 48′. 30″. and upon the ecliptic to be 5ſ. 16°. 20′. The node of the fifth ſatellite is placed by M. Caſſini in 5ſ. 5°. upon the orbit of

Saturn. M. de la Lande makes it 5ſ. 0°. 27′. From the obſervation of M. Bernard at Marſeilles in 1787, it appears, that the node of this ſatellite is retrograde. Dr. Halley diſcovered that the orbit of the fourth ſatellite was eccentric. For, having found its mean motion, he diſcovered that its place by obſervation was at one time three degrees forwarder than by his calculations, and at other obſervations it was 2° 30′ behind; this indicated an eccentricity; and he placed the line of the apſides in 10ſ. 22°.

M. Caſſini obſerved, that the fifth ſatellite diſappeared regularly for about half its revolution, when it was to the eaſt of Saturn; from which he concluded, that it revolved about its axis; he afterwards however doubted of this. But Sir Iſaac Newton, in his Principia, concludes from hence, that it revolves about its axis, and in the ſame time that it revolves about Saturn; and that the variable appearance ariſes from ſome parts of the ſatellite not reflecting ſo much light as others. Dr. Herſchel has confirmed this, by tracing regularly the periodical change of light through more than ten revolutions, and finding it, in all appearances, to be cotemporary with the return of the ſatellite to the ſame ſituation in its orbit. This is farther confirmed by ſome obſervations of M. Bernard at Marſeilles, in 1787; and is a remarkable inſtance of analogy among the ſecondary planets.

Theſe are all the ſatellites which were known to revolve about Saturn till the year 1789, when Dr. Herſchel, in a paper in the Phil. Tranſ. for that year, announced the diſcovery of a ſixth ſatellite, interior to all the others, and promiſed a farther account in another paper. But, in the intermediate time, he diſcovered a ſeventh ſatellite, interior to the ſixth; and, in a paper upon Saturn and its ring, in the Phil. Tranſ. 1790, he has given an account of the diſcovery. After his obſervations upon the ring, he ſays, he cannot quit the ſubject without mentioning his own ſurmiſes, and that of ſeveral other aſtronomers, of a ſuppoſed roughneſs of the ring, or inequality in the planes and inclinations of its flat ſides. This ſuppoſition aroſe, from ſeeing luminous points on its boundaries projecting like the Moon's mountains; or from ſeeing one arm brighter or longer than another; or even from ſeeing one arm when the other was inviſible. Dr. Herſchel was of this opinion, till he ſaw one of theſe points move off the edge of the ring in the form of a ſatellite. With his 20-feet teleſcope he ſuſpected that he ſaw a ſixth ſatellite; and, on Auguſt 19, 1787, marked it down as probably being one; and, having finiſhed his teleſcope of forty feet focal length, he ſaw ſix of its ſatellites the moment he directed his teleſcope to the planet. This happened on Auguſt 28, 1789. The retrograde motion of Saturn was then nearly 4′ 30″ in a day, which made it very eaſy to aſcertain whether the ſtars he took to be ſatellites were really ſo; and, in about two hours and an half after, he found that the planet had viſibly carried them all away from their places. He continued his obſervations, and, on September 17, he diſcovered the ſeventh ſatellite. Theſe two ſatellites lie within the orbits of the other five. The orbits of theſe ſatellites lie ſo near to the plane of the ring, that the difference cannot be perceived.

As ſoon as Dr. Herſchel had made obſervations ſufficient to conſtruct Tables of their mean motions, he calculated their places backwards, and found that his ſuſpicions of the exiſtence of theſe ſatellites, in the ſhape of protuberant points on the arms of the ring, were confirmed. He frequently ſaw the firſt, ſecond, third, fourth, and fifth, ſatellites, paſs before and behind the ring in ſuch a manner, that they ſerved as an excellent micrometer to meaſure its thickneſs by. It may be proper to mention a few inſtances, as they ſerve alſo to ſolve ſome phenomena obſerved by other aſtronomers, without having been accounted for in any manner that could be admitted conſiſtently with other known facts. July 18, 1789, at 19h. 41′. 9″. ſiderial time, the third ſatellite ſeemed to hang upon the following arm, declining a little towards the north, and was ſeen gradually to advance upon it towards the body of Saturn; but the ring was not ſo thick as the lucid point. July 23, at 19h. 41′. 8″. the fourth ſatellite was a very little preceding the ring, but the ring appeared to be leſs than half the thickneſs of the ſatellite. July 27, at 20h. 15′. 12″. the fourth ſatellite was about the middle, upon the following arm of the ring, and towards the ſouth; and the ſecond at the farther end, towards the north; but the arm was thinner than either. Auguſt 29, at 22h. 12′. 25″. the fifth ſatellite was upon the ring, near the end of the preceding arm, and the thickneſs of the arm ſeemed to be about one-third or one-fourth of the diameter of the ſatellite, which, in the ſituation it then was, he took to be leſs than one-ſecond in diameter. At the ſame time, the firſt appeared at a little diſtance following the fifth, in the ſhape of a bead upon a thread, projecting on both ſides of the ſame arm. October 16, he followed the firſt and ſecond ſatellites up to the very diſk of the planet; and the ring, which was extremely faint, did not obſtruct his ſeeing them gradually approach the diſk. Theſe obſervations ſhew the extreme thinneſs of the ring. But Dr. Herſchel farther obſerves, that there may be a refraction through an atmoſphere of the ring, by which the ſatellites may be lifted up and depreſſed, ſo as to become viſible on both ſides of the ring, even though the ring ſhould be equal in thickneſs to the ſmalleſt ſatellite, which may amount to 1000 miles.

The periodical revolutions, and diſtances of theſe ſatellites from the body of Saturn, expreſſed in ſemidiameters of that planet, and in miles, are as follow:

Satellites.	Periods.	Diſtances in Semidiameters.	Diſtances in Miles.	Diam. of Orbit.
1	1d. 21h. 18′. 27″	$4\frac{3}{8}$	170,000	1′ 27″
2	2 17 41 22	$5\frac{1}{2}$	217,000	1 52
3	4 12 25 12	8	303,000	2 36
4	1 22 41 13	18	704,000	6 18
5	79 7 48 0	54	2,050,000	17 4
6	1 8 53 9	$3\frac{5}{9}$	135,000	1 14
7	0 22 40 46	$2\frac{5}{6}$	107,000	0 57

There is reaſon to believe that all the ſatellites both of Jupiter and Saturn, revolve about their axes; for the ſatellites of the former appear at different times to be of very different magnitudes and brightneſs. The fifth ſatellite of Saturn was obſerved by M. Caſſini for ſeveral years as it went through the eaſtern part of its orbit to appear leſs and leſs, till it became inviſible; and in the weſtern part to increaſe again. Theſe phenomena can hardly be accounted for, but by ſuppoſing ſome parts of the ſurfaces to be unfit to reflect light; and therefore, when ſuch parts are turned towards the Earth, they appear to grow leſs, or to diſappear. As the ſame appearances of this ſatellite returned again when it came to the ſame part of its orbit, it affords an argument that the time of the rotation about its axis is equal to the time of its revolution about its primary, a circumſtance ſimilar to the caſe of the Moon and Earth. See Dr. Herſchel's account of this in the Phil. Tranſ. 1792. The appearance of this ſatellite of Saturn is not always the ſame, and therefore it is probable that the dark parts are not permanent.

On the SECULAR MOTIONS of JUPITER and SATURN.

The time of a revolution of Saturn deduced from the modern obſervations, comes out greater than that deduced from a compariſon of the modern with the ancient obſervations. If therefore the modern obſervations could be depended upon to give the time of a revolution nearer than that difference, it would prove that the length of Saturn's year is increaſing. Now, although obſervations made at a ſmall interval of time could not be ſufficient to eſtabliſh this point, yet, from a compariſon of our obſervations with thoſe made by Tycho, it appears that this is the caſe. The length of the year, therefore, when aſcertained for one time, will afterwards want a correction; and the quantity of this correction is technically called the *ſecular equation.* Kepler firſt obſerved this circumſtance, from examining the obſervations of Regiomontanus and Waltherus; for, he conſtantly found Jupiter forwarder, and Saturn backwarder, than they ought to have been from the mean motions determined from the obſervations of Ptolemy and Tycho. He ſaid the ſame of Mars; but M. de la Lande obſerves, that he cannot find there is any ſecular equation wanted for that planet. Flamſtead alſo obſerved, that in all the beſt Aſtronomical Tables the mean motions of Saturn were too ſwift, and of Jupiter too ſlow; whence it came to paſs, that the computations gave thoſe conjunctions which happened when the planets were direct ſome days ſooner, and, when retrograde, ſome days later, than the time from obſervation. Phil. Tranſ. No. cxlix. Hevelius alſo obſerved the ſame. M. Maraldi perceived alſo, that the mean motions of Saturn, if we ſuppoſe them uniform, would agree both with the obſervations of Tycho and thoſe of this age. Dr. Halley, in his Aſtronomical Tables, applied a ſecular equation of $9\frac{1}{4}^{\circ}$ for 2000 years to Saturn, and 3° 40′ to Jupiter, but he does not give the obſervations from which he deduced theſe concluſions. M. de la Lande, from comparing the oppoſitions in the years 1594, 1595, 1596, and 1597, with thoſe in 1713, 1714, 1715, 1716, and 1717, found the mean motion of Saturn to be 12° 13′ 19″ 14‴, which is 16″ in a year leſs than that given by Caſſini; and the duration of the revolution greater by near four days. He choſe thoſe oppoſitions which happened near the mean diſtance (as Caſſini did alſo), becauſe the true and mean motions being then equal, the concluſions would be more accurate. He alſo choſe other oppoſitions at the diſtance of about 120 years, and when Jupiter and Saturn were in ſimilar ſituations, ſo that no error was to be apprehended from their mutual attraction, this being the ſame in each caſe. Now, if with the mean motion found in 120 years, the place of Saturn, from where it is now found to be, be computed for the time of the obſervation before-mentioned in the year 228 before Chriſt, the longitude will be found to be too great by 7°; this, therefore, is the ſecular equation for 2000 years, according to this mean motion. But, from other obſervations, he concluded the mean motion to be 12° 13′ 26·558″. With this mean motion he finds the ſecular equation to be 47″, in the firſt century from which this motion was deduced; for, with this mean motion and ſecular equation, the calculations beſt agree with the ancient obſervations. From the theory of attraction it appears, that, ſuppoſing the aphelion of Saturn and Jupiter to be fixed, the ſecular equation varies as the ſquare of the time, which M. de la Lande thinks may be deduced from this conſideration, that the velocity loſt by Saturn, in conſequence of the cauſe which produces the equation, being ſo very ſmall, may be conſidered equal in equal times; whence, from the principle of the law of falling bodies, the ſpace loſt muſt vary as the ſquare of the time. Now, from from five obſervations by Ptolemy, he found the ſecular equation for the firſt 100 years to be 47″; hence $100^2 : t^2 :: 47''$: the ſecular equation for t years. But the logarithm of 47 *minus* the logarthm of 100^2 is 7·6720979; hence, if to this conſtant logarithm we add twice the logarithm of t, we ſhall have the logarithm of the ſecular equation for t years from the commencement of the 100 years, to be ſubtracted from the mean longitude.

But, beſides the ſecular equation, the mean motion of Saturn is alſo ſubject to other irregularities which are found to follow from the attraction of Jupiter. Dr. Halley, in his Aſtronomical Tables, obſerves, that Jupiter, from his oppoſition in 1677 to that in 1689, was found, from indubitable obſervations, to be 12′ ſlower than in the preceding or ſubſequent revolutions. Alſo the periodic time of Saturn, between the years 1668 and 1698, was nearly a week ſhorter than its mean revolution, and the periodic time between the year 1689 and that of 1719 was nearly as much greater; ſo that between the two revolutions there was a difference of more than thirteen days. This Dr. Halley ſuppoſes to ariſe from the attraction of the greater bodies in the ſyſtem being different in different poſitions. For he obſerves, that in 1683 there was a conjunction of Jupiter and Saturn, when, from the poſition of the apſides, the planets approached neareſt to each other, and Saturn was moſt urged towards the Sun, and Jupiter from it; ſo that Jupiter's velocity being increaſed, and its force to the Sun diminiſhed, its orbit was increaſed, and conſequently its periodic time; on the contrary, Saturn's velocity being diminiſhed, and its force to the Sun increaſed, its orbit, and conſequently its periodic time, was diminiſhed. Now, ſays he, if the ſame thing ſhould happen again, that is, if a conjunction ſhould take place again in the ſame point of the heavens, and the ſame effects ſhould follow, we may hope that it can be accounted for from the laws of gravity; but if, in like circumſtances, the ſame effects are not found to take place, other extraneous cauſes are to be ſought for. But M. de la Place has diſcovered, that theſe inequalities, as well as the ſecular equations, may be repreſented by an equation, from Jupiter's attraction, of 48′, which depends on five times the longitude of Saturn *minus* twice that of Jupiter, of which the period is 918 years. For this we muſt employ the mean annual motion of 12° 13′ 36·81″. Thus all the irregularities of Saturn's motion are confined to a certain period, after which they all return again. In the years 1701 and 1760 the errors of Dr. Halley's Tables were $8\frac{1}{2}'$ and $21\frac{1}{2}'$, according to M. de la Lande, ſo that the motion of Saturn was greater by 13′, and its periodic time was ſhorter $6\frac{1}{2}$ days, than in its revolution between 1686 and 1745. Now, the mean anomaly in 1701 and 1760 was 3° 1′, and the angle at the Sun between Jupiter and Saturn was 19° in 1701, and 30° in 1760; ſo that the error in the mean motion could not ariſe from any diſſimilar ſituations of Saturn in its orbit, by which the elements of the motions might err; nor from the different ſituations of Jupiter, that difference not being ſufficient to cauſe ſuch an error.

The motion of Jupiter requires alſo a ſecular equation, as Dr. Halley obſerved, who made it 3° 49′ 24″ for 2000 years, or 34·4″ for the firſt century, ſuppoſing it to encreaſe as the ſquare of the time. M. Maraldi alſo obſerved, that the modern obſervations gave the motion of Jupiter greater than the ancient. M. de la Lande found, by comparing the obſervations made 240 years before Chriſt, with thoſe in the year 508, that Jupiter's ſecular motion in eighty-three years was 2′ 04″. And, comparing the obſervations in 508 with thoſe in 1503 and 1504, we find nearly the ſame reſult. But, if we compare the conjunction of Jupiter with Regulus on October 12, 1623, with the like obſervation made in 1706, we find it 21′ minutes for eighty-three years. Dr. Halley, in his Tables, fixed it at 12′ 26″ for eighty-three years, which makes the revolution eight hours ſhorter than that deduced from the ancient obſervations. The oppoſitions from 1689 to 1698 compared with thoſe in 1749, give a mean motion equal to that in the Tables of Caſſini; which Tables give the place of Jupiter 1′ too much in 508. Theſe concluſions indicate a great irregularity in Jupiter's motions; and this irregularity is farther confirmed, if we conſider that Wargentin makes the ſecular equation for the firſt 100 years to be 18″; M. Bailly makes it $12\frac{1}{3}''$; and M. de la Lande fixes it at $30\frac{1}{2}''$ for the firſt 100 years, or 3° 23′ 20″ for 2000 years, admitting it to increaſe as the ſquare of the time, which agrees nearly with Dr. Halley's determination. M. de la Grange, from the theory of gravity, finds it to be 3′ 18″, which, as M. de la Lande obſerves, agrees very well with the obſervations from 1590 to 1762, but not with the ancient obſervations. Euler determined it from theory to be 2′ 23″. M. de la Lande ſays, that his own ſecular equation, with the mean ſecular motion of 5ſ. 6°. 27′. 30″. agree as nearly as poſſible to all the obſervations. M. de la Place found in 1786 an inequality of 20′ from the attraction of Saturn, the period of which equation is 918 years, as in Saturn. Thus he made the ſecular equation diſappear, it being only an irregularity whoſe period is 918 years. This ſuppoſes a ſecular motion of 5ſ. 6°. 17'. 33". The ſecular equation being determined for 100 years, it may be found for any other time, as it was for Saturn, by taking it in proportion to the ſquare of the time.

The longitude of the Sun alſo requires a ſecular equation of 12' for 2500 years, ariſing from the diminution of the preceſſion of the equinoxes, according to De la Lande.

Of the GEORGIUM SIDUS.

The Georgian planet we have already ſtated to have been diſcovered by Dr. Herſchel; it is therefore diſtinguiſhed by ♅, the initial of his name, with a croſs, denoting the Chriſtian planet, or that it was diſcovered by the Chriſtians. Its light is of a bluiſh white colour, and its brilliancy between that of the Moon and Venus; though on account of its immenſe diſtance, being the outermoſt of the ſuperior planets, it is but juſt viſible to the naked eye. Dr. Herſchel firſt obſerved this planet in the evening of March 13, 1781; and, having given notice of it to the Royal Society, Dr. Maſkelyne inſtantly made obſervations upon it, and wrote to the aſtronomers at Paris, declaring, with Dr. Herſchel, that he ſuſpected it to be a planet. M. Lexell was then in England; but he applied himſelf to compute the orbit, upon ſuppoſition that it was a comet; he therefore, according to the uſual manner in ſuch a caſe, ſuppoſed the orbit to be a parabola, and aſſumed ſeveral perihelion diſtances, 6, 8, 10, 12, 14, 16, and 18, times the Earth's diſtance from the Sun; and found that any perihelion diſtance between 14 and 18 would anſwer very well to the obſervations. Boſcovich printed a Memoir on the ſubject, in which he ſhewed that there were four different parabolas in which the body might move, and yet the computed places would agree with the obſervations which had then been made. Other aſtronomers however found, that a circular orbit, whoſe radius was about eighteen times the diſtance of the Sun from the Earth, would agree better with the obſervations; and this confirmed Dr. Maſkelyne's opinion that it was a planet. Upon ſuppoſition, therefore, of a circular orbit, M. de la Lande proceeded to inveſtigate its magnitude, from the following obſervations:

Time of obſervation	Ap. 25, 1781, at 9h. 47'.	July 31, 1781, at 15h. 33'.	Dec. 12, 1781 at 10h. 10'.
Right aſcenſion obſerved	2ſ. 25° 15' 27"	3ſ. 1° 7' 49"	3ſ. 1° 23' 31"
North declination obſ.	23 35 34	23 40 25	23 42 47
Longitude	2 25 39 17	3 1 2 7	3 1 16 28
Latitude north	11 36	12 24	14 54
Nutation in longitude	+10	+ 8	+7
Aberration in longitude	+19	+21	—18
Sun's longitude from the mean equinox	1 5 58 53	4 9 7 13	8 21 21 50
Log. of the Sun's diſtance	0·003196	0·006272	9·992993

From theſe obſervations, M. de la Lande proceeded thus to find the circular orbit. He aſſumed the radius of the orbit, and then calculated the heliocentric places of the planet at the times of the firſt and laſt obſervation; conſequently the angle deſcribed by the planet about the Sun in that interval of 213 days 23' was known; and hence the time of the whole revolution was known by proportion, upon ſuppoſition that the orbit was circular. Next, knowing the radius of the orbit compared with the mean diſtance of the Earth from the Sun, he calculated the periodic time, and the radius of the orbit was found to be 18,931 times the mean diſtance of the Earth from the Sun, and the duration of the revolution 8237 years. This circular orbit therefore agreed to the firſt and laſt obſervations; and, by computing from it the place at the ſecond obſervation, he found that it differed only five ſeconds from the obſerved place, which difference might eaſily ariſe from the unavoidable errors in the obſervation. He then calculated thirty-two other obſervations made by Dr. Maſkelyne, Monnier, Meſſier, Mechain, d'Agelet, Leveſque, and himſelf, and found they all agreed very well, except in April 1781, and July, Auguſt, and September, 1782; the laſt differing more than two minutes. He then proceeded, as before, to find what radius would anſwer to the obſervation on April 25, 1781, and on July 21, 1782, at 15h. at Paris, when the longitude obſerved was 3ſ. 4°. 42'. 39". this radius he found to be 18·893, and the periodic time 82·12 years. But, by uſing this radius, he found the calculations to differ 1' 27" from the place obſerved in oppoſition in December 1781. This indicated an irregularity in the motion of the planet; but the irregularity was too ſmall, and the obſervations too near together, to afford proper data for the inveſtigation of the orbit. M. de la Lande proceeded to determine the place of the node, and inclination of the orbit; but, on account of the ſmall motion in latitude, great accuracy could not at that time be expected. The geocentric latitudes obſerved on April 25, and December 12, 1781, were 11' 36" and 14' 54" north, which give the heliocentric latitudes 11' 59" and 14' 8"; and, the motion in longitude being 2° 46' 3" between the obſervations, he found the place of the node to be 2ſ. 12°. 54', and inclination of the orbit 46'. Again, the obſerved geocentric latitudes on April 16, 1781, and March 26, 1782, were 11' 48" and 15' 5", and hence the heliocentric latitudes were found to be 12' 7" and 15' 10"; and, the motion in longitude between the obſervations be- 4° 7' 44", the place of the nodes was found to be 2ſ. 12°. 2', and the inclination 44'. He farther obſerves, that the planet was ſtationary eleven days before Dr. Herſchel firſt obſerved it; and therefore, if his obſervations had been made eleven days ſooner, he would not have perceived any motion, and the diſcovery might, M. de la Lande thinks, have been loſt. It is probable, however, that, if this had happened, the diſcovery would have been made; for, from the ſingularity of its appearance, which alone made Dr. Herſchel pay attention to it, he would undoubtedly have continued to obſerve it, till he had diſcovered its motion, which muſt very ſoon have been perceived.

It having been found, that the motion did not agree to that of any one circle, the next enquiry was to determine the ellipſe in which it moved, ſuppoſing that, like the other planets, it revolves in ſuch a curve, having the Sun in one of its foci. Mr. Robiſon, profeſſor of natural philoſophy in the univerſity of Edinburgh, inveſtigated the elements of the orbit, in the Edinb. Tranſ. vol. i. 1788; we ſhall therefore ſtate the computations as given by him; the method is capable of great accuracy, ſo far as the obſervations are accurate, and may be eaſily underſtood by thoſe who are acquainted with only the elementary parts of mathematics and philoſophy. The obſervations upon which the inveſtigation is founded are as follows:

True Time at Edinburgh.				*Longitude.*				*N. Lat.*	
Dec. 21, 1781,	17h.	44'.	33"	3ſ.	0°.	52'.	11"	15'	7"
26, 1782,	8	56	56	3	5	20	29	18	56
31, 1783,	0	46	24	3	9	50	52	22	10
Jan. 3, 1785,	17	28	56	3	14	23	2	25	40
8, 1786,	10	39	31	3	18	57	5	28	52

We have here the times of five ſucceſſive oppoſitions, as deduced from obſervations, and the correſponding heliocentric longitudes and latitudes. Hence the longitude of the node on January 1, 1786, was 2ſ. 12°. 48'. 45". and inclination of the orbit 46' 26". The place of the node, and the inclination of the orbit, being determined, the places of the planet reduced to the orbit will be known, and thus we may find the arcs deſcribed in the orbit itſelf between the above oppoſitions. Mr. Robiſon next took the oppoſition on December 31, 1783, for an epoch to which the other obſervations were to be reduced. The interval between this and the preceding oppoſition was 369d. 15h. 49′. 28″; from this oppoſition he counted back the ſame interval of time; and in like manner he counted forwards from the epoch two equal intervals; thus he got four equal intervals of time, to which times he found the places of the planet upon its orbit; and, upon comparing their differences, he diſcovered that they had irregularities not conſiſtent with the motion of a body in an ellipſe; theſe, therefore, muſt have ariſen from ſome inaccuracies in the obſervations; and as, upon account of the ſmall intervals of the places, ſuch errors would be the cauſe of great errors in the elements of the orbit, it was neceſſary to correct theſe inaccuracies, ſo as to give the differences ſuch a law, as near as poſſible, that they ought to have.

The next conſideration was, upon what principle this correction was to be made; and this was, by finding, as nearly as poſſible, about what part of the ellipſe the planet was in at the time of the above obſervations, and then by obſerving in ſimilar parts of the ellipſes deſcribed by the other planets, what law the firſt and ſecond differences of the angles deſcribed in equal times obſerve. The places of the planet in the ecliptic at five points of time being known, its place at any other point of time may be very accurately found by interpolation. Now, on March 6, 1782, at 6h. 14′. 56″. mean time (at which time the planet was ſtationary), its apparent longitude upon the ecliptic was obſerved to be 2ſ. 28°. 49′. 27″; the heliocentric longitude was alſo found by interpolation; hence the diſtance of the planet from the Sun came out 18·9053, the Earth's diſtance being unity. By interpolating the place of the planet for March, 7d. 6h. 14′. 56″. it was found to have moved 43·4365″ in twenty-four hours; but a planet revolving about the Sun in a circle whoſe radius is 18·9053, will have its diurnal motion =43·1647″. Now, the angular velocity of a body in an ellipſe is to the angular velocity in a circle at the ſame diſtance, in the ſubduplicate ratio of half the latus rectum to the diſtance; hence the planet's diſtance from the Sun was leſs than half the latus rectum. Alſo, by a like proceſs for April 1781 it appears, that at that time the angular motion of the planet exceeded, by a very little, the angular motion of a body in a circle at the ſame diſtance; therefore its diſtance from its perihelion could be but a very little leſs than ninety degrees. We find, moreover, that the angular velocity of the planet about the Sun was continually accelerated at the time of the above obſervations, and therefore the planet was approaching its perihelion. Now, by examining the Tables of the planet's motions in ſimilar ſituations, it appears that, in equal intervals of time, the firſt differences decreaſe very ſlowly, and the ſecond differences increaſe very ſlowly. Mr. Robiſon therefore gave to the firſt differences a very ſmall diminution, and to the ſecond differences a very ſmall increaſe, and this correction was made without altering any of the longitudes more than 3″; for the firſt obſervation had its longitude diminiſhed 1″, the ſecond and third increaſed 2·5″, and the fourth and fifth diminiſhed by 3″; and this muſt be allowed to be within the limits of probability. The elements deduced are as follow:

Mean diſtance		19·08247			
Eccentricity		0·9006			
Periodic times		83·359	years		
Mean anomaly		4ſ.	0°.	32′.	51″
Long. of aphelion	for epoch Dec. 31, 1783,	11	23	9	51
Long. of the node		2	12	46	14
Inclination of the orbit			0	46	25
Equation of the centre			5	26	56·6

Theſe elements, ſays Mr. Robinſon, are as accurate as the obſervations on which they are founded can give them; and, in 1788, agree very well with the obſervations, the differences being as often as much in defect as in exceſs; but, as the obſervations were made ſo near together, it cannot be expected that this agreement will laſt for a long time. The ſtar No. 964, obſerved by Mayer in 1756, is not now to be found; and, by computing the place of this planet for the time of his obſervation, Mr. Robiſon found the planet to be only 3′ 52″ weſtward of the ſtar, and 1″ northward, from which he ſuſpected that it might have been this planet which Mayer obſerved. It will appear, however, that this was not the caſe. It was alſo conjectured by ſome aſtronomers, that the ſtar No. 34, Tauri, of the Britiſh catalogue, was the new planet; but Mr. Robiſon thinks this conjecture by no means to be admitted, as it cannot be made to agree with the elements. Mr. Robiſon has computed Tables of this planet's motion, and obſerves, that the deviations from obſervations made near the vernal ſtations are in defect, whilſt thoſe near the autumnal ſtations are in exceſs. Hence it may be preſumed, that the mean diſtance and periodic time are ſomewhat too ſmall, and the aphelion too forward. This he did not perceive till after he had computed his Tables; and, he obſerves, the taſk was too tedious to make the computations anew. He therefore publiſhes them, not in the perſuaſion that they are perfect, but becauſe they are more conſiſtent with obſervations than thoſe of M. de la Place, and Oriani, the only ones which he had then ſeen.

M. de la Lande, in the Hiſtoire de l'Academie Royale des Sciences, 1787, has corrected theſe elements, after determining two diſtances from the Sun, the angle, and the time between. The reſults given by him are as follow;

Mean longitude in 1784	3ſ.	14°.	49′.	14″
Aphelion	11	16	19	30
Equation		5	26	47
Secular motion	2	9	11	11
Mean diſtance			19·2033	
Tropical revolution	30637 days			
Sidereal revolution	30737 days			

Theſe elements are formed from taking into conſideration the diſturbing forces of Jupiter and Saturn, which M. de la Lande found neceſſary; for otherwiſe the diſtances would be repreſented very well, when the longitude varied conſiderably. Theſe elements give the place of the planet different from the place of the ſtar obſerved by Mayer in 1756 by 11′, from which we may conclude that that ſtar was not the Georgian planet.

To correct the place of the node, M. de la Lande found the heliocentric longitudes on September 28, 1781, and March 8, 1788, to be 2ſ. 29°. 51′. 24″. and 3ſ. 28°. 48′. 49″. and latitudes 13′ 38″ and 33′ 20·5″. But the preceſſion of the equinoxes being 5′ 24″ in the interval, it muſt be ſubtracted from the difference of the longitudes to get the true motion in longitude, which was therefore 28° 52′ 1″; and the laſt latitude was diminiſhed 3″ for the ſame reaſon, but augmented 1″ on account of the motion of the node; hence the place of the node at the beginning of 1781 was 2ſ. 12°. 44′. 12″, and the inclination 46′ 20″. M. de la Grange makes the annual motion in longitude of the aphelion to be 53·42″; and that of the node to be 12·5″. But, if the denſity of Venus be ſuch as is ſuppoſed by La Lande, the annual motion of the nodes will be 20″ 40‴.

Of the Satellites of the Georgian Planet.

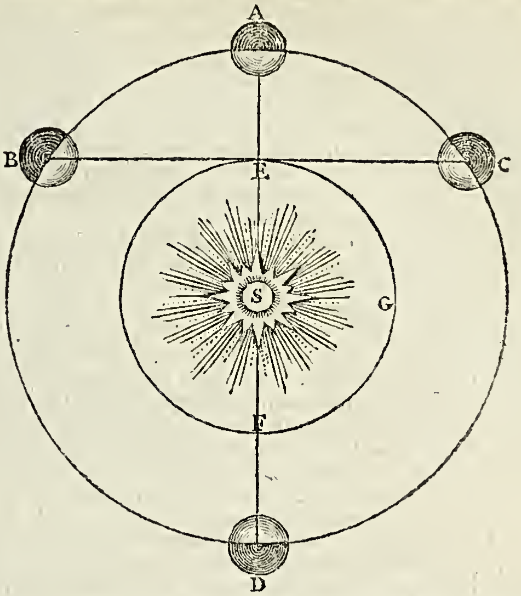
On January 11, 1787, as Dr. Herſchel was obſerving the Georgian planet, he perceived, near its diſk, ſome very ſmall ſtars, whoſe places he noted. The next evening, upon examining them, he found that two of them were miſſing. Suſpecting therefore that they might be ſatellites, which had diſappeared in conſequence of having changed their ſituation, he continued his obſervations, and in the courſe of a month diſcovered them to be ſatellites, as he had at firſt conjectured. Of this diſcovery he gave an account in the Phil. Tranſ. for 1787. The next year he publiſhed a farther account of this diſcovery, containing their periodic times, diſtances, and poſitions of their orbits, ſo far as he was able then to aſcertain them. The moſt convenient method of determining the periodic time of a ſatellite, is either from its eclipſes, or from taking its poſition in ſeveral ſucceſſive oppoſitions of the planet; but no eclipſes have yet happened ſince the diſcovery of theſe ſatellites, and it would be waiting a long time to put in practice the other method. Dr. Herſchel, therefore, took their ſituations whenever he could aſcertain them with ſome degree of preciſion, and then reduced them by computation to ſuch ſituations as were neceſſary for his purpoſe. In computing the periodic times, he has taken the ſynodic revolution, as the poſitions of their orbits, at the times when their ſituations were taken, were not ſufficiently known to get a very accurate ſiderial revolution. The mean of ſeveral reſults gave the ſynodic revolution of the firſt ſatellite 8d. 17h. 1′. 19·3″. and of the ſecond 13d. 11h. 5′. 1·5″. The reſults, he obſerves, of which theſe are a mean, do not much differ among themſelves, and therefore the mean is probably tolerably accurate. The epochs from which their ſituations may at any time be computed are, for the firſt, October 19, 1787, at 19h. 11′. 28″. and, for the ſecond, at 17h. 22′. 40″. at which times they were 76° 43′ north, following the planet.

The next thing to be determined, in the elements of theſe ſatellites, was their diſtances from the planet; to obtain which, he found one diſtance by obſervation, and then the other from the periodic times. Now, in attempting to diſcover the diſtance of the ſecond, the orbit was ſeemingly elliptical. On March 18, 1787, at 8h. 2′. 50″. he found the elongation to be 46·46″, this being the greateſt of all the meaſures he had taken. Hence, at the mean diſtance of the Georgian from the Earth, this elongation will be 44·23″. Admitting, therefore, for the preſent, ſays Dr. Herſchel, that the ſatellite moves in a circular orbit, we may take 44·23″ for the true diſtance, without much error; hence, as the ſquares of the periodic times are as the cubes of the diſtances, the diſtance of the firſt ſatellite comes out 33·09″. The ſynodic revolutions were here uſed inſtead of the ſiderial, which will make but a ſmall error.

The laſt thing to be done was to determine the inclination of the orbits, and places of their nodes. And here a difficulty preſented itſelf, which could not be got over at the time of his firſt obſervation; for it could not then be determined which part of the orbit was inclined to the Earth, and which from it. On the two different ſuppoſitions, therefore, Dr. Herſchel has computed the inclinations of the orbits, and the places of the nodes, and found them as follows: The orbit of the ſecond ſatellite is inclined to the ecliptic 99° 43′ 53·3″, or 81° 6′ 4·4″; its aſcending node upon the ecliptic is in 5ſ. 18°. or 8ſ. 6°. and, when the planet comes to the aſcending node of this ſatellite, which will happen about the year 1799, or 1818, the northern half of the orbit will be turned towards the eaſt or weſt at the time of its meridian paſſage. M. de Lambre makes the aſcending node in 5ſ. 21°. or 8ſ. 9°. from Dr. Herſchel's obſervations. The ſituation of the orbit of the firſt ſatellite does not materially differ from that of the ſecond. The light of the ſatellites is extremely faint; the ſecond is the brighteſt, but the difference is ſmall. The ſatellites are probably not leſs than thoſe of Jupiter. There will be eclipſes of theſe ſatellites about the year 1799, or 1818, when they will appear to aſcend through the ſhadow of the planet, in a direction almoſt perpendicular to the ecliptic.

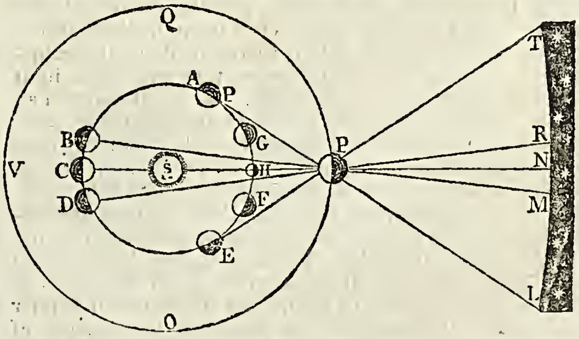
Of the Phenomena peculiar to the Superior Planets.

We have ſeen that the greateſt elongation of the *inferior* planets is leſs than ninety degrees, or a quarter of a circle; ſo that they are never far from the Sun, but conſtantly attend it. But the *ſuperior* planets do not always attend the Sun, as the inferior ones do; they are indeed ſometimes in conjunction with it, but then they are ſometimes in oppoſition to, or 180 degrees from, it. Let S, in the annexed figure, be the Sun, ABDC the orbit of any ſuperior planet, Mars, for inſtance; and EFG, the Earth's orbit. If the Earth be at E, the Sun at S, and the planet at D, the Sun and the planet will be both on the ſame ſide of the Earth; and conſequently the planet will appear in conjunction with the Sun. But, as the orbit of the Earth is between the Sun and the orbit of the ſuperior planet, it is poſſible for the Earth to be between the Sun and the planet, and conſequently for the planet and the Sun to be on oppoſite ſides of the Earth, or the planet to be in oppoſition; thus, if, when the Earth is at E, Mars be at A, he is then in oppoſition to the Sun. A ſuperior planet is in quadrature with the Sun, when its geocentric place is ninety degrees from the geocentric place of the Sun. If the Earth be at E, and Mars at B or C, he is in quadrature with the Sun; for the lines AE, EB, form a right angle, as do alſo the lines EA, EC.



As the Earth goes round the Sun in leſs time, and in a leſs orbit, than any of the ſuperior planets, it will not be amiſs to ſuppoſe a ſuperior planet to ſtand ſtill in ſome part of its orbit, while the Earth goes once round the Sun in her's, and conſider the appearances the planets would then have, which are theſe: 1. While the Earth is in her moſt diſtant ſemicircle, the apparent motion of the planet would be *direct*. 2. While the Earth is in her neareſt ſemicircle, the planet would be *retrograde*. 3. While the Earth is near the points of contact of a line drawn from the planet, ſo as to be a tangent to the Earth's orbit, the planet would be *ſtationary*.

To illuſtrate this, let ABCDEFHG, in the following figure, be the orbit of the Earth; S, the Sun; PQVO, the orbit of Mars; LMNRT, an arc of the ecliptic. Let us now ſuppoſe the planet Mars to continue at P, while the Earth goes round in her orbit, according to the order of the letters ABC, &c. ABCDEFHG may be conſidered as ſo many ſtations, from whence an inhabitant of the Earth would view Mars at different times of the year; and if ſtraight lines be drawn, from each of theſe ſtations,



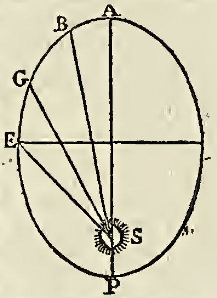
through Mars at P, and be continued to the ecliptic, they will point out the apparent place of Mars at theſe different ſtations. Thus, ſuppoſing the Earth at A, the planet will be ſeen among the ſtars at L; when the Earth is arrived at B, the planet will appear at M; and, in the ſame manner, when at C, D, and E, it will be ſeen among the ſtars at NRT; therefore, while the Earth moves over the large part of the orbit ABCDE, the planet will have an apparent motion from L to T, and this motion is from weſt to eaſt, or the ſame way with the Earth; and the planet is ſaid to move direct, or according to the order of the ſigns. When the Earth is near to A and E, the point of contact of the tangent to the Earth's orbit, the planet will be ſtationary for a ſhort ſpace of time.

When the Earth moves from E to H, the planet ſeems to return from T to N; but, while it moves from H to A, it will appear to move in a contrary direction, and thus be retrograde from N to L, where it will again be ſtationary: and, ſince the part of the orbit which the Earth deſcribes in paſſing from A to E, is much greater than the part EHP, though the ſpace TL which the planet deſcribes in direct and retrograde motion is the ſame, the direct motion from L to T muſt be much ſlower than the retrograde motion from T to L. When the Earth is at C, a line drawn from C through S and P to the ecliptic, ſhews that Mars is then in conjunction with the Sun. But, when the Earth is at H, a line drawn from H through P, and continued to the ecliptic, would terminate in a point oppoſite to S; therefore in this ſituation Mars would be in oppoſition to the Sun. Thus it appears, that the motion of Mars is direct when in conjunction, and retrograde when in oppoſition. The retrograde motions of the ſuperior planets happen oftener, the ſlower their motions are; as the retrograde motions of the inferior planets happen oftener, the ſwifter their angular motions are; becauſe the retrograde motions of the ſuperior planets depend upon the motions of the Earth, but thoſe of the inferior on their own angular motion. A ſuperior planet is retrograde once in each revolution of the Earth; an inferior one in every revolution of its own.

The ſuperior planets are ſometimes nearer the Earth than at other times; they alſo appear larger, or ſmaller, according to their different diſtances from us. Thus, ſuppoſe the Earth to be at C; if Mars be at V, he is the whole diameter of the Earth's orbit nearer to us than if he were at P, and conſequently his diſk muſt appear larger at V than it would be at P. In other places, the diſtances of Mars from the Earth are intermediate. The diameter of the Earth's orbit bears a greater ratio to the diameter of the orbit of Mars than it does to the diameter of the orbit of Jupiter, and a greater to that of Jupiter than of Saturn; conſequently, the difference between the greateſt and leaſt apparent diameters is greater in Mars than in Jupiter, and greater in Jupiter than in Saturn.

The ſuperior, like the inferior, planets, do not always appear in the ecliptic, their orbits being inclined alſo to that of the Earth; one half is therefore above the ecliptic, the other half below it, nor are they ever ſeen in it but when they are in their nodes. They all move in an ellipſe; and their motions are very ſimple, being compounded of a projectile motion, forward in a right line, which is a tangent to the orbit, and a gravitation towards the Sun at the centre. Beſides, being at ſuch vaſt diſtances from each other, the effects of their mutual gravitation towards one another are in a conſiderable degree, tho' not altogether, inſenſible; for the action of Jupiter upon Saturn, for example, is found to be $\frac{1}{204}$ of the action of the Sun upon Saturn, by comparing the matter of Jupiter with that of the Sun, and the ſquare of the diſtance of each from Saturn. So that the elliptic orbit of Saturn will be found more juſt, if its focus be ſuppoſed not in the centre of the Sun, but in the common centre of gravity of the Sun and Jupiter, or rather in the common centre of gravity of the Sun and all the planets below Saturn. And, in like manner, the elliptic orbit of any other planet will be found more accurate, by ſuppoſing its focus to be in the common centre of gravity of the Sun and all the planets that are below it. But the matter is far otherwiſe in reſpect of the ſecondary planets, or ſatellites; for every one of theſe, though it chiefly gravitates towards its reſpective primary one, as its centre, yet, at equal diſtances from the Sun, it is alſo attracted towards him with an equally-accelerated gravity, as the primary one is towards him; but at a greater diſtance with leſs, and at a nearer diſtance with greater: from which double tendency towards the Sun, and towards their own primary planets, it happens, that the motion of the ſatellites, or ſecondary planets, comes to be very much compounded, and affected with various inequalities.

The motions even of the primary planets, in their elliptic orbits, are not equable, becauſe the Sun is not in their centre, but their focus. Hence they move ſometimes faſter, and ſometimes ſlower, as they are nearer to, or farther from, the Sun; but yet theſe irregularities are all certain, and follow according to an immutable law. Thus, the ellipſis PEA, &c. repreſenting the orbit of a planet, and the focus S the Sun's place: the axis of the ellipſe AP, is the line of the apſes; the point A, the higher apſis, or aphelion; P, the lower apſis, or perihelion; GS, the eccentricity; and ES, the planet's mean diſtance from the Sun. Now, the motion of the planet in its perihelion P is ſwifteſt, but in its aphelion A it is ſloweſt; and at E the motion as well as the diſtance is a mean, being there ſuch as, if continued uniform, would deſcribe the whole orbit in the ſame time it is really deſcribed in. And the law by which the motion in every point is regulated, is this, that a line or radius drawn from the centre of the Sun to the centre of the planet, and thus carried along with an angular motion, does always deſcribe an elliptic area proportional to the time; that is, the trilineal area ASB, is to the area ASG, as the time the planet is in moving over AB, to the time it is in moving over AG.



A planet's motion, or diſtance from its apogee, is called the *mean anomaly* of the planet, and is meaſured by the area it deſcribes in the given time; when the planet arrives at the middle of its orbit, or the point E, the area or time is called the *true anomaly*. When the planet's motion is reckoned from the firſt point of Aries, it is called its *motion in longitude*, which is either mean or true, viz. *mean*, which is ſuch as it would have were it to move uniformly in a circle; and *true*, which is that with which the planet actually deſcribes its orbit, and is meaſured by the arc of the ecliptic it deſcribes. And hence may be found the planet's place in its orbit for any given time, after it has left the aphelion; for, ſuppoſe the area of the ellipſis be ſo divided by the line SG, that the whole elliptic area may have the ſame proportion to the part ASG, as the whole periodical time in which the planet deſcribes its whole orbit, has to the given time; then will G be the planet's place in its orbit ſought.

As to the periods and velocities of the planets, or the times in which they perform their courſes, they are found to have a wonderful harmony with their diſtances from the Sun, and with one another: the nearer each planet is to the Sun, the quicker ſtill is its motion, and its period the ſhorter, according to this general and regular law, viz. that the ſquares of their periodical times are as the cubes of their mean diſtances from the Sun or focus of their orbits. Kepler deduced this law merely from obſervation, by a compariſon of the ſeveral diſtances of the planets with their periods or times: the glory of inveſtigating it from phyſical principles is due to Sir Iſaac Newton, who has demonſtrated that, in the preſent ſtate of nature, ſuch a law was inevitable.

With reſpect to the *proportional* magnitudes of the primary planets, we have, at *fig.* 3, in the Aſtronomical-

Plate V. exhibited a view of them, as they really are, in quantity of matter or dimenſions, compared with one another; from a bare inſpection of which the imagination will readily form a correct idea of the ſuperior maſs of the more diſtant planets, and of the inferior ſize of thoſe which revolve nearer the Sun. Each planet is diſtinguiſhed by its proper character, from Saturn to Mercury. The Georgian planet, in this arrangement, is placed under Jupiter, as being inferior to him in ſize.

With reſpect to the *apparent* ſize or magnitude of the Sun, as it would comparatively appear to the eye of a ſpectator placed on the different planets, we have, at *fig.* 4, in the ſame Plate, illuſtrated this phenomenon. If ſeen from Mercury, the Sun would appear as large as at *a.* From Venus, of the ſize as at *b.* From the Earth, as at *c.* From Mars, of the ſize at *d.* From Jupiter, as at *e.* From Saturn, as ſmall as at *f*; and from the Georgian planet ſtill ſmaller, as at *g.*

OF ECLIPSES.

Thoſe phenomena termed *eclipſes*, were in former ages beheld with terror and amazement, and looked upon as prodigies that portended calamity and miſery to mankind. Theſe fears, and the erroneous opinions which produced them, had their ſource in the hieroglyphical language of the firſt inhabitants of the Earth. The word eclipſe is derived from the Greek, and ſignifies dereliction, a fainting away, or ſwooning. Now as the Moon falls into the ſhadow of the Earth, and is deprived of the Sun's enlivening rays, at the time of her greateſt brightneſs, and even appears pale and languid before her obſcuration, Lunar eclipſes were called *Lunæ labores*, the ſtruggles or labours of the Moon. To relieve her from theſe imagined diſtreſſes, ſuperſtition adopted methods equally ridiculous and abſurd. Plutarch aſſures us, that at Rome it was not allowed to talk publicly of any natural cauſes of eclipſes; the popular opinion running ſo ſtrongly in favour of their ſupernatural production, at leaſt thoſe of the Moon; for, as to thoſe of the Sun, they had ſome idea that they were cauſed by the interpoſition of the Moon between us and the Sun; but were at a loſs for a body to interpoſe between us and the Moon, which they thought muſt be the way if the eclipſes of the Moon were produced by natural cauſes. They therefore made a great noiſe with brazen inſtruments, and ſet up loud ſhouts, during eclipſes of the Moon; thinking by that means to eaſe her in labour: whence Juvenal, ſpeaking of a talkative woman, ſays, *Una laboranti poterit ſuccurrere Lunæ.* Others attributed the eclipſe of the Moon to the arts of magicians, who, by their inchantments, plucked her out of heaven, and made her ſkim over the graſs.

The ſuperſtitious notions entertained of eclipſes, were of conſiderable advantage to Chriſtopher Columbus, the diſcoverer of America, who being driven on the iſland of Jamaica in the year 1493, and diſtreſſed for want of proviſions, was refuſed relief by the natives; but having threatened them with a plague, and foretelling an eclipſe as a token of it, which happened according to his prediction, the barbarians were ſo terrified, that they ſtrove who ſhould be the firſt in bringing him ſupplies, throwing them at his feet, and imploring forgiveneſs.

The natives of Mexico keep faſt during eclipſes; and particularly their women, who beat and abuſe themſelves, drawing blood from their arms, &c. imagining the Moon has been wounded by the Sun in ſome quarrel between them. The Chineſe fancy that eclipſes are occaſioned by great dragons, who are ready to devour the Sun and Moon; and therefore, when they perceive an eclipſe, they rattle drums and braſs kettles, till they think the monſter, terrified by the noiſe, lets go his prey. Among other nations, when the Moon, by paſſing between us and the Sun, deprived the Earth of its light, the Sun was thought to turn away his face, as if in abhorrence of the crimes of mankind, and to threaten everlaſting night and deſtruction to the world. But thanks to the advancement of ſcience, which, while it has delivered us from the idle fears and apprehenſions of the ancients, leaves us in poſſeſſion of their repreſentative knowledge, enables us to explain the appearances on which it was founded, and points out the perverſion and abuſe of it.

Any opaque body, that is expoſed to the light of the Sun, will caſt a ſhadow behind it. This ſhadow is a ſpace deprived of light, into which if another body comes, it cannot be ſeen for want of light; the body thus falling within the dark ſhadow, it is ſaid to be *eclipſed*. The Earth and Moon being opaque bodies, and deriving their light from the Sun, do each of them caſt a ſhadow behind, or towards the hemiſphere oppoſed to the Sun. Now when either the Moon or the Earth paſſes through the other's ſhadow, it is thereby deprived of illumination from the Sun, and becomes inviſible to a ſpectator on the body from whence the ſhadow comes; and ſuch ſpectator will obſerve an eclipſe of the body which is paſſing through the ſhadow; while a ſpectator on the body which paſſes through the ſhadow, will obſerve an eclipſe of the Sun, being deprived of his light. Hence there muſt be three bodies concerned in an eclipſe; 1. the luminous body; 2. the opaque body that caſts the ſhadow; and, 3. the body involved in the ſhadow.

Of ECLIPSES of the MOON.

As the Earth is an opaque body, enlightened by the Sun, it will caſt a ſhadow towards thoſe parts that are oppoſite to the Sun, and the axis of this ſhadow will always be in the plane of the ecliptic, becauſe both the Sun and the Earth are always there. The Sun and the Earth are both ſpherical bodies; if they were therefore of an equal ſize, the ſhadow of the Earth would be cylindrical, as in *fig.* 1, below; and would continue of the ſame breadth at all diſtances from the Earth, and would conſequently extend to an infinite diſtance, ſo that Mars, Jupiter, Saturn, or the Georgian, might be eclipſed by it; but, as the planets are never eclipſed by the Earth, this is not the ſhape of the ſhadow, and conſequently the Earth is not equal in ſize to the Sun. If the Sun were leſs than the Earth, as in *fig.* 2, the ſhadow would be wider the farther it was from the Earth, and would therefore reach to the orbits of Jupiter, Saturn, and the Georgian, and eclipſe any of theſe planets when the Earth came between the Sun and them; but the Earth never eclipſes them, therefore this is not the ſhape of its ſhadow, and conſequently the Sun is not leſs than the Earth. Therefore, as the Earth is neither larger nor equal to the Sun, we may fairly conclude that it is leſs; and that the ſhadow of the Earth is a cone, which ends in a point at ſome diſtance from the Earth, as in *fig.* 3.

Fig. 1.

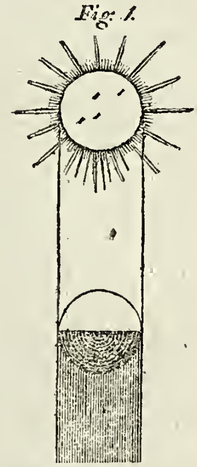


Fig. 2.

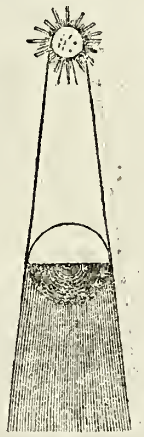
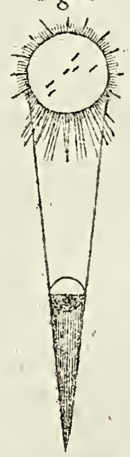


Fig. 3.



The axis of the Earth's ſhadow falls always upon that point of the ecliptic that is oppoſite to the Sun's geocentric place; thus if the Sun be in the firſt point of Aries, the axis of the Earth's ſhadow will terminate in the firſt point of Libra. It is clear, therefore, that there can be no eclipſe of the Moon but when the Earth is interpoſed between it and the Sun, that is, at the time of its *oppoſition*, or when it is full; for, unleſs it is oppoſite to the Sun, it never can be in the Earth's ſhadow: and, if the Moon always moved in the plane of the ecliptic, ſhe would every full Moon paſs through the body of the ſhadow, and there would be a total eclipſe of the Moon.

We have already obſerved, that the Moon's orbit is inclined to the plane of the ecliptic, and only coincides with it in two places, which are the nodes. It may therefore be full Moon without her being in the plane of the ecliptic; ſhe may either be on the north or the ſouth ſide of it; in either of theſe caſes ſhe will not enter into the ſhadow, but be above it in the one caſe, and below it in the other. To illuſtrate this, let HG, *fig.* 5, in the Aſtronomical-Plate V, repreſent the orbit of the Moon, EF, the plane of the ecliptic, in which the centre of the Earth's ſhadow always moves, and N the node of the Moon's orbit; ABCD four places of the ſhadow of the Earth in the ecliptic. When the ſhadow is at A, and the Moon at I, there will be no eclipſe: when the full Moon is nearer the node, as at K, only part of her globe paſſes through the ſhadow, and, that part becoming dark, it is called a *partial* eclipſe; and it is ſaid to be of ſo many digits as there are twelfth parts of the Moon's diameter darkened. When the full Moon is at M, ſhe enters into the ſhadow C; and, paſſing through it, becomes wholly darkened at L, and leaves the ſhadow at O: as the whole body of the Moon is here immerſed in the ſhade, this is called a *total* eclipſe: but when the Moon's centre paſſes through that of the ſhadow, which can only happen when ſhe is in the node at N, it is called a *total* and *central* eclipſe. There will always be ſuch eclipſes, when the centre of the Moon and axis of the ſhadow meet in the nodes.

The duration of a central eclipſe is ſo long, as to let the Moon go the length of three of its diameters totally eclipſed, which ſtay in the Earth's ſhadow is computed to be 3h. 57′. 6″. from the beginning to the end, if the Moon be at her greateſt diſtance from the Earth; and 3h. 37′. 26″. if ſhe be at her leaſt diſtance. The reaſon of this difference is, that when the Moon is fartheſt from the Earth ſhe moves ſloweſt, and when neareſt to it, quickeſt. In the beginning of an eclipſe, the Moon enters the weſtern part of the ſhadow with the eaſtern part of her limb; and, in the end of it, ſhe leaves the eaſtern part of the ſhadow with the weſtern part of her limb. All the intermediate time, from her entrance to her quitting the ſhadow, is reckoned into the eclipſe; but only ſo much into the total immerſion, as paſſes while the Moon is altogether obſcured.

From the magnitude of the Sun, the ſize of the Earth, their diſtance from each other, the refraction of the atmoſphere, and the diſtance of the Moon from the Earth, it it has been calculated that the ſhadow of the Earth terminates in a point, which does not reach ſo far as the Moon's orbit. The Moon is not, therefore, eclipſed by the ſhadow of the Earth alone. The atmoſphere, by refracting ſome of the rays of the Sun, and reflecting others, caſts a ſhadow, though not ſo dark a one as that which ariſes from an opaque body: when, therefore, we ſay the Moon is eclipſed, by paſſing into the ſhadow of the Earth, it is to be underſtood of the ſhadow of the Earth together with its atmoſphere. Hence it is that the Moon is viſible in eclipſes, the ſhadow caſt by the atmoſphere not being ſo dark as that caſt by the Earth. The cone of this ſhadow is larger than the cone of the Earth's ſhadow, the baſe thereof broader, and the axis longer. There have been eclipſes of the Moon, in which the Moon has entirely diſappeared: Hevelius mentions one of this kind, which happened in Auguſt 1647, when he was not able to diſtinguiſh the place of the Moon, even with a good teleſcope, although the ſky was ſufficiently clear for him to ſee the ſtars of the fifth magnitude.

All opaque bodies, when illuminated by the rays of the Sun, caſt an *umbra*, or ſhadow, from them, which is encompaſſed by a *penumbra*, or thinner ſhadow, which every where ſurrounds the former, growing larger and larger as we recede from the body: in other words, the penumbra is all that ſpace ſurrounding the umbra, into which the rays of light can only come from ſome part of that half of the globe of the Sun which is turned towards the planet, all the reſt being intercepted by the intervening body. To illuſtrate this, let S, *fig.* 6, of the forementioned plate, be the Sun, E the planet, then the penumbral cone is FGH. The nearer any part of the penumbra is to the umbra or ſhadow, the leſs light it receives from the Sun; but, the farther it is, the more it is enlightened; thus the parts of the penumbra near M are illuminated by thoſe rays of light which come from that part of the Sun near to I, all the reſt being intercepted by the planet E. In like manner, the parts about N can only receive the light that comes from the part of the Sun near to L; whereas the parts of the penumbra at P and Q are enlightened in a much greater degree: for the planet intercepts from P only thoſe rays which come from the Sun near L, and hides from Q only a ſmall part of the Sun near I. The Moon paſſes through the penumbra before ſhe enters into the umbra or ſhadow. This cauſes her gradually to loſe her light, which is not ſenſible at firſt; but, as ſhe goes into the darker part of the penumbra, ſhe grows paler. The penumbra, where it is contiguous to the ſhadow, is ſo dark, that it is difficult to diſtinguiſh one from the other. If the atmoſphere be ſerene, every eclipſe of the Moon is viſible at the ſame inſtant to all the inhabitants of that ſide of the Earth to which ſhe is oppoſite. In a total eclipſe, the Moon generally appears of a duſky reddiſh colour, eſpecially towards the edges; but of a darker towards the middle of the ſhadow.

Since an eclipſe of the Moon ariſes from its real deprivation of light, and appears to begin at the ſame inſtant of time to every place on that hemiſphere, it affords a very ready method of finding the difference of longitudes of places upon the Earth. As the Moon enters the penumbra of the Earth before it comes to the umbra, it very gradually loſes its light; and the penumbra is ſo dark juſt at the umbra, that it is difficult to aſcertain the exact time when the Moon's limb touches the umbra, or when the eclipſe really begins. When the Moon has entered into the umbra, the ſhadow upon its diſk is generally ſo well defined that we may determine to a conſiderable degree of accuracy the time when any ſpots enter into the umbra. Hence the beginning and end of a lunar eclipſe are not ſo proper to determine the longitude from, as the times at which the umbra touches any of the ſpots.

Of Eclipſes of the Sun.

The Moon, when in conjunction, if near one of her nodes, will be interpoſed between us and the Sun, and will conſequently hide the Sun, or a part of him, from us, and caſt a ſhadow upon the Earth: this is called an *eclipſe* of the Sun; it may be either partial or total. An eclipſe of any lucid body is a deficiency or diminution of light, which would otherwiſe come from it to our eye, and is cauſed by the interpoſition of ſome opaque body. The eclipſes of the Sun and Moon, though expreſſed by the ſame word, are in nature very different; the Sun, in reality, loſes nothing of its native luſtre in the greateſt eclipſes, but is all the while inceſſantly ſending forth ſtreams of light every way around him, as copiouſly as before. Some of theſe ſtreams are, however, intercepted in their way towards our Earth, by the Moon coming between the Earth and the Sun: and the Moon having no light of her own, and receiving none from the Sun on that half of the globe which is towards our eye, muſt appear dark, and make ſo much of the Sun's diſk appear ſo, as is hid from us by her interpoſition. What is called an eclipſe of the Sun, is therefore, in reality, an eclipſe of the Earth, which is deprived of the Sun's light, by the Moon's coming between, and caſting a ſhadow upon it. The Earth being a globe, only that half of it, which at any time is turned towards the Sun, can be enlightened by him at that time; it is upon ſome part of this enlightened half of the Earth that the Moon's ſhadow falls in a ſolar eclipſe.

The Sun is always in the plane of the ecliptic; but the Moon being inclined to this plane, and only coinciding with it at the nodes, it will not cover either the whole or a part of the Sun, or in other words the Sun will not be eclipſed, unleſs the Moon is in or near one of her nodes. The Moon, however, cannot be directly between the Sun and us, unleſs they are both in the ſame part of the heavens; that is, unleſs they are in conjunction. Therefore, the Sun can never be eclipſed but at the *new Moon*, nor even then, unleſs the Moon at that time is in or near one of her nodes. From hence it is eaſy to ſhew, that the darkneſs of our Saviour's crucifixion was not owing to an eclipſe of the Sun. For the crucifixion happened at the time of the Jewiſh paſſover; and the paſſover, by the appointment of the law, was to be celebrated at the *full Moon*; the Sun could not, therefore, be eclipſed at the time of the paſſover.

The Moon being much ſmaller than the Earth, and having a conical ſhadow, becauſe ſhe is leſs than the Sun, can only cover a ſmall part of the Earth by her ſhadow; though, as we have obſerved before, the whole body of the Moon may be involved in that of the Earth. Hence an eclipſe of the Sun is viſible but to a few inhabitants of the Earth; whereas an eclipſe of the Moon may be ſeen by all thoſe that are on that hemiſphere which is turned towards it. In other words, as the Moon can never totally eclipſe the Earth, there will be many parts of the globe that will ſuffer no eclipſe, though the Sun be above their horizon. An eclipſe of the Sun always begins on the weſtern, and ends on the eaſtern, ſide; becauſe the Moon, moving in her orbit from weſt to eaſt, neceſſarily firſt arrives at and touches the Sun's weſtern limb, and goes off at the eaſtern.

It is not neceſſary, in order to conſtitute a central eclipſe of the Sun, that the Moon ſhould be exactly in the line of the nodes, at the time of its conjunction; for it is ſufficient to denominate an eclipſe of the Sun *central*, that the centre of the Moon be directly between the centre of Sun and the eye of the ſpectator; for to him, the Sun is then centrally eclipſed. But, as the ſhadow of the Moon can cover but a ſmall portion of the Earth, it is obvious this may happen when the Moon is not in one of her nodes. Further, the Sun may be eclipſed centrally, totally, partially, and not at all, at the ſame time. Thus, in *fig.* 7, of the Aſtronomical-Plate V, let ABC be the Sun, MN the Moon, *hlg* part of the cone of the Moon's ſhadow, *fd* the penumbra of the Moon: from this figure it is eaſy to perceive, 1. That thoſe parts of the Earth that are within the circle repreſented by *gh*, are covered by the ſhadow of the Moon, ſo that no rays can come from any part of the Sun into that circle, on account of the interpoſition of the Moon. 2. In thoſe parts of the Earth where the penumbra falls, only part of the Sun is viſible; thus between *d* and *g* the parts of the Sun near C cannot be ſeen, the rays coming from thence towards *d* or *g* being intercepted by the Moon; whereas at the ſame time, the parts between *f* and *h* are illuminated by rays coming from C, but are deprived by the Moon of ſuch as come from A. 3. The nearer any part of the Earth, within the penumbra, is to the ſhadow of the Moon, as in places near *g*, *l*, or *h*, the leſs portion of the Sun is viſible to its inhabitants; but the nearer it is to the outſide of the penumbra, as towards *d*, or *f*, the greater portion of the Sun may be ſeen. 4. Out of the penumbra, the entire diſk of the Sun is viſible.

The Moon's dark ſhadow covers only a ſpot on the Earth's ſurface about 180 Engliſh miles broad, when the Moon's diameter appears largeſt, and the Sun's leaſt; and the total darkneſs can extend no farther than the dark ſhadow covers. Yet the Moon's partial ſhadow or penumbra may cover a circular ſpace 4900 miles in diameter, within all which the Sun is more or leſs eclipſed, as the places are leſs or more diſtant from the centre of the penumbra. When the Moon changes exactly in the node, the penumbra is circular on the Earth at the middle of the general eclipſe; becauſe at that time it falls perpendicularly on the Earth's ſurface: but at every other moment it falls obliquely, and will therefore be elliptical; and the more ſo, as the time is longer before or after the middle of the eclipſe; and then much greater portions of the Earth's ſurface are involved in the penumbra. When the penumbra firſt touches the Earth, the general eclipſe begins; when it leaves the Earth, the eclipſe ends: from the beginning to the end the Sun appears eclipſed in ſome part of the Earth or other. When the penumbra touches any place, the eclipſe begins at that place, and ends when the penumbra leaves it. When the Moon changes in the node, the penumbra goes over the centre of the Earth's diſk as ſeen from the Moon; and conſequently, by deſcribing the longeſt line poſſible on the Earth, the Sun's general eclipſe continues the longeſt upon it; namely, at a mean rate, 5h. 50m. more, if the Moon be at her greateſt diſtance from the Earth, becauſe ſhe then moves ſloweſt; leſs, if ſhe be at her leaſt diſtance, becauſe of her quicker motion, as obſerved before in eclipſes of the Moon.

A total eclipſe of the Sun is a very curious phenomenon; and, as there are not many perſons who can have an opportunity of ſeeing one, we ſhall here give the particulars recorded of that which happened on the 22d of April, 1715. Captain Stannyan, at Bern in Switzerland, ſays, "the Sun was totally dark for four minutes and an half; and that a fixed ſtar and planet apeared very bright; and that its getting out of the eclipſe was preceded by a blood-red ſtreak of light from its left limb, which continued not longer than ſix or ſeven ſeconds of time; then part of the Sun's diſk appeared all on a ſudden, as bright as Venus was ever ſeen in the night; nay brighter, and in that very inſtant gave a light and ſhadow to things, as ſtrong as Moon-light uſed to do." The inference drawn from theſe phenomena is, that the Moon has an atmoſphere.

J. C. Facis, of Geneva, ſays, "there was ſeen, during the whole time of its total immerſion, a whiteneſs, which ſeemed to break out from behind the Moon, and to encompaſs it on all ſides equally; its breadth was not the twelfth part of the Moon's diameter. Venus, Saturn, and Mercury, were ſeen by many; and, if the ſky had been clear, many more ſtars might have been ſeen, and with them Jupiter and Mars. Some gentlewomen in the country ſaw more than ſixteen ſtars; and many people on the mountains ſaw the ſky ſtarry, in ſome places where it was not overcaſt, as during the night at the time of the full Moon. The duration of total darkneſs was three minutes." Dr. J. J. Scheuchzer, of Zurich, ſays, that "both planets and fixed ſtars were ſeen; the birds went to rooſt; the bats came out of their holes; and the fiſhes ſwam about; we experienced a manifeſt ſenſe of cold; and the dew fell upon the graſs. The total darkneſs laſted four minutes."

Dr. Halley, who obſerved this eclipſe at London, has thus given the phenomena attending it. "It was univerſally obſerved, that, when the laſt part of the Sun remained on its eaſt ſide, it grew very faint, and was eaſily ſupportable to the naked eye, even through the teleſcope, for above a minute of time before the total darkneſs; whereas on the contrary, my eye could not endure the ſplendour of the emerging beams in the teleſcope from the firſt moment. To this perhaps two cauſes concurred; the one, that the pupil of the eye did neceſſarily dilate itſelf during the darkneſs, which had before been much contracted by looking on the Sun. The other, that the eaſtern parts of the Moon, having been heated with a day near as long as thirty of ours, muſt of neceſſity have that part of its atmoſphere replete with vapours, raiſed by the long-continued action of the Sun; and by conſequence, it was more denſe near the Moon's ſurface, and more capable of obſtructing the luſtre of the Sun's beams. Whereas at the ſame time the weſtern edge of the Moon had ſuffered as long a night, during which time there might fall in dews, all the vapours that were raiſed in the preceding long day; and for that reaſon, that part of its atmoſphere might be ſeen much more pure and tranſparent. About two minutes before the total immerſion, the remaining part of the Sun was reduced to a very fine horn, whoſe extremities ſeemed to loſe their acuteneſs, and to become round like ſtars. And, for the ſpace of about a quarter of a minute, a ſmall piece of the ſouthern horn of the eclipſe ſeemed to be cut off from the reſt by a good interval, and appeared like an oblong ſtar rounded at both ends: which appearance could proceed from no other cauſe but the inequalities of the Moon's ſurface, there being ſome elevated parts thereof near the Moon's ſouthern pole, by which interpoſition, part of that exceedingly-fine filament of light was intercepted. A few ſeconds before the Sun was totally hid, there diſcovered itſelf round the Moon a luminous ring, about a digit or perhaps a tenth part of the Moon's diameter in breadth. It was of a pale whiteneſs, or rather pearl colour, ſeeming to me a little tinged with the colours of the iris, and to be concentric with the Moon; whence I concluded it was the Moon's atmoſphere. But the great height of it, far exceeding that of our Earth's atmoſphere; and the obſervations of ſome who found the breadth of the ring to increaſe on the weſt ſide of the Moon, as the emerſion approached; together with the contrary ſentiments of thoſe, whoſe judgment I ſhall always revere; make me leſs confident, eſpecially in a matter whereto I gave not all the attention requiſite. Whatever it was, this ring appeared much brighter and whiter near the body of the Moon than at a diſtance from it; and its outward circumference, which was ill defined, ſeemed to terminate only by the extreme rarity of the matter it was compoſed of; and in all reſpects reſembled the appearance of an enlightened atmoſphere viewed from far: but whether it belonged to the Sun or the Moon, I ſhall not at preſent undertake to decide.

"During the whole time of the total eclipſe, I kept my teleſcope conſtantly fixed on the Moon, in order to obſerve what might occur in this uncommon appearance, and I ſaw perpetual flaſhes or coruſcation of light, which ſeemed for a moment to dart out from behind the Moon, now here, now there, on all ſides, but more eſpecially on the weſtern ſide, a little before the emerſion: and about two or three ſeconds before it, on the ſame weſtern ſide, where the Sun was juſt coming out, a long and very narrow ſtreak of a duſky but ſtrong red light ſeemed to colour the dark edge of the Moon, though nothing like it had been ſeen immediately after the immerſion. But this inſtantly vaniſhed upon the firſt appearance of the Sun, as did alſo the aforeſaid luminous ring. As to the degree of darkneſs, it was ſuch, that one might have expected to have ſeen many more ſtars than were ſeen in London; the planets, Jupiter, Mercury, and Venus, were all that were ſeen by the gentlemen of the Society from the top of their houſe, where they had a free horizon: and I do not hear that any one in town ſaw more than Capella and Aldebaran of the fixed ſtars. Nor was the light of the ring round the Moon capable of effacing the luſtre of the ſtars, for it was vaſtly inferior to that of the full Moon, and ſo weak, that I did not obſerve it caſt a ſhade. But the under parts of the hemiſphere, particularly in the ſouth-eaſt under the Sun, had a crepuſcular brightneſs; and all round us, ſo much of the ſegment of our atmoſphere as was above the horizon, and was without the cone of the Moon's ſhadow, was more or leſs enlightened by the Sun's beams; and its reflection gave a diffuſed light, which made the air ſeem hazy, and hindered the appearance of the ſtars. And that this was the real cauſe thereof, is manifeſted by the darkneſs being more perfect in thoſe places near which the centre of the ſhade paſſed, where many more ſtars were ſeen, and in ſome, not leſs than twenty, though the light of the ring was to all alike. I forbear to mention the chill and damp, with which the darkneſs of this eclipſe was attended, of which moſt ſpectators were ſenſible, and equally judges; or the concern that appeared in all ſorts of animals, birds, beaſts, and fiſhes, upon the extinction of the Sun, ſince ourſelves could not behold it without ſome ſenſe of horror."

Of the Limits and Periods of Solar and Lunar Eclipses.

The diſtance of the Moon in degrees and minutes, above or below the ecliptic line, is called her *latitude*. If ſhe be above the ecliptic, ſhe has paſſed her *aſcending* node, and is ſaid to have north latitude; if below it, ſhe has paſſed her *deſcending* node, and is ſaid to have ſouth latitude. If the latitude at any time exceed the ſum of the ſemi-diameter of the Moon, equal to $16\frac{1}{4}$ minutes, and the Earth's ſhadow equal to $45\frac{1}{4}$ minutes, the Moon at that time cannot be eclipſed; but will either paſs under or over the ſhadow, according as ſhe happens to be above or below the ecliptic line. The diſtance from the node, either before or after it, correſponding to the above extent, is about twelve degrees, which is conſequently the limit of lunar eclipſes: for, when a full Moon or oppoſition happens within twelve degrees of the nodes, ſhe will be eclipſed; and, the nearer to the nodes, the greater will the eclipſe be.

If at the conjunction, or new Moon, the latitude of the Moon exceeds the ſum of the ſemi-diameters of the Sun $16\frac{1}{4}$ minutes, and of the Moon $16\frac{3}{4}$ minutes, we ſhould ſee no eclipſe of the Sun from the centre of the Earth. But as we view the luminaries from the ſurface, which is much higher, we are obliged to take in the ſemi-diameter of the Earth as ſeen from the Moon. Then, if the latitude of the Moon be greater than the ſum of theſe three numbers, $94\frac{3}{4}$ minutes, the Sun will not be eclipſed; for the Moon will paſs either over or under his diſk, according as ſhe is above or below the ecliptic line. The diſtance from the node on either ſide agreeing to the above-mentioned extent, is the eighteen degrees which is the utmoſt limit of ſolar eclipſes; whence it follows, that if the Sun and Moon, at the time of a conjunction or new Moon, happen to be within eighteen degrees of the node, the Sun will be eclipſed. Now, if a conjunction happen at or very near the node, there will be a great ſolar eclipſe; but at the preceding oppoſition, if the Earth was not got into the lunar ecliptic limits, at the next oppoſition it will be got beyond it; hence at each node there may happen only one ſolar eclipſe, and therefore in a year there may happen only two ſolar eclipſes. Indeed there muſt be one conjunction happen in the time in which the Earth is paſſing through the ſolar ecliptic limits, and conſequently there muſt be one ſolar eclipſe happen at each node; hence there muſt be two ſolar eclipſes at leaſt in a year.

If an oppoſition happen juſt before the Earth gets into the lunar ecliptic limit, the next oppoſition may not happen till the Earth is got beyond the limit on the other ſide of the node; conſequently there may not be a lunar eclipſe at the node; hence there may not be an eclipſe of the Moon in the courſe of a year. When therefore there are only two eclipſes in a year, they muſt be both of the Sun. If there be an eclipſe of the Moon as ſoon as the Earth gets within the lunar ecliptic limit, it will be got out of the limit before the next oppoſition; conſequently there can be only one lunar eclipſe at the ſame node. But, as the lunar nodes move backwards about nineteen degrees in a year, the Earth may come within the lunar ecliptic limits, at the ſame node, a ſecond time in the courſe of a year, and therefore there may be three lunar eclipſes in a year; and there can be no more.

If an eclipſe of the Moon happen at or very near to the node, a conjunction may happen before and after, whilſt the Earth is within the ſolar ecliptic limits; hence there may, at each node, happen two eclipſes of the Sun and one of the Moon; and in this caſe, the eclipſes of the Sun will be ſmall, and that of the Moon large. Thus

When the eclipſes happen at each node only once, there may be ſix eclipſes in a year, four of which muſt be of the Sun, and two of the Moon. But if, as in the laſt caſe, an eclipſe ſhould happen at the return of the Earth within the lunar ecliptic limits at the ſame node a ſecond time within the year, there may be ſix eclipſes, three of the Sun, and three of the Moon.

There may be ſeven eclipſes in a year. For twelve lunations are performed in 354 days, or in eleven days leſs time than a common year. If therefore an eclipſe of the Sun ſhould happen before January 11, and there be, at that and the next node, two ſolar and one lunar eclipſe at each node; then the twelfth lunation from the firſt eclipſe will give a new Moon within the year, and (on account of the retrograde motion of the Moon's nodes) the Earth may be got within the ſolar ecliptic limits, and there may be another ſolar eclipſe. Hence, when there are ſeven eclipſes in a year, five will be of the Sun, and two of the Moon. And, as ſeven eclipſes but ſeldom happen in a year, we may conclude the mean number to be about four. The ecliptic limits of the Sun being greater than thoſe of the Moon, there will be more ſolar than lunar eclipſes in about the ſame proportion as the limit is greater, that is, as three to two nearly. But more lunar than ſolar eclipſes are ſeen at any given place, becauſe a lunar eclipſe is viſible to a whole hemiſphere at once, whereas a ſolar eclipſe is viſible only to a part; and therefore there is a greater probability of ſeeing a lunar than a ſolar eclipſe. And, ſince the Moon is as long above the horizon as below, every ſpectator may expect to ſee half the number of lunar eclipſes that happen, provided the firmament be clear.

With reſpect to the periods of eclipſes, if the places of the Moon's nodes were fixed, eclipſes would always happen nearly at the ſame time of the year; but as they have a motion of about 3′ 11″ every day backwards, or contrary to the order of the ſigns, the ſucceeding eclipſe muſt recede likewiſe; and in one revolution of the nodes, which is completed in eighteen years and 225 days, there would always be a regular period of eclipſes, if any complete number of lunations were finiſhed without a fraction. But this never happens, for if both the Sun and Moon ſhould ſtart from a line of conjunction with either of the nodes in any point of the ecliptic, the Sun would perform eighteen annual revolutions and 222 degrees over and above, and the Moon 230 lunations and eighty-five degrees of the 231, by the time the node came round to the ſame point of the ecliptic again; ſo that the Sun would then be 138 degrees from the node, and the Moon eighty-five degrees from the Sun. But in 223 mean lunations, after the Sun, Moon, and nodes, have been once in a line of conjunction, they return ſo nearly to the ſame ſtate again, as that the ſame node, which was in conjunction with the Sun and Moon at the beginning of the firſt of theſe lunations, will be within 28′ 12″ of a degree of a line of conjunction with the Sun and Moon again, when the laſt of theſe lunations is completed. And therefore in that time there will be a regular period of eclipſes, or return of the ſame eclipſe, for many ages. In this period, which is called the Chaldean Saros, there are 18 Julian yrs. 11d. 7h. 43′. 20″. when the laſt day of February in leap-years is four times included; but, when it is five times included, the period conſiſts of only 18y. 10d. 7h. 43′. 20″. Conſequently, if to the mean time of any eclipſe, either of the Sun or Moon, we add 18 Julian yrs. 11d. 7h. 43′. 20″. when the laſt day of February in leap-years comes in four times, or a day leſs when it comes in five times, we ſhall have the mean time of the return of the ſame eclipſe.

But the falling back of the line of conjunctions or oppoſitions of the Sun and Moon 28′ 12″ with reſpect to the line of the nodes in every period, will wear it out in proceſs of time; and, after that, it will not return again in leſs than 12,492 years. Theſe eclipſes of the Sun, which happen about the aſcending node, and begin to come in at the north pole of the Earth, will go a little ſoutherly at each return, till they go quite off the Earth at the ſouth pole; and thoſe which happen about the deſcending node, and begin to come in at the ſouth pole of the Earth, will go a little northerly at each return, till at laſt they quite leave the Earth at the north pole. To exemplify this matter, we will firſt conſider the Sun's eclipſe (March 21ſt old ſtyle, April 1ſt new ſtyle), A.D. 1764, according to its mean revolutions, without equating the times, or the Sun's diſtance from the node; and then according to its true equated times.

This eclipſe fell in open ſpace at each return, quite clear of the Earth, ever ſince the creation, till A.D. 1295, June 13th old ſtyle, at 12h. 52′. 59″. P.M. when the Moon's ſhadow firſt touched the Earth at the north pole; the Sun being then 70° 48′ 27″ from the aſcending node. In each period ſince that time, the Sun has come 28′ 12″ nearer and nearer the ſame node, and the Moon's ſhadow has therefore gone more ſoutherly. In the year 1962, July 18th old ſtyle, at 10h. 36′. 21″. P.M. when the ſame eclipſe will have returned thirty-eight times, the Sun will be only 24′ 45″ from the aſcending node, and the centre of the Moon's ſhadow will fall a little northward of the Earth's centre. At the end of the next following period, A.D. 1980, July 28th old ſtyle, at 18h. 19′. 41″. P.M. the Sun will have receded back 3′ 27″ from the aſcending node, and the Moon will have a very ſmall degree of ſouthern latitude, which will cauſe the centre of her ſhadow to paſs a very ſmall matter ſouth of the Earth's centre. After which, in every following period, the Sun will be 28′ 12″ farther back from the aſcending node than in the period laſt before; and the Moon's ſhadow will go ſtill farther and farther ſouthward, until September 12th old ſtyle, at 23h. 46′. 22″. P.M. A.D. 2665; when the eclipſe will have completed its 77th periodical return, and will go quite off the Earth at the ſouth pole (the Sun being then 17° 55′ 22″ back from the node), and cannot come in at the north pole, ſo as to begin the ſame courſe over again, in leſs than 12,492 years afterwards. And ſuch will be the caſe of every other eclipſe of the Sun: For, as there is about eighteen degrees on each ſide of the node within which there is a poſſibility of eclipſes, their whole revolution goes through thirty-ſix degrees about that node, which, taken from 360 degrees, leaves remaining 324 degrees for the eclipſes to travel *in expanſum*. And as this thirty-ſix degrees is not gone through in leſs than ſeventy-ſeven periods, which takes up 1388 years, the remaining 324 degrees cannot be ſo gone through in leſs than 12,492 years. For, as 36 is to 1388, ſo is 324 to 12,492.

To illuſtrate this a little farther, we will examine ſome of the moſt remarkable circumſtances of the returns of the eclipſe which happened July 14th, 1748, about noon. This eclipſe, after traverſing the voids of ſpace from the creation, at laſt began to enter the Terra Auſtralis Incognita about eighty-eight years after the conqueſt, which was in the laſt year of king Stephen's reign: every Chaldean period it has crept more northerly, but was ſtill inviſible in Britain before the year 1622; when, on the 30th of April, it began to touch the ſouth parts of England about two in the afternoon; its central appearance riſing in the American ſouth ſeas, and traverſing Peru and the Amazons country, through the Atlantic ocean into Africa, and ſetting in the Æthiopian continent, not far from the beginning of the Red Sea. Its next viſible period was, after three Chaldean revolutions, in 1676, on the firſt of June, riſing central in the Atlantic ocean, paſſing us about nine in the morning, with four digits eclipſed on the under limb, and ſetting in the gulph of Cochinchina in the Eaſt Indies. It being now near the ſolſtice, this eclipſe was viſible the very next return in 1694, in the evening; and in two periods more, which was in 1730, on the 4th of July, was ſeen about half eclipſed juſt after ſun-riſe, and obſerved both at Wirtemberg in Germany, and Pekin in China, ſoon after which it went off.

Eighteen years more afforded us this eclipſe again, which fell on the 14th of July, 1748. The next viſible return happened on July 25th, 1766, in the evening, about four digits eclipſed; and, after two periods more, it will happen on Auguſt 16th, 1802, early in the morning, about five digits, the centre coming from the north frozen continent, by the capes of Norway, through Tartary, China, and Japan, to the Ladrone iſlands, where it goes off.

Again, in 1820, Auguſt 26th, between one and two, it will be a great eclipſe at London, about ten digits; but, happening ſo near the equinox, the centre will leave every part of Britain to the weſt, and enter Germany at Embden, paſſing by Venice, Naples, Grand Cairo, and ſet in the gulf of Baſſora near that city. It will be no more viſible till 1874, when five digits will be obſcured (the centre being now about to leave the Earth) on September 28th. In 1892, the Sun will go down eclipſed in London; and again, in 1928, the paſſage of the centre will be in the expanſum, though there will be two digits eclipſed at London, October the 31ſt of that year, and about the year 2090 the whole penumbra will be worn off; whence no more returns of this eclipſe can happen till after a revolution of ten thouſand years.

From theſe remarks on the entire revolution of this eclipſe, we may gather, that a thouſand years more or leſs (for there are ſome irregularities that may protract or lengthen this period 100 years) complete the whole terreſtrial phenomena of any ſingle eclipſe: and ſince twenty periods of fifty-four years each, and about thirty-three days, comprehend the entire extent of their revolution, it is evident, that the times of the returns will paſs through a circuit of one year and ten months, every Chaldean period being ten or eleven days later, and of the equable appearances, about thirty-two or thirty-three days. Thus, though this eclipſe happens about the middle of July, no other ſubſequent eclipſe of this period will return till the middle of the ſame month again; but wear conſtantly each period ten or eleven days forward, and at laſt appear in winter; but then it begins to ceaſe from affecting us. Another concluſion from this revolution may be drawn, that there will ſeldom be any more than two great eclipſes of the Sun in the interval of this period, and theſe follow ſometimes next return, and often at greater diſtances. That of 1715 returned again in 1735 very great; but this preſent eclipſe will not be great till the year 1820, which is a revolution of four Chaldean periods: ſo that the irregularities of their circuits muſt undergo new computations to aſſign them exactly.

Nor do all eclipſes come in at the ſouth pole: that depends altogether on the poſition of the lunar nodes, which will bring in as many from the expanſum one way as the other; and ſuch eclipſes will wear more ſoutherly by degrees, contrary to what happens in the preſent caſe. The eclipſe, for example, of 1736, in September, had its centre in the expanſum, and ſet about the middle of its obſcurity in Britain; it will wear in at the north pole, and, in the year 2600, or thereabouts, go off into the expanſum on the ſouth ſide of the Earth. The eclipſes therefore which happened about the creation are little more than half-way yet of their ethereal circuit; and will be 4000 years before they enter the Earth any more. This grand revolution ſeems to have been entirely unknown to the ancients. A longer period than the above-mentioned, for comparing and examining eclipſes which happen at long intervals of time, is 557 yr. 21d. 18h. 30′. 11″. in which time there are 6890 mean lunations; and the Sun and node meet again ſo nearly as to be but 11″ diſtant; but then it is not the ſame eclipſe that returns, as in the ſhorter period above-mentioned.

Of COMETS.

Of all the celeſtial bodies, comets have given riſe to the greateſt number of ſpeculations and conjectures. Their ſtrange appearance has in all ages been a matter of terror to the uninformed, who have generally looked upon them to be evil omens, and forerunners of war, peſtilence, &c. Thus, in ancient times, they were imagined to be prodigies hung out by the immediate hand of God in the heavens, and intended to alarm the world. Their nature being now better underſtood, they are no longer terrible: but as there are ſtill many who think them to be ſupernatural warnings, portents of future events, it may not be improper to obſerve, that the architect of the univerſe has framed every part according to divine order, and ſubjected all things to laws and regulations; that he does not hurl at random ſtars and worlds, and diſorder the ſyſtem of the whole glorious frame, to produce falſe apprehenſions of diſtant events, fears without foundation and without uſe. Religion glories in the teſt of reaſon, of knowledge, and of true wiſdom; it is every way connected with, and is always elucidated, by them. From philoſophy we may learn, that, the more the works of the ſupreme Author of the univerſe are underſtood, the more he muſt be adored; and that his ſuperintendancy over every portion is more clearly evinced, and more fully expreſſed, by their unvaried courſe, than by ten thouſand deviations.

The exiſtence of an univerſal connection between all parts of the ſiderial heavens is now generally admitted. Comets undoubtedly form a part of this great chain; but of the part they occupy, and of the uſes for which they exiſt, we are in a great meaſure ignorant. It is a portion of ſcience whoſe perfection is reſerved for ſome diſtant day, when theſe bodies, and their vaſt orbits, may, by long and accurate obſervation, be added to the known parts of the ſolar ſyſtem; when aſtronomy will appear with new lights, after all our diſcoveries, great as we at preſent imagine them to be. Upon the whole, the aſtronomy of comets is very imperfect; for but little can be known with certainty where but little can be ſeen. Comets afford few obſervations on which to ground conjecture, and are for the greateſt part of their courſe beyond the reach of human viſion. They are ſometimes called *blazing ſtars*, becauſe they are uſually attended with a long train of light, tending always oppoſite to the Sun, and of a fainter luſtre the farther it is from the body of the comet. And hence ariſes the diviſion of comets, into three kinds, viz. *bearded*, *tailed*, and *hairy*; though, in reality, this diviſion rather relates to the ſeveral circumſtances of the ſame comet, than to the phenomena of ſeveral. Thus, when the comet is eaſtward of the Sun, and moves from him, it is ſaid to be bearded, becauſe the light precedes it in the manner of a beard, as ſhewn at *fig.* 8, of the Aſtronomical-Plate V. When the comet is weſtward of the Sun, and ſets after him, it is ſaid to be tailed, becauſe the train of light follows it in the manner of a tail, as ſhewn at *fig.* 9. And, laſtly, when the Sun and comet are diametrically oppoſite, the Earth being between them, the train is hid behind the body of the comet, excepting the extremities, which, being broader than the body of the comet, appear as it were around it, like a border of hair, or *coma*, from whence the comet derives its name. This form of it is ſhewn at *fig.* 10, in the ſame Plate. But there have been comets whoſe diſk was as clear, round, and well-defined, as that of Jupiter, without either tail, beard, or coma.

Philoſophers and aſtronomers, of all ages, have been much divided in their opinions as to the nature of comets. Diodorus Siculus and Apollonius Myndius, in Seneca, inform us, that many of the Chaldeans held them to be laſting bodies, having ſtated revolutions as well as the planets, but in orbits vaſtly more extenſive; on which account they are only viſible while near the Earth, but diſappear again when they go into the higher regions. Others of them were of opinion, that the comets were only meteors raiſed very high in the air, which blaze for a while, and diſappear when the matter of which they conſiſt is conſumed or diſperſed. Some of the Greeks, before the time of Ariſtotle, ſuppoſed that a comet was a vaſt heap or aſſemblage of very ſmall ſtars meeting together, by reaſon of the inequalities of their motions, and ſo uniting into a viſible maſs, by the union of all their ſmall lights; which muſt again diſappear, as thoſe ſtars ſeparated, and each proceeded in its courſe. Pythagoras, however, accounted them a kind of planets or wandering ſtars, diſappearing in the ſuperior parts of their orbits, and becoming viſible only in the lower parts of them. But Ariſtotle held, that comets were only a kind of tranſient fires, or meteors, conſiſting of exhalations raiſed to the upper region of the air, and there ſet on fire; far below the courſe of the Moon.

Seneca, who lived in the firſt century, and who had ſeen two or three comets himſelf, plainly intimates that he thought them above the Moon; and argues ſtrongly againſt thoſe who ſuppoſed them to be meteors, or who held other abſurd opinions concerning them; declaring his belief that they were not fires ſuddenly kindled, but the eternal productions of nature. He points out alſo the only way to arrive at a certainty on this ſubject, viz. by collecting a number of obſervations concerning their appearance, in order to diſcover whether they return periodically or not. "For this purpoſe (ſays he) one age is not ſufficient; but the time will come when the nature of comets and their magnitudes will be demonſtrated, and the routes they take, ſo different from the planets, explained. Poſterity will then wonder, that the preceding ages ſhould be ignorant of matters ſo plain and eaſy to be known." For a long time this prediction of Seneca ſeemed not likely to be fulfilled; and Tycho Brahe was the firſt among the moderns who reſtored the comets to their true rank in the creation; for, after diligently obſerving the comet of 1577, and finding that it had no ſenſible diurnal parallax, he aſſigned it its true place in the planetary regions. See his book de Cometa, anni 1577.

Hevelius, from a great number of obſervations, propoſed it as his opinion, that the comets, like the ſolar maculæ, or ſpots, are formed or condenſed out of the groſſer exhalations of his body; in which he differs but little from the opinion of Kepler. James Bernoulli, in his Syſtema Cometarum, imagined that comets were no other than the ſatellites of ſome very diſtant planet, which was itſelf inviſible to us on account of its diſtance, as were alſo the ſatellites unleſs when in a certain part of their orbits. Des Cartes advances another opinion: he conjectures that comets are only ſtars, formerly fixed, like the reſt, in the heavens; but which becoming gradually covered with maculæ, or ſpots, and at length wholly deprived of their light, cannot keep their places, but are carried off by the vortices of the circumjacent ſtars; and, in proportion to their magnitude and ſolidity, moved in ſuch a manner, as to be brought nearer the orb of Saturn, and thus, coming within the reach of the Sun's light, rendered viſible.

But the vanity of all theſe hypotheſes now abundantly appears from the obſerved phenomena of comets, and from the doctrine of Sir Iſaac Newton. The comets, he ſays, are compact, ſolid, fixed, and durable, bodies; in fact, a kind of planets, which move in very oblique and eccentric orbits, every way, with the greateſt freedom; perſevering in their motions, even againſt the courſe and direction of the planets: and their tail is a very thin and ſlender vapour, emitted by the head or nucleus of the comet, ignited or heated by the Sun. This theory of comets at once ſolves their principal phenomena, which are as follow:

Firſt, Thoſe comets which move according to the order of the ſigns, do all, a little before they diſappear, either advance ſlower than uſual, or elſe go retrograde, if the Earth be between them and the Sun; but more ſwiftly if the Earth be placed in a contrary part. On the other hand, thoſe which proceed contrary to the order of the ſigns, move more ſwiftly than uſual, if the Earth be between them and the Sun; and more ſlowly, or elſe are retrograde, when the Earth is in a contrary part. For, ſince this courſe is not among the fixed ſtars, but among the planets, as the motion of the Earth either conſpires with them, or goes againſt them, their appearance, with reſpect to the Earth, muſt be changed; and, like the planets, they muſt ſometimes appear to move ſwifter, ſometimes ſlower, and ſometimes to be retrograde. 2. So long as their velocity is increaſed, they nearly move in great circles; but, towards the end of their courſe, they deviate from thoſe circles; and, when the Earth proceeds one way, they go the contrary way. Becauſe, in the end of their courſe, when they recede almoſt directly from the Sun, that part of the apparent motion which ariſes from the parallax, muſt bear a greater proportion to the whole apparent motion. 3. The comets move in ellipſes, having one of their foci in the centre of the Sun; and, by radii drawn to the Sun, deſcribe areas proportional to the times. Becauſe they do not wander precariouſly from one fictitious vortex to another; but, making a part of the ſolar ſyſtem, return perpetually, and run a conſtant round. Hence, their elliptic orbits being very long and eccentric, they become inviſible when in that part which is moſt remote from the Sun. And, from the curvity of the paths of comets, Sir Iſaac Newton concludes, that, when they diſappear, they are much beyond the orbit of Jupiter; and that, in their perihelion, they frequently deſcend within the orbits of Mars and the inferior planets. 4. The light of their nuclei, or bodies, increaſes as they recede from the Earth towards the Sun; and, on the contrary, it decreaſes as they recede from the Sun. Becauſe, as they are in the regions of the planets, their acceſs towards the Sun bears a conſiderable proportion to their whole diſtance. 5. Their tails appear the largeſt and brighteſt immediately after their tranſit through the region of the Sun, or after their perihelion. Becauſe then their heads, being the moſt heated, will emit the moſt vapours. From the light of the nucleus we infer their vicinity to the Earth, and that they are by no means in the region of the fixed ſtars, as ſome have imagined; ſince, in that caſe, their heads would be no more illuminated by the Sun than the planets are by the fixed ſtars. 6. The tails always decline from a juſt oppoſition to the Sun towards thoſe parts which the nuclei or bodies paſs over, in their progreſs through their orbits. Becauſe all ſmoke, or vapour, emitted from a body in motion, tends upwards obliquely, ſtill receding from that parts towards which the ſmoking body proceeds. 7. This declination, *cæteris paribus*, is the ſmalleſt when the nuclei approach neareſt the Sun: and it is alſo leſs near the nucleus, or head, than towards the extremity of the tail. Becauſe the vapour aſcends more ſwiftly near the head of the comet, than in the higher extremity of its tail; and alſo when the comet is nearer the Sun, than when it is farther off. 8. The tails are ſomewhat brighter, and more diſtinctly defined, in their convex, than in their concave, part. Becauſe the vapour in the convex part, which goes firſt, being ſomewhat nearer and denſer, reflects the light more copiouſly. 9. The tails always appear broader at their upper extremity, than near the centre of the comet. Becauſe the vapour in a free ſpace continually rarefies and dilates. 10. The tails are always tranſparent, and the ſmalleſt ſtars appear through them. Becauſe they conſiſt of infinitely thin vapour.

The nuclei, which are the heads, or bodies, of comets, viewed through a teleſcope, ſhew a face very different from thoſe of the fixed ſtars or planets. They are liable to apparent changes, which Sir Iſaac Newton aſcribes to changes in their atmoſphere; and this opinion was confirmed by obſervations of the comet in 1744. Hiſt. Acad. Scienc. 1744. Sturmius ſays, that, by obſerving the comet of 1680 with a teleſcope, it appeared like a coal dimly glowing, or a rude maſs of matter illuminated with a duſky fumid light, leſs ſenſible towards the extremes than in the middle; whereas a ſtar appears with a round diſk, and a vivid light.

Of the comet of 1661, Hevelius obſerves, that its body was of a yellowiſh colour, very bright and conſpicuous, but without any glittering light: in the middle was a denſe ruddy nucleus, almoſt equal to Jupiter, encompaſſed by a much fainter, thinner, matter. February 5, its head was ſomewhat larger and brighter, and of a gold colour; but its light more duſky than the ſtars; and here the nucleus appeared divided into ſeveral parts. February 6, the diſk was leſſened; the parts of the nucleus ſtill exiſted, though leſs than before: one of them, on the lower part of the diſk, on the left, much denſer and brighter than the reſt; its body round, and repreſenting a very lucid little ſtar: the nuclei ſtill encompaſſed with another kind of matter. February 10, the head ſomewhat more obſcure, and the nuclei more confuſed, but brighter at top than bottom. February 13, the head diminiſhed much both in ſize and ſplendour. March 2, its roundneſs a little impaired, and its edges lacerated, &c. March 28, very pale, and exceeding thin; its matter much diſperſed; and no diſtinct nucleus at all appearing. Weigelius, who ſaw the comet of 1664, as alſo the Moon, and a ſmall cloud in the horizon illuminated by the Sun at the ſame time, obſerved, that through the teleſcope the Moon appeared of a continued luminous ſurface: but the comet very different; being exactly like the little cloud. And from theſe obſervations it was that Hevelius formed his opinion, that comets are like maculæ or ſpots formed out of the ſolar exhalations.

The eſtimates that have been given of the *magnitude* of comets by Tycho Brahe, Hevelius, and ſome others, are not very accurate; as it does not appear that they diſtinguiſhed between the nucleus and the ſurrounding atmoſphere. Thus Tycho computes that the true diameter of the comet in 1577 was in proportion to the diameter of the Earth, as 3 is to 14; and Hevelius made the diameter of the comet of 1652 to that of the Earth, as 52 to 100. But the diameter of the atmoſphere is often 10 or 15 times as great as that of the nucleus: the former, in the comet of 1682, was meaſured by Flamſtead, and found to be $2'$, when the diameter of the nucleus alone was only $11''$ or $12''$. Though ſome comets, eſtimated by a compariſon of their diſtance and apparent magnitude, have been judged much larger than the Moon, and even equal to ſome of the primary planets. The diameter of that of 1744, when at the diſtance of the Sun from us, meaſured about $1'$, which makes its diameter about three times that of the Earth: at another time, the diameter of its nucleus was nearly equal to that of the planet Jupiter.

There have been various conjectures concerning the nature of the tails of comets. The opinion of the ancient philoſophers, and of Ariſtotle himſelf, was, that the tail is a very thin fiery vapour ariſing from the comet. Apian, Cardan, Tycho, and others, believed, that the Sun's rays, being propagated through the tranſparent head of the comet, were refracted, as in a lens. But the figure of the tail does not anſwer to this; and, moreover, there ſhould be ſome reflecting ſubſtance to render the rays viſible, in like manner as there muſt be duſt or ſmoke flying about in a dark room, in order that a ray of light entering it may be ſeen by a ſpectator ſtanding ſide-ways from it. Kepler ſuppoſed, that the rays of the Sun carry away ſome of the groſs parts of the comet which reflects the Sun's rays, and gives the appearance of a tail. Hevelius thought, that the thinneſt parts of the atmoſphere of a comet are rarefied by the force of the heat, and driven from the forepart and each ſide of the comet towards the parts turned from the Sun. Sir Iſaac Newton thinks, that the tail of a comet is a very thin vapour, which the head, or nucleus, of a comet, ſends out by reaſon of its heat. He ſuppoſes, that when a comet is deſcending to its perihelion, the vapours behind the comet, in reſpect to the Sun, being rarefied by the Sun's heat, aſcend, and take up with them the reflecting particles with which the tail is compoſed, as air rarefied by heat carries up the particles of ſmoke in a chimney. But, as beyond the atmoſphere of a comet, the ethereal air *(auram ætheream)* is extremely rare, he attributes ſomething to the Sun's rays carrying with them the particles of the atmoſphere of the comet. And, when the tail is thus formed, it, like the nucleus, gravitates towards the Sun; and, by the projectile force it received from the comet, it deſcribes an ellipſe about the Sun, and accompanies the comet. It conduces alſo to the aſcent of theſe vapours, that they revolve about the Sun, and therefore endeavour to recede from it; whilſt the atmoſphere of the Sun is either at reſt or moves with ſuch a ſlow motion as it can acquire from the rotation of the Sun about its axis. Theſe are the cauſes of the aſcent of the tails in the neighbourhood of the Sun, where the orbit has a greater curvature, and the comet moves in a denſer atmoſphere. The tail of the comet therefore, being formed from the heat of the Sun, will increaſe till it comes to its perihelion, and decreaſe afterwards. The atmoſphere of the comet is diminiſhed as the tail increaſes, and is leaſt immediately after the comet has paſſed its perihelion, where it ſometimes appears covered with a thick black ſmoke. As the vapour receives two motions when it leaves the comet, it goes on with the compound motion, and therefore the tail will not be turned directly from the Sun, but decline from it towards thoſe parts which are left by the comet; and, meeting with a ſmall reſiſtance from the ether, will be a little curved. When the ſpectator therefore is in the plane of the comet's orbit, the curvature will not appear. The vapour, thus rarefied and dilated, may be at laſt ſcattered through the heavens, and be gathered up by the planets, to ſupply the place of thoſe fluids which are ſpent in vegetation, and converted into earth. This is the ſubſtance of Sir Iſaac Newton's account of the tails of comets.

But Mr. Rowning, not ſatiſfied with this ſolution of the phenomena, accounts for the tails of comets in the following manner: It is well known, ſays he, that when the Sun's light paſſes through the atmoſphere of any body, as the Earth, that which paſſes on one ſide is by the refraction made to converge towards that which paſſes on the oppoſite ſide; and this convergency is not wholly effected either at the entrance of the light into the atmoſphere, or at its exit on going out; but, beginning at its entrance, it increaſes in every point of its progreſs. It is alſo agreed, that the atmoſpheres of the comets are very large and denſe: he therefore ſuppoſes, that by ſuch time as the light of the Sun has paſſed through a conſiderable part of the atmoſphere of the comet, the rays are ſo far refracted towards each other, that they then begin ſenſibly to illuminate it, or rather the vapours floating in it, and ſo render that part they have yet to paſs through viſible to us: and that this portion of the atmoſphere of a comet, thus illuminated, appears to us in the form of a beam of the Sun's light, and paſſes under the denomination of a comet's tail. *Rowning's Nat. Philoſ.* part 4, chap. 11.

M. Euler, Mem. Berlin, tom. ii. p. 117, thinks there is a great affinity between the tails of comets, the zodiacal light, and the aurora borealis, and that the common cauſe of all of them, is the action of the Sun's light on the atmoſpheres of the comets, of the Sun, and of the Earth. He ſuppoſes, that the impulſe of the rays of light on the atmoſphere of comets, may drive ſome of the finer particles of that atmoſphere far beyond its limits; and that this force of impulſe, combined with that of gravity towards the comet, would produce a tail, which would always be in oppoſition to the Sun, if the comet did not move. But the motion of the comet in its orbit, and about an axis, muſt vary the poſition and figure of the tail, giving it a curvature, and deviation, from a line joining the centres of the Sun and comet; and, that this deviation will be greater, as the orbit of the comet has the greater curvature, and as the motion of the comet is more rapid. It may even happen, that the velocity of the comet, in its perihelion, may be ſo great, that the force of the Sun's rays may produce a new tail, before the old one can follow; in which caſe, the comet might have two or more tails. The poſſibility of this is confirmed by the comet of 1744, which was obſerved to have ſeveral tails while it was in its perihelion.

Dr. Hamilton, in his Philoſophical Eſſays, urges ſeveral objections againſt the Newtonian hypotheſis; and obſerves, that we have no abſolute proof of the exiſtence of a ſolar atmoſphere; and, if we had, that, when the comet is moving in its perihelion in a direction at right angles to the direction of its tail, the vapours which then ariſe, partaking of the great velocity of the comet, and being alſo ſpecifically lighter than the medium in which they move, muſt ſuffer a much greater reſiſtance than the denſe body of the comet does, and therefore ought to be left behind, and would not appear oppoſite to the Sun; and afterwards they ought to appear towards the Sun. Alſo, if the ſplendour of the tails be owing to the reflection and refraction of the Sun's rays, it ought to diminiſh the luſtre of the ſtars ſeen through it, which would have their light reflected and refracted in like manner, and conſequently their brightneſs would be diminiſhed.

Dr. Halley, in his deſcription of the aurora borealis in 1716, ſays, "The ſtreams of light ſo much reſembled the long tails of comets, that at firſt ſight they might well be taken for ſuch." And afterwards, "this light ſeems to have a great affinity to that which the effluvia of electric bodies emit in the dark." *Phil. Tranſ.* No. cccxlvii. D. de Mairan alſo calls the tail of a comet, the aurora borealis of the comet. This opinion Dr. Hamilton ſupports by the following arguments: A ſpectator, at a diſtance from the Earth, would ſee the aurora borealis in the form of a tail oppoſite to the Sun, as the tail of a comet lies. The aurora borealis has no effect upon the ſtars ſeen through it, nor has the tail of a comet. The atmoſphere is known to abound with electric matter, and the appearance of the electric matter in vacuo is exactly like the appearance of the aurora borealis, which, from its great altitude, may be conſidered to be in as perfect a vacuum as we can make. The electric matter in vacuo ſuffers the rays of light to paſs through, without being affected by them. The tail of a comet does not expand itſelf ſideways, nor does the electric matter. Hence he ſuppoſes the tails of comets, the aurora borealis, and the electric fluid, to be matter of the ſame kind. We may add, as a farther confirmation of this opinion, that the comet in 1607 appeared to ſhoot out the end of its tail. Le P. Cyſat remarked the undulations of the tail of the comet in 1618. Hevelius obſerved the ſame in the tails of the comets in 1652 and 1661. M. Pingré took notice of the ſame appearance in the comet of 1769. Theſe are circumſtances exactly ſimilar to the aurora borealis. Dr. Hamilton conjectures, that the uſe of the comets may be to bring the electric matter, which continually eſcapes from the planets, back into the planetary regions. "Theſe arguments (ſays Mr. Vince) are ſtrongly in favour of this hypotheſis; and, if this be true, we may farther add, that the tails are hollow; for, if the electric fluid only proceed in its firſt direction, and do not diverge ſideways, the parts directly behind the comet will not be filled with it; and this thinneſs of the tails will account for the appearance of the ſtars thro' them."

With reſpect to the *motions* of comets, Kepler, who had an opportunity of obſerving two of them, concluded, "that comets moved freely through the planetary orbs, with a motion not much different from a rectilinear one; but of what kind he could not preciſely determine." Hevelius embraced the ſame hypotheſis of a rectilinear motion; but, finding his calculations did not perfectly agree with his obſervations, he concluded, "that the path of a comet was bent in a curve line, concave towards the Sun." He ſuppoſed a comet to be generated in the atmoſphere of a planet, and to be diſcharged from it, partly by the rotation of the planet, and then to revolve about the Sun in a parabola by the force of projection and its tendency to the Sun, in the ſame manner as a projectile upon the Earth's ſurface deſcribes a parabola. At length, the famous comet in 1680, deſcending nearly in a right line towards the Sun, aroſe again from it in like manner, which proved its motion in a curve about the Sun. G. S. Doërfell, miniſter at Plaven in Upper Saxony, made obſervations upon this comet, and found that its motion might be very well repreſented by a parabola, having the Sun in its focus. He was ignorant, however, of the laws by which the motion of a body in a parabola is regulated, and erred conſiderably in his parabola, making the perihelion diſtance about twelve times greater than it was. This was publiſhed five years before the Principia, in which work Sir Iſaac Newton having proved that Kepler's law, by which the motions of the planets are regulated, was a neceſſary conſequence of his theory of gravity, it immediately followed, that comets were governed by the ſame law; and the obſervations upon them agreed ſo accurately with his theory, as to leave no doubt of its truth. To prove that comets deſcribe ellipſes, and not parabolas or hyperbolas, Dr. Halley, in his Synopſis of the Aſtronomy of Comets, advances the following reaſons:

"Hitherto I have conſidered the orbits of comets as exactly parabolic; upon which ſuppoſition it would follow, that comets, being impelled towards the Sun by a centripetal force, would deſcend as from ſpaces infinitely diſtant; and, by their ſo falling, acquire ſuch a velocity, as that they may again fly off into the remoteſt parts of the univerſe, moving upwards with a perpetual tendency, ſo as never to return again to the Sun. But, ſince they appear frequently enough, and ſince none of them can be found to move with an hyperbolic motion, or a motion ſwifter than what a comet might acquire by its gravity to the Sun, it is highly probable they rather move in very eccentric elliptic orbits, and make their returns after long periods of time: for ſo their number will be determinate, and, perhaps, not very great. Beſides, the ſpace between the Sun and the fixed ſtars is ſo immenſe, that there is room enough for a comet to revolve, though the period of its revolution be vaſtly long. Now, the latus rectum of an ellipſis is to the latus rectum of a parabola, which has the ſame diſtance in its perihelion, as the diſtance of the aphelion, in the ellipſis, is to the whole axis of the ellipſis: and the velocities are in a ſubduplicate ratio of the ſame: wherefore, in very eccentric orbits, the ratio comes very near to a ratio of equality; and the very ſmall difference which happens, on account of the greater velocity in the parabola, is eaſily compenſated in determining the ſituation of the orbit. The principal uſe therefore, continues Dr. Halley, of the Table of the elements of their motions, and that which induced me to conſtruct it, is that, whenever a new comet ſhall appear, we may be able to know, by comparing together the elements, whether it be any of thoſe which has appeared before, and conſequently to determine its period, and the axis of its orbit, and to foretel its return. And, indeed, there are many things which make me believe, that the comet which Apian obſerved in the year 1531, was the ſame with that which Kepler and Longomontanus more accurately deſcribed in the year 1607; and which I myſelf have ſeen return, and obſerved in the year 1682. All the elements agree, and nothing ſeems to contradict this my opinion, beſides the inequality of the periodic revolutions: which inequality is not ſo great neither, as that it may not be owing to phyſical cauſes. For the motion of Saturn is ſo diſturbed by the reſt of the planets, eſpecially Jupiter, that the periodic time of that planet is uncertain for ſome whole days together. How much more, therefore, will a comet be ſubject to ſuch-like errors, which riſes almoſt four times higher than Saturn, and whoſe velocity, though increaſed but a very little, would be ſufficient to change its orbit, from an elliptical to a parabolical one. And I am the more confirmed in my opinion of its being the ſame; for, in the year 1456, in the ſummer-time, a comet was ſeen paſſing retrograde between the Earth and the Sun, much after the ſame manner; which, though nobody made obſervations upon it, yet, from its period, and the manner of its tranſit, I cannot think different from thoſe I have juſt now mentioned. And ſince, looking over the hiſtories of comets, I find, at an equal interval of time, a comet to have been ſeen about Eaſter in the year 1305, which is another double period of 151 years before the former. Hence, I think, I may venture to foretel that it will return again in the year 1758."

Dr. Halley computed the effect of Jupiter upon this comet in 1682, and found that it would increaſe its periodic time above a year, in conſequence of which he predicted its return at the end of the year 1758, or the beginning of 1759. He did not make his computations with the utmoſt accuracy, but, as he himſelf informs, *levi calamo*. M. Clairaut computed the effects both of Saturn and Jupiter, and found that the former would retard its return in the laſt period 100 days, and the latter 511 days; and he determined the time when the comet would come to its perihelion to be on April 15, 1759, obſerving that he might err a month, from neglecting ſmall quantities in the computation. It paſſed the perihelion on March 13, within thirty-three days of the time computed. Now, if we ſuppoſe the time ſtated by Dr. Halley to mean the time of its paſſing the perihelion, then, if we add to that 100 days, ariſing from the action of Saturn which he did not conſider, it will bring it very near to the time in which it did paſs the perihelion, and prove his computation of the effect of Jupiter to have been very accurate. If he mean the time when it would firſt appear, his prediction was very accurate, for it was firſt ſeen on the 14th day of December, in the year 1758; and his computation of the effects of Jupiter will then be more accurate than could have been expected, conſidering that he made his calculations only by an indirect method, and in a manner profeſſedly not very accurate. Dr. Halley therefore had the glory, firſt to foretel the return of a comet, and the event anſwered remarkably to his prediction. He farther obſerved, that the action of Jupiter, in the deſcent of the comet towards its perihelion in 1682, would tend to increaſe the inclination of its orbit; and accordingly the inclination in 1682 was found to be 22′ greater than in 1607. A learned profeſſor (Dr. Long's Aſtronomy, p.562) in Italy to an Engliſh gentleman writes thus: "Though M. de la Lande, and ſome other French gentlemen, have taken occaſion to find fault with the inaccuracies of Halley's calculation, becauſe he himſelf had ſaid he only touched upon it ſlightly; nevertheleſs they can never rob him of the honour,—Firſt, of finding out that it was one and the ſame comet which appeared in 1682, 1607, 1531, 1456, and 1305. Secondly, of having obſerved that the planet Jupiter would cauſe the inclination of the orbit of the comet to be greater, and the period longer. Thirdly, of having foretold that the return thereof might be retarded till the end of 1758, or the beginning of 1759." From the obſervations of M. Meſſier upon a comet in 1770, M. Edric Proſperin, member of the royal academies of Stockholm and Upſal, ſhewed, that a parabolic orbit would not anſwer to its motions, and he recommended it to aſtronomers to ſeek for the elliptic orbit. This laborious taſk M. Lexell undertook, and has ſhewn that an ellipſe, in which the periodic time is about five years and ſeven months, agrees very well with the obſervations. See the Phil. Tranſ. 1779. As the ellipſes which the comets deſcribe are all very eccentric, aſtronomers, for the eaſe of calculation, ſuppoſe them to move in parabolic orbits, for that part which lies within the reach of obſervation, by which they can very accurately find the place of the perihelion, its diſtance from the Sun, the inclination of the plane of its orbit to the ecliptic, and the place of the node.

But, concerning the return of comets, there have been, and ſtill are, different opinions. Sir Iſaac Newton, Flamſtead, Halley, and other Engliſh aſtronomers, ſeem ſatisfied of the return of comets: Caſſini and ſome of the French think it highly probable; but M. de la Hire, and others, oppoſe it. Thoſe on the affirmative ſide ſuppoſe, that the comets deſcribe orbits prodigiouſly eccentric, inſomuch that we can ſee them only in a very ſmall part of their revolution: out of this, they are loſt in the immenſity of ſpace; hid not only from our eyes, but from our teleſcopes: that little part of their orbit next us paſſing ſometimes within thoſe of all the inferior planets. M. Caſſini gives the following reaſons in favour of their return: 1. It is found that they move a conſiderable time in the arch of a great circle, when referred to the fixed ſtars, that is a circle whoſe plane paſſes through the centre of the Earth; deviating but a little from it chiefly towards the end of their appearance; a deviation however common to them with the planets. 2. Comets, like planets, appear to move ſo much the faſter as they are nearer the Earth; and, when they are at equal diſtances from their perigee, their velocities are nearly the ſame. By ſubtracting from their motion the apparent inequality of velocity occaſioned by their different diſtance from the Earth, their equal motion might be found: but we ſhould not ſtill be certain that this is their true motion; becauſe they might have conſiderable inequalities, not diſtinguiſhable in that ſmall part of their orbit viſible to us. It is rather probable that their real motion, as well as that of the planets, is unequal in itſelf; and hence we have a reaſon why the obſervations made, during the appearance of a comet, cannot give the juſt period of their revolution. 3. There are no two different planets whoſe orbits cut the ecliptic in the ſame angle, whoſe nodes are in the ſame points of the ecliptic, and have the ſame apparent velocity in their perigee: conſequently, two comets ſeen at different times, yet agreeing in all thoſe three circumſtances, can only be one and the ſame comet. Not that this exact agreement, in theſe circumſtances, is abſolutely neceſſary to determine their identity: for the Moon herſelf is irregular in all of them, ſo that it ſeems there may be caſes in which the ſame comet, at different periods of revolution, may diſagree in theſe points.

As to the objections againſt the return of comets, the principal is that of the rarity of their appearance, with regard to the number of revolutions aſſigned to them. In 1702 there was a comet, or rather the tail of one, ſeen at Rome, which M. Caſſini takes to be the ſame with that obſerved by Ariſtotle, and again in the year 1668; which would imply a period of thirty-four years. Now, it may ſeem ſtrange that a ſtar which has ſo ſhort a revolution, and of conſequence ſuch frequent returns, ſhould be ſo ſeldom ſeen. Again, in April of the ſame year 1702, a comet was obſerved by Meſſrs. Bianchini and Maraldi, which the latter ſuppoſed was the ſame with that of 1664, both on account of his motion, velocity, and direction. M. de la Hire thought it had ſome relation to another he had obſerved in 1698, which Caſſini refers to that of 1652; which would make it a period of forty-three months, and the number of revolutions, between 1652 and 1692, fourteen. Now, it is hard to ſuppoſe, that in this age, when the heavens are ſo narrowly watched, a ſtar ſhould make fourteen revolutions unperceived; eſpecially ſuch a ſtar as this, which might appear above a month together; and conſequently be often diſengaged from the crepuſcula. For this reaſon M. Caſſini is very reſerved in maintaining the hypotheſis of the return of comets, and only propoſes thoſe for planets where the motions are eaſy and ſimple, and are ſolved without ſtraining, or allowing any irregularities.

M. de la Hire propoſes one general difficulty againſt the whole ſyſtem of the return of comets, which would ſeem to prevent any comet from returning as a planet: which is this; that, by the diſpoſition neceſſarily given to their courſes, they ought to appear as ſmall at firſt as at laſt; and always increaſe till they arrive at their neareſt proximity to the Earth; or, if they ſhould not chance to be obſerved as ſoon as they are capable of being ſeen, it is yet hardly poſſible but they muſt often ſhew themſelves before they have arrived at their full magnitude and brightneſs: but, adds he, none were ever yet obſerved till they had arrived at it. However, the appearance of a comet in the month of October 1723, while at a great diſtance, ſo as to be too ſmall and dim to be viewed without a teleſcope, as well as the obſervations of ſeveral others ſince, may ſerve to remove this obſtacle, and ſet the comets ſtill on the ſame footing with the planets; or at leaſt to ſupport the prevalent opinion, that the revolution or return of the comets is certain. In ſhort, the beſt way to aſcertain the fact ſeems to be, to compare the elements of all thoſe comets which have been computed, and, where we find they agree, we may conclude that they are elements of the ſame comet, it being ſo extremely improbable that the orbits of two different comets ſhould have the ſame inclination, the ſame perihelion diſtance, and the places of the perihelion and node the ſame. Thus, knowing

ing the periodic time, we may find the major axis of the ellipſe; and, the perihelion diſtance being known, the minor axis will be known. When the elements of the orbits agree, the comets may be the ſame, although the periodic times ſhould vary; as that may ariſe from the attraction of the bodies in our ſyſtem, and which may alſo alter all the other elements a little. We have already obſerved, that the comet which appeared in 1759 had its periodic time increaſed conſiderably by the attraction of Jupiter and Saturn. This comet was ſeen in 1682, 1607, and 1531, all the elements agreeing, except a little variation of the periodic time. Dr. Halley ſuſpected the comet in 1680 to have been the ſame which appeared in 1106, 531, and forty-four years before Chriſt. He alſo conjectured, that the comet obſerved by Apian in 1532, was the ſame as that obſerved by Hevelius in 1661; if ſo, it ought to have returned in 1790, but it has never been obſerved. But M. Mechain having collected all the obſervations in 1532, and calculated the orbit again, found it to be ſenſibly different from that determined by Dr. Halley, which renders it very doubtful whether this was the comet which appeared in 1661; and this doubt is increaſed by its not appearing in 1790. The comet in 1770, whoſe periodic time M. Lexell computed to be five years and ſeven months, has not been obſerved ſince. There can be no doubt but that the path of this comet, for the time it was obſerved, belonged to an orbit whoſe periodic time was that found by M. Lexell, as the computations for ſuch an orbit agreed ſo very well with the obſervations. But the revolution was probably longer before 1770; for, as the comet paſſed very near to Jupiter in 1767, its periodic time might be ſenſibly increaſed by the action of that planet; and, as it has not been obſerved ſince, we may conjecture, with M. Lexell, that, having paſſed in 1772 again into the ſphere of ſenſible attraction of Jupiter, a new diſturbing force might probably take place and deſtroy the effect of the other. According to the above elements, the comet would be in conjunction with Jupiter on Auguſt 23, 1779, and its diſtance from Jupiter would be only $\frac{1}{491}$ of its diſtance from the Sun, conſequently the Sun's action would be only $\frac{1}{224}$ times that of Jupiter. What a change muſt this make in the orbit! If the comet returned to its perihelion in March 1776, it would then not be viſible. See M. Lexell's account in the Phil. Tranſ. 1779. The elements of the orbits of the comets in 1264 and 1556 were ſo nearly the ſame, that it is very probable it was the ſame comet; if ſo, it might be expected to appear again about the year 1848.

Sir Iſ. Newton conjectures, that, as thoſe planets which are neareſt to the Sun, and revolve in the leaſt orbits, are the ſmalleſt; ſo, among the comets, ſuch as in their perihelion come neareſt the Sun are the ſmalleſt, and revolve in the leaſt orbits. As to their apparent velocity, the comet of 1472, as obſerved by Regiomontanus, was ſuch as to carry it through forty degrees of a great circle in twenty-four hours; and it was obſerved, that the comet of 1770 moved through more than forty-five degrees in the laſt twenty-five hours. M. Facio has ſuggeſted, that ſome of the comets have their nodes ſo very near the annual orbit of the Earth, that, if the Earth ſhould happen to be found in that part next the node at the time of a comet's paſſing by; as the apparent motion of a comet will be immenſely ſwift, ſo its parallax will become very ſenſible; and its proportion to that of the Sun will be given: whence, ſuch tranſits of comets will afford the beſt means of determining the diſtance between the Earth and Sun. The comet of 1472, for inſtance, had a parallax above twenty times greater than the Sun's: and, if that of 1618 had come down in the beginning of March to its deſcending node, it would have been much nearer the Earth, and its parallax much more notable. But hitherto none has threatened the Earth with a nearer appulſe than that of 1680: for, Dr. Halley finds, by calculation, that Nov. 11, at 1h. 6′. after noon, that comet was not more than one ſemidiameter of the Earth to the northward of the Earth's path; at which time, had the Earth been in that of its orbit, the comet would have had a parallax equal to that of the Moon. What might have been the conſequence of ſo near an appulſe is at beſt uncertain. Mr. Whiſton attributes the univerſal deluge in the time of Noah, to the near approach of a comet. His opinion was, that the Earth, paſſing through the atmoſphere of the comet, attracted therefrom great part of the water of the flood; that the nearneſs of the comet raiſed a great tide in the ſubterraneous waters, ſo that the outer cruſt of the Earth was changed from a ſpherical to an oval figure; that this could not be done without making fiſſures and cracks in it, thro' which the waters forced themſelves, by the hollow of the Earth being changed into a leſs capacious form; that, along with the water thus ſqueezed up on the ſurface of the Earth, much ſlime or mud would riſe; which, together with the groſſer part of the comet's atmoſphere, would, after the ſubſiding of the water, partly into the fiſſures and partly into the lower parts of the Earth to form the ſea, cover all over, to a conſiderable depth, the antediluvian Earth. Thus he accounts for trees and bones of animals being found at very great depths in the Earth. He alſo held that, before the fall, the Earth revolved round the Sun in the plane of the ecliptic, keeping always the ſame points of its ſurface towards the ſame fixed ſtars. By this means, as every meridian would come to the Sun but once in every revolution, a day and a year were then the ſame: but that a comet, ſtriking obliquely upon ſome part of the Earth, gave it the diurnal rotation; that the antediluvian year conſiſted of 360 days; but, that the additional matter depoſited upon the Earth from the atmoſphere of the comet at the flood, ſo retarded the revolution thereof round the Sun, that it is not now performed in leſs than 365 days and about a quarter. The ſame comet he thought would probably, coming near the Earth when heated in an immenſe degree in its perihelion, be the inſtrumental cauſe of that great cataſtrophe, the general conflagration, foretold in the ſacred writings, and conjectured from ancient tradition.

That this is very poſſible, admits not of a doubt; for, the heat of the comet of 1680, was to the heat of the ſummer ſun as 28,000 to 1. The heat of boiling water is about three times greater than the heat which dry earth acquires from the ſummer ſun: and the heat of red-hot iron about three or four times greater than the heat of boiling water. Therefore the heat of dry earth at the comet, when in its perihelion, was about 2000 times greater than red-hot iron. This heat of the comet muſt alſo be capable of being retained a very long time. For a red-hot globe of iron, of an inch diameter, expoſed to the open air, ſcarcely loſes all its heat in an hour; but a greater globe would retain its heat longer, in proportion to its diameter, becauſe the ſurface, at which it grows cold, varies in that proportion leſs than the quantity of hot matter. Therefore a globe of red-hot iron, as big as our Earth, would ſcarcely cool in fifty thouſand years!

From the beginning of our era to this time, it is probable, according to the beſt accounts, that there have appeared about 500 comets. Before that time about 100 others are recorded to have been ſeen, but it is probable, that not above half of them were comets. And, when we conſider, that many others may not have been perceived, from being too near the Sun, from appearing in moon-light, from being in the other hemiſphere, from being too ſmall to be perceived, or which may not have been recorded, we might imagine the whole number to be conſiderably greater; but it is likely, that of the comets which are recorded to have been ſeen, the ſame may have appeared ſeveral times, and therefore the number may be leſs than is here ſtated. The comet in 1786, which appeared on Auguſt 1, was diſcovered by Miſs Caroline Herſchel, a ſiſter of Dr. Herſchel; and ſince that time ſhe has diſcovered three others. A comet was alſo diſcovered at Paris, by M. Bouvard, on Aug. 14, 1797, which was ſeen in England, on the 18th of the ſame month, by the Hon. Capel Loft, of Froſton,

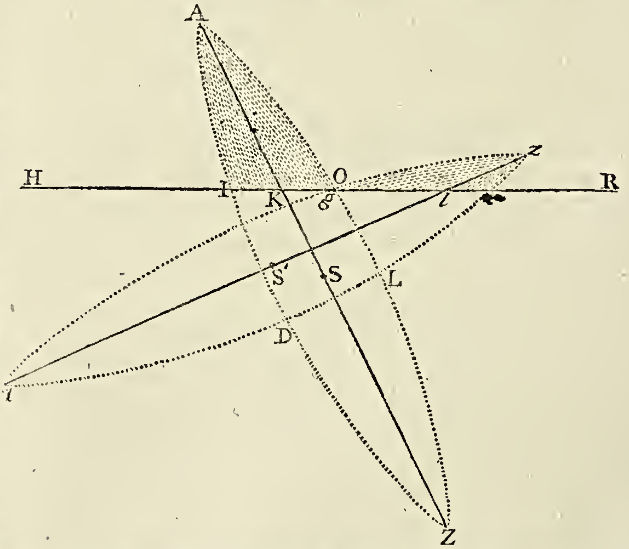
ton, in Suffolk, and an account was given of it as follows: It was ſeen at half paſt eight in the evening, nearly in the pole of the ecliptic; compoſing a rhomboides or lozenge-ſhaped figure with β and γ Draconis, and a ſtar of the 4th magnitude in the left heel of Hercules. It was then diſtinctly viſible to the naked eye as a faint ſtar. With a good teleſcope, it appeared to moſt advantage when a power of about forty was uſed. It was then a diffuſed milky hazineſs, like the nebula of Andromeda. Its motion in twenty-four hours was about twelve degrees. It had no diſtinct nucleus; but its ſouthern ſide was moſt luminous, and ſeveral ſtars were ſeen diſtinctly through it. On the 26th, at 8h. 53′ it was above α Ophinchi, with four degrees greater altitude than that ſtar; the comet being 50° 5′. It had ſeventy-three degrees polar diſtance, and was very near an unnamed ſtar, from which it was paſſing ſouth-eaſt. Its right aſcenſion twenty degrees of Sagittarius. In paſſing near its node it came very near to the Earth, and, when firſt ſeen, it was returning from the Sun, having paſſed its perihelion ſome weeks. Its aſcending node is calculated in the ſign twenty-eight degrees of Aquarius, and its perihelion diſtance computed at near one-ſixteenth of the Earth's, conſequently nearer to the Sun than Venus. If the comet was, when neareſt to the Earth, on the 16th of Auguſt, about five or ſix millions of miles from us, or more than twenty times the Moon's diſtance, which appears to have been the caſe, its obſerved apparent diameter could hardly be leſs than one-third larger than the Moon. This would make it about 3000 miles in diameter, and ſomewhat conſiderably larger than Mercury. If the perihelion place could be reconciled, the other elements would bring this comet to a very near agreement with that of 1596 and 1699, ſo as to make it probable they might be one and the ſame. This would give a period varying from 103½ to 108½ years.

From what has been diſcovered in general concerning comets, it is poſſible they may ſometimes approach ſo near to the primary planets, as to cauſe an eclipſe of the Sun to thoſe planets; and, as the body of a comet bears a much larger proportion to the bulk of a primary planet than any ſecondary, it is plain that a cometary eclipſe would both be of much longer continuance, and attended with much greater darkneſs, than that occaſioned by the Moon; and, if we ſuppoſe the primary planet and comet to be moving both the ſame way, the duration of ſuch an eclipſe would be prodigiouſly lengthened; and thus, inſtead of four minutes, the Sun might be totally darkened to the inhabitants of certain places for as many hours. Hence we may account for that prodigious darkneſs which we ſometimes read of in hiſtory, at times when no eclipſe of the Sun by the Moon could poſſibly happen. Such are thoſe mentioned by Herodotus, lib. vii. c. 37, and lib. ix. c. 70; likewiſe the eclipſe mentioned by Dion, which happened a little before the death of Auguſtus; and it is obſervable, that Seneca noticed a comet the ſame year. It is remarkable, however, that no comet hath ever been obſerved paſſing over the diſk of the Sun like a ſpot, as Venus and Mercury are; yet this muſt certainly happen, when the comet is in its perihelion, and the Earth on the ſame ſide of its annual orbit. Such a phenomenon well deſerves the watchful attention of aſtronomers, as it would be a greater confirmation of the planetary nature of the comets than any thing hitherto obſerved.

Of the ZODIACAL LIGHT.

The zodiacal light is a pyramid of light which ſometimes appears in the morning before ſun-riſe. It has the Sun for its baſis, and in appearance reſembles the aurora borealis, and the tails of comets. Its ſides are not ſtraight, but a little curved, its figure reſembling a lens ſeen edgeways. It is generally ſeen here about October and March, that being the time of our ſhorteſt twilight; for it cannot be ſeen in the twilight; and, when the twilight laſts a conſiderable time, it is withdrawn before the twilight ends. It was obſerved by M. Caſſini, in 1683, a little before the vernal equinox, in the evening, extending along the ecliptic from the Sun. He thinks, however, that it has appeared formerly, and afterwards diſappeared, from an obſervation of Mr. J. Childrey, in a book publiſhed in 1661, entitled, Britannia Baconica. He ſays, that "in February, for ſeveral years, about ſix o'clock in the evening, after twilight, he ſaw a path of light tending from the twilight towards the Pleiades, as it were touching them. This is to be ſeen whenever the weather is clear, but beſt when the Moon does not ſhine. I believe this phenomenon has been formerly, and will hereafter appear always at the abovementioned time of the year. But the cauſe and nature of it I cannot gueſs at, and therefore leave it to the enquiry of poſterity." From this deſcription, there can be no doubt but that this was the zodiacal light. He ſuſpects alſo, that this is what the ancients called *trabes*, which word they uſed for a meteor, or impreſſion in the air like a beam. Pliny, lib. ii. p. 26, ſays, "Emicant trabes, quos docos vocant." Des Cartes alſo ſpeaks of a phenomenon of the ſame kind. M. Facio obſerved it immediately after the diſcovery by M. Caſſini, and ſuſpected that it has always appeared. It was ſoon after obſerved by M. Kirch and Eimmart in Germany. In the year 1707, on April 3, it was obſerved by Mr. Derham in Eſſex. It appeared in the weſtern part of the heavens, about a quarter of an hour after ſun-ſet, in the form of a pyramid, perpendicular to the horizon. The baſe of this pyramid he judged to be the Sun. Its vertex reached fifteen or twenty degrees above the horizon. It was throughout of a duſky red colour, and at firſt appeared pretty vivid and ſtrong, but fainteſt at the top. It grew fainter by degrees, and vaniſhed about an hour after ſun-ſet. This ſolar atmoſphere has alſo been ſeen about the Sun in a total ſolar eclipſe, a luminous ring appearing about the Moon at the time when the eclipſe was total.

To illuſtrate this ſubject, let H O R, in the annexed figure, be the horizon, S the Sun 18° below twilight; then will A I O repreſent the appearance and poſition of the zodiacal light ſeen at Paris on the laſt day of February, and *zge* will repreſent the ſame the next morning before the beginning of twilight, the Sun being at S′, as determined by M. de Mairan, in his treatiſe *de l'Aurore Boreale.* The diſtance S A was then about 90°, and I O about 20°. The axis A Z, *az*, coincide with the Sun's equator, and therefore makes an angle of about 7⅓° with the ecliptic. Therefore, as the angle which the ecliptic makes with the horizon changes at different times of the day, the angle which the axis of this light makes with the horizon will alſo be variable. Hence, if we determine the angle which the ecliptic makes with the horizon at any time, it will give us the poſition. If we ſet a celeſtial globe to the hour, it will



will ſhew us its poſition, and through what ſtars it will paſs, which will therefore direct us very accurately where to look for it. Hence it will be moſt viſible, cæteris paribus, when the ecliptic makes the greateſt angle with the horizon. On October 6, 1684, M. Facio perceived the point A diſtinctly terminated, the angle of which was 26½°. M. Eimmart obſerved the ſame on January 13, 1694. In 1683, when M. Caſſini firſt obſerved it, S A was fifty or ſixty degrees, and I O about eight or nine degrees. In 1686, and 1687, S A extended from ninety to 103 degrees, and I O was about twenty degrees. On January 6, 1683, S A did not appear to be above forty-five degrees, but the horizon was then filled with fogs, and Venus ſhone very bright. The appearance therefore depends upon the ſtate of the atmoſphere, and ſituation of the planets, which may produce light enough partly to obſcure it. I O has ſometimes been extended to thirty degrees. M. Pingré, in the torrid zone, has obſerved S A to be 120 degrees. The thickneſs I O ought to appear different at different times of the year, becauſe the Earth will be in a different ſituation in reſpect to its edge.

M. Facio conjectured, that this appearance ariſes from a collection of corpuſcles encompaſſing the Sun in the form of a lens, reflecting the light of the Sun. M. Caſſini ſuppoſed that is might ariſe from an infinite number of planets revolving about the Sun; ſo that this light might owe its exiſtence to theſe bodies, as the milky way does to an innumerable number of fixed ſtars. It is now, however, generally ſuppoſed, that it is matter detached from the Sun by its rotation about its axis. The velocity of the equatorial parts of the Sun being the greateſt, would throw the matter to the greateſt diſtance, and, on account of the diminution of velocity towards its poles, the height to which the matter would there riſe would be diminiſhed; and, as it would probably ſpread a little ſideways, it would form an atmoſphere about the Sun ſomething in the form of a lens, whoſe ſection perpendicular to its axis would coincide with the Sun's equator. And this agrees very well with obſervation. There is however a difficulty in thus accounting for this phenomenon. It is very well known, that the centrifugal force of a point of the Sun's equator is a great many times leſs than its gravity. It does not appear, therefore, how the Sun, from its rotation, can detach any of its groſs particles. If they be particles detached from the Sun, they muſt be ſent off by ſome other unknown force; and in that caſe they might be ſent off equally in all directions, which would not agree with the obſerved figure. The cauſe is probably owing to the Sun's rotation, although not immediately to the centrifugal force ariſing therefrom.

Of the FIXED STARS.

No part of the univerſe affords ſuch exalted ideas of the ſtructure and magnificence of the heavens, as the conſideration of the number, magnitude, motion, nature, and diſtance, of the fixed ſtars. We admire indeed, with propriety, the vaſt bulk of our own globe; but, when we conſider how much it is ſurpaſſed by moſt of the heavenly bodies, what a point it degenerates into, and how little more even the vaſt orbit in which it revolves would appear, when ſeen from ſome of the fixed ſtars, we begin to conceive more juſt ideas of the extent of the univerſe, and of the infinity of creation. The unbounded ſpace appears filled, at different diſtances, with theſe ſtars; each of which is probably a Sun, with attendant planets rolling round it. In this view, what, and how amazing, is the ſtructure of the univerſe!

With reſpect to the *diſtances* of the fixed ſtars, they are ſo extremely remote, that we have no diſtances in the planetary ſyſtem to compare to them. Their immenſe diſtance appears from hence, that they have no ſenſible parallax; that is, that the diameter of the Earth's annual orbit, which is nearly 190 millions of miles, bears no ſenſible proportion to their diſtance.

M. Huygens (Coſmotheor. lib. iv.) attempts to determine the diſtance of the ſtars, by making the aperture of a teleſcope ſo ſmall, as that the Sun through it appears no larger than Sirius; which he found to be only as 1 to 27,664 of his diameter when ſeen with the naked eye; ſo that, were the Sun's diſtance 27,664 times as much as it is, it would then be ſeen of the ſame diameter with Sirius. And hence, ſuppoſing Sirius to be a ſun of the ſame magnitude with our Sun, the diſtance of Sirius will be found to be 27,664 times the diſtance of the Sun, or 345 million times the Earth's diameter. Dr. David Gregory inveſtigated the diſtance of Sirius, by ſuppoſing it of the ſame magnitude with the Sun, and of the ſame apparent diameter with Jupiter in oppoſition: as may be ſeen at large in his Aſtronomy, lib. iii. prop. 47. Caſſini (Mem. Acad. 1717), by comparing Jupiter and Sirius, when viewed through the ſame teleſcope, inferred, that the diameter of that planet was ten times as great as that of the ſtar; and, the diameter of Jupiter being 50″, he concluded that the diameter of Sirius was about 5″; ſuppoſing then, that the real magnitude of Sirius is equal to that of the Sun, and the diſtance of the Sun from us 12,000 diameters of the Earth, and the apparent diameter of Sirius being to that of the Sun as 1 to 384, the diſtance of Sirius becomes equal to 4,608,000 diameters of the Earth. Theſe methods of Huygens, Gregory, and Caſſini, are however conjectural and precarious; both becauſe the Sun and Sirius are ſuppoſed of equal magnitude, and alſo becauſe it is ſuppoſed the diameter of Sirius is not determined with ſufficient exactneſs.

Mr. Michell has propoſed an enquiry into the probable parallax and magnitude of the fixed ſtars, from the quantity of light which they afford us, and the peculiar circumſtances of their ſituation. With this view he ſuppoſes, that they are, on a medium, equal in magnitude and natural brightneſs to the Sun; and then proceeds to inquire, what would be the parallax of the Sun, if he were to be removed ſo far from us, as to make the quantity of light, which we ſhould then receive from him, no more than equal to that of the fixed ſtars. Accordingly, he aſſumes Saturn in oppoſition, as equal, or nearly equal, in light to the brighteſt fixed ſtar. As the mean diſtance of Saturn from the Sun is equal to about 2082 of the Sun's ſemidiameters, the denſity of the Sun's light at Saturn will conſequently be leſs than at his own ſurface, in the ratio of the ſquare of 2082 or 4,334,724 to 1. If Saturn therefore reflected all the light that falls upon him, he would be leſs luminous in that ſame proportion. And, beſides, his apparent diameter, in the oppoſition, being but about the 105th part of that of the Sun, the quantity of light which we receive from him muſt be again diminiſhed in the ratio of the ſquare of 105 or 11,025 to 1. Conſequently, by multiplying theſe two numbers together, we ſhall have the whole of the light of the Sun to that of Saturn, as the ſquare nearly of 220,000 or 48,400,000,000 to 1. Hence, removing the Sun to 220,000 times his preſent diſtance, he would ſtill appear at leaſt as bright as Saturn, and his whole parallax upon the diameter of the Earth's orbit would be leſs than 2″: and this muſt be aſſumed for the parallax of the brighteſt of the fixed ſtars, upon the ſuppoſition that their light does not exceed that of Saturn.

By a like computation it may be found, that the diſtance, at which the Sun would afford us as much light as we receive from Jupiter, is not leſs than 46,000 times his preſent diſtance; and his whole parallax in that caſe, upon the diameter of the Earth's orbit, would not be more than nine ſeconds; the light of Jupiter and Saturn, as ſeen from the Earth, being in the ratio of about 22 to 1, when they are both in oppoſition, and ſuppoſing them to reflect equally in proportion to the whole of the light that falls upon them. But, if Jupiter and Saturn, inſtead of reflecting the whole of the light that falls upon them, ſhould really reflect only a part of it, as a fourth, or a ſixth, which may be the caſe, the above diſtances muſt be increaſed in the ratio of 2 or 2½ to 1, to make the Sun's light no more than equal to theirs; and his parallax would be leſs in the ſame proportion. Suppoſing then that the fixed ſtars are of the ſame magnitude and brightneſs with the Sun, it is no wonder that their parallax ſhould hitherto have eſcaped obſervation; ſince in this caſe it could hardly amount to two ſeconds, and probably not more than one in Sirius himſelf, though he had been placed in the pole of the ecliptic; and, in thoſe that appear much leſs luminous, as γ Draconis, which is only of the third magnitude, it could hardly be expected to be ſenſible with ſuch inſtruments as have hitherto been uſed. However, Mr. Michell ſuggeſts, that it is not impracticable to conſtruct inſtruments capable of diſtinguiſhing even to the twentieth part of a ſecond, provided the air will admit of that degree of exactneſs. This ingenious writer apprehends that the quantity of light which we receive from Sirius, does not exceed the light we receive from the leaſt fixed ſtar of the ſixth magnitude, in a greater ratio than that of 1000 to 1, nor leſs than that of 400 to 1; and the ſmaller ſtars of the ſecond magnitude ſeem to be about a mean proportional between the other two. Hence the whole parallax of the leaſt fixed ſtars of the ſixth magnitude, ſuppoſing them of the ſame ſize and native brightneſs with the Sun, ſhould be from about $2'''$ to $3'''$, and their diſtance from about eight to twelve million times that of the Sun: and the parallax of the ſmaller ſtars of the ſecond magnitude, upon the ſame ſuppoſition, ſhould be about $12'''$, and their diſtance about two million times that of the Sun.

This author alſo imagines, that, from the apparent ſituation of the ſtars in the heavens, there is the greateſt probability that the ſtars are collected together in cluſters in ſome places, where they form a kind of ſyſtems, whilſt in others there are either few or none of them; whether this diſpoſition be owing to their mutual gravitation, or to ſome other law or appointment of the Creator. Hence it may be inferred, that ſuch double ſtars, &c. as appear to conſiſt of two or more ſtars placed very near together, do really conſiſt of ſtars placed near together, and under the influence of ſome general law: and he proceeds to inquire whether, if the ſtars be collected into ſyſtems, the Sun does not likewiſe make one of ſome ſyſtem, and which fixed ſtars thoſe are that belong to the ſame ſyſtem with him. Thoſe ſtars, he apprehends, which are found in cluſters, and ſurrounded by many others at a ſmall diſtance from them, belong probably to other ſyſtems, and not to ours. And thoſe ſtars, which are ſurrounded with nebulæ, are probably only very large ſtars which, on account of their ſuperior magnitude, are ſingly viſible, while the others, which compoſe the remaining parts of the ſame ſyſtem, are ſo ſmall as to eſcape our ſight. And thoſe nebulæ in which we can diſcover either none or only a few ſtars, even with the aſſiſtance of the beſt teleſcopes, are probably ſyſtems that are ſtill more diſtant than the reſt. See Philoſ. Tranſ. vol. lvii. p. 234, &c.

The diſtance of the ſtar γ Draconis appears, by Dr. Bradley's obſervations, to be at leaſt 400,000 times that of the Sun, and the diſtance of the neareſt fixed ſtar not leſs than 40,000 diameters of the Earth's annual orbit: that is, the diſtance from the Earth, of the former at leaſt 38,000,000,000,000 miles, and the latter not leſs than 7,600,000,000,000 miles. As theſe diſtances are immenſely great, it may both be amuſing, and help to a clearer and more familiar idea, to compare them with the velocity of ſome moving body, by which they may be meaſured.

The ſwifteſt motion we know of, is that of light, which paſſes from the Sun to the Earth in about eight minutes; and yet this would be above ſix years traverſing the firſt ſpace, and near a year and a quarter in paſſing from the neareſt fixed ſtar to the Earth. But a cannon-ball, moving on a medium at the rate of about twenty miles in a minute, would be 3,800,000 years in paſſing from γ Draconis to the Earth, and 760,000 years paſſing from the neareſt fixed ſtar. Sound, which moves at the rate of about thirteen miles in a minute, would be 5,600,000 years traverſing the former diſtance, and 1,128,000 in paſſing through the latter. The celebrated Huygens purſued ſpeculations of this kind ſo far, as to believe it not impoſſible, that there may be ſtars at ſuch inconceivable diſtances, that their light has not yet reached the Earth ſince its creation. Dr. Halley has alſo advanced, what he ſays ſeems to be a metaphyſical paradox (Philoſ. Tranſ. No. ccclxiv. or Abr. vol. vi. p. 148), viz. that the number of fixed ſtars muſt be more than finite, and ſome of them more than at a finite diſtance from others: and Addiſon has juſtly obſerved, that this thought is far from being extravagant, when we conſider, that the univerſe is the work of infinite power, prompted by infinite goodneſs, and having an infinite ſpace to exert itſelf in; ſo that our imagination can ſet no bounds to it.

Kepler has alſo made a very ingenious obſervation upon the magnitudes and diſtances of the fixed ſtars. He obſerves, that there can be only thirteen points upon the ſurface of a ſphere as far diſtant from each other as from the centre; and, ſuppoſing the neareſt fixed ſtars to be as far from each other as from the Sun, he concludes, that there can be only thirteen ſtars of the firſt magnitude. Hence, at twice that diſtance from the Sun, there may be placed four times as many, or fifty-two; at three times that diſtance, nine times as many, or 117; and ſo on. Theſe numbers will give pretty nearly the number of ſtars of the firſt, ſecond, third, &c. magnitudes. Dr. Halley further remarks, that, if the number of ſtars be finite, and occupy only a part of ſpace, the outward ſtars would be continually attracted towards thoſe which are within, and in proceſs of time they would coaleſce and unite into one. But, if the number be infinite, and they occupy an infinite ſpace, all the parts would be nearly in equilibrio, and conſequently each fixed ſtar, being drawn in oppoſite directions, would keep its place, or move on till it had found an equilibrium. *Phil. Tranſ.* No. ccclxiv.

In contemplating the *magnitudes* of the ſtars, they appear to be very different from one another; which difference may probably ariſe, partly from a diverſity in their real magnitude, but principally from their diſtances, which are certainly very different. To the bare eye, the ſtars appear of ſome ſenſible magnitude, owing to the glare of light ariſing from the numberleſs reflections from the aërial particles about the eye: this makes us imagine the ſtars to be much larger than they would appear, if we ſaw them only by the few rays which come directly from them, ſo as to enter our eyes without being intermixed with others. Any perſon may be ſenſible of this, by looking at a ſtar of the firſt magnitude through a long narrow tube; which, though it takes in as much of the ſky as would hold a thouſand ſuch ſtars, ſcarcely renders that one viſible.

The ſtars, on account of their apparently-various ſizes, have been diſtributed into ſeveral claſſes of magnitudes. The firſt claſs, or ſtars of the firſt magnitude, are thoſe that appear largeſt, and may probably be neareſt to us. Next to theſe, are thoſe of the ſecond magnitude; and ſo on to the ſixth, which comprehends the ſmalleſt ſtars viſible to the naked eye. All beyond theſe, that can be perceived by the help of teleſcopes, are called *teleſcopic* ſtars. Not that all the ſtars of each claſs appear juſtly of the ſame magnitude; there being great latitude in this reſpect; and thoſe of the firſt magnitude appearing almoſt all different in luſtre and ſize. There are alſo other ſtars, of intermediate magnitudes, which aſtronomers cannot refer to one claſs rather than another, and therefore they place them between the two. Procyon, for inſtance, which Ptolemy makes of the firſt magnitude, and Tycho of the ſecond, Flamſtead lays down as between the firſt and ſecond. So that, inſtead of ſix magnitudes, we may ſay there are almoſt as many orders of ſtars, as there are ſtars; ſo great a variation being obſervable in the magnitude, colour, and brightneſs, of them.

There ſeems to be little chance of diſcovering with certainty the real ſize of any of the fixed ſtars; we muſt therefore be content with an approximation, deduced from their parallax, if this ſhould ever be really found; and the quantity of light they afford us, compared with that of the Sun. And to this purpoſe, Dr. Herſchel informs us, that, with a magnifying power of 6450, and by means of his new micrometer, he found the apparent diameter of α Lyræ to be 0·355″.

The ſtars are diſtinguiſhed, with regard to their ſituation, into *aſteriſms*, or *conſtellations*; which are nothing but aſſemblages of ſeveral neighbouring ſtars, conſidered as conſtituting ſome determinate figure, as of an animal, &c. from which it is therefore denominated.

The ſtars are alſo diſtinguiſhed, in each conſtellation, by numbers, or by letters of the alphabet. This ſort of diſtinction was introduced by John Bayer, in his Uranometria, 1654; where he denotes the ſtars, in each conſtellation, by the letters of the Greek alphabet, α, β, γ, δ, ε, &c. viz. the moſt remarkable ſtar of each by α, the ſecond by β, the third by γ, &c. and, when there are more ſtars in a conſtellation than the characters in the Greek alphabet, he denotes the reſt, in their order, by the Roman letters A, b, c, d, &c. But, as the number of the ſtars, that have been obſerved and regiſtered in catalogues ſince Bayer's time, is greatly increaſed, as by Flamſtead and others, the additional ones have been marked by the ordinal numbers 1, 2, 3, 4, 5, &c.

Beſides the ſtars thus diſtinguiſhed into magnitudes and conſtellations, there are others not reduced to either. Thoſe not reduced into conſtellations, are called *unformed* ſtars; and thoſe not reduced to claſſes or magnitudes, are called *nebulous* ſtars; but ſuch as only appear faintly in cluſters, in form of little lucid ſpots, *nebulæ*, or clouds. Ptolemy ſets down five of ſuch nebulæ, viz. one at the extremity of the right hand of Perſeus, which appears through the teleſcope, thick ſet with ſtars; one in the middle of the crab called *Præſepe*, or the Manger, in which Galileo counted above forty ſtars; one unformed near the ſting of the Scorpion; another in the eye of Sagittarius, in which two ſtars may be ſeen in a clear ſky with the naked eye, and ſeveral more with the teleſcope; and the fifth in the head of Orion, in which Galileo counted twenty-one ſtars. Flamſtead obſerved a cloudy ſtar before the bow of Sagittarius, which conſiſts of a great number of ſmall ſtars; and the ſtar *d* above the right ſhoulder of this conſtellation is encompaſſed with ſeveral more. Flamſtead and Caſſini alſo diſcovered one between the Great and Little Dog, which is very full of ſtars, that are viſible only by the teleſcope. But the moſt remarkable of all the cloudy ſtars, is that in the middle of Orion's ſword, in which Huygens and Dr. Long obſerved twelve ſtars, ſeven of which (three of them now known to be four, being very cloſe together) ſeem to ſhine through a cloud, very lucid near the middle, but faint and ill-defined about the edges. Caſſini is of opinion, that the brightneſs of theſe proceeds from ſtars ſo minute, as not to be diſtinguiſhed by the beſt glaſſes: and this opinion is fully confirmed by the obſervations of Dr. Herſchel, whoſe powerful teleſcopes ſhew thoſe lucid ſpecks to be compoſed entirely of maſſes of ſmall ſtars, and whoſe diſcoveries in the ſidereal heavens have been already ſtated in the preceding part of this Treatiſe.

There are many ſtars which, though they appear ſingle to the naked eye, are yet diſcovered by the teleſcope to be double, triple, &c. Of theſe, ſeveral have been obſerved by Caſſini, Hooke, Long, Maſkelyne, Hornſby, Pigott, Mayer, &c. but Dr. Herſchel has been by far the moſt ſucceſsful in obſervations of this kind; and his ſucceſs has been chiefly owing to the very extraordinary magnifying powers of the Newtonian 7-feet reflector which he has uſed, and the advantage of an excellent micrometer of his own conſtruction. The powers which he has uſed, have been 146, 227, 278, 460, 754, 932, 1159, 1536, 2010, 3168, and even 6450. He has found about 700 double ſtars, not more than forty-two of which had been noticed by any other perſon. Among theſe there are alſo ſome ſtars that are treble, double-double, quadruple, double-treble, and multiple. His catalogue comprehends the names of the ſtars, and the number in Flamſtead's catalogue, or ſuch a deſcription of thoſe that are not contained in it as will be found ſufficient to diſtinguiſh them; alſo the comparative ſize of the ſtars; their colours as they appeared to his view; their diſtances determined in ſeveral different ways; their angle of poſition with regard to the parallel of declination; and the dates when he firſt perceived the ſtars to be double, treble, &c. Dr. Herſchel has diſtributed the double ſtars into ſix different claſſes. In the firſt he has placed all thoſe which require a very ſuperior teleſcope, with the utmoſt clearneſs of air, and every other favourable circumſtance, to be ſeen at all, or well enough to judge of them; and there are twenty-four of theſe. To the ſecond claſs belong all thoſe double ſtars that are proper for eſtimations by the eye, and very delicate meaſures by the micrometer; the number being thirty-eight. The third claſs comprehends all thoſe double ſtars, that are between 5″ and 15″ aſunder; the number of them being forty-ſix. The fourth, fifth, and ſixth, claſſes, contain double ſtars that are from 15″ to 30″, and from 30″ to 1′, and from 1′ to 2′, or more, aſunder; of which there are forty-four in the fourth claſs, fifty-one in the fifth claſs, and ſixty-ſix in the ſixth claſs: the laſt of this claſs is α Tauri, No. 87 of Flamſtead, whoſe apparent diameter, upon the meridian meaſured with a power of 460 at a mean of two obſervations, is 1″ 46‴, and with a power of 932 at a mean of two obſervations 1″ 12‴. We ſhall here enumerate a few of the moſt remarkable of theſe ſtars, from Dr. Herſchel's catalogue:

α Herculis, Flam. 64, a beautiful double ſtar: the two ſtars very unequal; the largeſt is red, and the ſmalleſt blue inclining to green.

δ Lyræ, Flam. 12, double, very unequal: the largeſt red, and ſmalleſt duſky; not eaſily to be ſeen with a magnifying power of 227.

α Geminorum, Flam. 66, double, little unequal: both white; with a magnifying power of 146 their diſtance appears equal to the diameter of the ſmalleſt.

ε Lyræ, Flam. 4 and 5, a double-double ſtar: at firſt ſight it appears double at a conſiderable diſtance, and by a little attention each will appear double; one ſet are equal, and both white; the other unequal, the largeſt white, and the ſmalleſt inclined to red. The interval of the ſtars, of the unequal ſet, is one diameter of the largeſt, with a power of 227.

γ Andromedæ, Flam. 57, double, very unequal: the largeſt reddiſh white, and the ſmalleſt a fine bright ſky-blue inclining to green. A very beautiful object.

α Urſæ Minoris, Flam. 1, double very unequal: the largeſt white, the ſmalleſt red.

β Lyræ, Flam. 10, quadruple, unequal, white; but three of them a little inclined to red.

α Leonis, Flam. 32, double, very unequal: largeſt white, ſmalleſt duſky.

ε Bootis, Flam. 36, double, very unequal: largeſt reddiſh, ſmalleſt blue, or rather a faint lilac; very beautiful.

b Draconis, Flam. 39, a very ſmall double ſtar, very unequal: the largeſt white, ſmalleſt inclining to red.

λ Orionis, Flam. 39, quadruple, or rather a double ſtar, and has two more at a ſmall diſtance: the double ſtar conſiderably unequal; the largeſt white, ſmalleſt pale roſe colour.

ξ Libræ, Flam. ultima, double-double: one ſet very unequal, the largeſt a very fine white.

μ Cygni, Flam. 78, double, conſiderably unequal: the largeſt white, the ſmalleſt bluiſh.

μ Herculis, Flam. 86, double, very unequal: the ſmall ſtar is not viſible with a power of 278, but is ſeen very well with one of 460; the largeſt is inclined to a pale red, ſmalleſt duſkiſh.

α Capricorni, Flam. 5, double, very unequal: the largeſt white, ſmalleſt duſky.

υ Lyræ, Flam. 8, treble, very unequal: the largeſt white, ſmalleſt both duſky.

α Lyræ, Flam. 3, double, very unequal: the largeſt a fine brilliant white, the ſmalleſt duſky; it appears with a power of 227. Dr. Herſchel meaſured the diameter of this fine ſtar, and found it to be 0·3553″.

The *number* of the ſtars appears to be immenſely great, almoſt infinite; yet have aſtronomers long ſince aſcertained the number of ſuch as are viſible to the eye, which are much fewer than at firſt ſight could be imagined. Of the 3000 contained in Flamſtead's catalogue, there are many that are only viſible through a teleſcope; and a good eye ſcarcely ever ſees more than a thouſand at the ſame time in the cleareſt heaven; the appearance of innumerable more, that are frequent in clear winter nights, ariſing from our ſight's being deceived by their twinkling, and from our viewing them confuſedly, and not reducing them to any order. But nevertheleſs we cannot but think the ſtars are almoſt, if not altogether, infinite. See Halley, on the number, order, and light, of the fixed ſtars, Phil. Tranſ. No. ccclxiv. or Abr. vol. vi. p. 148.

Riccioli, in his New Almageſt, affirms, that a man who ſhall ſay there are above twenty thouſand times twenty thouſand, would ſay nothing improbable. For a good teleſcope, directed indifferently to almoſt any point of the heavens, diſcovers multitudes that are loſt to the naked eye; particularly in the milky way. In the ſingle conſtellation of the Pleiades, inſtead of ſix, ſeven, or eight, ſtars, ſeen by the beſt eye, Dr. Hook, with a teleſcope twelve feet long, told ſeventy-eight, and with larger glaſſes many more, of different magnitudes. And F. de Rheita affirms, that he has obſerved above 2000 ſtars in the ſingle conſtellation of Orion. The ſame author found above 188 in the Pleiades. And Huygens, looking at the ſtar in the middle of Orion's ſword, inſtead of one, found it to be twelve. Galileo found eighty in the ſpace of the belt of Orion's ſword, twenty-one in the nebulous ſtar of his head, and above 500 in another part of him, within the compaſs of one or two degrees ſpace, and more than forty in the nebulous ſtar Præſepe; but the more recent diſcoveries of Dr. Herſchel have proved the fixed ſtars to be immenſe, their regions unbounded, and perhaps infinite!

The appearance of *new* ſtars, and the *changes* which have happened in others, offer to the mind a phenomenon more ſurpriſing, and leſs explicable, than almoſt any other in the ſcience of aſtronomy. The firſt change that is upon record was about 120 years before Chriſt, when Hipparchus, diſcovering a new ſtar to appear, was firſt induced to make a catalogue of the ſtars, that poſterity might perceive any future changes of the like nature. In the year 1572, Cornelius Gemma, and Tycho Brahe, obſerved another new ſtar in the conſtellation Caſſiopeia, which was likewiſe the occaſion of Tycho's making a new catalogue. At firſt its magnitude and brightneſs exceeded the largeſt of the ſtars, Sirius and Lyra; and even equalled the planet Venus when neareſt the Earth, and was ſeen in fair day-light. It continued ſixteen months; towards the latter end of which it began to dwindle, and, at length, in March 1574, it totally diſappeared, without any change of place in all that time. Leovicius tells us of another ſtar appearing in the ſame conſtellation, about the year 945, which reſembled that of 1572; and he quotes another ancient obſervation, by which it appears, that a new ſtar was ſeen about the ſame place in 1264. Dr. Keil thinks theſe were all the ſame ſtar; and indeed the periodical intervals, or diſtance of time between theſe appearances, were nearly equal, being from 318 to 319 years; and, if ſo, its next appearance may be expected about 1890.

Fabricius, in 1596, diſcovered another new ſtar, called the *ſtella mira*, or 'wonderful ſtar,' in the neck of the Whale, which has ſince been found to appear and diſappear periodically, ſeven times in ſix years, continuing in its greateſt luſtre for fifteen days together; and is never quite extinguiſhed. Its courſe and motion are deſcribed by Bulliald, in a treatiſe printed at Paris in 1667. Dr. Herſchel has lately, viz. in the years 1777, 1778, 1779, and 1780, made ſeveral obſervations on this ſtar, an account of which may be ſeen in the Phil. Tranſ. vol. lxx. art. 21.

In the year 1600, William Janſen diſcovered a changeable ſtar in the neck of the Swan. It was ſeen by Kepler, who wrote a treatiſe upon it, and determined its place to be 16° 18′ ♒, with 55° 30′ or 32′ north latitude. Ricciolus ſaw it in 1616, 1621, 1624, and 1629. He is poſitive that it was inviſible in the laſt years from 1640 to 1650. M. Caſſini ſaw it again in 1655; it increaſed till 1660, and then grew leſs, and at the end of 1661 it diſappeared. In November 1665 it appeared again, and diſappeared in 1681. In 1715 it appeared of the ſixth magnitude, and has continued ſo ever ſince.

On June 20, 1670, another changeable ſtar was diſcovered near the Swan's Head, by P. Anthelme. It diſappeared in October, and was ſeen again on March 17, 1671. On September 11, it diſappeared. It appeared again in March 1672, and diſappeared in the ſame month, and has never ſince been ſeen. Its longitude was 1° 52′ 26″ of ♒, and its latitude 47° 25′ 22″ north. The days are here put down for the new ſtyle.

In 1686, Kircher obſerved χ in the Swan to be a changeable ſtar; and, from twenty years obſervations, the period of the return of the ſame phaſes was found to be 405 days; the variations of its magnitude, however, were ſubject to ſome irregularity.

In the year 1604, at the beginning of October, Kepler diſcovered a new ſtar near the heel of the right foot of Serpentarius, ſo very brilliant, that it exceeded every fixed ſtar, and even Jupiter in magnitude. It was obſerved to be every moment changing into ſome of the colours of the rainbow, except when it was near the horizon, when it was generally white. It gradually diminiſhed, and diſappeared about October 1605, when it came too near the Sun to be viſible, and was never ſeen after. Its longitude was 17° 40′ of ♐, with 1° 56′ north latitude, and was found to have no parallax.

Montanari diſcovered two ſtars in the conſtellation of Ship, marked β and γ by Bayer, to be wanting. He ſaw them in 1664, but loſt them in 1668. The ſtar θ in the tail of the Serpent, reckoned by Tycho of the third, was found by him of the fifth, magnitude. The ſtar ρ in Serpentarius did not appear, from the time it was obſerved by him, till 1695. The ſtar ψ in the Lion, after diſappearing, was ſeen by him in 1667. He obſerved alſo that β in Meduſa's Head varied in its magnitude.

M. Caſſini diſcovered one new ſtar of the fourth, and two of the fifth, magnitude, in Caſſiopea; alſo five new ſtars in the ſame conſtellation, of which three have diſappeared; two new ones in the beginning of the conſtellation Eridamus, of the fourth and fifth magnitude; and four new ones of the fifth or ſixth magnitude, near the north pole. He farther obſerved, that the ſtar, placed by Bayer near ε of the Little Bear, is no longer viſible; that the ſtar A of Andromeda, which had diſappeared, had come into view again in 1695; that, in the ſame conſtellation, inſtead of one in the Knee, marked υ, there are two others come more northerly; and that ξ is diminiſhed; that the ſtar placed by Tycho at the end of the Chain of Andromeda, as of the fourth magnitude, could then ſcarcely be ſeen; and, that the ſtar which, in Tycho's catalogue, is the twentieth of Piſces, was no longer viſible.

M. Maraldi obſerved, that the ſtar κ in the left leg of Sagittarius, marked by Bayer of the third magnitude, appeared of the ſixth, in 1671; in 1676 it was found by Dr. Halley to be of the third; in 1692 it could hardly be perceived, but in 1693 and 1694 it was of the fourth magnitude. In 1704 he diſcovered a ſtar in Hydra to be periodical; its poſition is in a right line with thoſe in the tail marked π and γ. The time between its greateſt luſtre, of the fourth magnitude, was about two years; in the intermediate time it diſappeared. In 1666, Hevelius ſays he could not find a ſtar of the fourth magnitude in the eaſtern ſcale of Libra, obſerved by Tycho and Bayer; but Maraldi, in 1709, ſays, that it had then been ſeen for fifteen years, ſmaller than one of the fourth. See Elem. d'Aſtron. p. 57.

J. Goodricke, Eſq. has determined the periodic variation of Algol, or β Perſei, (obſerved by Montanari to be variable,) to be about 2d. 21h. Its greateſt brightneſs is of the ſecond magnitude, and leaſt of the fourth. It changes from the ſecond to the fourth in about three hours and a half, and back again in the ſame time, and retains its greateſt brightneſs for the other part of the time. See the Phil. Tranſ. 1783. The ſame gentleman likewiſe diſcovered that β Lyræ was ſubject to a periodic variation. The following is the reſult of his obſervations. It completes all his phaſes in 12d. 19h. during which time it undergoes the following changes: 1. It is of the third magnitude for about two days. 2. It diminiſhes in about one day and a quarter. 3. It is between the fourth and fifth magnitude for leſs than a day. 4. It increaſes in about two days. 5. It is of the third magnitude for about three days. 6. It diminiſhes in about one day. 7. It is ſomething larger than the fourth magnitude for a little leſs than a day. 8. It increaſes in about one day and three quarters to the firſt point, and ſo completes a whole period. See the Philoſ. Tranſ. 1785.—He alſo found, that δ Cephei is ſubject to a periodic variation of 5d. 8h. 37½'. during which time it undergoes the following changes: 1. It is at its greateſt brightneſs about 1d. 13h. 2. Its diminution is performed in about 1d. 18h. 3. It is at its greateſt obſcuration about 1d. 12h. 4. It increaſes in about thirteen hours. Its greateſt and leaſt brightneſs is that between the third and fourth, and between the fourth and fifth, magnitudes.

E. Pigott, Eſq. has diſcovered η Antinoi to be a variable ſtar, with a period of 7d. 4h. 38'. The changes happen as follow: 1. It is at its greateſt brightneſs 44± hours. 2. It decreaſes 62± hours. 3. It is at its greateſt brightneſs 30± hours. 4. It increaſes 36± hours. When moſt bright it is of the third or fourth magnitude, and when leaſt of the third or fourth.

In the Phil. Tranſ. for 1796, Dr. Herſchel has propoſed a method of obſerving the changes that may happen to the fixed ſtars; with a catalogue of their comparative brightneſs, in order to aſcertain the permanency of their luſtre. Dr. Herſchell, in a paper upon the proper motion of the ſolar ſyſtem, has alſo given a large collection of ſtars which were formerly ſeen, but are now loſt; alſo a catalogue of variable ſtars, and of new ſtars; and very juſtly obſerves, that it is not eaſy to prove that a ſtar was never ſeen before; for, though it ſhould not be contained in any catalogue whatever, yet the argument for its former non-appearance, which is taken from its not having been obſerved before, is only ſo far to be regarded, as it can be made probable, or almoſt certain, that a ſtar would have been obſerved, had it been viſible.

There have been various conjectures to account for the appearances of the changeable ſtars. Maupertuis ſuppoſes, that they may have ſo quick a motion about their axes, that the centrifugal force may reduce them to flat oblate ſpheroids, not much unlike a mill-ſtone; that its plane may be inclined to the plane of the orbits of its planets, by whoſe attraction the poſition of the body may be altered, ſo that, when its plane paſſes through the Earth, it may be almoſt or entirely inviſible, and then become again viſible as its broad ſide is turned towards us. Others have conjectured, that conſiderable parts of their ſurfaces are covered with dark ſpots, ſo that when, by the rotation of the ſtar, theſe ſpots are preſented to us, the ſtars become almoſt or entirely inviſible. Others have ſuppoſed, that theſe ſtars have very large opaque bodies revolving about and near to them, ſo as to obſcure them when they come in conjunction with us. The irregularity of the phaſes of ſome of them ſhews the cauſe to be variable, and therefore may perhaps be beſt accounted for, by ſuppoſing that a great part of the body of the ſtar is covered with ſpots, which appear and diſappear like thoſe on the Sun's ſurface. The total diſappearance of a ſtar may probably be the deſtruction of its ſyſtem; and the appearance of a new ſtar, the creation of a new ſyſtem of planets.

With reſpect to the *nature* of the fixed ſtars, their immenſe diſtance precludes us from an inveſtigation of thoſe particulars from whence poſitive facts can be deduced. What we can gather for certain from their phenomena, is as follows: 1ſt, That the fixed ſtars are greater than our Earth; becauſe, if that was not the caſe, they could not be viſible at ſuch immenſe diſtance. 2dly, That the fixed ſtars are farther diſtant from the Earth than the fartheſt of the planets. For we frequently find the fixed ſtars hid behind the body of the planets: and beſides, they have no ſenſible parallax, which the planets have. 3dly, The fixed ſtars ſhine with their own light; for they are much farther from the Sun than Saturn, and appear much ſmaller than Saturn; but ſince, notwithſtanding this, they are found to ſhine much brighter than that planet, it is evident they cannot borrow their light from the ſame ſource as Saturn does, viz. the Sun; but, ſince we know of no other luminous body beſide the Sun, whence they might derive their light, it follows that they ſhine with their own native light. Beſides, it is known, that the more a teleſcope magnifies, the leſs is the aperture through which the ſtar is ſeen; and, conſequently, the fewer rays it admits into the eye. Now, ſince the ſtars appear leſs in a teleſcope which magnifies 200 times, than they do to the naked eye, inſomuch that they ſeem to be only indiviſible points, it proves at once that the ſtars are at immenſe diſtances from us, and that they ſhine by their own proper light. If they ſhone by borrowed light, they would be as inviſible without teleſcopes as the ſatellites of Jupiter are; for the ſatellites appear larger when viewed with a good teleſcope than the largeſt fixed ſtars do. Hence, 1. We deduce, that the fixed ſtars are ſo many ſuns; for they have all the characters of ſuns. 2. That in all probability the ſtars are not ſmaller than our Sun. 3. That it is highly probable each ſtar is the centre of a ſyſtem, and has planets or earths revolving round it, in the ſame manner as round our Sun, i. e. it has opaque bodies illuminated, warmed, and cheriſhed, by its light and heat. As we have incomparably more light from the Moon than from all the ſtars together, it is abſurd to imagine that the ſtars were made for no other purpoſe than to caſt a faint light upon the Earth; eſpecially ſince many more require the aſſiſtance of a good teleſcope to find them out, than are viſible without that inſtrument. Our Sun is ſurrounded by a ſyſtem of planets and comets, all which would be inviſible from the neareſt fixed ſtar; and, from what we already know of the immenſe diſtance of the ſtars, it is eaſy to prove, that the Sun, ſeen from ſuch a diſtance, would appear no larger than a ſtar of the firſt magnitude. From all this it is highly probable, that each ſtar is a Sun to a ſyſtem of worlds moving round it, though unſeen by us; eſpecially as the doctrine of a plurality of worlds is rational, and greatly manifeſts the power, the wiſdom, and the goodneſs, of the great Creator. How immenſe, then, does the univerſe appear! Indeed, it muſt either be infinite, or infinitely near it. Kepler, it is true, denies that each ſtar can have its ſyſtem of planets as ours has; and takes them all to be fixed in the ſame ſurface or ſphere; urging, that, were one twice or thrice as remote as another, it would be twice or thrice as ſmall, ſuppoſing their real magnitudes equal; whereas there is no difference in their apparent magnitudes, juſtly obſerved, at all. But to this it is oppoſed, that Huygens has not only ſhewn, that fires and flames are viſible at diſtances where other bodies, comprehended under equal angles, diſappear; but it ſhould likewiſe ſeem, that the optic theorem about the apparent diameters of objects, being reciprocally proportional to their diſtances from the eye, does only hold while the object has ſome ſenſible ratio to its diſtance. Upon the whole, therefore, the doctrine of the fixed ſtars, as lately introduced by Dr. Herſchel, not only coincides with the opinions of the moſt able mathematicians and philoſophers, but has the beſt ſupport from analogical reaſoning, from obvious probability, and from the voluntary teſtimony our ſenſes.

As to the *motion* of the ſtars, they are of two kinds; one called the *firſt*, *common*, or *diurnal*, motion, ariſing from the

Earth's motion round its axis: by this they ſeem to be carried along with the ſphere of firmament, in which they appear fixed, round the Earth, from eaſt to weſt, in the ſpace of twenty-four hours. The other, called the *ſecond*, or *proper, motion*, is that by which they appear to go backwards from weſt to eaſt, round the poles of the ecliptic, with an exceeding ſlow motion, as deſcribing a degree of their circle only in the ſpace of 71½ years, or 50⅓ ſeconds in a year. This apparent motion is owing to the receſſion of the equinoctial points, which is 50⅓ ſeconds of a degree in a year backward, or contrary to the order of the ſigns of the zodiac. In conſequence of this ſecond motion, the longitude of the ſtars will be always increaſing. Thus, for example, the longitude of Cor Leonis was found at different periods to be as follows: viz.

		Year.		*Long.*	
By Ptolemy, in	-	138	to be	2°	30′
By the Perſians, in	-	1115	- -	17	30
By Alphonſus, in	-	1364	- -	20	40
By Prince of Heſſe, in		1586	- -	24	11
By Tycho, in	-	1601	- -	24	17
By Flamſtead, in	-	1690	- -	25	31⅓

Whence the proper motion of the ſtars, according to the order of the ſigns, in circles parallel to the ecliptic, is eaſily inferred.

It was Hipparchus who firſt ſuſpected this motion, upon comparing his own obſervations with thoſe of Timocharis and Ariſtyllus. Ptolemy, who lived three centuries after Hipparchus, demonſtrated the ſame by undeniable arguments. The increaſe of longitude in a century, as ſtated by different aſtronomers, is as follows:

By Tycho Brahe - -	1°	25′	0″
Copernicus - -	1	23	40⅓
Flamſtead and Riccioli -	1	23	20
Bulliald - - -	1	24	54
Hevelius - - -	1	24	46⅚
Dr. Bradley, &c. - -	1	23	55

which is at the rate of 50⅓ ſeconds per year. From theſe data, the increaſe in the longitude of a ſtar for any given time is eaſily had, and thence its longitude at any time: ex. gr. the longitude of Sirius, in Flamſtead's tables, for the year 1690, being 9° 49′ 1″, its longitude for the year 1800, is found by multiplying the interval of time, viz. 110 years, by 50⅓, the product 5537″, or 1° 32′ 17″, added to the given longitude - 9 49 1
gives the longitude - - 11 21 18 for the year 1800.

The chief phenomena of the fixed ſtars, ariſing from their common and proper motion, beſides their longitude, are their altitudes, right aſcenſions, declinations, occultations, culminations, riſings, and ſettings. Some have ſuppoſed that the latitudes of the ſtars are invariable. But this ſuppoſition is founded on two aſſumptions, which are both controverted among aſtronomers. The one of theſe is, that the orbit of the Earth continues unalterably in the ſame plane, and conſequently that the ecliptic is invariable; the contrary of which is now very generally allowed. The other aſſumption is, that the ſtars are ſo fixed as to keep their places immoveably. Ptolemy, Tycho, and others, comparing their obſervations with thoſe of the ancient aſtronomers, have adopted this opinion. But from the reſult of the compariſon of our beſt modern obſervations, with ſuch as were formerly made with any tolerable degree of exactneſs, there appears to have been a real change in the poſition of ſome of the fixed ſtars, with reſpect to each other; and ſeveral ſtars of the firſt magnitude have already been obſerved, and others ſuſpected, to have a proper motion of their own.

Dr. Halley (Philoſ. Tranſ. number 355, or Abr. vol. 4. p. 225) has obſerved, that the three following ſtars, the Bull's Eye, Sirius, and Arcturus, are now found to be above half a degree more ſoutherly than the ancients reckoned them: that this difference cannot ariſe from the errors of the tranſcribers, becauſe the declinations of the ſtars, ſet down by Ptolemy, as obſerved by Timocharis, Hipparchus, and himſelf, ſhew their latitudes given by him are ſuch as thoſe authors intended: and it is ſcarcely to be believed that thoſe three obſervers could be deceived in ſo plain a matter. To this he adds, that the bright ſtar in the ſhoulder of Orion has, in Ptolemy, almoſt a whole degree more ſoutherly latitude than at preſent: that an ancient obſervation, made at Athens in the year 509, as Bulliald ſuppoſes, of an appulſe of the Moon to the Bull's Eye, ſhews that ſtar to have had leſs latitude at that time than it now has: that, as to Sirus, it appears by Tycho's obſervations, that he found him 4½ minutes more northerly than he is at this time. All theſe obſervations, compared together, ſeem to favour an opinion, that ſome of the ſtars have a proper motion of their own, which changes their places in the ſphere of the heaven: this change of place, as Dr. Halley obſerves, may ſhew itſelf in ſo long a time as 1800 years, though it be entirely imperceptible in the ſpace of one ſingle century; and it is likely ſooneſt to be diſcovered in ſuch ſtars as thoſe juſt now mentioned; becauſe they are all of the firſt magnitude, and may, therefore, probably be ſome of the neareſt to our ſolar ſyſtem. Arcturus, in particular, affords a ſtrong proof of this: for if its preſent declination be compared with its place, as determined either by Tycho or Flamſtead, the difference will be found to be much greater than what can be ſuſpected to ariſe from the uncertainty of their obſervations.

Dr. Herſchel has lately obſerved, that the diſtance of the two ſtars forming the double ſtar γ Draconis, is 54″ 48‴, and their poſition 44° 19′ N. preceding. Whereas, from the right aſcenſion and declination of theſe ſtars in Flamſtead's catalogue, their diſtance, in his time, appears to have been 1′ 11·418″, and their poſition 44° 23′ N. preceding. Hence he infers, that as the difference in the diſtance of theſe two ſtars is ſo conſiderable, we can hardly account for it, otherwiſe than by admitting a proper motion in one or the other of the ſtars, or in our ſolar ſyſtem: moſt probably he ſays, neither of the three is at reſt. He alſo ſuſpects a proper motion in one of the double ſtars, in Cauda Lyncis Media, and in *o* Ceti. Phil. Tranſ. vol. 72. part 1. p. 117, 143, 150.

It is reaſonable to expect, that other inſtances of the like kind muſt alſo occur among the great number of viſible ſtars, becauſe their relative poſitions may be altered by various means. For, if our own ſolar ſyſtem be conceived to change its place with reſpect to abſolute ſpace, this might, in proceſs of time, occaſion an apparent change in the angular diſtances of the fixed ſtars; and in ſuch a caſe, the places of the neareſt ſtars being more affected than any of thoſe that are very remote, their relative poſition might ſeem to alter, though the ſtars themſelves were really immoveable; and vice verſa, we may ſurmiſe, from the obſerved motion of the ſtars, that our Sun, with all its planets and comets, may have a motion towards ſome particular part of the heavens, on account of a greater quantity of matter collected in a number of ſtars and their ſurrounding planets there ſituated, which may perhaps occaſion a gravitation of our whole ſolar ſyſtem towards it. If this ſurmiſe ſhould have any foundation, it will ſhew itſelf in a ſeries of ſome years; ſince from that motion there will ariſe another kind of hitherto unknown parallax (ſuggeſted by Mr. Michell, Philoſ. Tranſ. vol. 57, p. 252), the inveſtigation of which may account for ſome part of the motions already obſerved in ſome of the principal ſtars; and, for the purpoſe of determining the direction and quantity of ſuch a motion, accurate obſervations of the diſtance of ſtars, that are near enough to be meaſured with a micrometer, and a very high power of teleſcopes, may be of conſiderable uſe, as they will undoubtedly give us the relative places of thoſe ſtars to a much greater degree of accuracy than they can be had by inſtruments or ſectors, and thereby much ſooner enable us to diſcover any apparent change in their ſituation, occaſioned by this new kind of ſecular or ſyſtematical parallax, if we may ſo expreſs the change ariſing from the motion of the whole ſolar ſyſtem. And, on the other hand, if our ſyſtem be at reſt, and any of the ſtars really in motion, this might likewiſe vary their apparent poſitions; and the more ſo, the nearer they are to us, or the ſwifter their motions are; or the more proper the direction of the motion is to be rendered perceptible by us. Since then the relative places of the ſtars may be changed from ſuch a variety of cauſes, conſidering the amazing diſtance at which it is certain ſome of them are placed, it may require the obſervations of many ages to determine the laws of the apparent changes, even of a ſingle ſtar; much more difficult, therefore, muſt it be to ſettle the laws relating to all the moſt remarkable ſtars.

Dr. Maſkelyne, in the explanation and uſe of the tables which he publiſhed with the firſt volume of his Obſervations, obſerves, that many, if not all the fixed ſtars, have proper motions among themſelves, the cauſes and laws of which are at preſent hid in almoſt equal obſcurity. From comparing his own obſervations at that time with thoſe of Dr. Bradley, Mr. Flamſtead, and Mr. Roëmer, he then found the annual proper motion of the following ſtars in right aſcenſion to be, of Sirius —0·63″, of Caſtor —0·28″, of Procyon —0·8″, of Pollux —0·93″, of Regulus, —0·41″, of Arcturus —1·4″ and of α Aquilæ +0·57″; and of Sirius in north polar diſtance 1·20″, and of Arcturus, 2·01″, both ſouthwards. But ſince that time he had continued his obſervations; and, from a catalogue of the mean right aſcenſions of thirty-ſix principal ſtars (which he communicated to Mr. Wollaſton, and is found in his work), it appears that thirty-five of them have a proper motion in right aſcenſion.

In the year 1756, M. Mayer obſerved eighty ſtars, and compared them with the obſervations of Roëmer in 1706. M. Mayer is of opinion, that (from the goodneſs of the inſtruments with which the obſervations were made) where the diſagreement is at leaſt 10″ or 15″, it is a very probable indication of a proper motion of ſuch a ſtar. He further adds, that when the diſagreement is ſo great as he has found it in ſome of the ſtars, amongſt which is Fomahand, where the difference was twenty-one ſeconds in fifty years, he has no doubt of a proper motion. Dr. Herſchel, following Mayer's judgment of his own and Roëmer's obſervations, has compared the obſervations; and, leaving out of his account all thoſe ſtars which did not ſhew a diſagreement amounting to ten ſeconds, he found that fifty-ſix of them had a proper motion; from whence he attempts to deduce the motion of the ſolar ſyſtem in the following manner. He firſt takes the ſeven ſtars above-mentioned, whoſe proper motions had been determined by Dr. Maſkelyne, and he finds, that if a point be aſſumed about the 77° of right aſcenſion, and the Sun to move progreſſively, it will account for all the motions in right aſcenſion. And if, inſtead of ſuppoſing the Sun to move in the plane of the equator, it ſhould aſcend to a point near to γ Herculis, it will account for the obſerved change of declination of Sirius and Arcturus. In reſpect to the quantity of motion of each, that muſt depend upon their unknown relative diſtances; he only ſpeaks here of the directions of the motions. He next takes twelve ſtars from the above fifty-ſix, whoſe proper motions have been determined from a compariſon of the obſervations of Roëmer and Mayer, and adds to them Regulus and Caſtor; theſe have all a proper motion in right aſcenſion and declination, except Regulus, which has none in declination. Of theſe twenty-ſeven motions, the ſuppoſed motion of the ſolar ſyſtem will ſatisfy twenty-two. There are alſo ſome remarkable circumſtances in the quantities of theſe motions. Arcturus and Sirius being the largeſt, and therefore probably the neareſt, ought to have the greateſt apparent motion, and ſo we find they have. Alſo Arcturus is better ſituated to have a motion in right aſcenſion, and it has the greateſt motion. Several other arguments of the ſame kind are alſo found to take place. But there is a very remarkable circumſtance in reſpect to Caſtor. Caſtor is a double ſtar; now how extraordinary muſt appear the concurrence, that two ſuch ſtars ſhould both have a proper motion ſo exactly alike, that they have never been found to vary a ſingle ſecond! This ſeems to point out the common cauſe, the motion of the ſolar ſyſtem.

Dr. Herſchel next takes thirty-two more of the ſame fifty-ſix ſtars, and ſhews that their motions agree very well with his ſuppoſed motion of the ſolar ſyſtem. But the motions of the other twelve ſtars cannot be accounted for upon this hypotheſis. In theſe therefore he ſuppoſes the effect of the ſolar motion has been deſtroyed and counteracted by their own proper motions. The ſame may be ſaid of nineteen ſtars out of the thirty-two, which only agree with the ſolar motion one way, and are, as to ſenſe, at reſt the other. According to the rules of philoſophizing therefore, which direct us to refer all phenomena to as few and ſimple principles as are ſufficient to explain them, Dr. Herſchel thinks we ought to admit the motion of the ſolar ſyſtem. Perhaps, however, this argument cannot be properly applied here, becauſe there is no new cauſe or principle introduced by ſuppoſing each ſtar to have a proper motion. Admitting the doctrine of univerſal gravitation, the fixed ſtars ought to move as well as the Sun. But the Sun's motion, as here eſtimated, cannot be owing to the action of a body upon it, which might give it a rotatory motion at the ſame time, as M. de la Lande conjectures; becauſe a body acting on the Sun to give it its rotation about its axis, would not, at the ſame time, give it that progreſſive motion. See Dr. Herſchel's account in the Phil. Tranſ. 1783. But it will be proper to conſider how far this motion of the ſolar ſyſtem agrees with the proper motion of the thirty-five ſtars determined by Dr. Maſkelyne. Now upon ſuppoſition that the Sun moves, as conjectured by Dr. Herſchel, that motion will account for the motion of twenty of them, ſo far as regards their direction; but the motion of the other fifteen is contrary to that which ought to ariſe from this ſuppoſition. As ſome of the ſtars muſt have a proper motion of their own, even upon the hypotheſis of a ſolar motion, and which probably ariſes from their mutual attraction, it is very probable that they have all a proper motion from the ſame cauſe, but moſt of them ſo very ſmall as not yet to have been diſcovered. And it might alſo happen, that ſuch a motion might be the ſame as that which would ariſe from the motion of the ſolar ſyſtem. Yet it muſt be confeſſed, that the circumſtance of Caſtor, and the motions both in right aſcenſion and declination of many of the ſtars being ſuch as ariſe from this hypotheſis, with the apparent motion being greateſt of thoſe ſtars which are probably neareſt, form a ſtrong argument in its favour.

When the cauſes which affect the places of all the ſtars in general are known; ſuch as the preceſſion, aberration, and nutation, it may be of a ſingular uſe to examine nicely the relative ſituations of particular ſtars, and eſpecially of thoſe of the greateſt luſtre, which, it may be preſumed, lie neareſt to us, and may therefore be ſubject to more ſenſible changes, either from their own motion, or from that of our ſyſtem. And if, at the ſame time, the brighter ſtars are compared with each other, we likewiſe determine the relative poſitions of ſome of the ſmalleſt that appear near them, whoſe places can be aſcertained with ſufficient exactneſs, we may perhaps be able to judge to what cauſe the change, if any be obſervable, is owing. The uncertainty that we are at preſent under, with reſpect to the degree of accuracy with which former aſtronomers could obſerve, makes us unable to determine ſeveral things relating to this ſubject; but the improvements, which have of late years been made in the methods of taking the places of the heavenly bodies, are ſo great, that a few years may hereafter be ſufficient to ſettle ſome points, which cannot now be ſettled, by comparing even the earlieſt obſervations with thoſe of the preſent age.

Of the CONSTELLATIONS.

The diviſion of the ſtars into conſtellations is very ancient; being known to the moſt early authors, whether ſacred or profane. In the book of Job the names of ſome of them are mentioned; witneſs that ſublime expoſtulation, "Canſt thou reſtrain the ſweet influence of the Pleiades, or looſen the bands of Orion?" And the ſame may be obſerved of the oldeſt among the heathen writers, Heſiod and Homer. This diviſion of the ancients took in only the viſible firmament, or ſo many of the ſtars as came under their notice, as viſible to the naked eye; and were grouped, or repreſented, by certain figures or images, to aſſiſt the imagination and memory, to conceive or retain the number, order, and diſpoſition, of the ſtars; and perhaps alſo to diſtinguiſh the virtues they attributed to each reſpective conſtellation. The earlieſt of theſe is contained in the catalogue of Ptolemy, given in the ſeventh book of his Almageſt, prepared, as he aſſures us, from his own obſervations, compared with thoſe of Hipparchus, and the other ancient aſtronomers. In this catalogue Ptolemy has formed forty-eight conſtellations. Of theſe, twelve are about the ecliptic, commonly called the twelve ſigns; twenty-one to the north of it; and fifteen to the ſouth. The northern conſtellations are, the Little Bear, the Great Bear, the Dragon, Cepheus, Bootes, the Northern Crown, Hercules, the Harp, the Swan, Caſſiopeia, Perſeus, Auriga, Ophiucus or Serpentary, the Serpent, the Arrow, the Eagle, the Dolphin, the Horſe, Pegaſus, Andromeda, and the Triangle.

The conſtellations about the ecliptic are Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, and Piſces; or according to the Engliſh names, the Ram, the Bull, the Twins, the Crab, the Lion, the Virgin, the Balance, the Scorpion, the Archer, the Goat, the Water-bearer, and the Fiſhes.

The Southern conſtellations are, the Whale, Orion, the Eridanus, the Hare, the Great Dog, the Little Dog, the Ship, the Hydra, the Cup, the Raven, the Centaur, the Wolf, the Altar, the Southern Crown, and the Southern Fiſh. The other ſtars not comprehended under theſe conſtellations, yet viſible to the naked eye, the ancients called *informes*, or *ſporades*, ſome of which the modern aſtronomers have ſince reduced into new figures, or conſtellations. Ptolemy has ſet down the longitude and latitude of all thoſe ſtars to about the year of Chriſt 137, amounting to the number of 1022, viz.

In the northern conſtellations	360
In the zodiacal conſtellations	346
In the ſouthern conſtellations	316
In all of Ptolemy's catalogue	1022

Among the modern aſtronomers, Tycho Brahe is the firſt who determined, with exactneſs, and in conſequence of his own obſervations, the longitude and latitude of the fixed ſtars, out of which he formed forty-five conſtellations; of theſe, forty-three were of the old ones deſcribed by Ptolemy, to which Tycho added the Coma Berenices, and Antinous; but he omits five of the old ſouthern conſtellations, viz. the Centaur, the Wolf, the Altar, the Southern Crown, and Southern Fiſh; which he could not obſerve, becauſe of the high northern latitude of Uranibourg.

After Tycho, Bayer gave the figures of ſixty conſtellations, very exactly repreſented, and with tables annexed, having added, to the forty-eight old ones of Ptolemy, the following twelve about the ſouth pole, viz. the Peacock, the Toucan, the Crane, the Phœnix, the Dorado, the Flying Fiſh, the Hydra, the Cameleon, the Bee, the Bird of Paradiſe, the Triangle, and the Indian. Beſides accurately diſtinguiſhing the relative ſize and the ſituation of every ſtar, Bayer firſt marked the ſtars in each conſtellation with the letters of the Greek and Roman alphabets. The number and order of the ſtars, as mentioned by Bayer, are,

Of the firſt magnitude	17	In all 1706
Of the ſecond magnitude	63	
Of the third magnitude	196	
Of the fourth magnitude	415	
Of the fifth magnitude	348	
Of the ſixth magnitude	341	
Of the unformed ſtars	326	

In the year 1665, Riccioli publiſhed his Aſtronomy Reformed, containing the ſtars in ſixty-two conſtellations, viz. the ſixty of Bayer, with the Coma Berenices and Antinous of Tycho. He diſtributes the ſtars in all the conſtellations into four claſſes. In the firſt of theſe claſſes are contained thoſe ſtars determined by his own obſervations, and thoſe of Grimaldi. In the ſecond are thoſe ſtars which had been aſcertained by Tycho Brahe and Kepler. In the third are the ſtars determined by Hipparchus and Ptolemy. And the fourth claſs conſiſts of thoſe of the ſouthern hemiſphere diſcovered by navigators, who have aſcertained their places in a more or leſs accurate manner; in which he has marked the longitudes and latitudes for the year 1700, the period to which he has reduced all his obſervations. This was followed by a number of celeſtial ſchemes and maps of the heavens, publiſhed in 1673 by Pardies, who has repreſented very carefully all the conſtellations, with the ſtars they contain. Some time after this, Royer publiſhed maps of the heavens, reduced into four tables, with a catalogue of the fixed ſtars for the year 1700. To the ſtars marked by Bayer, he adds a number of ſtars not before ſeen, with others taken from the tables of Riccioli, and not mentioned by Bayer: he alſo forms, out of the unformed ſtars, eleven other conſtellations. Five of theſe are to the north, and are called the Giraffe, the River Jordan, the River Tigris, the Sceptre, and the Flower-de-Luce; with ſix on the ſouth part, which are the Dove, the Unicorn, the Croſs, the Great Cloud, the Little Cloud, and the Rhomboid. To this work Royer has joined the ſouthern ſtars obſerved by Dr. Halley at the iſland of St. Helena.

Hevelius has alſo improved upon the labours of thoſe who went before him, and collected together ſeveral ſtars of the before-unformed claſs into ſome new conſtellations. Theſe are, the Unicorn, the Camelopardalis, deſcribed by Bartſchius, the Sextant of Urania, the Dogs, the Little Lion, the Lynx, the Fox and Gooſe, the Sobieſki's Crown, the Lizard, the Little Triangle, and the Cerberus; to which Gregory has added the Ring and the Armilla. Some of theſe new conſtellations however anſwer to thoſe of Royer, as the Camelopardalis to the Giraffe, the Dogs to the River Jordan, and the Fox to the River Tigris. The latitudes and longitudes are added for the year 1700. Finally, Flamſtead diſtinguiſhed all the ſtars into ſeven claſſes, or orders of magnitude, marking their variation in right aſcenſion, for ſhewing their ſituation in the ſucceeding years. This was followed by an Atlas Cœleſtis, publiſhed in the year 1729, deſcribing, in ſeveral ſchemes, the figures of the conſtellations ſeen in our hemiſphere, with the exact poſition of the fixed ſtars, with reſpect to the circles of the ſphere. Later obſervations, made with improved teleſcopes, have greatly enlarged the number and accuracy of the ſtars; but the number of the conſtellations remains as above deſcribed, except that an attempt has been lately made by Dr. Hill to add to the liſt fourteen new ones, formed out of more of the cluſters of unformed ſtars.

Beſide the literal marks of the ſtars introduced by Bayer, and others, it is uſual alſo to diſtinguiſh them by that part of the conſtellation in which they are placed; and many of them again have their peculiar names; as Arcturus, between the knees of Bootes; Gemina, or Lucida, in the Corona Septentrionalis, or Northern Crown; Palilitium or Aldebaran in the Bull's eye, Pleiades in his neck, and Hyades in his forehead; Caſtor and Pollux, in the heads of Gemini; Capella, with the Hœdi, in the ſhoulder of Auriga; Regulus, or Cor Leonis, the Lion's Heart; Spica Virginis in the hand, and Vindemiatrix, in the ſhoulder, of Virgo; Antares, or Cor Scorpionis, the Scorpion's Heart; Fomalhaut, in the mouth of Piſces Auſtralis, or Southern Fiſh; Regel, in the foot of Orion; Sirius, in the mouth of Canis Major, the Great Dog; Procyon, in the back of Canis Minor, the Little Dog; and the Pole Star, the laſt in the tail of Urſa Minor, the Little Bear.

The Greek and Roman poets, from the ancient theology, give wild and romantic fables about the origin of the conſtellations, probably derived from the hieroglyphics of the Egyptians, and tranſmitted, with ſome alterations, from them to the Greeks, who probably obſcured them greatly with their own fables. See Hyginus's Poet. Aſtron. Riccioli, Almageſt. lib. vi. cap. 3, 4, 5; Shelburne's Notes upon Manilius; Bailly's Ancient Aſtronomy; and Gebelin's Monde Primitif, vol. iv. from the whole of which it is made probable, that the invention of the ſigns of the zodiac, and probably of moſt of the other conſtellations of the ſphere, is to be aſcribed to ſome very ancient nation, inhabiting the northern temperate zone, probably what is now called Tartary, or the parts to the northward of Perſia and China; and from thence tranſmitted through China, India, Babylon, Arabia, Egypt, Greece, &c.

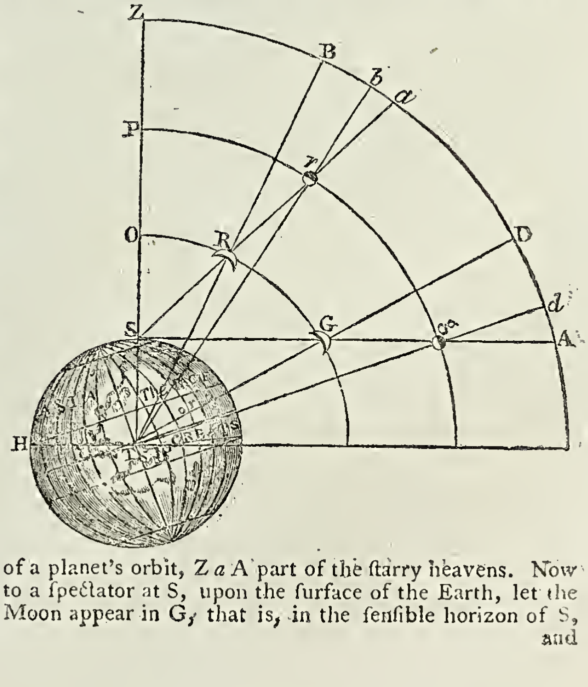
It is a very probable conjecture, that the figures of the ſigns in the zodiac, are deſcriptive of the ſeaſons of the year, or months, in the Sun's path: thus, the firſt ſign Aries, denotes, that, about the time when the Sun enters that part of the ecliptic, the lambs begin to follow the ſheep; that on the Sun's approach to the ſecond conſtellation, Taurus, the Bull, is about the time of the cows bringing forth their young. The third ſign, now Gemini, was originally two kids, and ſignified the time of the goats bringing forth their young, which are uſually two at a birth, while the former, the ſheep and cow, commonly produce only one. The fourth ſign, Cancer, the Crab, an animal that goes ſide-ways and backwards, was placed at the northern ſolſtice, the point where the Sun begins to return back again from the north to the ſouthward. The fifth ſign, Leo, the Lion, as being a very furious animal, was thought to denote the heat and fury of the burning Sun, when he has left Cancer, and entered the next ſign Leo. The ſucceeding conſtellation, the ſixth in order, received the Sun at the time of ripening corn and approaching harveſt; which was aptly expreſſed by one of the female reapers, with an ear of corn in her hand, viz. Virgo, the maid. The ancients gave to the next ſign, Scorpio, two of the twelve diviſions of the zodiac: autumn, which affords fruits in great abundance, affords the means and cauſes of diſeaſes, and the ſucceeding time is the moſt unhealthy of the year; expreſſed by this venomous animal, here ſpreading out his long claws into the one ſign, as threatening miſchief, and in the other brandiſhing his tail to denote the completion of it. The fall of the leaf was the ſeaſon of the ancient hunting; for which reaſon the ſtars which marked the Sun's place at this ſeaſon, into the conſtellation Sagittary, a huntſman with his arrows and his club, the weapons of deſtruction for the large creatures he purſued. The reaſon of the Wild Goat's being choſen to mark the ſouthern ſolſtice, when the Sun has attained his extreme limit that way, and begins to return and mount again to the northward, is obvious enough; the character of that animal being, that it is moſtly climbing, and aſcending ſome mountain, as it browzes. There yet remain two of the ſigns of the zodiac to be conſidered with regard to their origin, viz. Aquarius and Piſces. As to the former, it is to be conſidered that the winter is a wet and uncomfortable ſeaſon; this therefore was expreſſed by Aquarius, the figure of a man pouring out water from an urn. The laſt of the zodiacal conſtellations was Piſces, a couple of fiſhes tied together, that had been caught: the leſſon was, The ſevere ſeaſon is over; your flocks do not yet yield their ſtore, but the ſeas and rivers are open, and there you may take fiſh in abundance.

Through a vain and blind zeal, rather than through any love for the ſcience, ſome perſons have been moved to alter either the figures of the conſtellations, or their names. Thus, venerable Bede, inſtead of the profane names and figures of the twelve zodiacal conſtellations, ſubſtituted thoſe of the twelve apoſtles; which example was followed by Schiller, who completed the reformation, and gave ſcripture names to all the conſtellations in the heavens. Thus, Aries, or the Ram, was changed into Peter; Taurus, the Bull, into St. Andrew; Andromeda, into the Sepulchre of Chriſt; Lyra, into the Manger of Chriſt; Hercules, into the Magi coming from the Eaſt; the Great Dog, into David; and ſo on. And Weigelius, profeſſor of mathematics in the univerſity of Jena, made a new order of conſtellations; changing the firmament into a cœlum heraldicum, and introducing the arms of all the princes in Europe, by way of conſtellations. Thus, Urſa Major, the Great Bear, he transformed into the elephant of the kingdom of Denmark; the Swan, into the ruta with ſwords of the houſe of Saxony; Ophiuchus, into the croſs of Cologne; the Triangle, into compaſſes, which he calls the ſymbol of artificers; and the Pleiades, into the abacus Pythagoricus, which he calls that of merchants, &c. Schiller alſo publiſhed, in the year 1627, a work called *Cœlum Stellarum Chriſtianum*, or the Chriſtian Starry Heaven, in which he ſubſtitutes, very improperly, other figures of the conſtellations, and names, taken from the ſacred ſcriptures, inſtead of the old ones. But the more judicious among aſtronomers never approved of ſuch innovations; as they only tend to introduce confuſion into aſtronomy. The old conſtellations are, therefore, ſtill retained; both becauſe better could not be ſubſtituted, and likewiſe to keep up the greater correſpondence and uniformity between the old aſtronomy and the new.

Of PARALLAX.

The *parallax* of any object is the difference between the places that the object is referred to in the celeſtial ſphere, when ſeen at the ſame time from two different places within that ſphere. Or, it is the angle under which any two places in the inferior orbits are ſeen from a ſuperior planet, or even the fixed ſtars. The parallaxes principally uſed by aſtronomers, are thoſe which ariſe from conſidering the object as viewed from the centres of the Earth and the Sun, from the ſurface and centre of the Earth, and from all three compounded. The difference between the place of a planet, as ſeen from the Sun, and the ſame as ſeen from the Earth, is called the parallax of the annual orbit; in other words, the angle at any planet, ſubtended between the Sun and the Earth, is called the parallax of the Earth's or annual orbit. The diurnal parallax is the change of the apparent place of a fixed ſtar, or planet, or of any celeſtial body, ariſing from its being viewed on the ſurface, or from the centre of the Earth.

To explain the parallaxes with reſpect to the Earth only, let H S, in the annexed figure, repreſent the Earth, T the centre thereof, O R G part of the Moon's orbit, P *r g* part of a planet's orbit, Z *a* A part of the ſtarry heavens. Now to a ſpectator at S, upon the ſurface of the Earth, let the Moon appear in G, that is, in the ſenſible horizon of S, and



and it will be referred to A; but if viewed from the centre T, it will be referred to the point D, which is its true place.. The arc A D will be the Moon's parallax; the angle S G T the parallactic angle; or the parallax is expreſſed by the angle under which the ſemidiameter T S of the Earth is ſeen from the Moon.

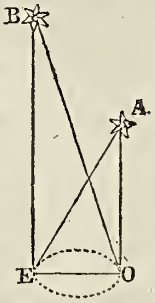
If the parallax be conſidered with reſpect to different planets, it will be greater or leſs as thoſe objects are more or leſs diſtant from the Earth; thus the parallax A D of G is greater than the parallax A *d* of *g*. If it be conſidered with reſpect to the ſame planet, it is evident that the horizontal parallax (or the parallax when the object is in the horizon) is greateſt of all, and diminiſhes gradually, as the body riſes above the horizon, until it comes to the zenith, where the parallax vaniſhes, or becomes equal to nothing. Thus A D and A *d*, the horizonal parallaxes of G and *g*, are greater than *a* B and *ab*, the parallaxes of R and *r*; but the objects O and P, ſeen from S or T, appear in the ſame place Z, or the zenith. By knowing the parallax of any celeſtial object, its diſtance from the centre of the Earth may be eaſily obtained by trigonometry. Thus if the diſtance of G from T be ſought, in the triangle of S T G, S T being known, and the angle S G T determined by obſervation, the ſide T G is thence known.

The parallax of the Moon may be determined by two perſons obſerving her from different ſtations at the ſame time; ſhe being vertical to the one, and horizontal to the other.. But the parallax moſt eſſential is that of the Sun, whereby his abſolute diſtance from the Earth is known; and hence the abſolute diſtances of all the other planets would be alſo known, from the ſecond Keplerian law. But the parallax of the Sun, or the angle under which the ſemidiameter of the Earth would appear at that diſtance, is ſo exceeding ſmall, that a miſtake of a ſecond will cauſe an error of ſeveral millions of miles.

As the diſtance of the fixed ſtars is alſo beſt determined by their parallax, various methods have been purſued, though hitherto without ſucceſs, for inveſtigating it; the reſult of the moſt accurate obſervations having given us little more than a diſtant approximation; from which however we may conclude, that the neareſt of the fixed ſtars cannot be leſs than 40,000 diameters of the whole annual orbit of the Earth diſtant from us. The method pointed out by Galileo, and attempted by Hook, Flamſtead, Molyneux, and Bradley, of taking the diſtances of ſuch ſtars from the zenith as paſs very near it, has given us a much juſter idea of the immenſe diſtance of the ſtars, and furniſhed an approximation to their parallax, much nearer the truth than any we had before.

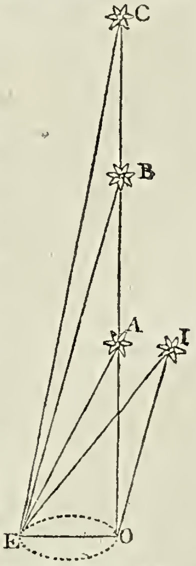
Dr. Bradley aſſures us (Phil. Tranſ. No. ccccvi. or Abr. vol. vi. p. 162), that, had the parallax amounted to a ſingle ſecond, or two at moſt, he ſhould have perceived it in the great number of obſervations which he made, eſpecially upon γ Draconis; and, that it ſeemed to him very probable, that the annual parallax of this ſtar does not amount to a ſingle ſecond, and conſequently that it is above 400,000 times farther from us than the Sun. But Dr. Herſchel, to whoſe induſtry and ingenuity, in exploring the heavens, aſtronomy is ſo much indebted, remarks, that the inſtrument uſed on this occaſion, being the ſame with the preſent zenith ſectors, can hardly be allowed capable of ſhewing an angle of one or even two ſeconds, with accuracy: and beſides, the ſtar on which the obſervations were made, is only a bright ſtar of the third magnitude, or a ſmall ſtar of the ſecond; and that, therefore, its parallax is probably much leſs than that of a ſtar of the firſt magnitude. So that we are not warranted in inferring, that the parallax of the ſtars in general does not exceed 1″, whereas thoſe of the firſt magnitude may have, notwithſtanding the reſult of Dr. Bradley's obſervations, a parallax of ſeveral ſeconds.

As to the method of zenith diſtances, it is liable to conſiderable errors, on account of refraction, the change of poſition of the Earth's axis, ariſing from nutation, preceſſion of the equinoxes, or other cauſes, and the aberration of light. Dr. Herſchel has therefore propoſed another method, by means of double ſtars, which is free from theſe errors, and of ſuch a nature, that the annual parallax, even if it ſhould not exceed the tenth part of a ſecond, may ſtill become viſible, and be aſcertained at leaſt much nearer than heretofore. This method, which was firſt propoſed in an imperfect manner by Galileo, and has been alſo mentioned by other authors, is capable of every improvement which the teleſcope and mechaniſm of micrometers can furniſh. To give a general idea of it, let O and E be two oppoſite points of the annual orbit, taken in the ſame plane with two ſtars A, B, of unequal magnitudes. Let the angle A O B be obſerved when the Earth is at O, and A E B be obſerved when the Earth is at E. From the difference of theſe angles, when there is any, the parallax of the ſtars may be computed, according to the theory ſubjoined. Theſe two ſtars ought to be as near as poſſible to each other, and alſo to differ as much in magnitude as we can find them.



This theory of the annual parallax of double ſtars, with the method of computing from thence what is uſually called the parallax of the fixed ſtars, or of ſingle ſtars of the firſt magnitude, ſuch as are neareſt to us, ſuppoſe firſt, that the ſtars are all about the ſize of the Sun; and, ſecondly, that the difference in their apparent magnitudes is owing to their different diſtances, ſo as that a ſtar of the ſecond, third, or fourth, magnitude, is two, three, or four, times, as far off as one of the firſt. Theſe principles, which Dr. Herſchel premiſes as poſtulata, have ſo great a probability in their favour, that they will ſcarcely be objected to by thoſe who are in the leaſt acquainted with the doctrine of chances. See Dr. Halley, on the number, order, and light, of the fixed ſtars, in the Phil. Tranſ. vol. xxxi. or Abr. vol. vi. p. 148.

Therefore, let E O be the whole diameter of the Earth's annual orbit: and let A, B, C, be three ſtars ſituated in the ecliptic, in ſuch a manner, that they may appear all in one line O A B C when the Earth is at O. Now, if O A, A B, B C, be equal to each other, A will be a ſtar of the firſt magnitude, B of the ſecond, and C of the third. Let us next ſuppoſe the angle O A E, or parallax of the whole orbit of the Earth, to be 1″ of a degree; then, becauſe very ſmall angles, having the ſame ſubtenſe E O, may be taken to be in the inverſe ratio of the lines O A, O B, O C, &c. we ſhall have $EBO = \frac{1}{2}''$, and $ECO = \frac{1}{3}''$, &c. alſo becauſe $EA = AB$ nearly, the angle $AEB = ABE = \frac{1}{2}''$; and becauſe $BC = \frac{1}{2} BO = \frac{1}{2} BE$ nearly, the angle $BEC = \frac{1}{2} BCE = \frac{1}{6}''$, and hence $AEC = \frac{1}{2} + \frac{1}{6} = \frac{2}{3}''$; from all which it follows, that, when the Earth is at E, the ſtars A and B appear at $\frac{1}{2}''$ diſtant from one another, the ſtars A and C at $\frac{2}{3}''$ diſtant, and the ſtars B and C only $\frac{1}{6}''$ diſtant. In like manner may be deduced a general expreſſion for the parallax that will become viſible in the change of diſtance between the two ſtars, by the removal of the Earth from one extreme of her orbit to the other. Let *P* denote the total parallax of a fixed ſtar of the magnitude of the *M* order, and *m* the number of the order of a ſmaller ſtar, *p* denoting the partial parallax to be obſerved by the change in the diſtance of a double ſtar; then is $p = \frac{m-M}{mM} P$, or $P = \frac{mMp}{m-M}$, which gives *P*, when *p* is found by obſervation.



For example, Suppoſe a ſtar of the firſt magnitude ſhould have a ſmall ſtar of the twelfth magnitude near it; then will the partial parallax we are to expect to ſee be $\frac{12-1}{12\times 1}P=\frac{11}{12}P$, or $\frac{11}{12}$ of the total parallax of the larger ſtar; and, if we ſhould, by obſervation, find the partial parallax between two ſuch ſtars to amount to 1″, then will the total parallax $P=\frac{12}{11}p=1\frac{1}{11}''$. Again, if the ſtars be of the third and twenty-fourth magnitude, the total parallax will be $P=\frac{24\times 3}{24-3}p=\frac{72}{21}p=\frac{24}{7}p$; ſo that, if by obſervation p be found to be $\frac{1}{10}$ of a ſecond, the whole parallax P will come out $\frac{24}{70}''=0{\cdot}3428''$.

Farther, the ſtars being ſtill in the ecliptic, ſuppoſe they ſhould appear in one line, when the Earth is in ſome other part of her orbit between E and O; then will the parallax be ſtill expreſſed by the ſame algebraic formula, and one of the maxima will ſtill lie at E, the other at O; but the whole effect will be divided into two parts, which will be in proportion to each other, as radius — ſine to radius + ſine of the ſtar's diſtance from the neareſt conjunction or oppoſition.

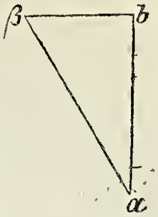
When the ſtars are any where out of the ecliptic, ſituated ſo as to appear in one line O A B C perpendicular to E O, the maximum of parallax will ſtill be expreſſed by $\frac{m-M}{mM}P$; but there will ariſe another additional parallax in the conjunction and oppoſition, which will be to that which is found ninety degrees before or after the Sun, as the ſine (s) of the latitude of the ſtars ſeen at O, is to radius (1); and the effect of this parallax will be divided into two parts; half of it lying on one ſide of the large ſtar, the other half on the other ſide of it. This latter parallax will alſo be compounded with the former, ſo that the diſtance of the ſtars in the conjunction and oppoſition will then be repreſented by the diagonal of a parallelogram, whoſe ſides are the two ſemi-parallaxes; a general expreſſion for which will be $\frac{m-M}{2mM}P\sqrt{1+s^2}$, or $\frac{1}{2}p\sqrt{1+s^2}$.

When the ſtars are in the pole of the ecliptic, s will be $=1$, and the laſt formula becomes $\frac{1}{2}p\sqrt{2}={\cdot}7071p$.

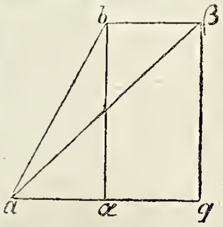
Again, let the ſtars be at ſome diſtance, as 5″, from each other, and let them be both in the ecliptic. This caſe is reſolvable into the firſt; for, imagine the ſtar A to ſtand at I; then the angle A E I may be accounted equal to A O I: and as the foregoing formula, $p=\frac{m-M}{mM}P$, gives us the angles A E B, A E C, we are to add A E I or 5″ to A E B, which will give I E B. In general, let the diſtance of the ſtars be d, and let the obſerved diſtance at E be D; then will $D=d+p$, and therefore the whole parallax of the annual orbit will be expreſſed by $\frac{D-d}{m-M}Dd=P$.

Suppoſe now the ſtars to differ only in latitude, one bein the ecliptic, the other at ſome diſtance, as 5″ north, when ſeen at O. This caſe may alſo be reſolved by the former; for imagine the ſtars B and C to be elevated at right angles above the plane of the figure, ſo that A O B, or A O C, may make an angle of 5″ at O; then, inſtead of the lines O A B C, E A, E B, E C, imagine them all to be planes at right angles to the figure, and it will appear, that the parallax of the ſtars, in longitude, muſt be the ſame as if the ſmall ſtar had been without latitude. And, ſince the ſtars B, C, by the motion of the Earth from O to E, will not change their latitude, we ſhall have the following conſtruction for finding the diſtance of the ſtars A B and A C at E, and from thence the parallax P.

Let the triangle $\alpha b \beta$ repreſent the ſituation of the ſtars; ab is the ſubtenſe of 5″, the angle under which they are ſuppoſed to be ſeen at O. The quantity $b\beta$ by the former theorem is found $=\frac{m-M}{mM}P$, which is the partial parallax, that would have been ſeen by the Earth's moving from O to E, if both ſtars had been in the ecliptic; but, on account of the difference in latitude, it will now be repreſented by $a\beta$, the hypothenuſe of the triangle $ab\beta$: therefore in general, putting $ab=d$, $a\beta=D$, we have $\frac{mM}{m-M}\sqrt{D^2-d^2}=P$. Hence, D being found by obſervation, and the three, d, m, M, given, the total parallax is obtained.



When the ſtars differ in longitude as well as latitude, this caſe may be reſolved in the following manner. Let the triangle $ab\beta$ repreſent the ſituation of the ſtars, $ab=d$ being their diſtance ſeen at O, $a\beta=D$ their diſtance ſeen at E. That the change $b\beta$, which is produced by the Earth's motion, will be truly expreſſed by $\frac{m-M}{mM}P$, may be proved as before, by ſuppoſing the ſtar a to have been placed at α. Now, let the angle of poſition $ba\alpha$ be taken by a micrometer, or by any other method ſufficiently exact; then, by reſolving the triangle $ab\alpha$, we obtain the longitudinal and latitudinal differences, $a\alpha$ and $b\alpha$, of the two ſtars. Put $a\alpha=x$, $b\alpha=y$, and it will be $x+b\beta=aq$, whence



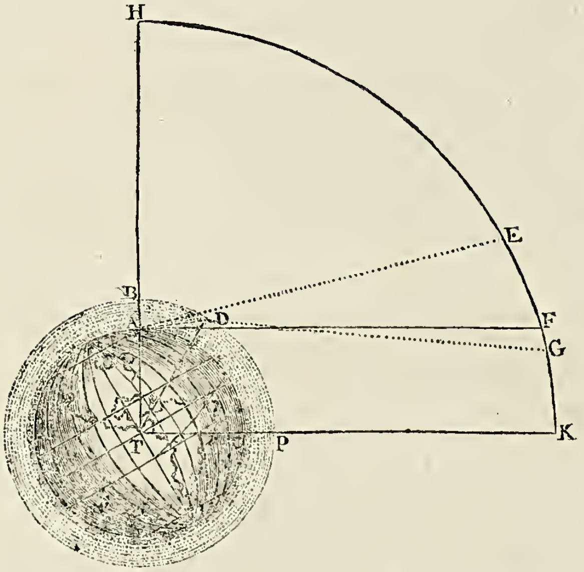
$$D=\sqrt{\left(x+\frac{m-M}{mM}P\right)^2+y^2};\ \text{and}\ P=\frac{\sqrt{D^2-y^2}-x}{M-m}mM.$$

If neither of the ſtars ſhould be in the ecliptic, nor have the ſame longitude or latitude, the laſt theorem will ſtill ſerve to calculate the total parallax, whoſe maximum will lie in E. There will alſo ariſe another parallax, whoſe maximum will be in the conjunction and oppoſition, which will be divided, and lie on different ſides of the large ſtar; but, as the whole parallax is extremely ſmall, it is not neceſſary to inveſtigate every particular caſe of this kind; for, by reaſon of the diviſion of the parallax, which renders obſervations taken at any other time, except where it is greateſt, very unfavourable, the formulæ would be of little uſe. Dr. Herſchel cloſes his account of this theory, with a general obſervation on the time and place where the maxima of parallax will happen. Thus, when two unequal ſtars are both in the ecliptic, or, not being in the ecliptic, have equal latitudes, north or ſouth, and the larger ſtar has moſt longitude, the maximum of the apparent diſtance will be when the Sun's longitude is 90° more than the ſtar's, or when obſerved in the morning: and the minimum, when the longitude of the Sun is 90° leſs than that of the ſtar, or when obſerved in the evening. But when the ſmall ſtar has moſt longitude, the maximum and minimum, as well as the time of obſervation, will be the reverſe of the former. And, when the ſtars differ in latitude, this makes no alteration in the place of the maximum or minimum, nor in the time of obſervation; that is, it is immaterial which of the two ſtars has the greater latitude. See Phil. Tranſ. vol. lxxii. art. 11.

Of REFRACTION.

As one of the principal objects of aſtronomy is to aſcertain the ſituation of the ſeveral heavenly bodies, it is neceſſary, as a firſt ſtep, to underſtand the cauſes which occaſion a falſe appearance of the place of thoſe objects, and make us ſuppoſe them in a different ſituation from that which they really have. Among theſe cauſes refraction is to be reckoned. By this term is meant the bending of the rays of light as they paſs out of one medium into another. The Earth is every where ſurrounded by an heterogeneous fluid, a mixture of air, vapour, and terreſtrial exhalations, that extend to the regions of the ſky. The rays of light from the Sun, Moon, and ſtars, in paſſing to a ſpectator upon Earth, come through this medium, and are ſo refracted in their paſſage through it, that their apparent altitude is greater than their true altitude.

To illuſtrate this, let A C, in the annexed figure, repreſent the ſurface of the Earth, T its centre, B P a part of the atmoſphere, H E K the ſphere of the fixed ſtars, A F the ſenſible horizon, G a planet, G D a ray of light proceeding from the planet to D, where it enters into our atmoſphere, and is refracted towards the line D T, which is perpendicular to the ſurface of the atmoſphere; and, as the upper air is rarer than that near the Earth, the ray is continually entering a denſer medium, and is every moment bent towards T, which cauſes it to deſcribe a curve, as D A, and to enter a ſpectator's eye at A, as if it came from E, a point above G. And, as an object always appears in that line in which it enters the eye, the planet will appear at E, higher than its true place, and frequently above the horizon A F, when its true place is below it, at G.



This refraction is greateſt at the horizon, and in this climate it is found to be about 33′. In climates nearer to the equator, where the air is purer, the refraction is leſs; and, in the colder climates, it increaſes exceedingly, and is a happy proviſion for lengthening the appearance of the light at thoſe regions ſo remote from the Sun. Gaſſendus relates, that ſome Hollanders, who wintered in Nova Zembla, in latitude 75°, were ſurpriſed with a ſight of the Sun ſeventeen days before they expected him in the horizon. This difference was owing to the refraction of the atmoſphere in that latitude. To the ſame cauſe, together with the peculiar obliquity of the Moon's orbit to the ecliptic, ſome of theſe very northern regions are indebted for an uninterrupted light from the Moon much more than half the month, and ſometimes almoſt as long as it is capable of affording any light to other parts of the Earth.

Through this refraction we are favoured with the ſight of the Sun about three minutes and a quarter before it riſes above the horizon, and alſo as much every evening after it ſets below it, which in one year amounts to more than forty hours. And it is to this property that we are alſo indebted for that enjoyment of light from the Sun when he is below the horizon, which produces the phenomena of the crepuſculum, or morning and evening twilight. The Sun's rays, in falling upon the higher part of the atmoſphere, are reflected back to our eyes, and form a faint light, which gradually augments till it becomes day. It is owing to this, that the Sun illuminates the whole hemiſphere at once: deprived of the atmoſphere, he would have yielded no light, but when our eyes were directed towards him; and, even when he was in meridian ſplendour, the heavens would have appeared dark, and as full of ſtars as on a fine winter's night. The rays of light would have come to us in ſtraight lines, the appearance and diſappearance of the Sun would have been inſtantaneous; we ſhould have had a ſudden tranſition from the brighteſt ſun-ſhine to the moſt profound darkneſs, and from thick darkneſs to a blaze of light. Thus, by refraction we are prepared gradually for the light of the Sun, the duration of its light is prolonged, and the ſhades of darkneſs ſoftened.

That there is a *real* refraction of the ſtars and planets, &c. is deduced not only from phyſical conſiderations, and from arguments *à priori*, and *à ſimilitudine*, but alſo from preciſe aſtronomical obſervation: for there are numberleſs obſervations by which it appears, that the Sun, Moon, and ſtars, riſe much ſooner, and appear higher, than they ſhould do according to aſtronomical calculations. Hence it is argued, that, as light is propagated in right lines, no rays could reach the eye from a luminary below the horizon, unleſs they were deflected out of their courſe, at their entrance into the atmoſphere; and therefore it is certain, that the rays are refracted in paſſing through the atmoſphere. Hence the ſtars appear higher by refraction than they really are; ſo that, to bring the obſerved or apparent altitudes to the true ones, the quantity of refraction muſt be ſubtracted. And hence, the ancients, as they were not acquainted with this refraction, reckoned their altitudes too great, ſo that it is no wonder they ſometimes committed conſiderable errors. Hence alſo, refraction lengthens the day, and ſhortens the night, by making the Sun appear above the horizon a little before his riſing, and a little after his ſetting. Refraction alſo makes the Moon and ſtars appear to riſe ſooner, and ſet later, than they really do. The apparent diameter of the Sun or Moon is about 32′; the horizontal refraction is about 33′; whence the Sun and Moon appear wholly above the horizon when they are entirely below it. Alſo from obſervations it appears, that the refractions are greater nearer the pole than at ſmaller latitudes, cauſing the Sun to appear ſome days above the horizon, when he is really below it; and the Moon to be ſeen eclipſed, when ſhe is really below the horizon, and the Sun above it; doubtleſs from the greater denſity of the atmoſphere, and the greater obliquity of the incidence.

Stars in the zenith are not ſubject to any refraction: thoſe in the horizon have the greateſt of all: from the horizon, the refraction continually decreaſes to the zenith. All which follows from hence, that, in the firſt caſe, the rays are perpendicular to the medium; in the ſecond, their obliquity is the greateſt, and they paſs through the largeſt ſpace of the lower and denſer part of the air, and through the thickeſt vapours; and, in the third, the obliquity is continually decreaſing. The air is condenſed, and conſequently refraction is increaſed, by cold; for which reaſon it is greater in cold countries than in hot ones. It is alſo greater in cold weather than in hot, in the ſame country; and the morning refraction is greater than that of the evening, becauſe the air is rarefied by the heat of the Sun in the day, and condenſed by the coldneſs of the night. Refraction is alſo ſubject to ſome ſmall variation at the ſame time of the day in the fineſt weather.

At the ſame altitudes, the Sun, Moon, and ſtars, all undergo the ſame refraction: for at equal altitudes the incident rays have the ſame inclinations; and the ſines of the refracted angles are as the ſines of the angles of inclination, &c. Indeed Tycho Brahe, who firſt deduced the refractions of the Sun, Moon, and ſtars, from obſervation, and whoſe Table of the refraction of the ſtars is not much different from thoſe of Flamſtead and Newton, except near the horizon, makes the ſolar refractions about 4′ greater than thoſe of the fixed ſtars; and the lunar refractions alſo ſometimes greater than thoſe of the ſtars, and ſometimes leſs. But the theory of refractions, found out by Snellius, was not fully underſtood in his time.

The horizontal refraction, being the greateſt, is the cauſe that the Sun and Moon appear of an oval form at their riſing and ſetting; for the lower edge of each being more refracted than the upper edge, the perpendicular diameter is ſhortened, and the under edge appears more flatted. Hence alſo, if we take with an inſtrument the diſtance of two ſtars when they are in the ſame vertical and near the horizon, we ſhall find it conſiderably leſs than if we meaſure it when they are both at ſuch a height as to ſuffer little or no refraction; becauſe the lower ſtar is more elevated than the higher. There is alſo another alteration made by refraction in the apparent diſtance of ſtars: when two ſtars are in the ſame almicanter, or parallel of declination, their apparent diſtance is leſs than the true; for, ſince refraction makes each of them higher in the azimuth or vertical in which they appear, it muſt bring them into parts of the vertical where they come nearer to each other; becauſe all vertical circles converge and meet in the zenith. This contraction of diſtance, according to Dr. Halley, (Phil. Tranſ. No. ccclxviii.) is at the rate of at leaſt one ſecond in a degree; ſo that, if the diſtance between two ſtars in a poſition parallel to the horizon meaſure 30°, it is at moſt to be reckoned only 29° 59′ 30″.

The quantity of the refraction at every altitude, from the horizon, where it is greateſt, to the zenith, where it is nothing, has been determined by obſervation, by many aſtronomers; thoſe of Dr. Bradley and Mr. Mayer are eſteemed the moſt correct of any, being nearly alike, and are now uſed by moſt aſtronomers. Dr. Bradley, from his obſervations, on the different ſtates of the atmoſphere at different times, deduced this very ſimple and general rule for the refraction r at any altitude a whatever, viz. As radius 1 : cotang. $\overline{a+3r}$ :: $57''$: r'', the refraction in ſeconds. This rule is adapted to theſe ſtates of the barometer and thermometer, viz.

Either 29·6 inc. barometer, and 50° thermometer,
Or 30 — barometer, and 55 thermometer,

for both which ſtates it anſwers equally the ſame. But, for any other ſtates of the barometer and thermometer, the refraction above-found is to be corrected in this manner, viz. If b denote any other height of the barometer in inches, and t the degrees of the thermometer, r being the refraction uncorrected, as found in the manner above; then

As $29{\cdot}6 : b :: r : R$, the refraction corrected on account of the barometer,

And $400 : 450t :: R$: the refraction corrected both on account of the barometer and thermometer; which final corrected refraction is therefore $= \frac{450-t}{11840}br$. Or, to correct the ſame refraction r by means of the latter ſtate, viz. barometer 30, and thermometer 55, it will be

$$\text{As}\quad 30 : b :: r : R = \frac{br}{30},$$

$$\text{And } 400 : 455-t :: R : \frac{455-t}{400}R = \frac{455-t}{12000}br,$$ the correct refraction.

Mr. Mayer ſays his rule was deduced from theory, and, when reduced from French meaſure and Reaumur's thermometer, to Engliſh meaſure and Fahrenheit's thermometer, it is this,

$$r = \frac{74{\cdot}4b \times \text{coſ. } a}{(1 \times {\cdot}00248t)^{\frac{3}{2}}}\left(\sqrt{1+\frac{17{\cdot}14 \text{ ſin. } a}{1+{\cdot}00248t}} - \frac{17{\cdot}14 \text{ ſin. } a}{(1+{\cdot}00248t)^{\frac{1}{2}}}\right)$$

or $r = \frac{74{\cdot}4b \times \text{coſ. } a \times \text{tang. } \frac{1}{2}A}{(1+{\cdot}00248t)^{\frac{3}{2}}}$ the refraction in ſeconds, corrected for both barometer and thermometer: where the letters denote the ſame things as before, except A, which denotes the angle whoſe tangent is $\frac{\sqrt{1+{\cdot}00248t}}{17{\cdot}14 \text{ ſin. } a}$.

Mr. Simpſon, too, (Diſſert. p. 46, &c.) has ingeniouſly determined by theory the aſtronomical refractions, from which he brings out this rule, viz. As 1 to ·9986, or as radius to ſine of 86° 58′ 30″, ſo is the ſine of any given zenith diſtance, to the ſine of an arc; then $\frac{2}{11}$ of the difference between this arc and the zenith diſtance, is the refraction ſought for that zenith diſtance. And, by this rule, Mr. Simpſon computed a Table of the mean refractions, which are not much different from thoſe of Dr. Bradley and Mr. Mayer, and are as in the following Table:

Apparent Altitude	Refraction		Apparent Altitude	Refraction		Apparent Altitude	Refraction	
0°	33′	0″	17°	2′	50″	38°	1′	7″
1	23	50	18	2	40	40	1	2
2	17	43	19	2	31	42	0	58
3	13	44	20	2	23	44	0	54
4	11	5	21	2	16	46	0	50
5	9	10	22	2	9	48	0	47
6	7	49	23	2	3	50	0	44
7	6	48	24	1	57	52	0	41
8	5	59	25	1	52	54	0	38
9	5	21	26	1	47	56	0	35
10	4	50	27	1	42	58	0	32
11	4	24	28	1	38	60	0	30
12	4	2	29	1	34	65	0	24
13	3	43	30	1	30	70	0	19
14	3	27	32	1	23	75	0	14
15	3	13	34	1	17	80	0	9
16	3	1	36	1	12	85	0	4½

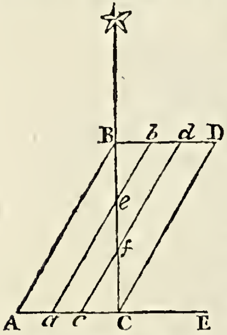
It is evident, that all obſerved altitudes of the heavenly bodies ought to be diminiſhed by the numbers taken out of the foregoing Table. It is alſo evident that the refraction diminiſhes the right and oblique aſcenſions of a ſtar, and increaſes the deſcenſions: it increaſes the northern declination and latitude, but decreaſes the ſouthern: in the eaſtern part of the heavens it diminiſhes the longitude of a ſtar, but in the weſtern part of the heavens it increaſes the ſame.

Terreſtrial refraction is that by which terreſtrial objects appear to be raiſed higher than they really are, in obſerving their altitudes. The quantity of this refraction is eſtimated by Dr. Maſkelyne at one-tenth of the diſtance of the object obſerved, expreſſed in degrees of a great circle. So, if the diſtance be 10,000 fathoms, its tenth part, 1000 fathoms, is the ſixtieth part of a degree of a great circle on the Earth, or 1′, which therefore is the refraction in the altitude of the object at that diſtance. See his Tables, 1766, p. 134. But M. le Gendre is induced, he ſays, by ſeveral experiments, to allow only a fourteenth part of the diſtance for the refraction in altitude. So that, upon the diſtance of 10,000 fathoms, the fourteenth part of which is 714 fathoms, he allows only 44″ of the terreſtrial refraction, ſo many being contained in the 714 fathoms. Again, M. de Lambre, an ingenious French aſtronomer, makes the quantity of the terreſtrial refraction to be the eleventh part of the arch of diſtance. But the Engliſh meaſurers, colonel Edw. Williams, captain Mudge, and Mr. Dalby, from a multitude of exact obſervations made by them, determine the quantity of the medium refraction to be the twelfth part of the ſaid diſtance. The quantity of this refraction, however, is found to vary conſiderably, with the different ſtates of the weather and atmoſphere, from the fifteenth part of the diſtance, to the ninth part of the ſame; the medium of which is the twelfth part, as above determined.

Some ſingular effects of this refraction are alſo related, ariſing from peculiar ſituations and circumſtances. Thus, it is ſaid, any perſon ſtanding by the ſide of the river Thames at Greenwich, when it is high-water there, he can ſee the cattle grazing on the Iſle of Dogs, which is the marſhy meadow on the other ſide of the river at that place; but, when it is low-water there, he cannot ſee any thing of them, as they are hid from his view by the land-wall or bank on the other ſide, which is raiſed higher than the marſh, to keep out the waters of the river. This curious effect is probably owing to the moiſt and denſe vapours, juſt above and riſing from the ſurface of the water, being raiſed higher or lifted up with the ſurface of the water at the time of high tide, through which the rays paſs, and are the more refracted. See the article REFRACTION.

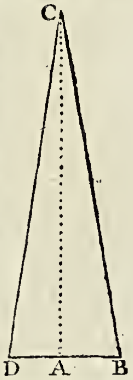
Of the ABERRATION of LIGHT in the STARS and PLANETS.

By *aberration* is meant, an apparent motion of the celeſtial bodies, occaſioned by the progreſſive motion of light, and the Earth's annual motion in her orbit. Its effect may be explained and familiarized by the motion of a line parallel to itſelf, much after the manner that the compoſition and reſolution of forces are explained. If light have a progreſſive motion, let the proportion of its velocity to that of the Earth in her orbit, be as the line B C to the line A C; then, by the compoſition of theſe two motions, the particle of light will ſeem to deſcribe the line B A or D C, inſtead of its real courſe B C; and will appear in the direction A B or C D, inſtead of its true direction C B. So that if A B repreſent a tube, carried with a parallel motion by an obſerver along the line A C, in the time that a particle of light would move over the ſpace B C, the different places of the tube being A B, *ab*, *cd*, C D; and when the eye, or end of the tube, is at A, let a particle of light enter the other end at B; then when the tube is at *a b*, the particle of light will be at *e*, exactly in the axis of the tube; and when the tube is at *c d*, the particle of light will arrive at *f*, ſtill in the axis of the tube; and laſtly, when the tube arrives at C D, the particle of light will arrive at the eye or point C, and conſequently will appear to come in the direction D C of the tube, inſtead of the true direction B C. And ſo on, one particle ſucceeding another, and forming a continued ſtream or ray of light in the apparent direction D C. So that the apparent angle made by the ray of light with the line A E, is the angle D C E, inſtead of the true angle B C E; and the difference, B C D or A B C, is the quantity of the aberration.



This diſcovery we owe to the ingenuity of the late Dr. Bradley, Aſtronomer Royal; to which he was accidentally led by the reſult of ſome obſervations which he had made with another view, namely, to determine the annual parallax of the fixed ſtars, or that which we have ſeen to ariſe from the motion of the Earth in its annual orbit about the Sun. The annual motion of the Earth about the Sun had been much doubted, and warmly conteſted. The diſcoverers of that motion, among other proofs of the reality of it, conceived the idea of adducing an inconteſtable one from the annual parallax of the fixed ſtars, if the ſtars ſhould be within ſuch a diſtance, or if inſtruments and obſervations could be made with ſuch accuracy as to render that parallax ſenſible; and with this view various attempts were made. Before the obſervations of M. Picard in 1672, it was the general opinion, that the ſtars did not change their poſition during the courſe of a year. Tycho Brahe and Ricciolus fancied that they had aſſured themſelves of it from their obſervations; and from thence they concluded that the Earth did not move round the Sun, and that there was no annual parallax in the fixed ſtars. M. Picard, in the account of his *Voyage d'Uranibourg*, made in 1672, ſays that the pole ſtar, at different times of the year, has certain variations which he had obſerved for about ten years, and which amounted to about 40″ a year: whence ſome were led to conclude that theſe variations were the effect of the parallax of the Earth's orbit. But it was impoſſible to explain it by that parallax; becauſe this motion was in a manner contrary to what ought to follow only from the motion of the Earth in her orbit.

In 1674 Dr. Hook publiſhed an account of obſervations which he had made in 1669, and by which he had found that the ſtar γ Draconis was twenty-three ſeconds more northerly in July than in October: obſervations which, for the preſent, ſeemed to favour the opinion of the Earth's motion, although it be now known that there could not be any truth or accuracy in them. Flamſtead having alſo obſerved the pole ſtar with his mural quadrant, in 1689 and the following years, found that its declination was 40″ leſs in July than in December; which obſervations, although very juſt, were yet however improper for proving the annual parallax; and he recommended the making of an inſtrument of fifteen or twenty feet radius, to be firmly fixed on a ſtrong foundation, for deciding a doubt which was otherwiſe not likely to be brought to a concluſion. In this ſtate of uncertainty, Dr. Bradley, in the year 1725, formed the project of verifying, by a ſeries of new obſervations, thoſe which Dr. Hook had communicated to the public almoſt fifty years before. And it was this attempt that gave riſe to the diſcovery of the aberration; for he found that all the phenomena hitherto mentioned, and which had been inexplicable to other obſervers, proceeded from the progreſſive motion of light, and the Earth's annual motion in her orbit: for, if light were propagated in time, the apparent place of a fixed object would not be the ſame when the eye is at reſt, as when it is moving in any other direction but that of the line paſſing through the object and the eye; and, when the eye is moving in different directions, the apparent place of the object would be different. He conſidered this matter in the following manner. He imagined C A to be a ray of light, falling perpendicularly upon the line B D: then if the eye be at reſt at A, the object muſt appear in the direction A C, whether light be propagated in time, or in an inſtant. But if the eye be moving from B towards A, and light be propagated in time, with a velocity that is to the velocity of the eye, as A C to A B; then, light moving from C to A, whilſt the eye moves from B to A, that particle of it by which the object will be diſcerned, when the eye in its motion comes to A, is at C when the eye is at B. Joining the points B, C, he ſuppoſed the line B C to be a tube, inclined to the line B D in the angle D B C, and of ſuch a diameter as to admit of but one particle of light: then it was eaſy to conceive, that the particle of light at C, by which the object muſt be ſeen when the eye arrives at A, would paſs through the tube B C, ſo inclined to the line B D, and accompany the eye in its motion from B to A; and that it would not come to the eye, placed behind ſuch a tube, if it had any other inclination to the line B D. If, inſtead of ſuppoſing B C ſo ſmall a tube, we conceive it to be the axis of a larger; then, for the ſame reaſon, the particle of light at C cannot paſs through that axis, unleſs it be inclined to B D in the ſame angle D B C.



In like manner, if the eye move the contrary way, from D towards A, with the ſame velocity; then the tube muſt be inclined in the angle B D C. Although therefore the true or real place of an object, be perpendicular to the line in which the eye is moving, yet the viſible place will not be ſo; ſince that muſt doubtleſs be in the direction of the tube. But the difference between the true and apparent place, will be, *cæteris paribus*, greater or leſs, according to the different proportions between the velocity of light and that of the eye: ſo that, if we could ſuppoſe light to be propagated in an inſtant, then there would be no difference between the real and viſible place of an object, although the eye were in motion; for in that caſe, A C being infinite with reſpect to A B, the angle A C B, which is the difference between the true and viſible place, vaniſhes. But, if light be propagated in time, then it is evident from the foregoing conſiderations, that there will always be a difference between the true and viſible place of an object, except when the eye is moving either directly towards or from the object. And in all caſes, the ſine of the difference between the true and viſible place of the object, will be to the ſine of the viſible inclination of the object to the line in which the eye is moving, as the velocity of the eye is to the velocity of light.

If light moved only 1000 times faſter than the eye, and an object, ſuppoſed to be at an infinite diſtance, were really placed perpendicularly over the plane in which the eye is moving; it follows, from what has been ſaid, that the apparent place of ſuch object will always be inclined to that plane, in an angle of $89^\circ\ 56\frac{1}{2}'$; ſo that it will conſtantly appear $3\frac{1}{2}'$ from its true place, and will ſeem ſo much leſs inclined to the plane, that way towards which the eye tends. That is, if AC be to AB or AD, as 1000 to 1, the angle ABC will be $89^\circ\ 56\frac{1}{2}'$, and the angle ACB $3\frac{1}{2}'$, and BCD or 2ACB will be $7'$, if the direction of the motion of the eye be contrary at one time to what it is at another.

If the Earth revolve about the Sun annually, and the velocity of light were to the velocity of the Earth's motion in its orbit, as 1000 is to 1; then it is eaſy to conceive, that a ſtar really placed in the pole of the ecliptic would, to an eye carried along with the Earth, ſeem to change its place continually; and, neglecting the ſmall difference on account of the Earth's diurnal revolution on its axis, it would ſeem to deſcribe a circle about that pole, every where diſtant from it by $3\frac{1}{2}'$. So that its longitude would be varied through all the points of the ecliptic every year, but its latitude would always remain the ſame. Its right aſcenſion would alſo change, and its declination, according to the different ſituation of the Sun in reſpect of the equinoctial points; and its apparent diſtance from the north pole of the equator, would be $7'$ leſs at the autumnal than at the vernal equinox.

The greateſt alteration of the place of a ſtar, in the pole of the ecliptic, or, which in effect amounts to the ſame, the proportion between the velocity of light and the Earth's motion in its orbit, being known, it will not be difficult to find what would be the difference, on this account, between the true and apparent place of any other ſtar at any time; and, on the contrary, the difference between the true and apparent place being given, the proportion between the velocity of light, and the Earth's motion in her orbit, may be found.

After the hiſtory of this valuable diſcovery, related by the author, he gives the reſults of a multitude of accurate obſervations, made on a great number of ſtars, at all ſeaſons of the year. From all which obſervations, and the theory related above, he found that every ſtar, in conſequence of the Earth's motion in her orbit and the progreſſive motion of light, appears to deſcribe a ſmall ellipſe in the heavens, the tranſverſe axis of which is equal to the ſame quantity of every ſtar, namely $40''$ nearly; and that the conjugate axis of the ellipſe, for different ſtars, varies in this proportion, namely, as the right ſine of the ſtar's latitude; that is, radius is to the ſine of the ſtar's latitude, as the tranſverſe axis to the conjugate axis; and conſequently a ſtar in the pole of the ecliptic, its latitude being there 90°, whoſe ſine is equal to the radius, will appear to deſcribe a ſmall circle about that pole as a centre, whoſe radius is equal to $20''$. He alſo gives the following law of the variation of the ſtar's declination: if A denote the angle of poſition, or the angle at the ſtar made by two great circles drawn from it through the poles of the ecliptic and equator, and B another angle, whoſe tangent is to the tangent of A, as radius is to the ſine of the ſtar's latitude; then B will be equal to the difference of longitude between the Sun and the ſtar, when the true and apparent declination of the ſtar are the ſame. And if the Sun's longitude in the ecliptic be reckoned from that point in which it is when this happens, then the difference between the true and apparent declination of the ſtar will be always as the ſine of the Sun's longitude from that point. It will alſo be found that the greateſt difference of declination that can be between the true and apparent place of the ſtar, will be to $20''$, the ſemitranſverſe axis of the ellipſe, as the ſine of A to the ſine of B.

From the greateſt variation in the place of the ſtars, namely $40''$, Dr. Bradely deduces the ratio of the velocity of light in compariſon with that of the Earth in her orbit. In the preceding figure, AC is to AB as the velocity of light to that of the Earth in her orbit, the angle ACB being equal to $20''$; ſo that the ratio of thoſe velocities is that of radius to the tangent of $20''$, or of radius to $20''$, ſince the tangent has no ſenſible difference from ſo ſmall an arc: but the radius of a circle is equal to the arc of $57\frac{3}{10}^\circ$ nearly, or equal to $206260''$; therefore the velocity of light is to the velocity of the Earth, as 206260 to 20. And hence alſo the time in which light paſſes over the ſpace from the Sun to the Earth, is eaſily deduced; for this time will be to one year, as AB or twenty ſeconds to 360 degrees, or the whole circle; that is, $360^\circ : 20'' :: 365\frac{1}{4}\text{d.} : 8'.\ 7''$.

Dr. Bradley having annexed to this theory the rules or formulæ for computing the aberration of the fixed ſtars in declination and right aſcenſion; theſe rules have been variouſly demonſtrated, and reduced to other practical forms, by M. Clariaut, in the Memoirs of the Academy of Sciences, for 1737; by Mr. Simpſon in his Eſſays in 1740; by M. Fontaine des Crutes, in 1744; and by ſeveral other perſons. The reſults of theſe rules are as follow: every ſtar appears to deſcribe in the courſe of a year, by means of the aberration, a ſmall ellipſe, whoſe greater axis is $40''$, and the leſs axis, perpendicular to the ecliptic, is equal to $40''$ multiplied by the ſine of the ſtar's latitude, the radius being 1. The eaſtern extremity of the longer axis marks the apparent place of the ſtar on the day of the oppoſition; and the extremity of the leſs axis, which is fartheſt from the ecliptic, marks its ſituation three months after.

The greateſt aberration in longitude, is equal to $20''$ divided by the coſine of its latitude. And the aberration for any time, is equal to $20''$ multiplied by the coſine of the elongation of the ſtar found for the ſame time, and divided by the coſine of its latitude. This aberration is ſubtractive in the firſt and laſt quadrant of the argument, or of the difference between the longitudes of the Sun and ſtar; and addative in the ſecond and third quadrants. The greateſt aberration in latitude, is equal to $20''$ multiplied by the ſine of the ſtar's latitude. And the aberration in latitude for any time, is equal to $20''$ multiplied by the ſine of the ſtar's latitude, and multiplied alſo by the ſine of the elongation. The aberration is ſubtractive before the oppoſition, and addative after it.

The greateſt aberration in declination, is equal to $20''$ multiplied by the ſine of the angle of poſition A, and divided by the ſine of B, the difference of longitude between the Sun and ſtar when the aberration in declination is nothing. And the aberration in declination at any other time, will be equal to the greateſt aberration multiplied by the ſine of the difference between the Sun's place at the given time and his place when the aberration is nothing. Alſo the ſine of the latitude of the ſtar is to radius, as the tangent of A, the angle of poſition at the ſtar, is to the tangent of B, the difference of longitude between the Sun and ſtar when the aberration in declination is nothing. The greateſt aberration in right aſcenſion, is equal to $20''$ multiplied by the coſine of A the angle of poſition, and divided by the ſine of C the difference in longitude between the Sun and ſtar when the aberration in right aſcenſion is nothing. And the aberration in right aſcenſion at any other time, is equal to the greateſt aberration multiplied by the ſine of the difference between the Sun's place at the given time, and his place when the aberration is nothing. Alſo the ſine of the latitude of the ſtar is to radius, as the cotangent of A the angle of poſition, to the tangent of C.

Hence Dr. Bradley finally deduced the following concluſions. 1. That the light of all the fixed ſtars arrives at the Earth with equal velocities; for the major axis of the ellipſe is the ſame in all the ſtars, that is 40″ according to his laſt determination. 2. That unleſs their diſtances from us are all equal, which is very improbable, their lights are propagated *uniformly* to all diſtances from them. 3. That light moves from the Sun to the Earth in 8′ 7·5″, and its velocity is to the velocity of the Earth in its orbit as 10314 to 1. 4. That the time thus determined can ſcarcely err from the truth by above 5 or 10″ at moſt, which is ſuch a degree of exactneſs as can never be expected from the eclipſes of Jupiter's ſatellites. 5. That, as this velocity of ſtar-light comes out about a mean of the ſeveral velocities found from the eclipſes of Jupiter's ſatellites, we may reaſonably conclude that the velocities of theſe reflected lights are equal to the velocity of direct light. 6. And, as it is highly probable that the velocity of the Sun's emitted light is equal to that of ſtar-light, it follows that its velocity is not altered by reflection into the ſame medium.

The aberration of the planets is greateſt in longitude, and very ſmall in latitude, becauſe they deviate very little from the plane of the ecliptic, or path of the Earth; ſo that the aberration in the latitudes of the planets is commonly neglected, as inſenſible; the greateſt in Mercury being only $4\frac{1}{3}''$, and much leſs in the other planets. As to the aberrations in declination and right aſcenſion, they muſt depend on the ſituation of the planet in the zodiac. The aberration in longitude, being equal to the geocentric motion, will be more or leſs according as that motion is; it will therefore be leaſt, or nothing at all, when the planet is ſtationary; and greateſt in the ſuperior planets Mars, Jupiter, Saturn, &c. when they are in oppoſition to the Sun; but in the inferior planets Venus and Mercury, the aberration is greateſt at the time of their ſuperior conjunction. Theſe maxima of aberration for the ſeveral planets, when their diſtance from the Sun is leaſt, are as follow: viz. for

Saturn	- - -	27·0″
Jupiter	- - -	29·8
Mars	- - -	37·8
Venus	- - -	43·2
Mercury	- - -	59·0
The Moon	- - -	$\frac{2}{3}$

And between theſe numbers and nothing the aberrations of the planets, in longitude, vary according to their ſituations. But that of the Sun varies not, being conſtantly 20″. And this may alter his declination by a quantity, which varies from 0 to near 8″; being greateſt or 8″ about the equinoxes, and vaniſhing in the ſolſtices. See the articles ABERRATION and OPTICS.

Of PRACTICAL ASTRONOMY.

This title comprehends all kinds of aſtronomical calculations; the admeaſurement of inacceſſible objects; the mode of aſcertaining the periodical times, eccentricities, poſitions, motions, and other properties, of the celeſtial bodies, by means of tables, and aſtronomical inſtruments, whereby the theoretical part is elucidated and explained, and adapted to the uſes of the practical. The immenſe labours of former aſtronomers in this department does honour to the age and country in which they lived, and ſhews that in leſs enlightened times the moſt laborious aſtronomical tables were calculated, and the utmoſt exertions made to bring the ſcience of aſtronomy into general and deſerved repute. Thales, the Mileſian, is juſtly celebrated for his early proweſs in practical aſtronomy. He was the firſt among the Greeks who obſerved the ſtars, the ſolſtices, the eclipſes of the Sun and Moon, which he calculated and foretold. And the ſame was farther calculated and extended by his ſucceſſors Anaximander, Anaximanes, and Anaxagoras; but moſt materially by Pythagoras, who brought from Egypt the learning of that people, and taught the ſame in Greece and Italy.

Philolaus, a Pythagorean, who flouriſhed about 450 years before Chriſt, aſſerted the annual motion of the Earth about the Sun; and, not long after, the diurnal motion of the Earth on her own axis was taught by Hicetas, a Syracuſan. About the ſame time flouriſhed at Athens, Meton and Euctemon, where they obſerved the ſummer ſolſtice 432 years before Chriſt, and obſerved the riſings and ſettings of the ſtars, and what ſeaſons they correſponded with. Meton alſo invented the cycle of nineteen years, which ſtill bears his name. Eudoxus the Cnidian, who lived about 370 years before Chriſt, was accounted one of the moſt ſkilful practical aſtronomers and geometricians of antiquity, being accounted the inventor of many of the propoſitions in Euclid's Elements, and having introduced geometry into the ſcience of aſtronomy. He travelled into Aſia, Africa, Sicily, and Italy, for improvements in aſtronomy; and we are informed by Pliny, that he determined the annual year to contain 365 days 6 hours, that he determined alſo the periodical times of the planets, and made other important obſervations and diſcoveries.

Calippus flouriſhed ſoon after Eudoxus, and his celeſtial ſphere is mentioned by Ariſtotle; but he is better known by a period of ſeventy-ſix which he invented, containing four correct Metonic periods, which commenced at the ſummer ſolſtice in the year 330 before Chriſt. About his time the knowledge of the Pythagorean ſyſtem was carried into Italy, Gaul, and Egypt, by certain colonies of Greeks. Vitruvius, however, maintains that Beroſus, a Babylonian, opened an aſtronomical ſchool in the iſle of Cos, by which the ſcience was introduced into Greece. And Pliny ſays, that in conſideration of his wonderful predictions, the Athenians erected him a ſtatue in the gymnaſium, with a gilded tongue. But if this Beroſus be the ſame with the author of the Chaldaic hiſtories, he muſt have lived before Alexander.

After the death of this great conqueror, the ſcience flouriſhed chiefly in Egypt, under the auſpices of Ptolemy Philadelphus and his ſucceſſors. He founded a ſchool, which continued to be the grand ſeminary of learning, till the invaſion of the Saracens in the year of Chriſt 650. From the founding of that ſchool, practical aſtronomy advanced conſiderably. Ariſtarchus, about 270 years before Chriſt, gave a method of determining the Sun's diſtance by the dichotomy of the Moon. Eratoſthenes, who was born at Cyrene in the year 271 before Chriſt, meaſured the circumference of the Earth by means of a gnomon; and being invited to Alexandria, from Athens, by Ptolemy Euergetes, and made keeper of the royal library there, he ſet up for that prince thoſe armillary ſpheres, which Hipparchus and Ptolemy the aſtrologer afterwards employed ſo ſucceſsfully in obſerving the heavens. He alſo determined the diſtance between the tropics to be $\frac{11}{83}$ of the whole meridian circle, which makes the obliquity of the ecliptic in his time to be 23° $51\frac{1}{3}$′. The celebrated Archimedes, too, cultivated practical aſtronomy, as well as geometry and mechanics: he determined the diſtances of the planets from one another, and conſtructed a kind of planetarium or orrery, to repreſent the phenomena and motions of the heavenly bodies.

To paſs by ſeveral others of the ancients, who practiſed aſtronomy, we find that Hipparchus, who flouriſhed about 140 years before Chriſt, was the firſt who applied himſelf to the ſtudy of every part of aſtronomy, and, as we are informed by Ptolemy, made great improvements in the practice of it: he diſcovered that the orbits of the planets are eccentric, that the Moon moved ſlower in the apogee than in her perigee, and, that there was a motion of anticipation of the Moon's nodes: he conſtructed tables of the motions of the Sun and Moon, collected accounts of ſuch eclipſes, &c. as had been made by the Egyptians and Chaldeans, and calculated all that were to happen for 600 years

years to come: he diſcovered that the fixed ſtars changed their places, having a ſlow motion of their own from weſt to eaſt: he corrected the Calippic period, and pointed out ſome errors in the method of Eratoſthenes, for meaſuring the circumference of the Earth: he computed the Sun's diſtance more accurately than any of his predeceſſors; and alſo the longitudes, latitudes, and apparent magnitudes, of the ſtars; which, with moſt of his other obſervations, are preſerved by Ptolemy in his Almageſt.

There was but little progreſs made in practical aſtronomy from the time of Hipparchus to that of Ptolemy, who made the greateſt part of his obſervations at the celebrated ſchool of Alexandria in Egypt. Profiting by thoſe of Hipparchus and other ancient aſtronomers, he formed a ſyſtem of his own, which, though erroneous, as we have ſeen, was followed for many ages by all nations. He compiled a great work, called the Almageſt, which contained the obſervations and collections of Hipparchus and others his predeceſſors in practical aſtronomy, on which account it will ever be valuable to the profeſſors of this ſcience. That work was preſerved from the grievous conflagration of the Alexandrine library by the Saracens, and tranſlated out of Greek into Arabic in the year 827, and from thence into Latin in 1230. The Greek original was not known in Europe till the beginning of the fifteenth century, when it was brought from Conſtantinople, then taken by the Turks, by George, a monk of Trapezond, by whom it was tranſlated into Latin; and various other editions have been ſince made.

During the long period from the year 800 till the beginning of the 14th century, while the weſtern parts of Europe were immerſed in ignorance and barbarity, the Arabians, profiting by the books they had preſerved from the wreck of the Alexandrine library, cultivated and improved all the ſciences, and particularly that of aſtronomy, in which they had many able profeſſors and authors. The caliph Al Manſur firſt introduced a taſte for the ſciences into his empire. His grandſon Al Mamun, who aſcended the throne in 814, was a great encourager and improver of the ſciences, and eſpecially of practical aſtronomy. Having conſtructed proper inſtruments, he made many obſervations; determined the obliquity of the ecliptic to be 23° 35′; and under his auſpices a degree of the circle of the Earth was meaſured a ſecond time in the plain of Singar, on the border of the Red Sea. About the ſame time Alferganus wrote elements of aſtronomy; and the ſcience was from hence greatly cultivated by the Arabians, but principally by Albategnius, who flouriſhed about the year 880, and who greatly reformed aſtronomy, by comparing his own obſervations with thoſe of Ptolemy: hence he computed the motion of the Sun's apogee from Ptolemy's time to his own; ſettled the preceſſion of the equinoxes at one degree in ſeventy years; and fixed the obliquity of the ecliptic at 23° 35′. The tables which he compoſed, for the meridian of Aracta, were long eſteemed by the Arabians. After his time, though the Saracens had many eminent aſtronomers, ſeveral centuries elapſed without producing any very valuable obſervations, excepting thoſe of ſome eclipſes obſerved by Ebn Younis, aſtronomer to the caliph of Egypt, by means of which the quantity of the Moon's acceleration ſince that time may be determined.

Other eminent Arabic aſtronomers, were, Arzachel a Moor of Spain, who obſerved the obliquity of the ecliptic: he alſo improved trigonometry by conſtructing tables of ſines, inſtead of chords of arches, dividing the diameter into 300 equal parts. And Alhazen, his cotemporary, wrote upon the twilight, the height of the clouds, the phenomenon of the horizontal moon, and firſt ſhewed the importance of the theory of refractions in aſtronomy. Ulugh Beigh, grandſon of the celebrated Tartar prince Tamerlane, was alſo a great proficient in practical aſtronomy; he had very large inſtruments, particularly a quadrant of about 180 feet high, with which he made good obſervations. From theſe he determined the latitude of Samarcand, his capital, to be 39° 37′ 23″; and compoſed aſtronomical tables for the meridian of the ſame, ſo exact, that they differ very little from thoſe conſtructed afterwards by Tycho Brahe.

During this period almoſt all Europe was immerſed in ignorance, until the ſettlement of the Moors in Spain, when the ſciences were again introduced, and have ſince continued to improve, and to be communicated from one people to another, to the preſent time. The emperor Frederic II. about 1230, firſt began to encourage learning; reſtoring ſome decayed univerſities, and founding a new one in Vienna: he alſo cauſed the works of Ariſtotle, and Ptolemy's Almageſt, to be tranſlated into Latin; and from the tranſlation of this work we may date the revival of practical aſtronomy in Europe. Two years after this, John de Sacro Boſco, that is, of Halifax, compiled from Ptolemy, Albategnius, Alferganus, and other Arabic aſtronomers, his work De Sphæra, which was held in the greateſt eſtimation for 300 years after, and was honoured with commentaries by Clavius and other learned men. In 1240, Alphonſo, king of Caſtile, not only cultivated practical aſtronomy himſelf, but greatly encouraged others; and by the aſſiſtance of ſeveral learned men he corrected the tables of Ptolemy, and compoſed thoſe which were from him denominated the Alphonſine Tables. About the ſame time alſo, Roger Bacon, an Engliſh monk, wrote ſeveral tracts relative to aſtronomy, particularly of the lunar aſpects, the ſolar rays, and the places of the fixed ſtars. And, about the year 1270, Vitello, a Polander, compoſed a treatiſe on optics, in which he ſhewed the uſe of refractions in aſtronomy.

Little other improvements were made in practical aſtronomy till the time of Purbach, who was born in 1423. He compoſed new tables of ſines for every ten minutes, making the radius 60, with four ciphers annexed. He conſtructed ſpheres and globes, and wrote ſeveral aſtronomical tracts. In his ſolar tables, he placed the Sun's apogee in the beginning of Cancer; but retained the obliquity of the ecliptic 23° 33½′, as determined by the lateſt obſervations. He alſo obſerved ſome eclipſes, made new tables for computing them, and had juſt finiſhed a theory of the planets, when he died in 1460. He was ſucceeded in his aſtronomical and mathematical labours by his pupil, John Muller, commonly called Regiomontanus, from Monteregio, or Koningſberg, a town of Franconia, where he was born. He completed the epitome of Ptolemy's Almageſt, which Purbach had began; and was afterwards invited to Rome, where he made many aſtronomical obſervations. Being returned to Nuremberg in 1471, by the encouragement of a wealthy citizen named Bernard Walther, he made ſeveral inſtruments for aſtronomical obſervations, among which was an armillary aſtrolabe, like that uſed at Alexandria by Hipparchus and Ptolemy, with which he made many obſervations. He made ephemerides for thirty years to come, ſhewing the lunations, eclipſes, &c. and wrote the Theory of the Planets and Comets, and a treatiſe on triangles, ſtill in repute for ſeveral good theorems; computing the tables of ſines for every ſingle minute, to the radius 1000000, and introducing the uſe of tangents alſo into trigonometry. After his death, which happened in 1476, Walther collected his papers, and continued the aſtronomical obſervations till his own death alſo. The obſervations of both were collected by order of the ſenate of Nuremberg, and publiſhed in 1544 by John Schooner: they were alſo afterwards publiſhed in 1618 by Snellius, at the end of the obſervations made by the landgrave of Heſſe; and laſtly with thoſe of Tycho Brahe, in 1666.

Walther was ſucceeded as aſtronomer at Nuremberg, by John Werner a clergyman. He obſerved the motion of the comet in 1500; and wrote ſeveral tracts on geometry and aſtronomy, in a maſterly manner; the moſt remarkable of which are thoſe concerning the motion of the eighth ſphere, or of the fixed ſtars; in this tract, by comparing his own obſervations with thoſe of Ptolemy, Alphonſus, and others, he ſhewed that the motion of the fixed ſtars, ſince called the preceſſion of the equinoxes, is 1° 10′ in

100 years. He made alſo the firſt ſtar of Aries 26° diſtant from the equinoctial point, and the obliquity of the ecliptic only 23° 28′. He conſtructed a planetarium, repreſenting the celeſtial motions according to the Ptolemaic hypotheſis; and he publiſhed a tranſlation of Ptolemy's geography, with a commentary, in which he firſt propoſed the method of finding the longitude at ſea by obſerving the Moon's diſtance from the fixed ſtars; now ſo ſucceſsfully practiſed for that purpoſe.

Nicolaus Copernicus was the next who made any conſiderable figure in aſtronomy, by whom, as we have ſeen, the old Pythagorean ſyſtem of the world was reſtored, which had been ſet aſide from the time of Ptolemy. About the year 1507 Copernicus conceived doubts of this ſyſtem, and entertained notions about the true one, which he gradually improved by a ſeries of aſtronomical obſervations, and the contemplation of former authors. By theſe he formed new tables, and completed his work in the year 1530, containing theſe, and his renovation of the true ſyſtem of the univerſe. But the work was only printed in 1543, under the care of Schoner and Oſiander, by the title of Revolutiones Orbium Cæleſtium; and the author only received a copy of the work a few hours before his death, which happened on the 23d of May, 1543.

After the death of Copernicus, practical aſtronomy was greatly improved by many other perſons, as Schoner, Nonius, Appian, Gemma Friſius, Rothman, Byrgius, the landgrave of Heſſe, &c. Schoner reformed and explained the calendar, improved the methods of making celeſtial obſervations, and publiſhed a treatiſe on coſmography; but he died four years after Copernicus. Nonius wrote ſeveral works on mathematics, aſtronomy, and navigation, and invented ſome uſeful and more accurate inſtruments than formerly; one of theſe was the aſtronomical quadrant, on which he divided the degrees into minutes by a number of concentric circles; the firſt of which was divided in ninety equal parts or degrees, the ſecond into eighty-nine, the third into eighty-eight, and ſo on to forty-ſix; ſo that, the index of the quadrant always falling upon or near one of the diviſions, the minutes would be known by an eaſy computation. The chief work of Appian, The Cæſarean Aſtronomy, was publiſhed at Ingoldſtadt in 1540; in which he teaches how to obſerve the places of the ſtars and planets by the aſtrolabe; to reſolve aſtronomical problems by certain inſtruments; to predict eclipſes, and to deſcribe the figures of them; and the method of dividing and uſing an aſtronomical quadrant. Gemma Friſius wrote a commentary on Appian's Coſmography, accompanied with many obſervations of eclipſes: he alſo invented the aſtronomical ring, and ſeveral other inſtruments, uſeful in taking obſervations at ſea: and he was the firſt who recommended a time-keeper for determining the longitude at ſea. Rheticus gave up his profeſſorſhip of mathematics at Wirtemberg, that he might attend the aſtronomical lectures of Copernicus; and, for improving aſtronomical calculations, he began a very extenſive work, being a table of ſines, tangents, and ſecants, to a very large radius, and to every ten ſeconds or $\frac{1}{6}$ of a minute; which was completed by his pupil Valentine Otho, and publiſhed in 1594.

About the year 1561, William IV. landgrave of Heſſe Caſſel, applied himſelf to the ſtudy of aſtronomy, having furniſhed himſelf with the beſt inſtruments that could then be conſtructed; with theſe he made a great number of obſervations, which were publiſhed by Snellius in 1618, and which were preferred by Hevelius to thoſe of Tycho Brahe. Tycho Brahe began his obſervations about the ſame time with the landgrave of Heſſe; and he obſerved the great conjunction of Jupiter and Saturn: but, finding the uſual inſtruments very inaccurate, he conſtructed others much larger and more exact, with which he applied himſelf diligently to obſerve the celeſtial phenomena. In 1571 he diſcovered a new ſtar in the chair of Caſſiopeia; which induced him, like Hipparchus on a ſimilar occaſion, to make a new catalogue of the ſtars. In the year 1576, by favour of the king of Denmark, he built his new obſervatory, called Uraniburg, on the ſmall iſland Huenna, oppoſite to Copenhagen, and which he very amply furniſhed with many large inſtruments. Tycho employed his time at Uraniburg to the beſt advantage, till the death of the king, when, falling into diſcredit, he was obliged to remove to Holſtein, and he afterwards found means of introducing himſelf to the emperor Rodolph, with whom he continued at Prague till the time of his death in 1601. We have already obſerved that Tycho was the inventor of a ſyſtem of aſtronomy, which he vainly endeavoured to eſtabliſh inſtead of the Copernican or true ſyſtem. His works, however, which are very numerous, ſhew that he was a man of great abilities; and his diſcoveries, together with thoſe of Purbach and Regiomontanus, were collected and publiſhed together in 1621, by Longomontanus, the favourite diſciple of Tycho.

While Tycho reſided at Prague with the emperor, he prevailed on Kepler to leave the univerſity of Glatz, and to come to him, which he did with his family and library in 1600: but, Tycho dying in 1601, Kepler enjoyed all his life the title of mathematician to the emperor, who ordered him to finiſh the Tables of Tycho Brahe, which he did accordingly, and publiſhed them in 1627 under the title of Rodolphine. He died about the year 1630 at Ratiſbon, where he was ſoliciting the arrears of his penſion. From his own obſervations, and thoſe of Tycho, Kepler diſcovered ſeveral of the true laws of nature, by which the motions of the celeſtial bodies are regulated. He found that all the planets revolved about the Sun, not in circular, but in elliptical, orbits, having the Sun in one of the foci of the ellipſe; that their motions were not equable, but varying, quicker or ſlower as they were nearer to the Sun or farther from him; but that this motion was ſo regulated, that the areas deſcribed by the variable line drawn from the planet to the Sun are equal in equal times, and always proportional to the times of deſcribing them. He alſo diſcovered, by trials, that the cubes of the diſtances of the planets from the Sun were in the ſame proportion as the ſquares of their periodical times of revolution. By obſervations alſo on comets, he concluded, that they are freely carried about among the orbits of the planets, in paths that are nearly rectilinear, but which he could not then determine.

In Kepler's time there are many other good proficients in practical aſtronomy; as Edward Wright, baron Napier, John Bayer, &c. Wright made ſeveral good meridional obſervations of the Sun, with a quadrant of ſix feet radius, in the years 1594, 1595, and 1596; from which he greatly improved the theory of the Sun's motion, and computed more accurately his declination than any perſon had done before. In 1599 he publiſhed an excellent work entitled “Certain Errors in Navigation diſcovered and detected,” containing a method which has commonly, though erroneouſly, been aſcribed to Mercator. To Napier we owe ſome excellent theorems and improvements in ſpherics, beſides the ever-memorable invention of logarithms, one of the moſt uſeful ever made in the art of numbering, and of the greateſt uſe in all the other mathematical ſciences. Bayer, a German, publiſhed his Uranometria, being a complete celeſtial atlas, or the figures of all the conſtellations viſible in Europe, with the ſtars marked on them, and the ſtars alſo accompanied by names, or the letters of the Greek alphabet; a contrivance by which the ſtars may eaſily be referred to with diſtinctneſs and preciſion. About the ſame time alſo practical aſtronomy was cultivated by Mercator, Maurolycus, Maginus, Homelius, Schultet, Stevin, Galileo, Thomas and Leonard Digges, John Dee, Robert Flood, Harriot, &c.

The beginning of the ſeventeenth century was particularly diſtinguiſhed by the invention of teleſcopes, and the application of them to aſtronomical obſervations; an invention to which we owe the moſt brilliant diſcoveries, and all the accuracy to which the practical part of the ſcience is now brought. The more diſtinguiſhed early obſervations with the teleſcope were made by Galileo, Harriot, Huygens, Hook, Caſſini, &c. It was ſaid, that, from report only, and before he had ſeen one, Galileo made for himſelf teleſcopes, by which he diſcovered inequalities in the Moon's ſurface, Jupiter's ſatellites, and the ring of Saturn; alſo ſpots on the Sun, by which he found out the revolution of that luminary on its axis; and he diſcovered that the nebulæ and milky-way were full of ſmall ſtars: Harriot alſo, who has hitherto been known only as an algebraiſt, made much the ſame diſcoveries as Galileo, and as early, if not more ſo, as appears by his papers beforementioned, in the poſſeſſion of the earl of Egremont.

Mr. Horrox, a young aſtronomer of great talents, alſo made conſiderable improvements. In 1633 he diſcovered that the planet Venus would paſs over Sun's diſc on the 24th of November, 1639; an event which he announced to his friend Mr. Crabtree; and theſe two were the only perſons in the world that obſerved this tranſit, which was alſo the firſt time it had ever been ſeen by mortal eyes. Mr. Horrox made many other uſeful obſervations, and had even formed a new theory of the Moon, taken notice of by Sir Iſaac Newton; but his early death, in the beginning of the year 1640, put a ſtop to his uſeful and valuable labours. About the ſame time flouriſhed Hevelius, burgomaſter of Dantzic, who furniſhed an excellent obſervatory in his own houſe, where he obſerved the ſpots and phaſes of the Moon, from which obſervations he compiled his Selenographia; and an account of his apparatus is contained in his work entitled Machina Cœleſtis, a book now very ſcarce, as moſt of the copies were accidentally burnt, with the whole houſe and apparatus, in 1679.

Dr. Hook, a cotemporary of Hevelius, invented inſtruments with teleſcopic ſights, and cenſured thoſe of the latter, which occaſioned a ſharp diſpute between them; to ſettle which, the celebrated Dr. Halley was ſent over to Hevelius to examine his inſtruments. Theſe two aſtronomers made ſeveral obſervations together, very much to their ſatisfaction, and amongſt them was one of an occultation of Jupiter by the Moon, when they determined the diameter of the latter to be 30′ 33″.

Before the middle of the ſeventeenth century the conſtruction of teleſcopes had been greatly improved, particularly by Huygens and Fontana. The former conſtructed one of 123 feet, with which he long obſerved the Moon and planets, and diſcovered that Saturn was encompaſſed with a ring. With teleſcopes of 200 and 300 feet focus, Caſſini ſaw five ſatellites of Saturn, with his zones or belts, and the ſhadows of Jupiter's ſatellites paſſing over his body. In 1666 Azout applied a micrometer to teleſcopes, to meaſure the diameters of the planets, and other ſmall diſtances in the heavens: but an inſtrument of this kind had been invented before, by Mr. Gaſcoigne, though it was but little known. To obviate the difficulties of the great lengths of refracting teleſcopes, and the abberration of the rays, it is ſaid that Merſennus firſt ſtarted the idea of making teleſcopes of reflectors, inſtead of lenſes, in a letter to Deſcartes; and, in 1663, James Gregory of Aberdeen ſhewed how ſuch a teleſcope might be conſtructed. After ſome time ſpent by Sir Iſaac Newton, on the conſtruction of both ſorts of teleſcopes, he found out the great inconvenience which ariſes to refractors from the different refrangibility of the rays of light, for which he could not then find a remedy; and therefore, purſuing the other kind, in the year 1672 he preſented to the Royal Society two reflectors, which were conſtructed with ſpherical ſpeculums, as he could not procure other figures. The inconveniences, however, ariſing from the different refrangibility of the rays of light, have ſince been fully obviated by the ingenious Mr. Dollond. Towards the latter part of the ſeventeenth, and beginning of the eighteenth, century, practical aſtronomy it ſeems rather languiſhed. But at the ſame time the ſpeculative part was carried to the higheſt perfection by the immortal Newton in his Principia, and by the Aſtronomy of David Gregory.

Soon after this, great improvements of aſtronomical inſtruments began to take place, particularly in Great Britain. Mr. Graham, a celebrated mechanic and watchmaker, not only improved clocks and watch-work, but alſo carried the accuracy of aſtronomical inſtruments to a ſurpriſing degree. He conſtructed the old 8-feet mural arch at the royal obſervatory at Greenwich, and a ſmall equatorial ſector for making obſervations out of the meridian; but he is chiefly remarkable for contriving the zenith ſector of twenty-four feet radius, and afterwards one of 12½ feet, with which Dr. Bradley diſcovered the abberration of the fixed ſtars. The reflecting teleſcope of Gregory and Newton was greatly improved by Mr. Hadley, who preſented a very powerful inſtrument of that kind to the Royal Society in 1719. The ſame gentleman alſo immortalized his memory by the invention of the reflecting quadrant, or ſector, now called by his name, which he preſented to the ſociety in 1731, and which is now ſo univerſally uſeful at ſea, eſpecially where nice obſervations are required. It appears, however, that an inſtrument ſimilar to this in its principles had been invented by Sir Iſaac Newton; and a deſcription, with a drawing, of it given by him to Dr. Halley, when he was preparing for his voyage in 1701, to diſcover the variations of the needle: it has alſo been aſſerted, that Mr. Godfrey, of Philadelphia in America, made the ſame diſcovery, and the firſt inſtrument of this kind. About the middle of this century, the conſtructing and dividing of large aſtronomical inſtruments were carried to great perfection by Mr. John Bird; and reflecting teleſcopes were not leſs improved by Mr. Short, who alſo firſt executed the divided object-glaſs micrometer, which had been propoſed and deſcribed by M. Louville and others. Mr. Dollond alſo brought refracting teleſcopes to the greateſt perfection, by means of his achromatic glaſſes; and the late diſcoveries of Dr. Herſchel are owing to the amazing powers of reflectors of his own conſtruction.

Thus the aſtronomical improvements in the preſent century have been chiefly owing to the inventions and improvements in the inſtruments, and to the eſtabliſhment of regular obſervatories in England, France, and other parts of Europe. Roemer, a celebrated Daniſh aſtronomer, firſt made uſe of a meridional teleſcope; and, by obſerving the eclipſes of Jupiter's ſatellites, he firſt diſcovered the progreſſive motion of light, concerning which he read a diſſertation before the Academy of Sciences at Paris in 1675. Mr. Flamſtead was appointed the firſt aſtronomer-royal at Greenwich in 1675. He obſerved, for forty-four years, all the celeſtial phenomena, the Sun, Moon, planets, and fixed ſtars, of all which he gave an improved theory with new ſolar tables, and a theory of the Moon according to Horrox; likewiſe, in Sir Jonas Moore's Syſtem of Mathematics, he gave a curious tract on the doctrine of the ſphere, ſhewing how geometrically to conſtruct eclipſes of the Sun and Moon, as well as occultations of the fixed ſtars by the Moon. And it was upon his tables that were conſtructed, both Halley's tables, and Newton's theory of the Moon. Caſſini alſo, the firſt French aſtronomer-royal, very much diſtinguiſhed himſelf, making many obſervations on the Sun, Moon, planets, and comets, and greatly improved the elements of their motions. He alſo erected the gnomon, and drew the celebrated meridian line in the church of Petronia at Bologna.

In 1719 Mr. Flamſtead was ſucceeded by Dr. Halley, as aſtronomer-royal at Greenwich. The doctor had been ſent at the early age of twenty-one to the iſland of St. Helena, to obſerve the ſouthern ſtars, and make a catalogue of them, which was publiſhed in 1679. In 1705 he publiſhed his Synopſis Aſtronomiæ Cometicæ, in which he ventured to predict the return of a comet in 1758 or 1759. He was the firſt who diſcovered the acceleration of the Moon, and gave a very ingenious method for finding her parallax by three obſerved phaſes of a ſolar eclipſe. He publiſhed, in the Phil. Tranſ. many learned papers, and amongſt them ſome that were concerning the uſe that might be made of the next tranſit of Venus in determining the diſtance of the Sun from the Earth. He compoſed tables of the Sun, Moon, and all the planets, which are ſtill in great repute; with which he compared the obſervations he made of the Moon at Greenwich, amounting to near 1500, and noted the differences. He recommended the method of determining the longitude by the Moon's diſtances from the Sun and certain fixed ſtars; a method which had before been noticed, and which has ſince been carried into execution, more particularly at the inſtance of Dr. Maſkelyne, the preſent aſtronomer-royal.

On the death of Dr. Halley, in 1742, he was ſucceeded by Dr. Bradley, as aſtronomer-royal at Greenwich. The accuracy of his obſervations enabled him to detect the ſmaller inequalities in the motions of the planets and fixed ſtars. The conſequence of this accuracy was, the diſcovery of the aberration of light, the nutation of the Earth's axis, and a much greater degree of perfection in the lunar tables. He obſerved the places, and computed the elements, of the comets, which appeared in the years 1723, 1736, 1743, and 1757; made new and accurate tables of of the motions of Jupiter's ſatellites; and, from a multitude of obſervations of the luminaries, conſtructed the moſt accurate table of refractions yet extant. Alſo, with a very large tranſit inſtrument, and a new mural quadrant of eight feet radius, conſtructed by Mr. Bird, in 1750, he made an immenſe number of obſervations for ſettling the places of all the ſtars in the Britiſh catalogue, together with near 1500 places of the Moon, the greater part of which he compared with Mayer's tables.

In the mean time aſtronomers elſewhere were aſſiduous in their endeavours to promote this ſcience. The theory of the Moon was particularly conſidered by Clairault, d'Alembert, Euler, Mayer, Simpſon, and Walmeſley; but eſpecially by Clairault, Euler, and Mayer, who computed complete ſets of lunar tables: thoſe of the laſt of theſe authors, for their ſuperior accuracy, were rewarded with a premium of 3000l. and brought into uſe in the computation of the Nautical Ephemeris, publiſhed by the Board of Longitude. The moſt accurate tables of the ſatellites of Jupiter were compoſed, from obſervations, by Wargentin, an excellent Swediſh aſtronomer. Among the many French aſtronomers who contributed to the advancement of the ſcience, it was particularly indebted to De la Caille, for an excellent ſet of ſolar tables; who, in 1750, went to the Cape of Good Hope to make obſervations in concert with the moſt celebrated aſtronomers in Europe, for determining the parallax of Mars and the Moon, and thence that of the Sun, which it was concluded did not much exceed 10″. Here he re-examined and adjuſted, with great accuracy, the ſtars about the ſouthern pole, and alſo meaſured a degree of the meridian. In Italy the ſcience was aſſiduouſly cultivated by Bianchini, Boſcovich, Friſi, Manfredi, Zanotti, and many others; in Sweden by Wargentin already mentioned, Blingenſtern, Mallet, and Planman; and in Germany by Euler, Mayer, Lambert, Griſchow, and others.

Dr. Bradley died in 1762, and was ſucceeded in his office of aſtronomer-royal by Mr. Bliſs, Savilian profeſſor of aſtronomy; who, being in a declining ſtate of health, did not long enjoy it. In 1765, he was ſucceeded by Dr. Nevil Maſkelyne, the preſent aſtronomer-royal, who, in January 1761, was ſent by the Royal Society, at a very early age, to the iſland of St. Helena, to obſerve the tranſit of Venus over the Sun, and the parallax of the ſtar Sirius. The firſt of theſe objects partly failed, by clouds preventing the ſight of the ſecond internal contact; and the ſecond alſo, owing to Mr. Short having ſuſpended the plumb-line by a *loop* from the neck of the central pin. However, our aſtronomer indemnified himſelf by many other valuable obſervations: thus, he obſerved at St. Helena, the tides; the horary parallaxes of the Moon; and the going of a clock, to find, by compariſon with its previous going which had been obſerved in England, the difference of gravity at the two places: alſo, in going out and returning, he practiſed the method of finding the longitude by the lunar diſtances taken with Hadley's quadrant, making out rules for the uſe of ſeamen, and teaching the method to the officers on-board the ſhip; which was explained in the Phil. Tranſ. for 1762, and more fully afterwards in the Britiſh Mariner's Guide, publiſhed in the year 1763. In September, 1763, he ſailed for the iſland of Barbadoes, to ſettle the longitude of the place, to examine Harriſon's time-piece, and to try Irwin's marine-chair. While at Barbadoes, he made many other obſervations, and amongſt them many relating to the Moon's horary parallaxes. Returning to England in the latter part of the year 1764, he was appointed in 1765 to ſucceed Mr. Bliſs as aſtronomer-royal; and he immediately recommended to the Board of Longitude the lunar method of finding the longitude, and propoſed to it the project of a Nautical Almanac, to be calculated and publiſhed to facilitate that method; this being agreed to, the firſt volume was publiſhed for 1767, and has continued ever ſince under his direction, to the great benefit of navigation.

Finally, the diſcoveries and improvements of Dr. Herſchel, by the invention of his powerful teleſcopes, form a new era both in ſpeculative and practical aſtronomy. His improved catalogue of the fixed ſtars will alſo be found of infinite utility to future obſervers. Indeed, the early care of practical aſtronomers ſeems very wiſely to have been that of numbering the fixed ſtars and of reducing them to a regular catalogue, in order that poſterity might know whether any changes had been diſcovered in the ſtarry firmament of the heavens. Hipparchus of Rhodes, about 120 years before Chriſt, is generally allowed to have been the firſt who attempted a compilation of this kind. Ptolemy however mentions, that Tymocharius and Ariſtyllus left ſeveral obſervations made 180 years before. The catalogue of Hipparchus contained 1022 ſtars, with their latitudes and longitudes, which Ptolemy publiſhed, with the addition of four more. Theſe aſtronomers made their obſervations with an armillary ſphere, as before obſerved; placing the armilla, or hoop repreſenting the ecliptic, to coincide with the ecliptic in the heavens by means of the Sun in the day-time, and then they determined the place of the Moon in reſpect to the Sun by a moveable circle of latitude. The next night, by the help of the Moon (whoſe place before found they corrected by allowing for its motion in the interval of time), they placed the hoop in ſuch a ſituation as was agreeable to the preſent moment of time, and then compared, in like manner, the places of the ſtars with the Moon. Thus they found the latitudes and longitudes of the ſtars; it could not, however, be done with ſuch an inſtrument to any very great degree of accuracy. Ptolemy adapted his catalogue to the year 137 after the Chriſtian era; but ſuppoſing, with Hipparchus who made the diſcovery, the preceſſion of the equinoxes to be one degree in 100 years, inſtead of about ſeventy-two years, he only added 2° 40′ to the numbers in Hipparchus for 265 years (the difference of the epochs), inſtead of 3° 42′ 22″, according to Dr. Maſkelyne's Tables. To compare his tables, therefore, with the preſent, we muſt firſt increaſe his numbers by 1° 2′ 22″, and then allow for the preceſſion from that time to this. The next aſtronomer who numbered the fixed ſtars anew, was Ulugh Beigh, the grandſon of Tamerlane the Great; he made a catalogue of 1022 ſtars, reduced to the year 1437. William, the moſt illuſtrious landgrave of Heſſe Caſſel, made a catalogue of 400 ſtars which he obſerved; he computed their latitudes and longitudes from their obſerved right aſcenſions and declinations. In the year 1610, Tycho Brahe's catalogue of 777 ſtars was publiſhed from his own obſervations, made with great care and diligence. It was afterwards, in 1627, copied into the Rodolphine Tables, and increaſed by 223 ſtars from other obſervations of Tycho. Inſtead of a *zodiacal* armilla, Tycho ſubſtituted the *equatorial* armilla, by which he obſerved the difference of right aſcenſions, and the declinations, out of the meridian, the meridian altitude being always made uſe of to confirm the others. From thence he computed the latitudes and longitudes. Tycho compared Venus with the Sun, and then the other ſtars with Venus, allowing for its parallax and refraction; and, having thus aſcertained the places of a few ſtars, he ſettled the reſt from them; and although his inſtrument was very large, and conſtructed with great accuracy, yet, not having pendulum-clocks to meaſure his time, his obſervations cannot be very accurate. The next catalogue was that of R. P. Ricciolus, which was taken from Tycho's, except 101 ſtars which he himſelf had obſerved. Hevelius, in 1690, publiſhed a catalogue of 1930 ſtars, of which 950 were known to the ancients; 603 he calls his own, becauſe they had not been accurately obſerved by any one before himſelf; and 377 of Dr. Halley which were inviſible to his hemiſphere. Their places were fixed for the year 1660. The Britiſh Catalogue, which was publiſhed by Mr. Flamſtead, contains 3000 ſtars, rectified for the year 1689. They are diſtinguiſhed into ſeven degrees of magnitude (of which the ſeventh degree are teleſcopic) in their proper conſtellations. This catalogue is more correct than any of the others, the obſervations having been made with better inſtruments. He alſo publiſhed an *Atlas Cœleſtis*, or Maps of the Stars, in which each ſtar is laid down in its true place, and delineated of its own magnitude. Each ſtar is marked with a letter, beginning with the firſt letter of the Greek alphabet for the largeſt ſtar of each conſtellation, and ſo on according to their magnitudes, following, in this reſpect, the charts of the ſame kind that were publiſhed by J. Bayer in 1603. In the year 1757, M. de la Caille publiſhed his Fundamenta Aſtronomiæ, in which there is a catalogue of 397 ſtars; and, in 1763, he publiſhed a catalogue of 1942 ſouthern ſtars, from the tropic of Capricorn to the ſouth pole, with their right aſcenſions and declinations for 1750. He alſo publiſhed a catalogue of the zodiacal ſtars in the Ephemerides, from 1765 to 1774. Mr. Mayer alſo publiſhed a catalogue of 600 zodiacal ſtars. In the Nautical Almanac, for 1773, there is publiſhed a catalogue of 380 ſtars, obſerved by Dr. Bradley, with their longitudes and latitudes. In the year 1782, J. E. Bode, aſtronomer at Berlin, publiſhed a ſet of Celeſtial Charts, containing a greater number of ſtars than in thoſe of Mr. Flamſtead, with many of the double ſtars and nebulæ. He alſo publiſhed, in the ſame work, a catalogue of ſtars, that of Flamſtead being the foundation, omitting ſome ſtars whoſe poſitions were left incomplete, and altering the numbers of others; to which he has added ſtars from Hevelius, M. de la Caille, Mayer, and others. In the year 1776, there was publiſhed at Berlin, a work entitled, Recueil de Tables Aſtronomiques, in which is contained a very large catalogue of ſtars from Hevelius, Flamſtead, M. de la Caille, and Dr. Bradley, with their latitudes and longitudes for the beginning of the year 1800; with a catalogue of the ſouthern ſtars of M. de la Caille; of double ſtars; of changeable ſtars; and of nebulous ſtars. This is a very uſeful work for the practical aſtronomer. But the moſt complete catalogue is that publiſhed by the Rev. Mr. Wollaſton, F.R.S. in 1789, entitled, "A Specimen of a General Aſtronomical Catalogue, arranged in Zones of North Polar Diſtance, and adapted to January 1, 1790; containing a Comparative View of the Mean Poſitions of Stars, Nebulæ, and Cluſters of Stars, as they come out upon Calculation from the Tables of ſeveral principal Obſervers." By arranging the ſtars into zones parallel to the equator, an obſerver, with his teleſcope on an equatorial ſtand, will have the ſtars paſs through in the order in which he finds them in the catalogue, by which he will more readily find out what he wants, being prepared for its appearance. The firſt table contains a catalogue of the mean right aſcenſions of thirty-ſix principal ſtars for January 1, 1790, as ſettled by Dr. Maſkelyne, with their annual preceſſions, and proper motions. The ſecond table contains the general catalogue of all the ſtars whoſe places have been well aſcertained, together with thoſe nebulæ and cluſters of ſtars which can eaſily be ſeen by a good common teleſcope, with their right aſcenſions and north polar diſtances, and their annual preceſſions; alſo their magnitudes, and the number, name, or character, of the object, and by whom it was obſerved. The third table contains an index to the ſtars in the Britiſh Catalogue; referring to the zone of north polar diſtance in which each is to be found. The fourth table contains an index of thoſe ſtars in M. de la Caille's fundamental catalogue which are not in Flamſtead's. The fifth table contains Flamſtead's Britiſh Catalogue, and M. de la Caille's ſouthern catalogue, with about eighty circumpolar ſtars from Hevelius which had been omitted by Flamſtead, arranged in their order of right aſcenſions in time for January 1, 1790. The ſixth table contains a catalogue of the zodiacal ſtars for nine degrees of latitude, arranged in their order of longitude for January 1, 1790. The whole concludes with a plan for examining the heavens, propoſing that different perſons ſhould undertake different zones and examine them very minutely; recommending a ſyſtem of wires in a teleſcope which he has found very convenient for that purpoſe. The practical aſtronomer is under very great obligations to Mr. Wollaſton for ſo uſeful and complete a work.

In all the preceding catalogues, aſtronomers have been led to arrange the ſtars in claſſes of different magnitudes by their various degrees of brilliancy or luſtre. Brightneſs and ſize have hitherto been conſidered as ſynonymous terms; ſo that the brighteſt ſtars have been referred to the claſs comprehending thoſe of the firſt magnitude; and, as the ſubſequent orders of ſtars have been ſuppoſed to decreaſe in luſtre, their magnitude has been determined in the ſame decreaſing progreſſion: but ſtill, Dr. Herſchel obſerves, the want of ſome fixed and ſatisfactory ſtandard of luſtre has been the ſource of conſiderable confuſion and uncertainty, in ſettling their relative magnitudes. A ſtar, marked 1. 2m. is ſuppoſed to be between the firſt and ſecond magnitude; but 2. 1m. intimates that the ſtar is nearly of the ſecond magnitude, and that it partakes ſomewhat of the luſtre of a ſtar of the firſt order. Such ſubdiviſions may be of uſe in aſcertaining ſtars of the firſt, ſecond, and third, claſſes: but the expreſſions 5m. 5. 6m. 6. 5m. 6m. are often very vague and indefinite. Dr. Herſchel obſerves, that he has found them ſo in fact; and he therefore conſiders this method of pointing out the different *luſtre* of ſtars as a reference to an imaginary ſtandard. If any dependence could be placed on this method of magnitudes, "it would follow (ſays he), that no leſs than eleven ſtars in the conſtellation of the Lion, viz. β, σ, π, ξ, A, *b*, *c*, *d*, 54, 48, 72, had all undergone a change in their luſtre ſince Flamſtead's time. For, if the idea of magnitudes had been a clear one, our author, who marked β 1. 2m. and γ 2m. ought to be underſtood to mean β is larger than γ; but we now find that actually γ is larger than β. Every one of the eleven ſtars I have pointed out may be reduced to the ſame contradiction."

Dr. Herſchel points out ſeveral inſtances of the inſufficiency of this method, and of the uncertain concluſions that are deduced from it, in determining the comparative brightneſs of ſtars found not only in Mr. Flamſtead's catalogue, but alſo in the catalogues of other aſtronomers; he therefore propoſes a different mode, that is more preciſe and ſatisfactory. "I place each ſtar, (he ſays,) inſtead of giving its magnitude, into a ſhort ſeries, conſtructed upon the order of brightneſs of the neareſt proper ſtars. For inſtance; to expreſs the luſtre of D, I ſay C D E. By this ſhort notation, inſtead of referring the ſtar D to an imaginary uncertain ſtandard, I refer it to a preciſe and determined exiſting one. C is a ſtar that has a greater luſtre than D, and E is another of leſs brightneſs than D. Both C and E are neighbouring ſtars, choſen in ſuch a manner that I may ſee them at the ſame time with D, and therefore may be able to compare them properly. The luſtre of C is in the ſame manner aſcertained by B C D; that of B by A B C; and alſo the brightneſs of E by D E F; and that of F by E F G.

"That this is the moſt natural, as well as the moſt effectual, way, to expreſs the brightneſs of a ſtar, and by that means to detect any change that may happen in its luſtre, will appear, when we conſider what is requiſite to aſcertain ſuch a change. We can certainly not wiſh for a more deciſive evidence, than to be aſſured by actual inſpection, that a certain ſtar is now no longer more or leſs bright than ſuch other ſtars to which it has been formerly compared; provided we are at the ſame time aſſured, that thoſe other ſtars remain ſtill in their former unaltered luſtre. But, if the ſtar D will no longer ſtand in its former order C D E, it muſt have undergone a change; and, if that order is now to be expreſſed by C E D, the ſtar has loſt ſome part of its luſtre; if, on the contrary, it ought now to be denoted by D C E, its brightneſs muſt have had ſome addition. Then, if we ſhould doubt the ſtability of C and E, we have recourſe to the orders B C D and D E F, which expreſs their luſtre; or even to A B C and E F G, which continue the ſeries both ways. Now, having before us the ſeries B C D E F, or if neceſſary even the more extended one A B C D E F G, it will be impoſſible to miſtake a change of brightneſs in D, when every member of the ſeries is found in its proper order except D."

In Dr. Herſchel's catalogue, therefore, in which the order of the luſtre of the ſtars is fixed, each ſtar bears its own proper name or number, e. g. "the brightneſs of the ſtar δ Leonis may be expreſſed by β δ ε Leonis, or better by 94—68—17 Leonis; theſe being the numbers which the three ſtars bear in the Britiſh Catalogue of fixed ſtars."

Dr. Herſchel adopted this method of arrangement about fourteen years ago; but he was diverted from the regular purſuit of it by a variety of other aſtronomical engagements. After many trials, the plan which appeared to him the moſt eligible was as follows: Inſtead of denoting particular ſtars by letters, he makes uſe of numbers; and, in his choice of the ſtars which are to expreſs the luſtre of any particular one, he directs his firſt view to perfect equality. When two ſtars ſeem to be ſimilar, both in brightneſs and magnitude, he puts down their numbers together, ſeparated merely by a point, as 30.24 Leonis: but, if two ſtars, which at firſt ſeemed alike in their luſtre, appeared on a longer inſpection to be different, and the preference ſhould be always decidedly in favour of the ſame ſtar, he ſeparates theſe ſtars by a comma, thus, 41,94 Leonis. This order muſt not be varied; nor can three ſuch ſtars as 20, 40, 39, Libræ, admit of a different arrangement. If the ſtate of the heavens ſhould be ſuch as to require a different order in theſe numbers, we may certainly infer, that a change has taken place in the luſtre of one or more of them. When two ſtars differ very little in brightneſs, but ſo that the preference of the one to the other is indiſputable, the numbers that expreſs them are ſeparated by a ſhort line, as 17—70 Leonis, or 68—17—70 Leonis. When two ſtars differ ſo much in brightneſs, that one or two other ſtars might be interpoſed between them, and ſtill leave ſufficient room for diſtinction, they are diſtinguiſhed by a line and comma, thus —, or by two lines, as 32— —41 Leonis. A greater difference than this is denoted by a broken line, thus 16— — —29 Bootis. On the whole, Dr. Herſchel obſerves, the marks and diſtinctions which he has adopted cannot poſſibly be miſtaken; "a point denoting equality of luſtre; a comma indicating the leaſt perceptible difference; a ſhort line to mark a decided but ſmall ſuperiority; a line and comma, or double line, to expreſs a conſiderable and ſtriking exceſs of brightneſs; and a broken line to mark any other ſuperiority which is to be looked upon as of no uſe in eſtimations that are intended for the purpoſe of directing changes."

The difficulties that attend this arrangement are not diſguiſed: but the importance and utility of it more than compenſate for the labour which it muſt neceſſarily require. By a method of this kind, many diſcoveries of changeable and periodical ſtars might probably have been made, which have eſcaped the moſt diligent and accurate obſervers. We might then, as the author ſuggeſts, be enabled to reſolve a problem in which we are all immediately concerned. "Who (ſays Dr. Herſchel) would not wiſh to know what degree of permanency we ought to aſcribe to the luſtre of our Sun? Not only the ſtability of our climates, but the very exiſtence of the whole animal and vegetable creation itſelf, is involved in the queſtion. Where can we hope to receive information upon this ſubject but from aſtronomical obſervations? If it be allowed to admit the ſimilarity of ſtars with our Sun as a point eſtabliſhed, how neceſſary will it be to take notice of the fate of our neighbouring ſuns, in order to gueſs at that of our own! The ſtar, which among the multitude we have dignified by the name of ſun, to-morrow may ſlowly begin to undergo a gradual decay of brightneſs, like β Leonis, α Ceti, α Draconis, δ Urſæ Majoris, and many other diminiſhing ſtars, that will be mentioned in my catalogues. It may ſuddenly increaſe, like the wonderful ſtar in the back of Caſſiopea's chair, and the no leſs remarkable one in the foot of Serpentarius; or gradually come on like β Geminorum, β Ceti, ζ Sagittarii, and many other increaſing ſtars, for which I alſo refer to my catalogues; and laſtly, it may turn into a periodical one of twenty-five days duration, as Algol is one of three days, δ Cephei of five, β Lyræ of ſix, η Antinoi of ſeven days, and as many others as are of various periods."

As many phenomena in natural hiſtory ſeem to point out ſome paſt changes in our climates, the eaſieſt way of accounting for them may probably be 'to ſurmiſe that our Sun has been formerly ſometimes more and ſometimes leſs bright than it is at preſent; at all events, it will be highly preſumptuous to lay any great ſtreſs upon the ſtability of the preſent order of things; and many hitherto unaccountable varieties that happen in our ſeaſons, ſuch as the general ſeverity or mildneſs of uncommon winters or burning ſummers, may poſſibly meet with an eaſy ſolution in the real inequality of the Sun's rays.'

The utility of the above method of eſtimating the comparative brightneſs of the ſtars, Dr. Herſchel has in a great meaſure verified by experience. He has very lately diſcovered α Herculis to be a periodical ſtar. By a ſeries of obſervations on this ſtar, compared with ϰ Ophiuchi, which was moſt conveniently ſituated for his purpoſe, he has been able not only to confirm this opinion, but to aſcertain its period. His obſervations are arranged in a table, by means of which he determines that this ſtar has gone through four ſucceſſive changes in an interval of 241 days; and therefore the duration of its period muſt be about ſixty days and a quarter. This fact concurs with other circumſtances in evincing the rotatory motion of the ſtars on their axes. "Dark ſpots, (he ſays,) or large portions of the ſurface, leſs luminous than the reſt, turned alternately in certain directions, either towards or from us, will account for all the phenomena of periodical changes in the luſtre of the ſtars, ſo ſatisfactorily, that we certainly need not look out for any other cauſe." If it be alleged, that the periods in the change of luſtre of ſome ſtars, ſuch as Algol, β Lyræ, δ Cephei, and η Antinoi, are ſhort, being only 3, 5, 6, and 7, days reſpectively; while thoſe of ο Ceti, of the changeable ſtar in Hydra, and that in the neck of the Swan, are long, amounting to 331, 394, and 497, days; and that we cannot aſcribe phenomena ſo different in their duration to the ſame cauſe; it may be anſwered to this objection, that the force of it is founded on our limited acquaintance with the ſtate of the heavens. To the ſeven ſtars, the periodical changes of which were before known, we may now add α Herculis, which performs a revolution of its changes in ſixty days. 'The ſtep from the rotation of α Herculis to that of ο Ceti is far leſs conſiderable than that from the period of Algol to the rotation of α Herculis; and thus a link in the chain is now ſupplied, which removes the objection that aroſe from the vacancy.' The rotation of the fifth ſatellite of Saturn is proved by the change obſervable in its light; and 'this variation of light, owing to the alternate expoſition of a more or leſs bright hemiſphere of this periodical ſatellite, plainly indicates that the ſimilar phenomenon of a changeable ſtar ariſes from the various luſtre of the different parts of its ſurface, ſucceſſively turned to us by its rotatory motion.' Beſides, we perceive a greater ſimilarity between the Sun and the ſtars, by means of the ſpots that muſt now be admitted to exiſt on their ſurfaces, as well as on that of the Sun. Dr. Herſchel farther obſerves that the ſtars, beſides a rotatory motion on their axes, may have other movements; "ſuch as nutations or changes in the inclination of their axes; which, added to bodies much flattened by quick rotatory motions, or ſurrounded by rings like Saturn, will eaſily account for many new phenomena that may then offer themſelves to our extended views."

Dr. Herſchel's catalogue, as far as it has yet gone, comprehends the ſtars of the following conſtellations, viz. Aquarius, Aquila, Capricornus, Cygnus, Delphinus, Equuleus, Hercules, Pegaſus, Sagitta, Aries, Canis major, Canis minor, Caſſiopea, Cetus, Corvus, Eridanus, Gemini, and Leo. The reſidue of the conſtellations are intended to be given upon the ſame principle, as ſoon as time will permit the completion of them. To this catalogue are alſo ſubjoined many ingenious notes, which are the reſult of conſtant and indefatigable attention, and which will ſerve to aſſiſt future aſtronomers in extending their acquaintance with the celeſtial bodies. Thoſe who are deſirous of a farther explanation of this arrangement, are referred to the doctor's own papers, in the Philoſophical Tranſactions of 1796. The practical aſtronomer will alſo derive much information and aſſiſtance, by conſulting the following publications, from the bulk of which this treatiſe hath been compiled; viz. the Rev. S. Vince's complete Syſtem of Aſtronomy. The late ingenious Mr. George Adams's Aſtronomical and Philoſophical Works. Dr. Hutton's Mathematical Dictionary. Sir Iſaac Newton's Principles of Natural Philoſophy. Dr. Adam Smith's Aſtronomical Eſſays. Sir H. Englefield's Elements of the Orbits of Comets. The celebrated French authors La Place and La Grange; Montucla's *Hiſtoire des Mathematiques*, and the eloquent M. Bailly's *Hiſtoire de l'Aſtronomie ancienne et moderne.* All Dr. Herſchel's Papers in the Philoſophical Tranſactions, from the year 1782, to the preſent time; to which we would add the Nautical Almanac, and the Obſervations and Aſtronomical Tables of Dr. Maſkelyne, with his other works in ſeveral folio volumes, publiſhed under the direction of the Board of Longitude, and the Royal Society. Other ingenious authors on aſtronomy are, De la Lande, Weidler, Voſſius, Perrault, Niceron, Chauſſepié, De la Hire, Dr. Long, Ferguſon, Emerſon, Leadbetter, Brent, Keil, Whiſton, Wing, Street, Bonnycaſtle, &c.

Of the ASTRONOMICAL INSTRUMENTS.

It ſeems highly probable, that the ancients were not wholly unaccquainted with planetary machines, but that the ſame powers of genius which led them to contemplate and reaſon upon the motions of the heavenly bodies, induced them to realize their ideas, and form inſtruments for explaining them; and we may fairly preſume, that theſe were carried to no inſignificant degree of perfection, ſince of one Archimedes was the maker, and Cicero its encomiaſt. Thoſe we are now going to deſcribe, are of more modern invention, and require equal nicety and attention in their uſe. For this reaſon it is neceſſary to have a room or building conveniently ſituated and ſuitably contrived. It ſhould have an uninterrupted view from the zenith down to (or even below) the horizon, at leaſt towards its cardinal points: and for this purpoſe, that part of the roof which lies in the direction of the meridian in particular, ſhould have moveable covers, which may eaſily be taken off and put on again; by which means an inſtrument may be directed to any point of the heavens between the horizon and the zenith, as well to the northward as ſouthward. The apartment, thus fitted up, may be called an obſervatory, and ſhould contain, according to its magnitude and intent, moſt, or all, of the following inſtruments.

A *pendulum clock*, for ſhewing equal time. This ſhould ſhew time in hours, minutes, and ſeconds; and with which the obſerver, by hearing the beats of the pendulum, may count them by his ear, while his eye is employed on the motion of the celeſtial object he is obſerving. Juſt before the object arrives at the poſition deſcribed, the obſerver ſhould look on the clock, and remark the time, ſuppoſe it 9h. 15'. 25". then ſaying, 25, 26, 27, 28, &c. reſponſive to the beat of the pendulum, till he ſees through the inſtrument the object arrived at the poſition expected; which ſuppoſe to happen when he ſays 38, he then writes down 9h. 15'. 38". for the time of obſervation, annexing the year and the day of the month. See Clock.

A *refracting*, and a *reflecting*, *teleſcope*, for obſerving inviſible and particular phenomena. The invention and improvement of this inſtrument is one of the nobleſt and moſt uſeful theſe ages can boaſt of; by means of it the wonders of the heavens are diſcovered to us, and aſtronomy is brought to a degree of perfection which former ages could have no idea of. But the moſt conſiderable magnifying powers that have ever been uſed, have lately been invented by Dr. Herſchel, and are truly aſtoniſhing. Particulars of this invention, with an elegant view of Dr. Herſchel's forty-feet reflecting teleſcope, will be given under that head. Teleſcopes, with all theſe improvements, are now fitted up by W. and S. Jones, in Holborn, London, from five guineas to five hundred pounds each.

A *micrometer*, which is an inſtrument uſually fitted to a teleſcope, in the focus of the object-glaſs, for meaſuring ſmall angles or diſtances, as the apparent diameters of the planets, &c. The general principle is, that the inſtrument moves a fine wire parallel to itſelf, in the plane of the picture of an object, formed in the focus of a teleſcope, ſo as with great exactneſs to meaſure its perpendicular diſtance from a fixed wire in the ſame plane; and thus are meaſured ſmall angles, ſubtended by remote objects at the naked eye. See Micrometer.

Aſtronomical quadrants, mural and portable, for obſerving meridian and other altitudes of the celeſtial bodies. The *mural* quadrant is in the form of a quarter of a circle, contained under two radii at right angles to one another, and an arch equal to one fourth part of the circumference of the circle. It is one of the moſt uſeful of all the aſtronomical inſtruments; and as it is ſometimes fixed to the ſide of a ſtone or brick wall, and the plane of it erected exactly in the plane of the meridian, it in this caſe receives the name of mural quadrant or arch. Tycho Brahe was the firſt perſon who applied this arch to a wall; and Flamſtead, the firſt in England who with indefatigable pains fixed one up in the royal obſervatory at Greenwich.

The *portable* aſtronomical quadrant, is generally made from twelve to twenty-three inches, ſtrongly framed together by croſſed perpendicular bars. When this inſtrument is ſet up for uſe or obſervation, it is neceſſary that two adjuſtments be very accurately made: one, that the plane or ſurface of the inſtrument be truly perpendicular to the horizon; the other, that the line ſuppoſed to be drawn from the centre to the firſt line of the limb, be truly on a level or parallel with the horizon. See the article Quadrant, where Mr. Ramſden's new inſtruments for meaſuring horizontal angles are alſo deſcribed.

The *aſtronomical* or *equatorial ſector*, for finding the difference in right aſcenſion and declination between two objects, the diſtance of which is too great to be obſerved by the micrometer. The firſt inſtrument of this kind was made by Mr. Graham, and is now in the Obſervatory at Greenwich. See Equatorial.

The *tranſit inſtrument*, for obſerving objects as they paſs over the meridian, conſiſts of a teleſcope fixed at right angles to an horizontal axis, ſo ſupported that what is called the line of collimation, or line of ſight of the teleſcope, may move in the plane of the meridian. It is uſed to take the right aſcenſion of the heavenly bodies, and to correct the going of the clock; for which purpoſe it has a ſyſtem of five parallels and equidiſtant wires perpendicular to a ſixth wire biſecting the field of view. See Transit Instrument.

The *equatorial*, or *univerſal dial*, an inſtrument deſigned to anſwer a number of uſeful purpoſes in practical aſtronomy, independent of any particular obſervatory, may be made uſe of in any ſteady room or place, and performs moſt of the uſeful problems in the ſcience. See Equatorial.

To the above liſt of aſtronomical inſtruments, all of which appear abſolutely neceſſary to the practical aſtronomer, we might add the following more coſtly and ſuperb apparatus:

The *grand orrery*, invented by Mr. Rowley, which at once diſplays all the phenomena of the celeſtial bodies. Alſo the orrery invented by Mr. Ferguſon, ſhews the motions of the Sun, Mercury, Venus, Earth, and Moon; and occaſionally the ſuperior planets, Mars, Jupiter, and Saturn, may be put on. Jupiter's four ſatellites are moved round him in their proper times by a ſmall winch; and Saturn has his five ſatellites, and his ring which keeps its paralleliſm round the Sun; and, by a lamp put in the Sun's place, the ring ſhews all its various phaſes. For a complete deſcription of its conſtruction and uſes, ſee Orrery.

The *planetarium*, is a ſmaller kind of orrery, contrived to repreſent the motions, orbits, &c. of the planets, as they really are in nature, or according to the Copernican ſyſtem. A very remarkable machine of this ſort was invented by Huygens, and deſcribed in his Opuſc. Poſth. tom. ii. p. 157, edit. Amſt. 1728. And it is ſtill preſerved among the curioſities of the univerſity at Leyden. In this planetarium, the five primary planets perform their revolutions about the Sun, and the Moon performs her revolution about the Earth, in the ſame time that they are really performed in the heavens. Alſo the orbits of the Moon and planets are repreſented with their true proportions, eccentricity, poſition, and declination, from the ecliptic or orbit of the Earth. So that by this machine the ſituation of the planets, with the conjunctions, oppoſitions, &c. may be known, not only for the preſent time, but for any other time either paſt or to come; as in a perpetual ephemeris. There was alſo exhibited in London, in the year 1791, a ſtill much more complete planetarium of this ſort; called "a planetarium or aſtronomical machine, which exhibits the moſt remarkable phenomena, motions, and revolutions, of the univerſe. Invented, and partly executed, by the celebrated M. Phil. Matthew Hahn, member of the academy of ſciences at Erfurt; but finiſhed and completed by Mr. Albert de Mylius." This is a moſt ſtupendous and elaborate machine; conſiſting of the ſolar ſyſtem in general, with all the orbits and planets in their due proportions and poſitions; as alſo the ſeveral particular planetary ſyſtems of ſuch as have ſatellites, as of the Earth, Jupiter, &c. the whole kept in continual motion by a chronometer, or grand eight-day clock; by which all theſe ſyſtems are made perpetually to perform all their motions exactly as in nature, exhibiting at all times the true and real motions, poſitions, aſpects, phenomena, &c. of all the celeſtial bodies, even to the very diurnal rotation of the planets, and the unequal motions in their elliptic orbits. A deſcription was publiſhed of this moſt ſuperb machine; and it was purchaſed and ſent as one of the preſents to the emperor of China, in the embaſſy of Lord Macartney, in the year 1793. But the planetariums or orreries commonly uſed are only turned round with the hand, to help to give young beginners an idea of the planetary ſyſtem; and to reſolve problems relating to the motions of the planets, and of the Earth and Moon, &c. See Planetarium.

Theſe curious and elegant machines are now fitted up in the completeſt manner, by Meſſrs. W. and S. Jones, in Holborn, exemplifying the motions and phenomena of all the planets, the Georgium Sidus included, from forty guineas to one thouſand pounds.

The *tellurian*, is a contrivance invented by the late ingenious Mr. Adams, which by an addition to the planetarium, will ſhew, in an accurate and clear manner, all the phenomena ariſing from the annual and diurnal motions of the Earth.

The *lunarium*, is alſo an inſtrument ſo contrived as to be occaſionally affixed to the planetarium, whereby all the phaſes and phenomena of the Moon are diſtinctly exemplified.

The *cometarium*, an inſtrument very ingeniouſly contrived, whereby the eccentric motions of comets are clearly delineated.

The *terreſtrial* and *celeſtial globes*. No new globes of a large ſize have been conſtructed ſince the time of Senex, until the preſent year 1797, in which a very fine ſet of new and improved globes of eighteen inches diameter have been conſtructed, by Meſſrs. W. and S. Jones, beforementioned. They contain all the lateſt aſtronomical and geographical diſcoveries. The places upon the terreſtrial globe are laid down by an eminent geographer, with their names in Engliſh; and upon the celeſtial globe there are about ſix thouſand ſtars very accurately laid down for the year 1800, from the beſt obſervations; to which are added many cluſters of ſtars, and nebulæ, with the figures of the conſtellations. The ſtars are marked with Bayer's and M. de la Caille's letters; and an improved apparatus is added for the ſolution of problems. Elegant copperplates of theſe globes, with complete directions for their application and uſe in all aſtronomical and geographical problems, will be given under Globe. Similar inſtructions, with copper-plate figures, will alſo be given, to exemplify the uſe of all the aſtronomical and mathematical inſtruments, under each of their reſpective heads.

Of ASTRONOMICAL CALCULATION and MEASUREMENT.

There is no part of mathematical ſcience more truly calculated to intereſt and ſurprize mankind, than the meaſurement of the relative poſitions and diſtances of inacceſſible objects. To determine the diſtance of a ſhip ſeen on a remote ſpot of the unvaried face of the ocean, to aſcertain the height of the clouds and meteors which float in the inviſible fluid above our heads, or to ſhew with certainty the motions and dimenſions of the Sun, and other bodies, in the heavens, are among the numerous problems which to the vulgar appear far beyond the reach of human art, but which are nevertheleſs truly reſolved by the incontrovertible principles of the mathematics.

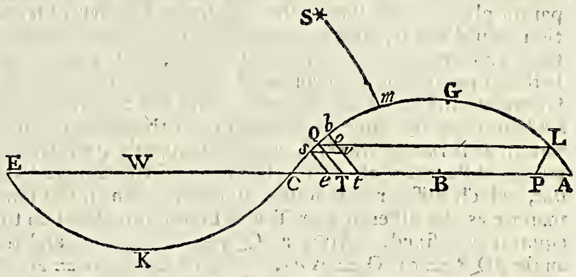
The poſition of any object, with regard to a ſpectator, can be conſidered in no more than two ways; namely, as to its diſtance, or the length of a line ſuppoſed to be drawn from the eye to the object; and as to its direction, or the ſituation of that line with reſpect to any other lines of direction; or, in other words, whether it lies to the right or left above or below thoſe lines. The firſt of theſe two modes bears relation to a line abſolutely conſidered, and the ſecond to an angle. It is evident that the diſtance can be directly come at by no other means than by meaſuring it, or ſucceſſively applying ſome known meaſure along the line in queſtion; and therefore, that in many caſes the diſtance cannot be directly found; but the poſition of the line, or the angle it forms, with ſome other aſſumed line, may be readily aſcertained, provided this laſt line do likewiſe terminate in the eye of the ſpectator. Now the whole artifice of meaſuring inacceſſible diſtances conſiſts in finding their lengths, from the conſideration of angles, obſerved about ſome other line, whoſe length can be ſubmitted to actual menſuration. Every one knows the form of a common pair of compaſſes. If the legs of this inſtrument were mathematical lines, they would form an angle greater or leſs in proportion to the ſpace the points would have paſſed through in their opening. Suppoſe an arc of a circle to be placed in ſuch a manner as to be paſſed over by theſe points, then the angles will be in proportion to the parts of the arc paſſed over; and, if the whole circle be divided into any number of equal parts, as for example 360, the number of theſe comprehended between the points of the compaſſes will denote the magnitude of the angle. This is ſufficiently clear; but there is another circumſtance which readers are not ſufficiently aware of, and which therefore requires to be well attended to: it is, that the angle will be neither enlarged nor diminiſhed by any change in the length of the legs, provided their poſition remains unaltered; becauſe it is the inclination of the legs, and not their length, which conſtitutes the angle. So that, if a pair of compaſſes, with very long legs, were opened to the ſame angle as another ſmaller pair, the intervals between their reſpective points would be very different, but the number of degrees on the circles, ſuppoſed to be applied to each, would be equal, becauſe the degrees themſelves on a ſmaller circle would be exactly proportioned to the ſhortneſs of the legs. This property renders the admeaſurement of angles very eaſy, becauſe the diameter of the meaſuring circle may be varied at pleaſure, as convenience requires.

Magnitude, however, abſtractedly conſidered, is capable of being increaſed to infinity, and is alſo diviſible without end; and hence we find in nature, that the limits of the greateſt and leaſt dimenſions of things, are actually placed at an immenſe diſtance from each other. We can perceive no bounds of the vaſt expanſe in which natural cauſes operate, and fix no limit, or termination, to the univerſe. The objects we commonly call great vaniſh, when we contemplate the vaſt body of the Earth; yet the terraqueous globe itſelf is loſt in the ſolar ſyſtem; the Sun itſelf dwindles into a ſtar; Saturn's vaſt orbit, and all the orbits of the comets, crowd into a point, when viewed from numberleſs places between the Earth and the neareſt fixed ſtars. Other ſuns kindle to illuminate other ſyſtems, where our Sun's rays are unperceived; but theſe alſo are ſwallowed up in the vaſt expanſe. When we have riſen ſo high, as to leave all definite meaſures far behind us, we ſtill find ourſelves no nearer to a term, or limit. Theſe views of nature, however, ſerve to repreſent to us, in a moſt ſenſible manner, that mighty power which prevails throughout, acting with a force and efficacy that ſuffers no diminution from the greateſt diſtances of ſpace, or intervals of time; and prove that all things are ordered by infinite wiſdom, and perfect goodneſs: ideas which ſhould excite and animate us to correſpond with the general harmony of nature.

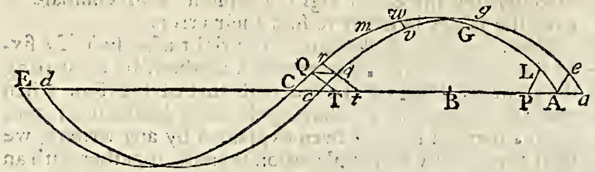
TO CALCULATE the RIGHT ASCENSION, DECLINATION, LATITUDE, and LONGITUDE, of the HEAVENLY BODIES.

As the Earth revolves uniformly about its axis, the apparent motion of all the heavenly bodies, ariſing from this motion of the Earth, muſt be uniform; and, as this motion is parallel to the equator, the interval of the times, in which any two ſtars paſs over any meridian, muſt be in proportion to the arc of the equator intercepted between the two ſecondaries paſſing through them, becauſe this arc of the equator contains the ſame number of degrees as the arc of any ſmall circle parallel to it and comprehended between the ſame ſecondaries; and therefore, if one increaſe uniformly, the other muſt. Hence the right aſcenſion of ſtars paſſing the meridian at different times will differ in proportion to the difference of the times of their paſſing; and, as the clock is ſuppoſed to go uniformly, we have the following rule: As the interval of the times of the paſſage of any fixed ſtar over the meridian : the interval of the paſſage of any two ſtars :: 360 degrees : their *apparent* difference of right aſcenſions; which, corrected for their aberration in right aſcenſion, gives their *true* difference of right aſcenſions. By the ſame method we may find the difference of right aſcenſions of the Sun or Moon, when they paſs the meridian, and a ſtar, and therefore, if that of the ſtar be known, that of the Sun or Moon will; which will be rendered more exact if we compare them with ſeveral ſtars, and take the mean; remembering to apply the ſtar's aberration in right aſcenſion to the *apparent*, in order to get the *true* difference. When we thus determine the Sun's right aſcenſion from that of a ſtar, the Sun's aberration, which in longitude is always 20″, is not here conſidered, becauſe the Sun's place in the aſtronomical tables is put down as affected by aberration; and the uſe of obſerving the Sun's right aſcenſion is to compare it with the tables in order to find their error.

Now, in order to determine the right aſcenſion of a fixed ſtar, Mr. Flamſtead propoſed a method, by comparing the right aſcenſion of the ſtar with that of the Sun when near the equinoxes, and having the ſame declination; and, as this method has not been explained by any writers, we ſhall give a very full explanation thereof, together with an example. Let A G C K E be the equator, A B C W E the ecliptic, S the place of a ſtar, and Sm a ſecondary to the equator, and let the Sun be at P, very near to A, when it is on the meridian; and take $CT=PA$, and draw PL, TQ, perpendicular to A G C, and QL parallel to A C; then the Sun's declination is the ſame at T as at P. Obſerve the meridian altitude of the Sun when at P, and alſo the time of the paſſage of its centre over the meridian; obſerve alſo at what time the ſtar paſſes over the meridian, and then find the apparent difference Lm of their right aſcenſions. When the Sun approaches near to T, obſerve its meridian altitude for ſeveral days, ſo that on one of them at t it may be greater, and on the next day at e it may be leſs, than the meridian altitude at P, ſo that in the intermediate time it may have paſſed through T; and, drawing tb, es, perpendicular to A G C E, obſerve on theſe two days the differences bm, sm, of the Sun's right aſcenſion and that of the ſtar; draw alſo sv parallel to Qo. Hence, to find Qb, we may conſider the variation both of the right aſcenſion and declination to be uniform for a ſmall time, and conſequently to be proportional to each other; hence vb (the change of the meridian altitudes in one day) : ob (the difference of the meridian altitudes at t and T, or the difference of declinations) :: sb (the difference of sm, bm, found by obſervation) : Qb, which added to bm, or ſubtracted from it, according to the ſituation of m, gives Qm, to which add Lm, or take their difference, according to circumſtances, and we get QL, which ſubtracted from A G C, or 180°, half the remainder will be A L, the Sun's right aſcenſion at the firſt obſervation, to which add Lm, and we get the ſtar's right aſcenſion at the ſame time. Inſtead of finding bQ, we might have found sQ, by taking TQ$-es$ for the ſecond term, and from thence we ſhould have gotten Qm. Thus we ſhould get the right aſcenſion of a ſtar, upon ſuppoſition that the poſition of the equator had remained the ſame, and the apparent place of the ſtar had not varied, in the interval of the obſervations. But the interſection of the equator with the ecliptic having a retrograde motion, called the *preceſſion* of the *equinoxes*; alſo the inclination of the equator to the ecliptic being ſubject to a variation, called the *nutation*; together with the aberration of the ſtar; its apparent place is continually changing. But, if the *mean* right aſcenſion of any ſtar be taken for the beginning of the year, and theſe corrections for the preceſſion of the equinoxes, nutation, and aberration, be applied to it, according to their ſigns, for any day, the reſult gives the *apparent* right aſcenſion of the ſtar for that day.



Let therefore A B C E be the ecliptic, A G C E the poſition of the equator at the firſt obſervation when the Sun was at P, and $agcd$ the poſition of the equator at the time of the obſervation at the other equinox, and take $TC=PA$, P A, and draw T Q perpendicular to A G C E, as before, and draw Q q parallel to A B C, and tqr perpendicular to A G C E; let A e be alſo perpendicular to $agcd$. Now,



as the poſition of the equator and the apparent place of the ſtar are altered in the time between the two obſervations, let m be the point where a ſecondary from the apparent place of the ſtar to the equator at the firſt obſervation would cut it, and v the place at the ſecond obſervation, and draw vw perpendicular to A G C E; then Am is the apparent right aſcenſion of the ſtar at the firſt obſervation, and av at the ſecond. Alſo the Sun muſt be at t when it has the ſame declination tq at the ſecond obſervation as it had at the firſt, and conſequently qv is the apparent difference of right aſcenſions of the Sun at t and ſtar, which difference is found by obſervation in the ſame manner as the difference at T was before found, when the equator was fixed. Alſo, as Qq = Cc = Aa, and the angle qQR = cCQ = Aae, we have Qr = ae = Aa × coſ. Aae. Now, if we put M for the *mean* right aſcenſion of the ſtar at the beginning of the year, and S for the ſum of all the corrections due at the time of the firſt obſervation, and s for the ſum due at the ſecond; then, from what we have already explained, $M+S=Am$, $M+s=av$; hence, if we take the former from the latter, ſuppoſing s to be greater than S, we have $s-S=av-Am=ae+ev-Aw-wm$ (m lying beyond w); but $ev=Aw$; hence $s-S=ae-wm$, conſequently $wm=ae-\overline{s-S}$. Now qv, or rw, is known, hence we know rm; and, as Qr is known, Qm will be known; and, as we alſo know Lm, we get the value of QL, with which we proceed, as before, to get the ſtar's right aſcenſion; which having thus determined of one, the right aſcenſion of all the heavenly bodies may from thence be found.

The practical method of finding the right aſcenſion of a body from that of a fixed ſtar, by a clock adjuſted to ſiderial time, is this: Let the clock begin its motion from 0h. 0′. 0″. at the inſtant the firſt point of Aries is on the meridian; then, when any ſtar comes to the meridian, the clock would ſhew the apparent right aſcenſion of the ſtar, the right aſcenſion being eſtimated in time at the rate of fifteen degrees an hour, provided the clock was ſubject to no error, becauſe it would then ſhew at any time how far the firſt point of Aries was from the meridian. But, as the clock is neceſſarily liable to err, we muſt be able at any time to aſcertain what its error is, that is, what is the difference between the right aſcenſion ſhewn by the clock and the right aſcenſion of that point of the equator which is at that time on the meridian. To do this, we muſt, when a ſtar, whoſe apparent right aſcenſion is known, paſſes the meridian, compare its apparent right aſcenſion with the right aſcenſion ſhewn by the clock, and the difference will ſhew the error of the clock. For inſtance, let Aldebaran be 4h. 23′. 50″. at the time when its tranſit over the meridian is obſerved by the clock, and ſuppoſe the time ſhewn by the clock to be 4h. 23′. 52″. then there is an error of 2″ in the clock, it giving the right aſcenſion of the ſtar 2″ more than it ought. If the clock be compared with ſeveral ſtars, and the mean error taken, we ſhall have, more accurately, the error at the mean time of all the obſervations. Theſe obſervations being repeated every day, we ſhall get the rate of the clock's going, i.e. how faſt it gains or loſes. Its error, and rate of going, being thus aſcertained, if the time of the tranſit of any body be obſerved, and the error of the clock at the time be applied, we ſhall have the right aſcenſion of the body. This is the method by which the right aſcenſion of the Sun, Moon, and planets, are regularly found in obſervatories.

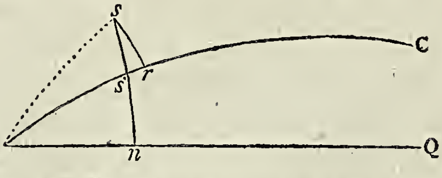
The right aſcenſion of the heavenly bodies being aſcertained, the next thing to be explained is, the method of finding their declinations. Take the apparent altitude of the body, when it paſſes the meridian, by an aſtronomical quadrant; correct it for parallax and refraction, and for the error of the line of collimation of the inſtrument, if neceſſary, and you get the true meridian altitude, the difference between which and the altitude of the equator (which is equal to the complement of the latitude, previouſly determined) is the declination required.

To find the latitude and longitude from the right aſcenſion and declination, or the converſe, we have the following admirable rules, given by Dr. Maſkelyne.

Given the Right Aſcenſion and Declination of a Heavenly Body, and the Obliquity of the Ecliptic; to find its Latitude and Longitude. 1. The ſine of *AR.* + cotang. decl. —10, = cotang. of arc A, which call *north* or *ſouth*, according as the declination is north or ſouth. 2. Call the obliquity of the ecliptic *ſouth* in the ſix firſt ſigns of *AR*, and *north* in the ſix laſt. Let the ſum of arc A and obl. eclip. according to their titles, = arc B with its proper title. 3. The arith. comp. of coſ. arc A + coſ. arc B + tan *AR.* —10, = tan. of the *longitude*, of the ſame kind as *AR.* unleſs arc B be more than ninety degrees, in which caſe, the quantity found of the ſame kind as *AR.* muſt be ſubtracted from twelve ſigns, or 360 degrees. 4. The ſine of longitude + tan. arc B —10, = tan. of the required *latitude*, of the ſame title as arc B. If the longitude come out near 0°, or near 180°, for the ſine of long. in the laſt operation, ſubſtitute tan. long. + coſ. long. —10, or the laſt operation will be, tan. long. + coſ. long. + tan. arc B — 20, = tan. lat. The tan. lon. is already given.

Given the Latitude and Longitude of an Heavenly Body, and the Obliquity of the Ecliptic; to find its Right Aſcenſion and Declination. 1. Sine long. + cot. lat. —10 = cot. arc A, which call *north* or *ſouth*, according as the lat. is north or ſouth. 2. Call the obliquity of the ecliptic *north* in the firſt ſemicircle of longitude, and *ſouth* in the ſecond. Let the ſum of arc A and obl. eclip. according to their titles, = arc B with its proper title. 3. The arith. comp. of coſ. arc A + coſ. arc B + tang. long. —10, = tan. of *right aſcenſion*, of the ſame kind as the longitude, unleſs arc B be more than 90°, in which caſe, the laſt quantity found of the ſame kind as the longitude, muſt be ſubtracted from twelve ſigns, or 360 degrees. 4. The ſine *AR.* + tan. arc B —10, = tan. of the required *declination*, of the ſame title as the arc B. If *AR.* come out near 0°, or near 180 degrees, for the ſine *AR.* in the laſt operation, ſubſtitute tan. *AR.* + coſ. *AR.* —10, or the laſt operation will be, tan. *AR.* + coſ. *AR.* + tan. arc B — 20, = tan. declination. The tan. *AR.* is already given.

Demonſtration. Let s be the body, ♈C the ecliptic, ♈Q the equator, sr, sn, perpendicular to ♈C, ♈Q. Then rad. : ſin. ♈n :: cot. sn : cot. s♈n, hence log. ſin.



♈n + log. cot. sn — 10, = log. cot. s♈n arc A. Hence, s♈n $\overset{\smile}{+}$ Q♈C s♈r arc B. Alſo,

coſ. s♈n : rad. :: tan. n♈ : tan. s♈
rad. : coſ. s♈r :: tan. s♈ : tan. r♈

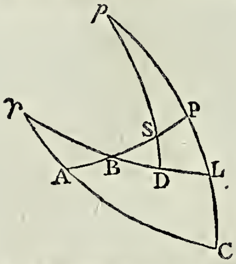
∴ coſ. s♈n : coſ. s♈r :: tan. n♈ : tan. r♈ = $\frac{\text{coſ. } s♈r \times \text{tan. } n♈}{\text{coſ. } s♈n}$; hence, ar. co. log. coſ. s♈n + log. coſ. s♈r + log. tan. n♈ — 10, = log. tan. r♈ the *longitude.* And rad. : ſin. r♈ :: tan. r♈s tan. sr; hence log. ſin. r♈ + log. tan. r♈s — 10, = log. tan. sr the *latitude.*

And, in whatever poſition we take s, theſe concluſions will give the rule as ſtated above. If we conſider ♈C as the equator, and ♈Q the ecliptic, the demonſtration will do for the ſecond rule.

If the body be the Sun at s', whoſe right aſcenſion and declination are given, to find its longitude; then ſin. s'♈n : rad. :: ſin. $s'n$: ſin. ♈s', that is, ſin. obl. ecl. : rad. :: ſin. decl. : ſin. longitude. Or, coſ. s'♈n : rad. :: tan. ♈n : tan. ♈s', that is, coſ. obl. ecl. : rad. :: tan. right aſc. : tan. longitude. The Sun being always in the ecliptic has no latitude.

To find the Angle of Position.

Let p be the pole of the ecliptic ♈L, P the pole of the equator ♈C, S a ſtar; draw the great circles pLC, pSD, PSBA, and PSp is the angle of poſition. Now, the angle PpS, or DL, is the complement of longitude ♈D; the angle pPS is the ſupplement of APC, or of AC, which is the complement of the right aſcenſion ♈A of the ſtar; pP is the obliquity of the ecliptic; PS is the complement of the declination, and pS the complement of the latitude of the ſtar. Hence, if the longitude and declination of a ſtar be given, we have ſin. PS : ſin. PpS :: ſin. Pp : ſin. PSp, that is, coſ. ſtar's dec. : coſ. its long. :: ſin. obl. ecl. : ſin. angle of poſition. If the latitude and declination of the ſtar be given, we know pS and PS their complements, and Pp; hence ſin. pS × ſin. PS : rad.^{2} :: ſin. $\frac{1}{2}\times\overline{SP+Sp+Pp}\times$ ſin. $\frac{1}{2}\times\overline{SP+Sp-Pp}$: $\overline{\text{coſ. }\frac{1}{2}\angle PSp}^2$. Or of the right aſcenſion, declination, latitude, and longitude, of the ſtar, any two being known, we ſhall know three parts of the triangle PpS, and conſequently the angle PSp may be found. If S be the Sun, $p\text{S}=90°$, and the triangle may be ſolved by the circular parts.

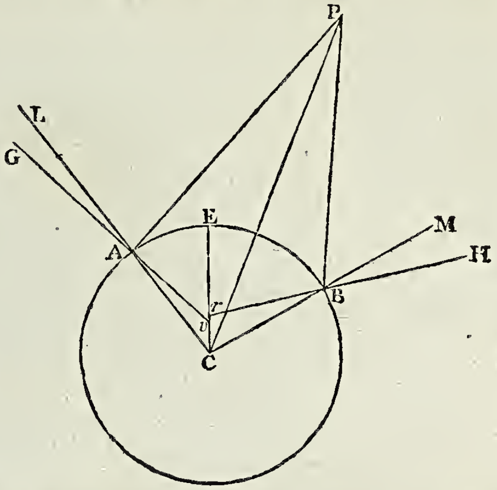


To find the Parallax.

The centre of the Earth deſcribes that circle in the heavens which is called the ecliptic; but, as the ſame object would appear in different poſitions in reſpect to this circle, when ſeen from the centre and ſurface, aſtronomers always reduce their obſervations to what they would have been, if they had been made at the centre of the Earth, in conſequence of which, the places of the heavenly bodies are computed as ſeen from the ecliptic, and it becomes a fixed point for that purpoſe, on whatever part of the Earth's ſurface the obſervations are made.

To find the Moon's Parallax. Take the meridian altitudes of the Moon, when it is at its greateſt north and ſouth latitudes, and correct them for refraction; then the difference of the altitudes, thus corrected, would be equal to the ſum of the two latitudes of the Moon, if there were no parallax; conſequently, the difference between the ſum of the two latitudes, and the difference of the altitudes, will be the difference between the parallaxes at the two altitudes. Now, to find from thence the parallax itſelf, let S, s, be the ſines of the greateſt and leaſt apparent zenith diſtances; P, p, the ſines of the correſponding parallaxes; then as, when the diſtance is given, the parallax varies as the ſine of the zenith diſtance, $S : s :: P : p$; hence $S-s : s :: P-p : p=\frac{s\times\overline{P-p}}{S-s}$, the parallax at the greateſt altitude. This ſuppoſes that the Moon is at the ſame diſtance in both caſes; but, as this will not neceſſarily happen, we muſt correct one of the obſervations in order to reduce it to what it would have been, had the diſtance been the ſame. If the obſervations be made in thoſe places where the Moon paſſes through the zenith in one of the obſervations, the difference between the ſum of the two latitudes and the zenith diſtance at the other obſervation will be the parallax at that altitude.

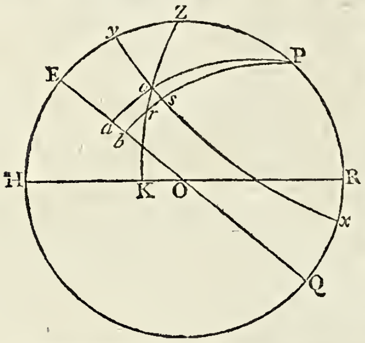
To find the Parallax of the Sun, &c. Let a body P be obſerved, as in the annexed figure, from two places A, B, in the ſame meridian, then the whole angle APB is the effect of parallax between the two places. The parallax APC = *hor. par.* × ſin. PAL, taking APC for ſin. APC, and the parallax BPC = *hor. par.* × ſin. PBM; hence *hor. par.* × $\overline{\text{ſin. PAL + ſin. PBM}}$=APB, ∴ *hor. par.* = APB divided by the ſum of theſe two ſines. If the two places be not in the ſame meridian, it does not ſignify, provided we know how much the altitude varies from the change of declination of the body in the interval of the paſſages over the meridians.



Ex: On October 5, 1751, M. de la Caille, at the Cape of Good Hope, obſerved Mars to be 1′ 25·8″ below the parallel of λ in Aquarius, and at 25° diſtance from the zenith. On the ſame day at Stockholm, Mars was obſerved to be 1′ 57·7″ below the parallel of λ and at 68° 14′ zenith diſtance. Hence, if the angle APB is 31·9″, and the ſines of the zenith diſtances being 0·4226 and 0·9287, the horizontal parallax was 23·6″. Hence, if the ratio of the diſtance of the Earth from Mars to its diſtance from the Sun be found, we ſhall have the Sun's horizontal parallax. Now, from comparing the altitudes of the northern limb of Mars with ſtars nearly in the ſame parallel obſerved on the ſame days at the Cape and at Greenwich, Bologna, Paris, Stockholm, Upſal, Hernoſand, the mean of the whole gave 10·2″ for the horizontal parallax of the Sun; and, rejecting thoſe reſults which differed the moſt from the reſt, the mean was 9·842″. From the mean of another ſet of obſervations, the reſult was 9·575″. From the mean of ſeveral obſervations on Venus made in like manner, the parallax came out 10·38″. The mean of the three laſt gives 9·93″ for the horizontal parallax of the Sun. Flamſtead, from an obſervation on Mars, concluded the Sun's parallax could not be more than 10″. Maraldi found the ſame. From the obſervations of Mr. Pound and Dr. Bradley, Dr. Halley found it never greater than 12″, nor leſs than 9″. Caſſini, from his obſervations on Mars, found it to be between 11″ and 15″. But the moſt accurate method of determining the Sun's parallax is from the tranſit of Venus over its diſk, already explained.

If the Earth be a ſpheroid, let E be the equator; draw GAv, HBr, perpendicular to the ſurface, and compute the angles CAv or LAG, and CBr or MBH; ſubtract theſe from the obſerved zenith diſtances PAG, PBH, and we have the angles PAL, PBM. Now, CP : CA :: ſin. CAP or PAL : ſin. APC $=\frac{\text{CA}\times\text{ſin. PAL}}{\text{CP}}$ alſo CP : CB :: ſin. CBP or PBM : ſin. BPC =

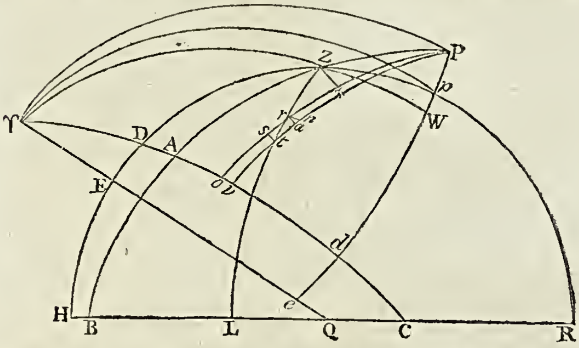
$\frac{CB \times \text{ſin. } PBM}{CP}$; and, as the parallax is very ſmall, the ſum of the two ſines will be very nearly the ſine of the ſum, therefore the ſine of $APB = \frac{CA \times \text{ſin. } PAL + CB \times \text{ſin. } PBM}{CP}$; hence $CP = \frac{CA \times \text{ſin. } PAL + CB \times \text{ſin. } PBM}{\text{ſin. } APB}$.



Or, let E Q be the equator, P its pole, Z the zenith, v the true place of the body, and r the apparent place as depreſſed by parallax in the vertical circle Z K, in the annexed figure; and draw the ſecondaries P v a, P r b; then ab is the parallax in right aſcenſion, and rs in declination. Now, $vr : vs :: 1$ (rad.) : ſin. vrs or ZvP, and $vs : ab ::$ coſ. $va : 1$, hence $vr : ab ::$ coſ. va : ſin. ZvP, $\therefore ab = \frac{vr \times \text{ſin. } ZvP}{\text{coſ. } va}$; but $vr = \textit{hor. par.} \times \text{ſin. } vZ$, and ſin. vZ : ſin. ZP :: ſin. ZPv : ſin. $ZvP = \frac{\text{ſin. } ZP \times \text{ſin. } ZPv}{\text{ſin. } vZ}$, therefore, by ſubſtitution, $ab = \frac{\textit{hor. par.} \times \text{ſin. } ZP \times \text{ſin. } ZPv}{\text{coſ. } va}$. Hence, for the ſame ſtar, where the *hor. par.* is given, the parallax in right aſcenſion varies as the ſine of the hour angle. Alſo the $\textit{hor. par.} = \frac{ab \times \text{coſ. } va}{\text{ſin. } ZP \times \text{ſin. } ZPv}$. For the eaſtern hemiſphere, the apparent place b lies on the equator to the eaſt of a the true place, and therefore the right aſcenſion is diminiſhed by parallax; but, in the weſtern hemiſphere, b lies to the weſt of a, and therefore the right aſcenſion is increaſed. Hence, if the right aſcenſion be taken before and after the meridian, the whole change of parallax in right aſcenſion between the two obſervations is the ſum (s) of the two parts before and after the meridian, and is therefore $= \frac{vr}{\text{coſ. } va} \times$ ſum (S) of the ſines of the two hour angles; and the $\textit{hor. par.} = \frac{s \times \text{coſ. } va}{\text{ſin. } ZP \times S}$. On the meridian there is no parallax in right aſcenſion.

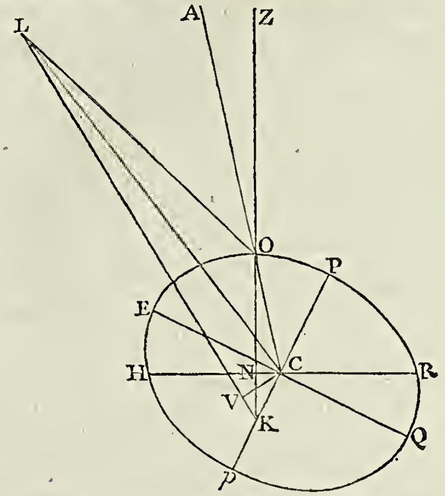
To apply this rule, obſerve the right aſcenſion of the planet when it paſſes the meridian, compared with that of a fixed ſtar, at which time there is no parallax in right aſcenſion; about ſix hours after, take the difference of their right aſcenſions again, and obſerve how much the difference (d) between the apparent right aſcenſions of the planet and fixed ſtar has changed in that time. Next obſerve the right aſcenſion of the planet for three or four days when it paſſes the meridian, in order to get its true motion in right aſcenſion; then, if its motion in right aſcenſion in the above interval of time between the taking of the right aſcenſions of the fixed ſtar and planet on and off the meridian be equal to d, the planet has no parallax in right aſcenſion; but, if it be not equal to d, the difference is the parallax in right aſcenſion, and hence the horizontal parallax will be known. Or one obſervation may be made as long before the planet comes to the meridian, by which a greater difference will be obtained.

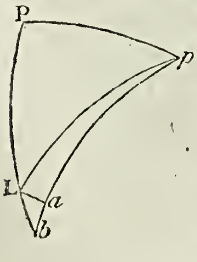
But, beſides the effect of parallax in right aſcenſion and declination, it is manifeſt, that the latitude and longitude of the Moon and planets muſt alſo be affected by it; and, as the determination of this, in reſpect to the Moon, is in many caſes, particularly in ſolar eclipſes, of great importance, we ſhall proceed to ſhew how to compute it, ſuppoſing that we have given the latitude of the place, the time, and conſequently the Sun's right aſcenſion, the Moon's true latitude and longitude, with her horizontal parallax.



Let H Z R be the meridian, ♈ E Q the equator, p its pole; ♈ C the ecliptic, P its pole; ♈ the firſt point of Aries, H Q R the horizon, Z the zenith, Z L a ſecondary to the horizon paſſing through the true place r and apparent place t of the Moon; draw P t, P r, which produce to s, drawing the ſmall circle ts parallel to ov; let rn be perpendicular to P t, and draw the ſmall circle ra parallel to ov; then rs, or ta, is the parallax in latitude, and ov the parallax in longitude. Draw the great circles P♈, P Z A B, P pde, and Z W, perpendicular to pe; then, as ♈P$=90°$, and ♈$p=90°$, ♈ muſt be the pole of Ppde, and therefore d♈$=90°$; conſequently d is one of the ſolſticial points ♋ or ♑; alſo draw Z x perpendicular to P r, and join Z♈, p♈. Now ♈E, or the angle ♈pE, or Zp♈, is the right aſcenſion of the mid-heaven, which is known; P Z = A B (becauſe A Z is the complement of both) the altitude of the higheſt point A of the ecliptic above the horizon, called the nonageſimal degree, and ♈A, or the angle ♈P A, is its longitude. Now, in the right-angled triangle ZpW, we have Zp the co-latitude of the place, and the angle ZpW, the difference between the right aſcenſion of the mid-heaven ♈pE and ♈d, to find pW; hence $PW = pW \pm pP$, where the upper ſign is to be taken when the right aſcenſion of the mid-heaven is leſs than 180°, and the under when greater. Alſo, in the triangles W Z p, W Z P, ſin. Wp : ſin. W P :: cot. WpZ : cot. W P Z, or tan. A P♈; and, as we know ♈o, or ♈Po, the true longitude of the Moon, we know A Po, or Z P x; alſo coſ. W P Z, or ſin. ♈P Z, : rad. :: tan. W P : tan. Z P. Hence, in the triangle Z P r, we know Z P, P r, and the angle P, from which the angle Z r P or trs, and Z r, may be found; for, in the right-angled triangle Z P x, we know Z P and the angle P, to find P x; therefore we know rx; and hence (as the ſines of the ſegments of the baſe of any triangle are inverſely as the tangents of the angles at the baſe adjacent to which they lie) we may find the angle Z rx, with which, and rx, we may find Z r, the *true* zenith diſtance; to which, as if it were the *apparent* zenith diſtance, find the parallax and add to it, and you will get very nearly the apparent zenith diſtance, correſponding to which, find the parallax rt; then, in the right-angled triangle rst, which may be conſidered as plane, we know rt and the angle r, to find rs the parallax in *latitude*; find alſo ts, which, multiplied by the ſecant of tv, the apparent latitude, gives the arc ov, the parallax in *longitude*.

Hitherto we have conſidered the effect of parallax, upon ſuppoſition that the Earth is a ſphere; but, as the Earth is a ſpheroid, having the polar diameter ſhorter than the equatorial, it will be neceſſary to ſhew how the computations are to be made for this caſe. The following method is given by Clairaut: Let E P Q p in this figure, be the Earth, E Q the equatorial and Pp the polar diameters, O the place of the ſpectator, H C R the rational horizon, to which draw Z O N K perpendicular; L the Moon, join L O, L C, L K, and draw C V perpendicular to L K. Now, to compare the apparent places ſeen from O and C, let us compare the places ſeen from O and K, and from K and C. Put $h =$ the horizontal parallax to the radius O C, or O N, which is very nearly equal to it, on account of the ſmallneſs of the angle C O N. Let $CO = 1$, and C N (the ſine of C O N to that radius) $= a$, $t =$ tan. of the angle K C N the latitude of the place; then rad. $= 1 : t :: a : ta = NK$; hence, as h = the angle under which O N (which we may conſider as equal to unity) appears when ſeen directly at the Moon, we have $h \times ta =$ the angle under which N K would appear; therefore $h \times \overline{1 + ta} =$ the horizontal parallax of O K; conſidering therefore K as the centre of a ſphere, and K O the radius, compute the parallax as before. Now, as the planes of all the circles of declination paſs through P p, in eſtimating the parallax either from K or O, the parallax in right aſcenſion muſt be the ſame, becauſe K and O lie in the plane of the ſame circle of declination; the only difference therefore between the effect of parallax at K and O muſt be in declination. Now at K, the angular diſtance of the Moon from the pole P is L K P, and the angular diſtance from C is L C P; the difference of theſe two angles, therefore, or C L K, is the difference between the parallax in declination at K and at C, and this angle C L K is *always* to be *added* to the polar diſtance ſeen from K to get the polar diſtance from C. Now, $CLK = h \times CV$; but the angle VCK ($= LCE$) is the Moon's declination, therefore $CV = CK \times \text{coſ. dec.}$ alſo $CK = \frac{CN}{\text{coſ.} KCN} = \frac{a}{\text{coſ. lat.}}$; hence $CLK = \frac{h \times a \times \text{coſ. dec.}}{\text{coſ. lat.}}$. This therefore is the equation of declination for the ſpheroid, to be applied to find the parallax in declination ſeen from C, after having calculated the effect of parallax in declination for a ſphere whoſe centre is K and radius K O. There is no equation for the parallax in right aſcenſion. To find how this equation in declination will affect the latitude, let P be the pole of the equator, p the pole of the ecliptic, L the place of the Moon ſeen from K, and b ſeen from C; then b L is the equation in declination; draw L a perpendicular to pb, and ba is the equation in latitude, and the angle apL the equation in longitude. Now, conſidering bL and ba as the variations of the two ſides Pb, pb, whilſt Pp and the angle P remain conſtant, we have $bL : ba :: \text{ſin. P}b \times \text{ſin.}\, pb : \text{coſ. P}p - \text{coſ. P}b \times \text{coſ.}\, pb$; hence $ba = bL \times \frac{\text{coſ. P}p - \text{coſ. P}b \times \text{coſ. P}b}{\text{ſin. P}b \times \text{ſin.}\, pb} = \frac{h \times a}{\text{coſ. lat.}} \times \overline{\frac{\text{coſ. P}b}{\text{ſin.}\, pb} - \frac{\text{coſ. P}b \times \text{coſ.}\, pb}{\text{ſin. P}b}} = \frac{h \times a}{\text{coſ.lat.}} \times \overline{\frac{\text{coſ. P}b}{\text{ſin.}\, pb} - \text{coſ. P}b \times \text{cotan.}\, pb} = \frac{h \times a}{\text{coſ.lat.}} \times \overline{\frac{\text{coſ. } 23^\circ\, 28'}{\text{coſ.Moon's lat.}} - \text{ſin. dec.} \times \text{tan. Moon's lat.}}$ But, if CP be to CE as 1 is to $1 + m$, and $x, y, =$ the ſine and coſine of the latitude of the place, then $a = 2m \times xy$; hence $ba = 2hmx \times \overline{\frac{\text{coſ. } 23^\circ\, 28'}{\text{coſ.Moon's lat.}} - \text{ſin. dec.} \times \text{tan. Moon's lat.}}$ The ſign — becomes + if the declination and latitude of the Moon be of different affections, that is, one ſouth and the other north. The latitude here uſed is that ſeen from the centre of the Earth. This correction increaſes the Moon's diſtance from the pole p of the ecliptic.





To find the correction of longitude, or the angle Lpa, we have $La = Lpa \times \text{ſin.}\, pL$, hence $Lpa = \frac{La}{\text{ſin.}\, pL}$; but $aL = bL \times \text{ſin.}\, b$, and by ſpher. trig. $\text{ſin. P}b : \text{ſin.}\, p :: \text{ſin. P}p : \text{ſin.}\, b = \frac{\text{ſin.}\, p \times \text{ſin. P}p}{\text{ſin. P}b}$; alſo $Lb = 2hmx$; hence $Lpa = 2hmx \times \frac{\text{ſin.}\, p \times \text{ſin. P}p}{\text{ſin. P}b \times \text{ſin.}\, pL} = 2hmx \times \frac{\text{coſ. lon. ☾} \times \text{ſin. } 23^\circ\, 28'}{\text{coſ. dec. ☾} \times \text{coſ. lat. ☾}}$ = (as the coſ. of the Moon's latitude may be conſidered equal to unity) $2hmx \times \frac{\text{ſin. } 23^\circ\, 28'}{\text{coſ. dec. ☾}} \times \text{coſ. lon. ☾}$. In north latitude, we muſt *add* this correction to the longitude ſeen from K, in the figure preceding the laſt, when the Moon is in the deſcending ſigns 3, 4, 5, 6, 7, 8, but *ſubtract* it when in the aſcending ſigns 0, 1, 2, 9, 10, 11, to have the longitude ſeen from C; and the contrary when the latitude of the place is ſouth.

According to the Tables of Mayer, the greateſt parallax of the Moon (or when ſhe is in her perigee and in oppoſition) is 61′ 32″; the leaſt parallax (or when in her apogee and conjunction) is 53′ 52″, in the latitude of Paris; the arithmetical mean of theſe is 57′ 42″; but this is not the parallax at the mean diſtance, becauſe the parallax varies inverſely as the diſtance, and therefore the parallax at the mean diſtance is 57′ 24″, an harmonic mean between the two. M. de Lambre re-calculated the parallax from the ſame obſervations from which Mayer calculated it, and found it did not exactly agree with Mayer's. He made the equatorial parallax 57′ 11·4″. M. de la Lande makes it 57′ 5″ at the equator, 56′ 53·2″ at the pole, and 57′ 1″ for the mean radius of the Earth, ſuppoſing the difference of the equatorial and polar diameters to be $\frac{1}{300}$ of the whole. From the formula of Mayer, the equatorial parallax is 57′ 11·4″ with the following equations, according to M. de la Lande:

57′ 11·4″	—	3′ 7·7″	coſ. ano. ☾
	+	10·0	coſ. 2 ano. ☾
	—	0·3	coſ. 3 ano. ☾
	—	37·3	coſ. arg. evection
	+	0·3	coſ. 2 arg. evect.
	+	26·0	coſ. 2 diſt. ☾ à ⊙
	—	1·0	coſ. diſt. ☾ à ⊙
	+	0·2	coſ. 4 diſt. ☾ à ⊙
	+	2·0	coſ. 2 (apo. ☾—⊙)
	+	0·2	coſ. 3 (apo. ☾—⊙)
	+	1·0	coſ. (arg. evect. + ano. ⊙)
	+	0·8	coſ. (2 arg. lat. — ano. ☾ cor.)
	—	0·8	coſ. (2 diſt ☾ à ⊙ — ano. ⊙)
	—	0·7	coſ. (2 diſt. ☾ à ⊙ + ano. ⊙)
	+	0·6	coſ. (arg. evect. — mean ano. ☾)
	+	0·4	coſ. 2 (☊—⊙), or 2 (⊙ + ſup. ☊)

+

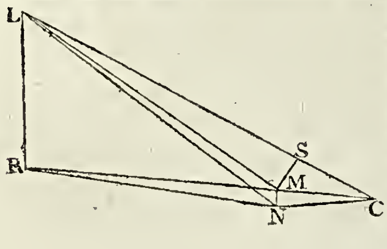
+ 0·3 coſ. mean ano. ☉
+ 0·2 coſ. (mean ano. ☾ — mean ano. ☉)
+ 0·1 coſ. (2 diſt. ☉ à ☾ + mean ano. ☾)

Let $r=\frac{1}{2}$ the ſemiaxis major, $\rho=\frac{1}{2}$ the ſemiaxis minor, $n=$ the ſine, m the coſine of the angle OCE; then, from conics, the ſine of the horizontal polar parallax : ſine of the hor. parallax at O :: $\sqrt{r^2n^2+\rho^2m^2} : r\rho$; hence the ſine of the hor. par. at $O=\frac{r\rho}{\sqrt{r^2n^2+\rho^2m^2}}\times$ the ſine of the hor. polar parallax. If $r : \rho :: 230 : 229$, we have the following Table for the horizontal parallax for every degree of latitude, that at the pole being unity:

Lat.	Hor. Par.	Lat.	Hor. Par.	Lat.	Hor. Par.
0°	100438	31°	100321	61°	100103
1	100438	32	100314	62	100097
2	100437	33	100307	63	100091
3	100436	34	100300	64	100085
4	100435	35	100293	65	100079
5	100434	36	100286	66	100073
6	100432	37	100279	67	100067
7	100430	38	100272	68	100062
8	100428	39	100265	69	100057
9	100426	40	100257	70	100052
10	100424	41	100250	71	100047
11	100421	42	100243	72	100042
12	100418	43	100235	73	100038
13	100415	44	100227	74	100034
14	100412	45	100219	75	100030
15	100408	46	100211	76	100026
16	100404	47	100203	77	100023
17	100400	48	100195	78	100020
18	100396	49	100187	79	100017
19	100391	50	100180	80	100014
20	100386	51	100173	81	100012
21	100381	52	100166	82	100010
22	100376	53	100159	83	100008
23	100371	54	100152	84	100006
24	100365	55	100145	85	100004
25	100359	56	100138	86	100003
26	100353	57	100131	87	100002
27	100347	58	100124	88	100001
28	100341	59	100117	89	100000
29	100335	60	100110	90	100000
30	100328				

Hence, by multiplying the polar parallax by the number correſponding to any latitude, it gives the horizontal parallax at that latitude. From the theorem, the parallax may be very eaſily calculated for any other ratio of the diameters of the Earth.

In the ſpheroid, beſides the parallax in right aſcenſion and declination, latitude and longitude, there is alſo a parallax in azimuth, and alſo a correction of the parallax in altitude. For the plane, which is perpendicular to the ſurface at O, always paſſes through O N, and therefore the azimuth ſeen from O or N and from C muſt be different, except when the body is on the meridian, in which caſe the plane alſo paſſes through C; and the altitude ſeen from N muſt alſo be different from that ſeen from C. Hence, having compared the parallax between O and N in altitude, we ſhall want a correction for the difference between the altitudes and azimuths ſeen from N and C, in the figure preceding the laſt. Let, therefore, C N in *this* figure, repreſent C N in the *foregoing* figure; L the Moon, LCR a plane perpendicular to the horizon, and then will N C R be the azimuth ſeen from C; draw N M perpendicular to C R, M S perpendicular to C L, and L R perpendicular to the horizon; and let m and n be the ſine and coſine of N C M, r the ſine of M C S, a = C N, the ſine of C O N in the firſt figure above-mentioned, and c the coſine of L N R, and let $d=$ the diſtance of the Moon; then $cd=$RN, $ma=$MN. Now, the line CO, or unity, at the diſtance d appears under an angle h when ſeen directly; hence $\frac{1}{d} : h :: \frac{ma}{cd}$: the angle NRC$=\frac{hma}{c}$ the difference of the azimuths ſeen from C and N. Alſo, as the arc parallel to the horizon between any two ſecondaries to it varies as the coſine of the altitude, the arc of the difference of the azimuths at the altitude of the Moon $=hma=h\times$MN. Now, as the plane NML is perpendicular to CLM, and NM is extremely ſmall, the altitudes ſeen from N and M will not ſenſibly differ; hence the difference between the altitudes at N and C is the angle CLM$=h\times$SM$=h\times r\times$CM$=h\times r\times n\times a$. If the Moon be to the *ſouth* of the prime vertical, we muſt *ſubtract* this correction from the altitude at N to get the altitude at C; if it be to the *north*, we muſt *add* the correction.



But the moſt elegant and ſimple method of finding the parallax in latitude and longitude on a ſpheroid, is the following, given by Mayer. The parallax at any place O in the ſpheroid is the ſame as on a ſphere whoſe radius is CO, and latitude OCE, as ſhewn in the figure above-mentioned, preceding the two laſt; ſubtract therefore the angle COK (found in the following Table) from the latitude OvE on the ſpheroid, and you get the angle OCE the latitude of the point O reduced to a ſphere. Alſo the horizontal parallax which is made uſe of muſt be adapted to the radius OC, by diminiſhing the equatorial horizontal parallax by a quantity correſponding to the difference between CE and CO. This diminution is alſo found in the ſame Table. The latitude thus reduced, and the horizontal parallax thus found, are to be employed in computing the Moon's parallaxes in longitude, latitude, right aſcenſion, and declination, which will now be performed by the rule above given, founded on the hypotheſis of the Earth being a ſphere; for, by means of the Table, both the baſe of the parallax, and the latitude of the place, are referred to the Earth's centre.

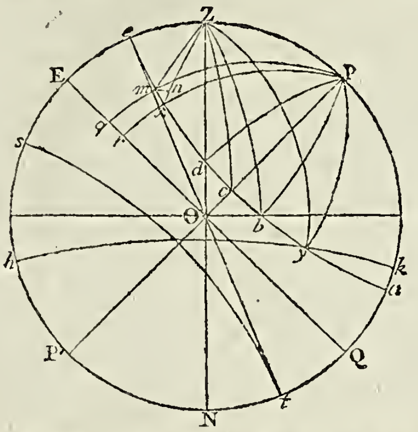
ARGUMENT.
Elevation of the Pole, and Equatorial Parallax.

Elev. of Pole.	Equatorial Parallax.			Reduct. of Elevat. of Pole.
	54′	57′	60′	
	Reduction of Parallax.			
0°	— 0·0″	— 0·0″	— 0·0″	— 0′ 0″
6	0·2	0·2	0·2	3 6
12	0·6	0·7	0·7	6 4
18	1·4	1·4	1·5	8 57
24	2·3	2·5	2·6	11 6
30	3·5	3·7	3·9	12 56
36	4·9	5·1	5·4	14 12
42	6·3	6·7	7·0	14 51
48	7·7	8·2	8·6	14 51
54	9·2	9·7	10·2	14 12
60	10·5	11·1	11·7	12 56
66	11·7	12·4	13·0	11 6
72	12·7	13·4	14·1	8 57
78	13·4	14·2	14·9	6 4
84	13·9	14·6	15·4	3 6
90	14·1	14.8	15·6	0 0

Ex. If the latitude on the ſpheroid be 63°, and the equatorial parallax be 56′, what are the reductions? The reduction of the parallax is 11·5″, and of the elevation of the pole it is 55″; hence the reduced latitude is 62° 59′ 5″, and the parallax 55′ 48·5″.

To determine the Refraction.

Take the altitude of the Sun, or a ſtar whoſe right aſcenſion and declination are known, and note the time by the clock; obſerve alſo the times of their tranſits over the meridian; then find the hour angle; hence, in the triangle P Z x, we know P Z and P x the complements of latitude and declination, and the angle x P Z, to find the ſide Z x, the complement of which is the altitude, the difference between which and the obſerved altitude is the refraction at that altitude.



Ex. On May 1, 1738, at 5h. 20′ in the morning, Caſſini obſerved the altitude of the Sun's centre at Paris to be 5° 0′ 14″, and the Sun paſſed the meridian at 12h. 0′. 0″. to find the refraction, the latitude being 48° 50′ 19″, and the declination was 15° 0′ 25″. The Sun's diſtance from the meridian was 6h. 40′, which gives 100° for the hour angle x P Z; alſo PZ=41° 9′ 50″, and Px=74° 59′ 35″; hence Zx=85° 10′ 8″, conſequently the true altitude was 4° 49′ 52″. Now to 5° 0′ 14″, the apparent altitude, add 9″ for the parallax, and we have 5° 0′ 23″ for the apparent altitude corrected for parallax; hence 5° 0′ 23″ — 4° 49′ 52″ = 10′ 31″, the refraction at the apparent altitude 5° 0′ 14″.

Or, Take the greateſt and leaſt altitude of a circumpolar ſtar which paſſes through, or very near, the zenith, when it paſſes the meridian above the pole; then the refraction being nothing in the zenith, we ſhall have the true diſtance of the ſtar from the pole at that obſervation, the altitude of the pole above the horizon being previouſly determined; but, when the ſtar paſſes the meridian under the pole, we ſhall have its diſtance affected by refraction, and the difference of the two obſerved diſtances above and below the pole gives the refraction at the apparent altitude below the pole.

Ex. M. de la Caille obſerved at Paris a ſtar to paſs the meridian within 6′ of the zenith, and conſequently at the diſtance of 41° 4′ from the pole; hence it muſt paſs the meridian under the pole at the ſame diſtance, or at the altitude 7° 46′; but the obſerved altitude at that time was 7° 52′ 25″; hence the refraction was 6′ 25″ at that apparent altitude.

M. de la Caille alſo employed obſervations made at Paris, and the Cape of Good Hope, in order to aſcertain the refraction. The method he made uſe of was this: The diſtance of the parallels of Paris and the Cape was found to be about 82° 46′, the half of which is 41° 23′; therefore a ſtar vertical to a parallel in the middle between Paris and the Cape, muſt be at the zenith diſtance of 41° 23′ from each. Now, the ſum of the apparent zenith diſtances of ſuch a ſtar was found to be 82° 44′ 46″, which therefore is the diſtance of the two parallels, diminiſhed by the ſum of the two refractions at the zenith diſtance 41° 23′, for refraction elevating a ſtar, muſt make the apparent zenith diſtance of each ſtar leſs than the true diſtance. Next, the apparent altitude of the pole at the Cape was obſerved to be 33° 56′ 49·1″, and the altitude at Paris to be 48° 52′ 27·5″, the ſum of theſe two apparent altitudes is 82° 49′ 16·6″, the diſtance of the parallels increaſed by the ſum of the two refractions correſponding to the altitude of each pole. The difference of theſe two determinations is 4′ 30·6″, for the ſum of the four refractions. Now, taking the refraction to be as the tangent of the zenith diſtance, he found the tangents of 41° 23′, and of the complement of the altitudes of the two poles, and divided 4′ 30·6″ into four parts in the ratio of theſe tangents, making the refraction a fortieth part leſs at the Cape than at Paris, as he had obſerved it; hence he got 1′ 36·5″ for the refraction at the altitude 33° 56′ 49·1″ at the Cape, and 58·2″ at the altitude 48° 52′ 27·5″ at Paris; alſo 57·2″ for the refraction at the zenith diſtance 41° 23′ at the Cape, and 58·7″ for the refraction at the zenith diſtance 41° 23, at Paris. The altitudes and zenith diſtances corrected by theſe refractions give 82° 46′ 42″ for the true diſtance of the parallels of Paris and the Cape.

Having determined the refraction at the altitude 48° 52′ 27·5″ at Paris, he calculated the refractions from that altitude up to the zenith, upon ſuppoſition that they were as the tangents of the zenith diſtances, and hence he knew the refractions at theſe altitudes at the Cape. Therefore, by taking the meridian altitudes of ſtars from ſeven to forty-eight degrees at Paris, and the correſponding meridian altitudes at the Cape, and correcting theſe latter for refraction, he got the refraction from ſeven to forty-eight degrees at Paris; for the ſum of the two true zenith diſtances was 82° 46′ 42″; therefore, knowing the true zenith diſtance at the Cape, the true zenith diſtance at Paris was known, the difference between which and the apparent zenith diſtance was the refraction. Thus M. de la Caille formed his Table of refractions. His method was very ingenious; but, from more accurate obſervations ſince his time, it appears, that his refractions are a little too great. This Dr. Maſkelyne has clearly ſhewn in the Phil. Tranſ. for 1787. By comparing the ſum of the two apparent zenith diſtances of ſtars obſerved at a low altitude at Paris, and conſequently at an high altitude at the Cape, and at an high altitude at Paris, and therefore at a low altitude at the Cape, he found the refraction at the Cape to be a fortieth part leſs than at Paris.

Boſcovich propoſes to find the refraction by the circumpolar ſtars, only by knowing its variation at different altitudes. Let a and a' be the apparent meridian zenith diſtances of a ſtar above and below the pole; x and x' the reſpective refractions; b and b' the apparent meridian zenith diſtances of another ſtar below and above the pole; z and z' the correſponding refractions; then the true diſtance will be $a+x$, $a'+x'$, and $b+z$, $b'+z'$; and, as the diſtance of the pole from the zenith is equal to half the ſum of the greateſt and leaſt true zenith diſtances, $a+x+a'+x'=b+z+b'+z'$; hence (A) $x+x'-z-z'=b+b'-a-a'$. Now taking, at firſt, the refractions to be as the tangent of the zenith diſtances, we have $\tan. a : \tan. a' :: x : x' = \frac{x \tan. a'}{\tan. a}$; for the ſame reaſon $z = \frac{x \tan. b}{\tan. a}$, $z' = \frac{x \times \tan. b'}{\tan. a}$; ſubſtitute theſe in the equation (A), and we get $x = \frac{\overline{b+b'-a-a'} \times \tan. a}{\tan. a + \tan. a' - \tan. b - \tan. b'}$; hence the other refractions are known. But, as the refractions vary more accurately as the tangent of the zenith diſtance diminiſhed by three times the refraction, put $a-3x=m$, $a'-3x'=m'$, $b-3z=n$, $b'-3z'=n'$, and we have $x = \frac{\overline{b+b'-a-a'} \times \tan. m}{\tan. m + \tan. m' - \tan. n - \tan. n'}$, the correct refraction at the apparent altitude a; hence we know $x' = \frac{x \tan. m'}{\tan. m}$, $z = \frac{x \times \tan. n}{\tan. m}$, and $z' = \frac{x \tan. n'}{\tan. m}$. The operation may be ſhortened, by taking $3x$, $3x'$, $3z$, $3z'$, from the common Tables. As $a+x$, $a'+x'$, are the true zenith diſtances of one of the ſtars below and above the pole, the true zenith diſtance of the pole will be one-half of $a+x+a'+x'$, which is the complement of the latitude of the place.

Dr. Bradley determined the refraction in the following manner: He obſerved the pole ſtar, and other circumpolar ſtars, above and below the pole, and from thence deduced the apparent zenith diſtance of the pole. By the apparent and equal zenith diſtances of the Sun at the two equinoxes, having at the ſame time oppoſite right aſcenſions, as found by comparing its obſerved tranſits over the meridian with thoſe of the fixed ſtars, he found the apparent zenith diſtance of the equator, which diminiſhed by parallax, and added to the apparent zenith diſtance of the pole, gave a ſum leſs than ninety degrees by the ſum of the two refractions belonging to the pole and meridian altitude of the equator. For the ſum of the two *true* zenith diſtances equal ninety degrees; but the true diſtance of each is diminiſhed by refraction, and therefore the ſum (after the correction for parallax) muſt be leſs than ninety degrees by the ſum of the two refractions. Now, he obſerved, that the difference of the refractions at theſe altitudes came out within 2″, or 3″, from the beſt tables then extant, whether deduced ſolely from obſervations, or partly from obſervation and partly from theory. Hence, knowing the ſum and difference of the refractions, he knew the refraction at each altitude. He afterwards more accurately divided the ſum of the two refractions, by taking the parts in proportion to the tangents of the zenith diſtances. The apparent zenith diſtance of the equator, by the mean of twenty obſervations in 1746-47 he found to be 51° 27′ 28″; and the mean apparent zenith diſtance of the pole, by obſervations made between 1750 and 1752, was 38° 30′ 35″; the ſum of which being 89° 58′ 3″, the ſum of the two refractions is 1′ 57″; conſequently the polar refraction is $45\frac{1}{2}''$, and the equatorial $1' 11\frac{1}{2}''$; therefore, the latitude of Greenwich Obſervatory is $51° 28' 39\frac{1}{2}''$. Dr. Bradley here ſuppoſed the Sun's horizontal parallax to to be $10\frac{1}{3}''$; but Dr. Maſkelyne obſerves, that had he taken it $8\frac{3}{4}''$, as determined from the two laſt tranſits of Venus over the Sun; the refraction at forty-five degrees, which he fixed at 57″, would have come out $56\frac{1}{2}''$, and the latitude of the Obſervatory 51° 28′ 40″. Dr. Bradley having thus ſettled the refraction at the altitude of the equator and pole, could calculate the refraction at all higher altitudes, or for all ſtars between the equator and pole, by taking it as the tangent of the zenith diſtances, which would be very accurate for all ſuch altitudes. Hence, by taking the altitudes of the circumpolar ſtars above and below the pole, and knowing the refraction above, he immediately got the refraction at the lower altitudes; for, knowing the refraction at the altitude above the pole, he knew the true altitude above, and, knowing the altitude of the pole, he got the true diſtance of the ſtar from the pole; which, ſubtracted from the altitude of the pole, gave the true altitude below, the difference between which and the apparent altitude was the refraction. When the weight and temperature of the air remains the ſame, he found that the refraction varied as the tangent of the zenith diſtance diminiſhed by three times the refraction found by the common rule; and, having fixed the refraction at forty-five degrees (whoſe tangent, if radius $=1$, is unity) to be 57″, if $r=$ the refraction in the tables, $z=$ the apparent zenith diſtance, he got this proportion, $r : 57'' :: \tan.\ \overline{z-3r} : 1$. The application of this rule to find the refraction at all altitudes is thus: Let the apparent zenith diſtance be z, then the refraction will be nearly $57'' \times \tan.\ z$, which put $=r$; and the correct mean refraction will be $57'' \times \tan.\ \overline{z-3r}$. If at very low altitudes it ſhould be required to have the refraction more correctly, put $57'' \times \tan.\ \overline{z-3r} = r'$, and the refraction becomes $57'' \times \tan.\ \overline{z-3r'}$. Let the refraction at the apparent zenith diſtance 70° be required: The tangent of 70° is 2·747; hence 57″×2·747=2′ 36·6″, which multiplied by 3 and ſubtracted from 70° gives 69° 52′ 10″, the tangent of which is 2·728; therefore 57″×2·728=2′ 35·5″, the *mean* refraction at the apparent zenith diſtance 70 degrees.

The inſtrument invented by Mr. Ramſden, called a *circular inſtrument*, and explained under the article QUADRANT, is admirably calculated to determine the quantity of refraction at all altitudes; for, by taking the altitude and azimuth of a body whoſe declination is known, the true altitude may be immediately computed from the latitude of the place, declination of the body, and obſerved azimuth; hence the difference between the obſerved and computed altitudes gives the refraction at that apparent altitude.

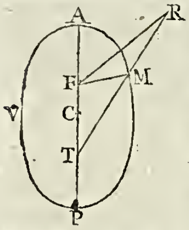
The refraction being found to vary in different ſtates of the air, the next enquiry is, what allowance muſt be made for any variation of the temperature and weight of the air, from any ſtandard which we make the mean. Dr. Bradley made 29·6 inches the mean ſtandard for the barometer; and, as Mr. Haukſbee had determined from experiment that the refraction was in proportion to the denſity of the air, it muſt alſo be as the altitude of the mercury in the barometer. Now, in the mean ſtate of the air, that is, when the barometer is at 29·6 inches, and Fahrenheit's thermometer at fifty degrees, the refraction : $57'' :: \tan.\ \overline{z-3r} : 1$; hence, at any altitude (a) of the mercury, the refraction : $57'' :: a \times \tan.\ \overline{z-3r} : 29{\cdot}6$. The refraction, thus corrected for the variation of the weight of the air, agrees very well with obſervations. The next thing to be done is, to find how the refraction varies in different temperatures. M. de la Caille found, that the refraction was diminiſhed $\frac{1}{27}$ part from an increaſe of ten degrees in the altitude of the mercury in the thermometer of Reaumur. Mayer obſerved that the refraction varied about $\frac{1}{22}$ part for ten degrees of variation. M. Bonner made ſome experiments in order to determine the variation of refraction ariſing from that of the temperature; calling the refraction unity for the altitude ten degrees of the thermometer, he found the refraction to be 0·92 at the altitude thirty degrees, or diminiſhed $\frac{1}{25}$ for a variation of ten degrees; and, at eight degrees below nothing, he found the refraction to be 1·085 or $\frac{1}{21{\cdot}18}$, for a variation of ten degrees. The mean of theſe differ but very little from the determination of Mayer. The obſervations, upon which Dr. Bradley formed his rate of variation, have never been publiſhed. He uſed Fahrenheit's thermometer, and fixed the mean temperature at fifty degrees; and, if $h°$ be any other altitude, he found that the refraction varied in the ratio of $400° : h°+350°$, or $1 : \frac{h°+350°}{400°}$ Hence, allowing for the variation of temperature and weight, he found, the *true* refraction : $57'' :: \frac{a}{29{\cdot}6} \times \tan.\ \overline{z-3r} : \frac{h°+350°}{400°}$. And this agrees very accurately with the rule deduced by Mayer.

When the Sun is in the horizon, the rays in paſſing very obliquely through the atmoſphere are ſo far ſeparated, that M. Bouguer, in a work entitled Traité d'Optique ſur la Gradation de la Lumière, has concluded from experiment, that the intenſity of light is 1354 times leſs than when the Sun is in the zenith. M. de Mairan thinks, that the weakneſs of the Sun's rays in the former caſe is principally to be attributed to the quantity of vapours with which the lower parts of the atmoſphere are always filled.

TO DETERMINE the PLACE of the MOON'S APOGEE.

Compare the obſerved place of the Moon at any time with the place obſerved at any time afterwards; take the mean motion correſponding to the interval of time, and add it to the Moon's place at the firſt obſervation, and the difference between that ſum and the Moon's place at the ſecond obſervation ſhews the effect of the equation of the orbit between theſe two ſituations of the Moon. Repeat this for a great many intervals, and mark thoſe where the difference between the ſum before-mentioned and the Moon's true place is greateſt both in exceſs and defect. If the greateſt exceſs and defect be equal, it is a proof that at the time of the firſt obſervation, the Moon was in its apogee or perigee, and that its true and mean places were the ſame. In this caſe each of theſe differences is the greateſt equation of the Moon's orbit. If the greateſt exceſs and defect be not equal, half the ſum will meaſure the greateſt equation; and, if from the greateſt equation we ſubtract the leaſt of the differences, we ſhall have the equation of the Moon at the time of the firſt obſervation. M. Caſſini uſes the place of the Moon as determined from its eclipſes, ſelecting thoſe which were proper for this purpoſe; and, although the apogee has moved in the interval, yet, as the true and mean place of the Moon always coincide at the apogee, it will not affect the concluſion. *Elem. d'Aſtron.* p. 297.

Hence to find the place of the apogee, let A M P V be the orbit of the Moon, A the apogee, P the perigee, C the centre of the orbit, T the Earth in the focus, F the other focus, M the place of the Moon at the time of the firſt obſervation; produce T M to R, take M R = M F, and join R F. From the greateſt equation find the ratio of A C to C T; this being known, we have, As T F is to T R ſo is ſin. T R F to ſin. T F R, or A F R; now $FRT = \frac{1}{2} FMT$ the equation of the Moon at the firſt obſervation, upon the ſimple elliptic hypotheſis; hence we know A F R, from which ſubtract F R T, and we get A T M the Moon's diſtance from its apogee.



Let the firſt eclipſe, with which the others are to be compared, be a total one, the middle of which happened at Paris on December 10, 1685, at 10h. 38′. 10″. mean time. The true place of the Sun at that time, by calculation, was 8ſ. 19°. 40′. and conſequently the Moon's place was 2ſ. 19°. 40′. Let the next eclipſe be the total one on May 16, 1696, the middle of which was 12h. 7′. 56″. mean time at Paris, and the Moon's place was 7ſ. 26°. 53′. 35″. Now in this interval of ten years (of which three were biſſextiles) 157d. 1h. 29′. 46″. the mean motion of the Moon, omitting the complete revolutions, was 5ſ. 12°. 53′. 10″. this added to 2ſ. 19°. 40′. the place at the firſt eclipſe, gives 8ſ. 2°. 33′. 10″. for the mean place at the ſecond eclipſe, the difference between which and the true place 7ſ. 26°. 53′. 35″. is 5° 39′ 35″. The next eclipſe compared with the firſt was that on March 15, 1699, the middle of which was at 7h. 14′. mean time at Paris, at which time the Moon's true place was 5ſ. 25°. 28′. 41″. Now in this interval of thirteen years (of which three were biſſextiles) 94d. 20h. 35′. 50″. the mean motion of the Moon, omitting the revolutions, was 3ſ. 1°. 24′. 47″. this added to 2ſ. 19′. 40′. the place at the firſt eclipſe, gives 5ſ. 21°. 4′. 47″. for the mean place at this third eclipſe, the difference between which and 5ſ. 25°. 28′. 41″. the true place is 4°. 23′. 54″. Now in the former caſe, the true place was leſs than the mean place by 5ſ. 39°. 35′. and in the latter caſe, the mean place is the leaſt by 4° 23 54″. Theſe are the greateſt differences of all the eclipſes between 1685 and 1720. Now the ſum of theſe differences is 10° 3′ 29″, and the half ſum is 5° 1′ 44·5″ the greateſt equation of the Moon's orbit deduced from theſe obſervations. And if from 5° 1′ 44·5″ we take 4° 23′ 54″, the leaſt difference, we have 37′ 50·5″ for the equation of the Moon at the time of the firſt eclipſe; and this taken from 2ſ. 19°. 40′. the true place of the Moon at that time, gives 2ſ. 19°. 2′. 10″. for the mean place of the Moon on Dec. 10, 1685, at 10h. 38′. 10″. mean time at Paris. This therefore may be conſidered as an epoch of the mean place of the Moon. This is the method uſed by M. Caſſini. But the beſt method is, to obſerve accurately the place of the Moon for a whole revolution as often as it can be done, and by comparing the true and mean motions, the greateſt difference will be double the equation. If two obſervations be found, where the difference of the true and mean motions is nothing, the Moon muſt then have been in its apogee and perigee. Mayer makes the mean eccentricity 0·05503568, and correſponding greateſt equation 6° 18′ 31·6″. It is 6° 18′ 32″ in his laſt tables publiſhed by Mr. Maſon, under the direction of Dr. Maſkelyne.

To determine the place of the apogee, from M. Caſſini's obſervations, we have the greateſt equation = 5° 1′ 44·5″, therefore, 57° 17′ 48·8″ : 2° 30′ 52·24″ :: $AC = 100000$: $CT = 4388$ for the Moon's eccentricity. Alſo $TF = 8776$: $TR = 200000$ :: ſin. $TRF = 18' \; 55{\cdot}25''$: ſin. TFR, or AFR, $= 7° \; 12' \; 20''$, from which take $TRF = 18' \; 55{\cdot}25''$, and we have $ATM = 6° \; 53' \; 25''$ the diſtance of the Moon from its apogee; add this to 2ſ. 19°. 40′. the true place of the Moon, and it gives 2ſ. 26°. 33′. 25″. for the place of the apogee on December 10, 1685, at 10h. 38′. 10″. mean time at Paris. This therefore may be conſidered as an epoch of the place of the apogee.

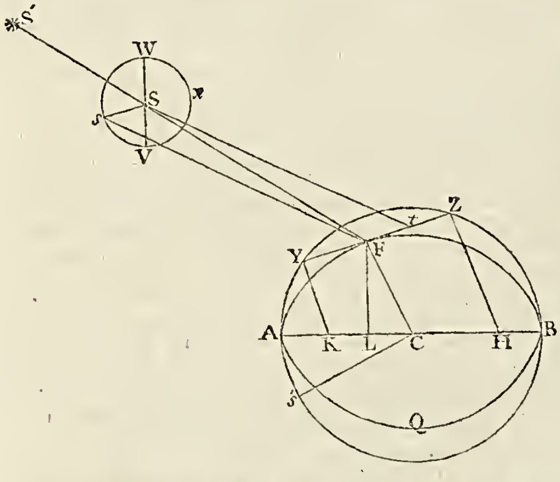
If we compare the ſame eclipſe in 1685 with two others, one of which happened on July 7, 1675, and the other on April 14, 1642, we ſhall get the equation of the orbit 5° 2′ 14″, differing only thirty-ſeven ſeconds from the other determination. Alſo the place of the apogee at the eclipſe in 1685, comes out 2ſ. 25°. 57′. 58″. which is 35′ 27″ leſs advanced than by the former caſe. If the Moon's place be determined by obſervation at any time when it is not eclipſed, the ſame method may be applied, and the way to get at the greateſt accuracy is to make a great number of ſuch compariſons, and take the mean.

To determine the mean Motion of the Apogee. Find its place at different times, and compare the difference of the places with the interval of the time between. To do this, we muſt firſt compare obſervations at a ſmall diſtance from each other, leſt we ſhould be deceived in a whole revolution; and then we can compare thoſe at a greater diſtance. Now we may either compute the place of the apogee at ſeveral times, or we may find it from knowing the place once, according to the following method, given by M. Caſſini in his Aſtronomy, p. 307. The place of the apſide has been determined for Dec. 10, 1685; and to find from thence its place at any other time, obſerve the true place of the Moon at that time; and find the mean motion correſponding to that interval, and add it to, or ſubtract it from, the place of the apogee on Dec. 10, 1685, according as the time was after or before that, and you have the mean place of the Moon at that time; the difference between which and the true place obſerved, is the equation of the orbit at that time; if the mean place be forwarder than the true, the Moon is in the firſt ſix ſigns; if backwarder, in the laſt ſix. But the ſame equation may anſwer to two different mean anomalies; this therefore leaves an uncertainty in reſpect to the place of the apogee. Now from the mean place of the Moon ſubtract each mean anomaly, and it gives the place of the apogee correſponding to each; conſequently you get the motion of the apogee correſponding to each place thus found; and to determine which is the true motion, repeat the operation for ſome other time compared with the place of the apogee on December 10, 1685, and you will get the motion correſponding to two places again. Then compare theſe two motions with the other two, and thoſe two which agree muſt be the true motion.

By thus comparing the place of the apogee on Dec. 21, 1684, at 10h. 55′. 58″. apparent time, with the place determined on Dec. 10, 1685, M. Caſſini found the time of a revolution of the apſides to be either eight years and nearly nine months, or about three years. And by comparing the place of the apogee on Nov. 29, 1686, at 11h. 7′. 18″. apparent time, with the place on Dec. 10, 1685, he found that the motion of the apſides, deduced from thence, came out one between eight and nine years, but that the other motion did not agree with either of the former. The time of a revolution therefore muſt be about eight years and nine months. The time being thus nearly determined, he computed the motion from more diſtant obſervations, and from a mean of the whole, he found the time of a revolution of the apſides to be eight common years, 311 days, eight hours, and hence the mean annual motion is 1ſ. 10°. 39′. 52″. and daily motion 6′ 41″ 1‴. Mayer in his tables makes the annual motion 1ſ. 10°. 39′. 50″. This is the mean motion in reſpect to the equinoxes. M. de la Lande makes the daily motion, in reſpect to the equinoxes, 6′ 41·069815″. Hence he deduces the daily motion in reſpect to the fixed ſtars to be 6′. 40·932238″. If we take unity to repreſent the mean motion of the Moon in reſpect to the fixed ſtars, then will the motion of its apogee be repreſented by 0·00845226445, found by comparing their mean motions; hence, as the motion of the apogee is direct, the ſidereal revolution of the Moon, 27d. 7h. 43′. 11·4947″. : its revolution in reſpect to its apogee :: 1—0·00845226445 : 1, the Moon approaching the apogee with the difference of the velocities; hence the revolution of the Moon in reſpect to its apogee is 27d. 13h. 18′. 33·95″. The motion of the apogee is not uniform, as is implied in this method of determining its mean motion, and therefore it will be ſubject to a ſmall error, unleſs the equation ſhould be the ſame at both obſervations; this error may be corrected, by reducing the true to the mean place at each obſervation. Horrox, from obſerving the diameters of the Moon, found the apogee ſubject to an annual equation of 12·5°.

To find the Aberration.

As it appears, from the explanation before given, that the angle sFS in the annexed figure, or FSt, meaſures the aberration, or the difference between the true place of the ſtar and the place meaſured by a teleſcope; take FS to Ft as the velocity of light to the velocity of the Earth, and by Trigonometry, As ſin. FSt is to ſin. FtS ſo is Ft to FS as velocity of the Earth is to velocity of light; hence ſine of aberration $=$ ſin. $\mathrm{F}t\mathrm{S} \times \frac{\text{vel. of Earth}}{\text{vel. of light}}$; therefore, if we conſider the velocity of the Earth and of light to be conſtant, the ſine of aberration, or the aberration itſelf as it never exceeds twenty ſeconds, varies as ſin. FtS, and therefore is greateſt when that angle is a right angle; if therefore s be put for the ſine of FtS, we have, As 1 (rad.) is to s, ſo is 20″ to $s \times 20''$ the aberration. Hence when Ft coincides with FS′ or the Earth be moving directly to or from a ſtar, there is no aberration.

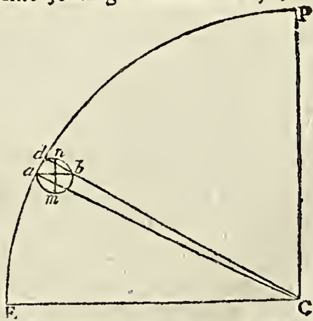


As (by obſervation) the angle $FSt=20''$ when $FtS=90°$, we have *the velocity of the earth* : *velocity of light* :: *ſin.* 20″ : *radius* :: 1 : 10314. The aberration Ss lies from the true place of the ſtar in a direction parallel to the direction of the Earth's motion, and towards the ſame part.

Whilſt the Earth makes one revolution in its orbit, the curve, parallel to the ecliptic, deſcribed by the apparent place of a fixed ſtar, is a circle. For let $AFBQ$ be the Earth's orbit, K the focus in which the Sun is, H the other focus; on the major axis AB deſcribe a circle; draw a tangent YFZ to the point F, and KY, HZ, perpendicular to it; then, by Conics, the points Y and Z will be always in the circumference of the circle. Let S' be the true place of the ſtar, any where out of the plane of the ecliptic, which therefore muſt be conceived to be elevated above the plane $AFBQ$, and take $tF : FS$ as the velocity of the Earth : the velocity of light, and complete the parallelogram $FtSs$ and s will be the apparent place of the ſtar. Draw FL perpendicular to AB, and let $WsVx$ be the curve deſcribed by the point s, and WSV be parallel to FL. Now the velocity of the Earth varies as $\frac{1}{KY}$, or as HZ; but tF, or Ss, repreſents the velocity of the Earth; hence Ss varies as HZ. Alſo as Ss, SV are parallel to FY, FL, the angle $sSV =$ the angle YFL which is $=$ the angle ZHL, becauſe the angle LFZ added to each makes two right angles, for in the quadrilateral figure $LFZH$ the angles L and Z are right ones. Hence as Ss varies as HZ, and the angle $sSV = ZHA$, the figures deſcribed by the points s and Z muſt be ſimilar; but Z deſcribes a circle in the time of one revolution of the Earth in its orbit, hence s muſt deſcribe a circle about S in the ſame time. And as Ss is always parallel to tF which lies in the plane of the ecliptic, the circle $WsVx$ is parallel to the ecliptic. Alſo, as S and H are two points ſimilarly ſituated in Wv and AB, it appears that the true place of the ſtar divides that diameter which, although in a different plane, we may conſider as perpendicular to the major axis of the Earth's orbit, in the ſame ratio as the focus divides the major axis. But, as the Earth's orbit is very nearly a circle, we may conſider S in the centre of the circle without any ſenſible error.

As we may, for the purpoſes which we ſhall here want to conſider, conceive the Earth's orbit $AFBQ$ to be a circle, if from the centre C we draw Cs' parallel to Ss, or YF, s' will be the point in that circle correſponding to s in the circle $WsVx$, and as $FCs'=90°$, the apparent place of the ſtar in the circle of aberration is always 90° before the place of the Earth in its orbit, and conſequently the apparent angular velocity of the ſtar and Earth about their reſpective centres are always equal. It is farther ſuppoſed, that the ſtar S' is at an indefinitely great diſtance; for the ſituation of the ſtar is not ſuppoſed to be altered from the motion of the Earth, and conſidering FS as always parallel to itſelf, it will always be directed to S' as a fixed point in the heavens. Hence alſo, as the apparent place of the Sun is oppoſite that of the Earth, the apparent place of the ſtar in the circle of aberration is 90° behind that of the Sun.

As a ſmall part of the heavens may be conceived to be a plane perpendicular to a line joining the ſtar and eye, it follows from the principles of orthographic projection, that the circle parallel to the ecliptic deſcribed by the apparent place of the ſtar projected upon this plane will be an ellipſe; the apparent path of the ſtar in the heavens will therefore be an ellipſe, and the major axis will be to the minor as radius to the ſine of the ſtar's latitude.

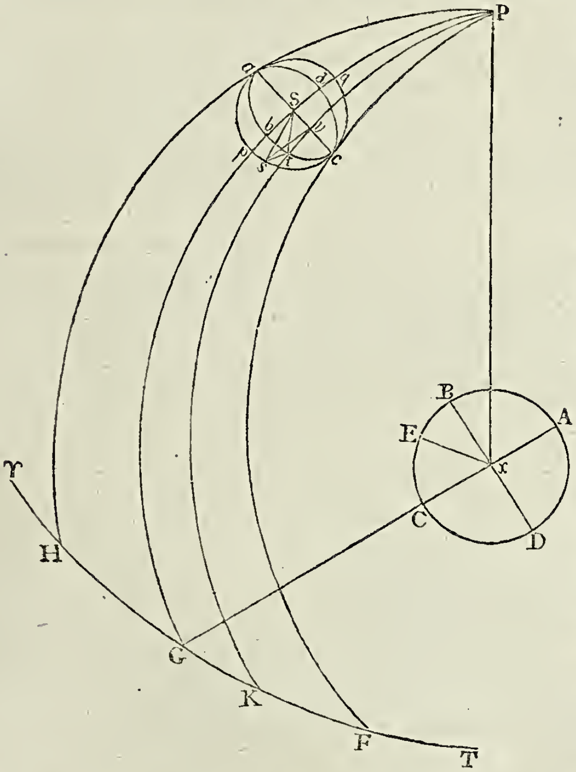


For let CE in the annexed figure, be the plane of the ecliptic, P its pole, PE a ſecondary to it, PC perpendicular

lar to EC, C the place of the eye, and let ab be parallel to CE, then it will be that diameter of the circle $anbm$ of aberration which is ſeen moſt obliquely, and conſequently that diameter which is projected into the minor axis of the ellipſe; let mn be perpendicular to ab, and it will be ſeen directly, being perpendicular to a line drawn from it to the eye, and therefore will be the major axis; draw Ca, Cbd, and ad in the projection of ab; and as ad may be conſidered as a ſtraight line, we have mn, or ab, the major axis to ad the minor as rad. is to ſin. abd, or ECd the ſtar's latitude. As the angle bad is the complement of abd, or of the ſtar's latitude, the circle is projected upon a plane making an angle with it equal to the complement of the ſtar's latitude.

As the minor axis da coincides with a ſecondary to the ecliptic, it muſt be perpendicular to it, and the major axis mn is parallel to it, its poſition not being altered by projection. Hence in the pole of the ecliptic, the ſine of the ſtar's latitude being radius, the ellipſe becomes a circle; and in the plane of the ecliptic, the ſine of the ſtar's latitude being $=0$, the minor axis vaniſhes, and the ellipſe becomes a ſtraight line, or rather a very ſmall part of a circular arc.

To find the Aberration in Latitude and Longitude. Let ABCD, in the annexed figure, be the Earth's orbit, ſuppoſed to be a circle with the Sun in the centre at x, and conceive P to be a line drawn from x perpendicular to ABCD, and to repreſent the pole of the ecliptic; let S be the true place of the ſtar, and conceive $apcq$ to be the circle of aberration parallel to the ecliptic, and $abcd$, the ellipſe into which it is projected; let ♈T be an arc of the ecliptic, and draw the ſecondary PSG to it, and it will coincide with the minor axis bd into which the diameter pq is projected; draw $GCxA$, and it is parallel to pq, and BxD perpendicular to it muſt be parallel to the major axis ac; then, when the Earth is at A, the ſtar is in conjunction, and in oppoſition when the Earth is at C. Now at the place of the ſtar in the circle of aberration is always ninety degrees before the Earth in its orbit, when the Earth is at A, B, C, D, the apparent places of the ſtar in the circle will be at a, p, c, q, or in the ellipſe at a, b, c, d; and, to find the place of the ſtar in the circle when the Earth is at any point E, take the angle $pSs = ExB$, and s will be the correſponding place of the ſtar in the circle; and to find the projected place in the ellipſe, draw sv perpendicular to Sc, and vt perpendicular to Sc in the plane of the ellipſe, and t will be the apparent place of the ſtar in the ellipſe; join st, and it will be perpendicular to vt, becauſe the projection of the circle into the ellipſe is in lines perpendicular to the ellipſe; draw the ſecondary $PvtK$, which will, as to ſenſe, coincide with vt, unleſs the ſtar be very near to the pole of the ecliptic; therefore the rules here given will be ſufficiently accurate, except in that caſe. Now as cvS is parallel to the ecliptic, S and v muſt have the ſame latitude, hence vt is the aberration in latitude; and, as G is the true and K the apparent place of the ſtar in the ecliptic, GK is the aberration in longitude. To find theſe quantities, put m and n for the ſine and coſine of the angle sSc, or CxE the Earth's diſtance from ſyzygies, radius being unity; and as the angle $svt =$ the complement of the ſtar's latitude, the angle $vst =$ the ſtar's latitude, for the ſine and coſine of which put v and w, and put $r = Sa$ or Ss; then in the right angled triangle Ssv, As 1 is to m ſo is r to $sv = rm$; hence in the triangle vts, As 1 is to v ſo is rm to $tv = rvm$ the aberration in latitude. Alſo in the triangle Ssv, As 1 is to n ſo is r to $vS = rn$, hence, As w is to 1 ſo is rn to $GK = \frac{rn}{w}$ the aberration in longitude. When the Earth is in ſyzygies, $m = 0$, therefore there is no aberration in latitude: and, as n is then greateſt, there is the greateſt aberration in longitude; if the Earth be at A, or the ſtar in conjunction, the apparent place of the ſtar is at a, and reduced to the ecliptic at H, therefore GH is the aberration, which diminiſhes the longitude of the ſtar, the order of the ſigns being ♈GT; but, when the Earth is at C, or the ſtar in oppoſition, the apparent place c reduced to the ecliptic is at F, and the aberration GF increaſes the longitude; hence the longitude is the greateſt when the ſtar is in oppoſition, and leaſt when in conjunction. When the Earth is in quadratures at D or B, then $n = 0$, and m is greateſt, therefore there is no aberration in longitude, but the greateſt in latitude; when the Earth is at D, the apparent place of the ſtar is at d, and the latitude is there increaſed; but, when the Earth is at B, the apparent place of the ſtar is at b, and the latitude is diminiſhed; hence the latitude is leaſt in quadratures before oppoſition, and greateſt in quadratures after. From the mean of a great number of obſervations, Dr. Bradley determined the value of r to be twenty ſeconds.

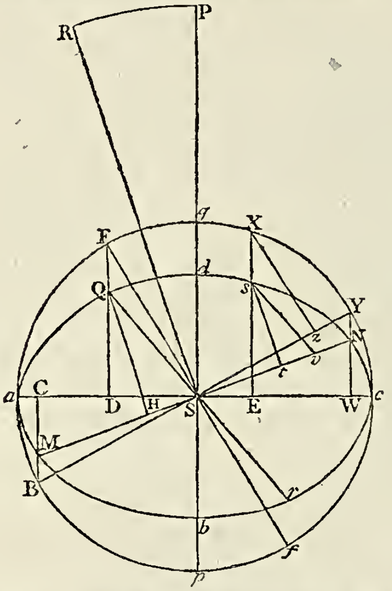


Ex. 1. What is the greateſt aberration in latitude and longitude of γ Urſæ minoris, whoſe latitude is 75° 13′? Here $m = 1$, $v = {\cdot}9669$ the ſine of 75° 13′; hence $20'' \times {\cdot}9669 = 19{\cdot}34''$ the greateſt aberration in latitude. For the greateſt aberration in longitude, $n = 1$, $w = {\cdot}2551$; hence $\frac{20''}{{\cdot}2551} = 78{\cdot}4''$ the greateſt aberration in longitude.

Ex. 2. What is the aberration in latitude and longitude of the ſame ſtar, when the Earth is thirty degrees from ſyzygies? Here $m = {\cdot}5$; hence $19{\cdot}34'' + {\cdot}5 = 9{\cdot}67''$ the aberration in latitude. If the Earth be thirty degrees beyond conjunction or before oppoſition, the latitude is diminiſhed; but, if it be thirty degrees after oppoſition or before conjunction, the latitude is increaſed. Alſo $n = {\cdot}866$; hence $78{\cdot}4'' \times {\cdot}866 = 67{\cdot}89''$ the aberration in longitude. If the Earth be thirty degrees from conjunction, the longitude is diminiſhed; but, if it be thirty degrees from oppoſition, it is increaſed.

Ex. 3. For the *Sun*, $m = 0$ and $n = 1$, $w = 1$; hence it has no aberration in latitude, and the aberration in longitude $= r = 20''$ conſtantly. This quantity twenty ſeconds of aberration of the Sun anſwers to its mean motion in 8′ 7″ 30‴, which is therefore the time the light is moving from the Sun to us at its mean diſtance. Hence the Sun always appears twenty ſeconds backwarder than its true place.

To find the Aberration in Declination. Let *abcd* be the ellipſe of aberration, and P the pole of the ecliptic, as deſcribed in the laſt figure; on the major axis *ac* deſcribe the circle *apcq*, which we will now ſuppoſe to lie in the plane of the ellipſe, and then every point of this circle will be projected into the ſame point of the ellipſe as before; let R be the pole of the equator, and perpendicular to R S draw the diameter MN of the ellipſe; alſo draw BMC, YNW, perpendicular to *ac*, and YB will be the correſponding diameter of the circle; draw FS perpendicular to BY, FQD perpendicular to *ac*, and QH perpendicular to MS; from any point X let fall X*s*E perpendicular to *ac*; draw X*z*, *st*, perpendicular to BY and MN reſpectively, and *sv* an ordinate to the diameter MN.

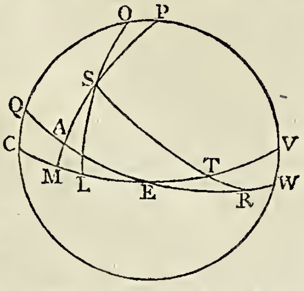


As the point F of the circle lies at the diſtance of ninety degrees from the diameter BY, the diameter FS*f* will be projected into a diameter QS*r* which will be conjugate to MSN, and therefore a tangent at Q is parallel to MN; hence QH is the greateſt perpendicular on MN, and conſequently it is the greateſt aberration in declination; for as MN is the projection of BY, which is perpendicular to the circle of declination RS, there can be no aberration in MN; alſo *st* is the aberration in declination at any point *s*. Now, when the apparent place of the ſtar is at *a*, the ſtar is then in conjunction; and as the motion of the Sun is equal to the motion of the ſtar in the circle *apcq*, whilſt the ſtar moves from *s* to Q in the ellipſe, its motion in the circle would be XF, which therefore repreſents the Sun's motion in the ſame time, or the motion from the time when the ſtar is at *s* to the time when the aberration in declination is the greateſt. Alſo the arc F*a* ſhews the elongation of the ſtar from the Sun when the ſtar appears at Q, and X*a* the elongation when at *s*.

When the ſtar is at *s*, *st* is the aberration in declination; and, as the poſition of *st* to *sv* is conſtant, *st* varies as *sv*; but *sv* is the projection of X*z*, and therefore in a given ratio to it; hence *st* varies as X*z* the ſine of XY, or coſine of XF; that is, the aberration in declination at any time is as the coſine of the Sun's diſtance from the point where it was when the aberration in declination was the greateſt.

To find QH, we have, by the property of the ellipſe, $QH \times SM = Sd \times Sc$; hence, $\frac{QH}{Sc} = \frac{Sd}{SM} = \frac{Sd \times BS}{SM \times BS} =$ (becauſe $\frac{CM}{CB} = \frac{Sd}{S} = \frac{Sd}{SB}$) $\frac{CM \times BS}{SM \times CB} = \frac{CM}{SM}$ divided by $\frac{CB}{BS} = \frac{\text{ſin. } MSa}{\text{ſin. } BSa}$; conſequently, $QH : cS :: \text{ſin. } MSa : \text{ſin. } BSa ::$ $\text{ſin. } PSR : \text{coſ. } FSa$, hence $QH = \frac{20'' \times \text{ſin. } PSR}{\text{coſ. } FSA}$, the greateſt aberration in deelination.

Let P, in the annexed figure, be the pole of the equator QEW, O the pole of the ecliptic CEV, S the place of the ſtar, PSAM a circle of declination, OSL a circle of latitude; then L has the ſame longitude as the ſtar, and therefore it marks the place of the Sun when the aberration in latitude is nothing. Draw the circle STR perpendicular to PSA, and T will be the place of the Sun when the aberration in declination is the greateſt; for, by Conics, in the preceding figure, WN : WY :: S*b* : S*p* :: ſin. ſtar's lat. : rad. alſo WN : WY :: tan. NSW or PSR : tan. YSW, or cot. FS*a*; hence ſin. ſtar's lat. : rad. :: tan. PSR : cot. FS*a*. But in this figure ſin. SL (the ſtar's lat.) : rad. :: cot. TSL or tan. LSM : cot. TL; hence, the three firſt terms in theſe two laſt proportions being reſpectively equal, the arc *a*F, in the preceding figure, = TL, in the preſent figure; and as *a*F repreſents the motion of the Sun from the time when the aberration in declination is the greateſt to conjunction, and L repreſents the place of the Sun at conjunction, T muſt be the place at the greateſt aberration. Hence the greateſt aberration in declination $= \frac{20'' \times \text{ſin. MSL}}{\text{coſ. LT}}$. But, in the triangle STL, coſ. TSL or ſin. MSL = ſin. LTS × coſ. LT; hence the greateſt aberration in declination becomes 20″ × ſin. LTS. Alſo, in the triangle ETR, ſin. ETR or ſin. LTS $= \frac{\text{ſin. ER} \times \text{ſin. ERT}}{\text{ſin. ET}} =$ (becauſe the meaſure of ERT is AS, and AE is the complement of ER) $\frac{\text{coſ. AE} \times \text{ſin. SA}}{\text{ſin. ET}}$. Hence we get the greateſt aberration in declination = 20″ × coſ. right aſcenſion × ſin. dec. divided by the ſin. of the Sun's longitude at the time when the aberration is greateſt ſubtractive.



Therefore, as the aberration at any other time is as the coſine of the Sun's diſtance from that place where it was when the aberration was the greateſt, if L be the Sun's longitude at the time of the greateſt aberration in declination ſubtractive, S its longitude at any other time, A the Sun's right aſcenſion, D its declination, O the obliquity of the ecliptic, the aberration at that time $=$

$$\frac{-20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{coſ. } \overline{L-S}}{\text{ſin. } L} =$$

$$\frac{20'' \times \text{coſ. } A \times \text{ſin. } D \times \overline{\text{coſ. } L \times \text{coſ. } S + \text{ſin. } L \times \text{ſin. } S}}{\text{ſin. } L}$$

$=$ (becauſe $\frac{\text{coſ. } L}{\text{ſin. } L} = \text{cot. } L$) $-20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{cot. } L \times \text{coſ. } S - 20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{ſin. } S$. But, by Mauduit's Trigonometry, or Crackelt's Tranſlation, cot. ET, or cot. $L = \frac{\text{cot. } ERT \times \text{ſin. } E}{\text{ſin. } ER} + \text{coſ. } E \times \text{cot. } ER$ $=$ (becauſe cot. $ER = -$ tan. A) $\frac{\text{cot. } D \times \text{ſin. } O}{\text{coſ. } A} - \text{coſ. } O \times \text{tan. } A$; hence the aberration in declination becomes $-20'' \times \text{ſin. } D \times \text{coſ. } S \times \text{cot. } D \times \text{ſin. } O + 20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{coſ. } S \times \text{coſ. } O \times \text{tan. } A - 20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{ſin. } S =$ (becauſe ſin. $D \times$ cot. $D =$ coſ. D, and coſ. $A \times$ tan. $A =$ ſin. A) $-20'' \times \text{ſin. } O \times \text{coſ. } D \times \text{coſ. } S + 20'' \times \text{coſ. } O \times \text{ſin. } A \times \text{ſin. } D \times \text{coſ. } S - 20'' \times \text{coſ. } A \times \text{ſin. } D \times \text{ſin. } S = -20'' \times \text{ſin. } O \times \text{coſ. } D \times \text{coſ. } S -$

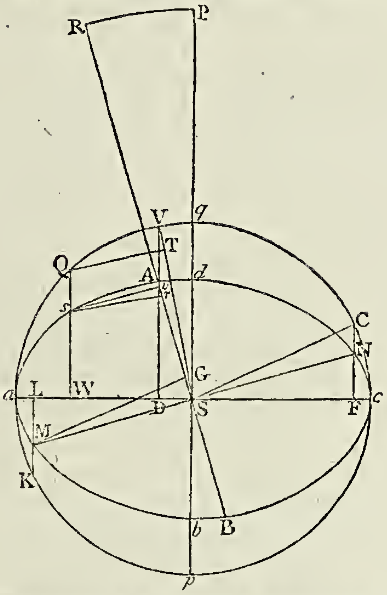
$20'' \times \text{ſin.}\, D \times \overline{\text{coſ.}\, A \times \text{ſin.}\, S - \text{coſ.}\, O \times \text{ſin.}\, A \times \text{coſ.}\, S}$. For ſouth declination we muſt change the ſigns. But, by Trigonometry, $\text{coſ.}\, D \times \text{coſ.}\, S = \tfrac{1}{2}\,\text{coſ.}\, \overline{S+D} + \tfrac{1}{2}\,\text{coſ.}\, \overline{S-D}$, and $\text{coſ.}\, A \times \text{ſin.}\, S = \tfrac{1}{2}\,\text{ſin.}\, \overline{A+S} - \tfrac{1}{2}\,\text{ſin.}\, \overline{A-S}$, alſo $\text{ſin.}\, A \times \text{coſ.}\, S = \tfrac{1}{2}\,\text{ſin.}\, \overline{A+S} + \tfrac{1}{2}\,\text{ſin.}\, \overline{A-S}$; hence the aberration in *declination* =

$$\left.\begin{array}{l} +10'' \times \overline{1+\text{coſ.}\, O} \times \text{ſin.}\, \overline{A-S} \times \text{ſin.}\, D \\ -10'' \times \overline{1-\text{coſ.}\, O} \times \text{ſin.}\, \overline{A+S} \times \text{ſin.}\, D \\ -10'' \times \text{ſin.}\, O \times \text{coſ.}\, \overline{S-D} \\ -10'' \times \text{ſin.}\, O \times \text{coſ.}\, \overline{S+D} \end{array}\right\} = \left\{\begin{array}{l} +19{\cdot}17'' \times \text{ſin.}\, \overline{A-S} \times \text{ſin.}\, D \\ -\ 0{\cdot}83'' \times \text{ſin.}\, \overline{A+S} \times \text{ſin.}\, D \\ -\ 3{\cdot}98'' \times \text{coſ.}\, \overline{S-D} \\ -\ 3{\cdot}98'' \times \text{coſ.}\, \overline{S+D}. \end{array}\right.$$

The two laſt terms muſt have their ſigns changed when the declination is ſouth.

To find the Sun's place when the aberration is the greateſt, we have in the triangle *LST*, ſin. *SL* : rad :: cot. *TSL* : cot. *TL*; therefore, knowing the longitude of the ſtar, or of the point *L*, the longitude of *T* the place of the Sun is known. Hence we find the Sun's longitude when the aberration is greateſt ſubtractive.

To find the Aberration in Right Aſcenſion. Let S be the true place of the ſtar, *abcd* the ellipſe of aberration, *apcq* the circumſcribing circle, P the pole of the ecliptic, and R that of the equator, and let MSN be a conjugate diameter to ASB; draw FNC, DAV, perpendicular to *ca*, join VS, draw CSK, which muſt be perpendicular to VS, and draw MG perpendicular to AB; alſo from any point Q draw Q*s*W perpendicular to *ca*, and QT, *sv*, perpendicular to SV, SA, reſpectively, and *sr* an ordinate to the diameter AB. Now it is manifeſt, that A is the apparent place of the ſtar when the aberration in right aſcenſion is nothing, and M when it is greateſt, becauſe a tangent at M is parallel to AB. By the property of the ellipſe, $MG \times AS = dS \times cS$, therefore $AS : cS$ or $Sv :: dS : MG$, hence $\frac{AD}{SV} : \frac{AD}{AS} :: dS : MG$; but $AD : dS :: VD : Sq$, therefore $\frac{VD}{SV} : \frac{AD}{AS} :: Sq : MG$, that is, the ſine of V*a* : the ſine of AS*a* or coſ. PSR :: 20″ : $MG = \frac{20'' \times \text{coſ.}\, PSR}{\text{ſin.}\, Va}$, the greateſt aberration in right aſcenſion. If the ſtar be at any other point *s*, then *sv* is the aberration in right aſcenſion; but *sv* is in a given ratio to *sr*, and *sr* is in a given ratio to QT, becauſe QT is projected into *sr*; hence *sv* varies as QT the ſine of QV, or coſine of KQ the diſtance of the Sun from that point where it was when the aberration was greateſt.



Now, as in the two laſt figures, tan. *ASD*, or cot. *PSR* : tan. *VSa* :: (*AD* : *VD* ::) ſin. ſtar's lat. : rad. but tan. *ML* : *MSL* :: ſin. ſtar's lat. : rad. hence, as *PSR*=*MSL*, the tan. *VSa* × tan. *LM* is conſtant, therefore *LM* is the complement of *VSa*; hence *LM*=*Ka* the elongation of the Sun from the ſtar when the aberration is greateſt; therefore *M* is the place of the Sun at that time; the longitude of which put =*L* at the time when the aberration is greateſt ſubtractive. Hence the greateſt aberration in right aſcenſion $= \frac{20'' \times \text{coſ.}\, MSL}{\text{coſ.}\, LM}$. This is the aberration at the ſtar, and therefore reduced to the equator it becomes $\frac{20'' \times \text{coſ.}\, MSL}{\text{coſ.}\, ML \times \text{coſ.}\, SA}$. But, as in the laſt figure but one, $\frac{\text{coſ.}\, MSL}{\text{coſ.}\, ML} = \text{ſin.}\, M = \frac{\text{ſin.}\, AE}{\text{ſin.}\, ME} = \frac{\text{ſin.}\, A}{\text{ſin.}\, L}$; therefore the greateſt aberration ſubtractive becomes $\frac{-20'' \times \text{ſin.}\, A}{\text{coſ.}\, D \times \text{ſin.}\, L}$; hence the aberration in right aſcenſion at any other time =

$$\frac{-20'' \times \text{ſin.}\, A \times \text{coſ.}\, \overline{L-S}}{\text{coſ.}\, D \times \text{ſin.}\, L} = \frac{-20'' \times \text{ſin.}\, A}{\text{coſ.}\, D \times \text{ſin.}\, L} \times \overline{\text{coſ.}\, L \times \text{coſ.}\, S + \text{ſin.}\, L \times \text{ſin.}\, S} = \frac{-20'' \times \text{ſin.}\, A \times \text{cot.}\, L \times \text{coſ.}\, S - 20'' \times \text{ſin.}\, A \times \text{ſin.}\, S}{\text{coſ.}\, D}$$

$$= (\text{becauſe cot.}\ L = \text{coſ.}\ O \times \text{cot.}\ A)\ \frac{-20'' \times \text{ſin.}\, A \times \text{coſ.}\, S \times \text{coſ.}\, O \times \text{cot.}\, A - 20'' \times \text{ſin.}\, A \times \text{ſin.}\, S}{\text{coſ.}\, D}$$

$$= \frac{-20'' \times \text{coſ.}\, O \times \text{coſ.}\, S \times \text{coſ.}\, A - 20'' \times \text{ſin.}\, A \times \text{ſin.}\, S}{\text{coſ.}\, D}.$$

Now, if we augment *A* by 90°, or three ſigns, the numerator of this fraction becomes the ſame as the coefficient of ſin. *D* in the aberration of declination, becauſe the $\text{ſin.}\, A = \text{coſ.}\, \overline{A+3s}$, and $\text{coſ.}\, A = \text{ſin.}\, \overline{A+3s}$. But, to reduce this farther, we have $\text{coſ.}\, A \times \text{coſ.}\, S = \tfrac{1}{2}\,\text{coſ.}\, \overline{A+B} + \tfrac{1}{2}\,\text{coſ.}\, \overline{A-B}$, and $\text{ſin.}\, A \times \text{ſin.}\, S = \tfrac{1}{2}\,\text{coſ.}\, \overline{A-B} - \tfrac{1}{2}\,\text{coſ.}\, \overline{A+B}$; hence the aberration in *right aſcenſion* =

$$-\frac{10'' \times \overline{1+\text{coſ.}\, O} \times \text{coſ.}\, \overline{A-S} - 10'' \times \overline{1-\text{coſ.}\, O} \times \text{coſ.}\, \overline{A+S}}{\text{coſ.}\, D}.$$

$$= \overline{-19{\cdot}17'' \times \text{coſ.}\, \overline{A-S} - 0{\cdot}83'' \times \text{coſ.}\, \overline{A+S}} \times \text{ſec.}\, D.$$

As *M* is the place of the Sun when the aberration in right aſcenſion is the greateſt, we have coſ. *AEM* : tan. *AE* the ſtar's right aſcenſion :: rad. : tan. *EM* the Sun's longitude. Hence we can find the Sun's longitude when the aberration is the greateſt ſubtractive. From theſe expreſſions for the aberration in right aſcenſion and declination, M. de Lambre has computed a ſet of tables, by which the aberration of a ſtar at any time may be very readily found, and to which the practical aſtronomer is referred.

To CALCULATE an ECLIPSE of the MOON.

Being provided with a complete ſet of aſtronomical tables, by either of the authors recommended above, the firſt thing to be done is to find the time of the *mean* oppoſition, which may be obtained from the Tables of Epacts. The epact for any year is the age of the Moon at the beginning of the year from the laſt *mean* conjunction, that is, from the time when the mean longitudes of the Sun and

Moon were laſt equal. The epact for any month is the age which the Moon would have had at the beginning of the month, if its age had been nothing at the beginning of the year. Now, from the tables, take out the epact for the year and month, and ſubtract the ſum from 29d. 12h. 44'. 3". one ſynodic revolution of the Moon, or two if neceſſary, ſo that the remainder may be leſs than a revolution, and that remainder gives the time of the mean conjunction. If to this we add 14d. 18h. 22' 1·4" half a revolution, it gives the time of the next mean oppoſition; or, if we ſubtract, it gives the time of the preceding mean oppoſition. If it be leap-year, in January and February ſubtract a day from the ſum of the epacts, before you make the ſubtraction. When the day of the mean conjunction is 0, it denotes the laſt day of the preceding month. Ex. To find the time of the *mean* new and full moons in February, 1795.

Epact 1795 - -	9d.	11h.	6'.	17".
February - -	1	11	15	57
	10	22	22	14
	29	12	44	3
Mean new Moon -	18	14	21	49
	14	18	22	1·4
Mean full Moon -	3	19	59	47·6

To determine whether an eclipſe may happen at oppoſition, find the *mean* longitude of the Earth at the time of *mean* oppoſition, and alſo the longitude of the Moon's node; then, according to M. Caſſini, if the difference between the *mean* longitudes of the Earth and the Moon's node be leſs than 7° 30', there *muſt* be an eclipſe; if it be greater than 14° 30', there *cannot* be an eclipſe; but, between 7° 30' and 14° 30' there *may*, or may *not*, be an eclipſe. M. de Lambre makes theſe limits 7° 47' and 13° 21'.

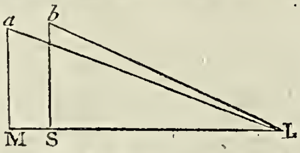
Ex. To find whether there will be an eclipſe at the full Moon on February 3, 1795.

Sun's mean long. at 3d. 19h. 59' 47·6"	10ſ.	13°.	27'.	20·8".
Mean long. of the Earth -	4	13	27	20·8
Long. of the Moon's node -	4	8	1	48·5
Difference - - -	0	5	25	32·3

Hence there muſt be an eclipſe.—Examine thus all the new and full moons for a month before and a month after the time at which the Sun comes to the place of the nodes of the lunar orbit, and you will be ſure not to miſs any eclipſes. Or, having the eclipſes for the laſt eighteen years, if we add to the times of the middle of theſe eclipſes, 18y. 10d. or 11d. 7h. 43¾'. it will give the times when we may expect the eclipſes will return.

To the time of *mean* oppoſition, compute the true longitudes of the Sun and Moon, and the Moon's true latitude; and find, from the tables of their motions, the horary motions of the Sun and Moon in longitude, and the difference (d) of their horary motions is the relative horary motion of the Moon in reſpect to the Sun, or the motion with which the Moon approaches to, or recedes from, the Sun; find alſo the Moon's horary motion in latitude; and ſuppoſe the time (t) of *mean* oppoſition, the Moon is at the diſtance (m) from oppoſition; then $d : m ::$ 1 hour : the time (w) between t and the oppoſition, which added to or ſubtracted from the time t, according as the Moon is not yet got into oppoſition, or is beyond it, gives the time of the ecliptic oppoſition.

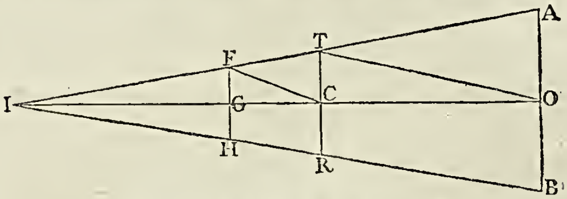
To find the place of the Moon in oppoſition, let n be the Moon's horary motion in longitude; then, 1 hour : w :: n : the increaſe of the Moon's longitude in the time w, which, applied to the Moon's longitude at the time of the mean oppoſition, gives the true longitude of the Moon at the time of the ecliptic oppoſition. The oppoſite to that muſt be the true longitude of the Sun. Find alſo the Moon's true latitude at the time of oppoſition, by ſaying, 1 hour : w :: the horary motion in latitude : the motion in latitude in the time w, which, applied to the Moon's latitude at the time of the mean oppoſition, gives the true latitude at the time of the true oppoſition. For greater certainty compute again from the tables the places of the Sun and Moon, and if they be not exactly in oppoſition, which probably may not be the caſe, as the Moon's longitude does not increaſe uniformly, repeat the operation. This accuracy, however, in eclipſes is generally unneceſſary; for the beſt lunar tables cannot be depended upon to give the Moon's longitude nearer than 30"; therefore the probable error from the tables is vaſtly greater than that which ariſes from the motion in longitude not being uniform. Unleſs therefore very great accuracy be required, this operation is unneceſſary. In like manner we may compute the true time of the ecliptic conjunction, and the places of the Sun and Moon for that time, when we calculate a ſolar eclipſe.



With the Sun's horary motion in longitude, and the Moon's in longitude and latitude, find the the inclination of the *relative* orbit, and the horary motion upon it. To do this, let LM be the horary motion of the Moon in longitude, SM that of the Sun; draw Ma perpendicular to LM and equal to the Moon's horary motion in latitude; take Sb = Ma, and parallel to it, and join La, Lb; then La is the Moon's *true* orbit, and Lb its *relative* orbit in reſpect to the Sun. Hence LS (the difference of the horary motions in longitude) : Sb (the Moon's horary motion in latitude) :: radius : tan. bLS the inclination of the relative orbit; and coſ. bLS : radius :: LS : Lb the horary motion in the relative orbit. By logarithms the calculations are thus:

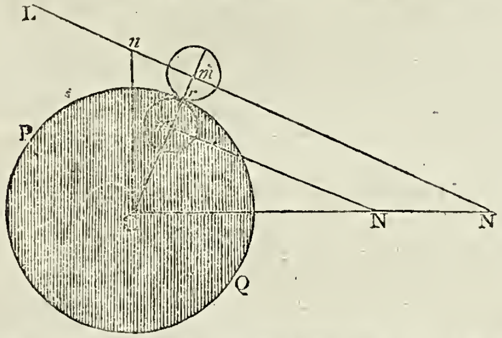
$$\text{Log. } Sb + 10, - \text{log. } LS = \text{log. tan. } bLS.$$
$$\text{Log. } LS + 10, - \text{log. coſ. } bLS = \text{log. } Lb.$$

M. de la Lande obſerves, that if we add 8" to the difference of the horary motion in longitude it will give the horary motion in the *relative* orbit; for in a right-lined triangle, of which the baſe is the difference of the horary motions in longitude, which is about half a degree, and the angle at the baſe about 5⅔°, the difference between the baſe and hypothenuſe will always be about 8".

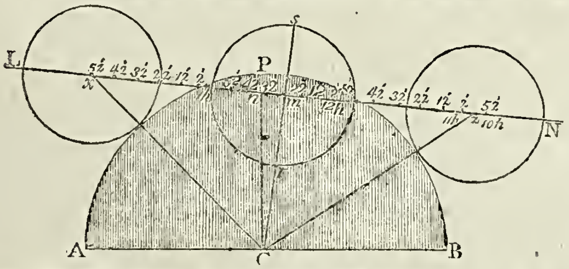


At the time of oppoſition, find, from the tables, the Moon's horizontal parallax, its ſemidiameter, and the ſemidiameter of the Sun, the horizontal parallax of which we may here take = 9". To find the ſemidiameter of the Earth's ſhadow at the Moon, ſeen from the Earth; let A B be the diameter of the Sun, T R the diameter of the O and C their centers; draw A T, B R, to meet at I, and join O C I; let F G H be the diameter of the Earth's ſhadow at the diſtance of the Moon, and join O T, C F. Now, the angle FCG = CFA — CIA, but CIA = OTA — TOC, therefore FCG = CFA — OTA + TOC, that is, the angle under which the ſemidiameter of the Earth's ſhadow appears at the Moon, is equal to the ſum of the horizontal parallax of the Sun and Moon diminiſhed by the apparent ſemidiameter of the Sun. In eclipſes of the Moon, the ſhadow is found to be a little greater than this rule gives it, owing to the atmoſphere of the Earth. This augmentation of the ſemidiameter is, according to M. Caſſini, 20"; according M. Monnier, 30"; and, according to M. de Hire, 60". As the angle CIT (= OTA — TOC) is known, we have ſin. TIC : coſ. TIC :: TC : CI the length of the Earth's ſhadow. If we take the angle $ATO = 16' 3''$ the mean ſemidiameter of the Sun, $TOC = 9''$ the horizontal parallax of the Sun, we have $CIT = 15' 54''$; hence ſin. 15′ 54″ : coſ. 15′ 54″, or 1 : 212·6 :: TC : $CI = 216{\cdot}2\,TC$.

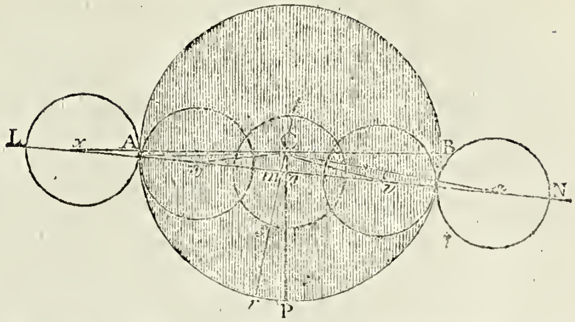
Now, in the next figure, let P Q repreſent the ſection of the Earth's ſhadow at the Moon, C N the ecliptic, N L the Moon's orbit; draw C n perpendicular to C N, and C m perpendicular to N L, and let the Moon at m juſt touch the Earth's ſhadow at r externally, ſo that C m may be the ſum of the radii of the Moon and Earth's ſhadow; then, to determine when this happens, we may take the angle at $N = 5° 17'$, which is very nearly its value in all eclipſes, the inclination of the lunar orbit being at that time always greateſt; hence, ſine 5° 17′ : rad. :: ſin. Cm : ſin. CN; now, the greateſt value of Cm is about 1° 3′ 30″; hence the correſponding value of $CN = 11° 34'$; when, therefore, CN is greater than that quantity, there can be no eclipſe. According to M. Caſſini, if the latitude Cn of the Moon at the time of the ecliptic conjunction exceed the ſum of the ſemidiameters of the Earth's ſhadow and Moon by 18″, there will be no eclipſe; but, if it do not exceed that ſum by 16″, there will be an eclipſe. If $Cm = Cr - rm$, or the limbs touch internally, the eclipſe will be juſt total; hence, if the diſtance of the Moon's node from the place of the Earth be leſs than the computed value of CN in this caſe, there muſt be a total eclipſe of ſome duration. And, as it now appears that there will be an eclipſe, proceed as follows to compute it:



To compute an Eclipſe of the Moon. For this purpoſe, let A P B, in the two following figures, be that half of the Earth's ſhadow where the Moon paſſes through; N L the relative orbit of the Moon, one figure repreſenting a partial eclipſe, and the other a total one; draw C m r perpendicular to N L, and let z be the centre of the Moon at the beginning of the eclipſe, m at the middle, x at the end, v at the beginning of total darkneſs, w at the end; alſo let A B be the ecliptic, and C n perpendicular to it; if the Moon at n have north or ſouth latitude increaſing, the angle C nm is to be ſet off to the right; otherwiſe to the left of C n. Now, in the right-angled triangle C nm, we know C n the latitude of the Moon at the time of the ecliptic conjunction, and the angle C nm the complement of the angle which the relative orbit of the Moon makes with the ecliptic; hence, radius : coſ. Cnm :: Cn : nm, which we call the *reduction*; and radius : ſine Cnm :: Cn : Cm. By logarithms the calculations are thus:



Log. coſ. Cnm + log. Cn — 10, = log. nm.
Log. ſin. Cnm + log. Cn — 10, = log. Cm.



The horary motion (h) of the Moon upon its relative orbit being known, we know the time of deſcribing mn, by ſaying, $h : mn ::$ 1 hour : the time of deſcribing mn; the computation of this is moſt readily performed by logiſtic logarithms. Hence, knowing the time of the ecliptic conjunction at n, we know the time of the middle of the eclipſe at m. Next, in the right-angled triangle Cmn, we know Cm, and Cz the ſum of the ſemidiameters of the Earth's ſhadow and the Moon, to find mz, which is done thus by logarithms; as $mz = \sqrt{Cz^2 - Cm^2} = \sqrt{\overline{Cz+Cm} \times \overline{Cz-Cm}}$, the logarithm of $mz = \frac{1}{2} \times \overline{\log.\overline{Cz+Cm} + \log.\overline{Cz-Cm}}$. Hence the horary motion of the Moon being known, we know the time of deſcribing zm, which *ſubtracted* from the time at m gives the time of the beginning, and *added*, gives the time of the end. In the ſame manner, in the right-angled triangle C mv, we know C m, and C v the difference of the ſemidiameters of the Earth's ſhadow and Moon; hence, by logarithms, log. of $mv = \frac{1}{2} \times \overline{\log.\overline{Cv+Cm} + \log.\overline{Cv-Cm}}$; from whence, as before, we know the time of deſcribing $m\,v$, which *ſubtracted* from the time at m gives the time of the beginning of total darkneſs, and *added*, gives the time of the end. The magnitude of the eclipſe at the middle is repreſented by $t\,r$, which is the greateſt diſtance of the Moon within the Earth's ſhadow, and this is meaſured in terms of the diameter of the Moon, conceived to be divided into twelve equal parts, called *digits*, or *parts deficient*; to find which, we know C m, the difference between which and C r gives $m\,r$, which added to $m\,t$, or if m fall *out* of the ſhadow take the difference between $m\,r$ and $m\,t$, and we get $t\,r$; hence, to find the number of digits eclipſed, ſay, $mt : tr ::$ 6 *digits* or 360′ (it being uſual to divide a digit into ſixty equal parts, and call them minutes) : the *digits eclipſed*. If the latitude of the Moon be north, we uſe the *upper* ſemicircle; if ſouth, we take the *lower*.

Ex. 1. *A Computation of a Partial Eclipſe of the Moon, on February* 3, 1795; *for the Meridian of the Royal Obſervatory at Greenwich.*

The time of the mean full Moon is at 3d. 19h. 59′. 47·6″. and the mean time of the ecliptic oppoſition is at 12h. 46′. 18″. from which ſubtract the equation of time 14′·20″, and we have 12h. 31′. 58″. the apparent time at Greenwich. To this time compute the Moon's place in the ecliptic, and it will be found 4ſ. 15°. 15′. 57″. the oppoſite point to which is 10ſ. 15°. 15′. 57″. the place of the Sun. Compute alſo the Moon's latitude Cn, and it will be found 37′ 39″ N. aſcending.

By the aſtronomical tables, the horary motion of the Moon in latitude is 2′ 57″; the horary motion of the Sun is 2′ 32″, and of the Moon 32′ 9″ in longitude; hence the horary motion of the Moon from the Sun in longitude is 29′ 37″; conſequently the horary motion of the Moon from the Sun on the relative orbit is 29′ 45″; alſo the inclination of the relative orbit is 5° 41′ 27″. The reduction

dm is $3' 44''$; reduce this into time by logiſtic logarithms, and the operation is thus:

3′ 44″		1·2061
29 45		0·3047
7 32	time of deſcribing *mn*	0·9014

The neareſt approach Cm of the centres is $37' 28''$. Now, from 12h. 31′. 58″. ſubtract 7′ 32″, and it leaves 12h. 24′. 36″. the *middle* of the eclipſe.

By the tables, the horizontal parallax of the Sun is 0′ 9″, and of the Moon 56′ 30″; alſo the apparent ſemidiameter of the Sun is 16′ 16″, and of the Moon 15′ 24″. Hence, hor. par. ⊙ + hor. par. ☾ — ſemidiam. ⊙ + 50″ = 41′ 13″, the ſemidiameter of the Earth's ſhadow increaſed by 50″ for refraction. Hence,

Semid. ☾ + ſem. ⊖'s ſhad.	56′ 37″ = 3397″	
Neareſt app. of centres	37 28 = 2248	
Sum	5645	—log. 3·751664
Difference	1149	—log. 3·060320
		2)6·811984
Log. of 2546·8″ = 42′ 26·8″ mot. of half duration		3·405992

Reduce this into time by the logiſtic logarithms.

29′. 45″.		0·3047
42. 27.		0·1503
1h. 25. 37.	half duration	0·8456

Subtract this from and add it to 12h. 24′. 26″. and we get 10h. 58′. 49″. for the *beginning*, and 13h. 50′. 3″. for the *end*.

From $Cr = 41' 13''$ ſubtract $Cm = 37' 28''$, and we get $mr = 3' 45''$; hence $mr + mt = rt = 19' 9''$, the parts deficient; conſequently 15′ 24″ : 19′ 9″ :: 6d. or 360′ : 7d. 27′. 36″. the digits eclipſed. By logiſtic logarithms the computation is thus:

19′. 9″. log. + 1,	1·4960
15 24	0·5906
7d. 27 36	0·9054

Hence the time of this eclipſe are, February 3, 1795, the

Beginning at	10h.	58′.	49″.	apparent time at Greenwich.
Middle	12	24	26	
End	13	50	3	
Duration	2	51	12	
Digits eclipſed	7d.	27	36	on the Moon's ſouth limb, as in the preceding figure.

Ex. 2. *A Computation of a Total Eclipſe of the Moon, on December 3, 1797; for the Meridian of the Royal Obſervatory at Greenwich.*

By computation the mean time of the ecliptic oppoſition is 3d. 16h. 16′. 46″. to which add 9′ 18″ the equation of time, and you get 3d. 16h. 26′. 4″. for the apparent time. To this time compute the Moon's place in the ecliptic, and it will be found to be 2ſ. 12°. 35′. 19″; conſequently the Sun's place is 8ſ. 12°. 35′. 19″. Compute alſo the Moon's latitude Cn, and it will be found 4′ 55″ S. decreaſing. By the tables, the horary motion of the Moon in latitude is 3′ 15″; the horary motion of the Sun is 2′ 32″, and of the Moon 35′ 14″ in longitude; hence the horary motion of the Moon from the Sun in longitude is 32′ 42″; conſequently the horary motion of the Moon from the Sun on the relative orbit is 32′ 50″; alſo the inclination of the relative orbit is 5° 40′ 34″. The reduction nm is 0′ 29″; reduce this into time by the logiſtic logarithms, and the operation is thus:

52′ 50″		0·2618
0 29		2·0939
0 43	time of deſcribing *mn*	1·8321

The neareſt approach Cm of the centres is 4′ 54″.

To 16h. 26′. 4″. add 53″, and it gives 16h. 26′. 57″. for the *middle* of the eclipſe.

By the tables, the horizonal parallax of the ſun is 0′ 9″, and of the Moon 59′ 9″; alſo the apparent ſemidiameter of the Sun is 16′ 17″, and of the Moon 16′ 6″. Hence hor. par. ⊙ + hor. par. ☾ — ſemid. ⊙ + 50″ = 43′ 51″, and the ſemidiameter of the Earth's ſhadow increaſed by 50″ for refraction. And as Cr (= 43′ 51″) is greater than $Cm + ms$ (= 21′), the eclipſe muſt be total. Hence,

Sem. ☾ + ſem. ⊖'s ſhad.	59′ 57″ = 3597″	
Neareſt ap. of the centres	4 54 = 294	
Sum	3891	—log. 3·5900612
Difference	3303	—log. 3·5189086
		2)7·1089698
Log. of 3585″ = 59′ 45″ mot. of half duration		3·5544849

Reduce this into time by the logiſtic logarithms; but becauſe the fourth term, in this caſe, would come out a greater quantity than that to which the table extends, we will take the half of 59′ 45″, and then double the concluſion:

32′ 50″	0·2618
29 52·5	0·30285
54 35·5	0·04105

Hence 1h. 49′. 11″. is the half duration; which ſubtracted from and added to 16h. 26′. 57″. gives 14h. 37′. 46″. for the *beginning*, and 18h. 16′. 8″. for the *end*.

By the ſame method we may alſo find the time of half the duration of total darkneſs thus:

Sem. ⊖'s ſhad. — ſem. ☾	27′ 45″ = 1665″	
Neareſt ap. of the centres	4 54 = 294	
Sum	1959	—log. 3·2920344
Difference	1371	—log. 3·1370375
		2)6·4290719
Log. of 1639″ = 27′ 19″ mot. of ½ dur. of tot. dark.		3·2145359

Reduce this into time by the logiſtic logarithms.

52′ 50″		0·2618
27 19		0·3417
49 55	half duration of total darkneſs	0·0799

Subtract this from and add it to 16h. 26′. 57″. and it gives 15h. 37′. 2″. for the beginning of total darkneſs, and 17h. 16′. 52″. for the end.

From $Cr = 43' 51''$ ſubtract $Cm = 4' 54''$, and we get $mr = 38' 57''$, to which add $tm = 16' 6''$, and we get $tr = 55' 3''$ the parts deficient; hence 16′ 6″ : 55′ 3″ :: 6d. or 360′ : 20d. 31′. the digits eclipſed. The operation by logiſtic Logarithms is thus:

55′ 3″ log. + 1,	1·0374
16 6	0·5713
20d. 31 0	0·4661

Hence the times of this eclipſe are, December 3, 1797, the

Beginning at	14h.	37′.	46″.	apparent time at Greenwich.
Total darkneſs begins	15	37	2	
Middle	16	26	57	
Total darkneſs ends	17	16	52	
End of the eclipſe	18	16	8	
Duration of total darkneſs	1	39	50	
Duration of the whole eclipſe	3	38	22	
Digits eclipſed	20d.	31	0	

If the time correſponding to the difference between the meridian of Greenwich and that of any other place, be applied to the times here found, it will give the times at that place.

TO CONSTRUCT an ECLIPSE of the MOON.

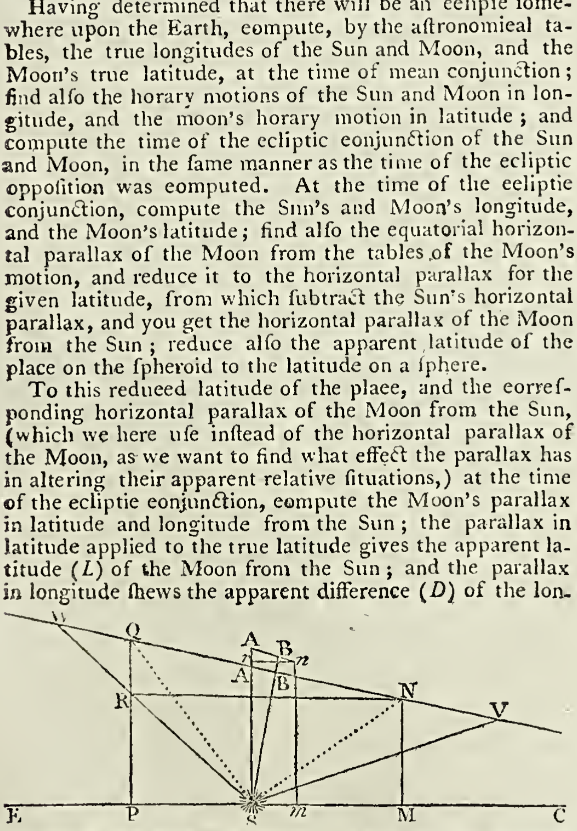
Inſtead of *computing* the firſt eclipſe, it may be *conſtructed* thus. Having a ſcale of minutes and ſeconds, as in the preceding figure in p. 445, with the centre C and radius $CB=41' 13''$, the ſemidiameter of the ſhadow, deſcribe a circle; draw Cn perpendicular to ABC and equal to $37' 19''$ the Moon's latitude at the ecliptic conjunction; make the angle $CnN=84^\circ 18' 33''$ the complement of the angle which the relative orbit makes with the ecliptic, and produce Nn to L; with a radius $=56' 37''$, the ſum of the ſemidiameters of the Earth's ſhadow and Moon, ſet off Cz, Cx; let fall the perpendicular Cm upon NL; and with the centres z, m, x, and radius $=15' 24''$, the ſemidiameter of the Moon, deſcribe the circles repreſenting the Moon. To find the beginning, middle, and end, mark the point n 12h. 32′. the time of the ecliptic conjunction; and, with a radius equal to the relative horary motion of the Moon upon NL, ſet off that extent from n both ways, and divide each interval into as many equal parts as can conveniently be done; and continue theſe diviſions to z and x, and the times correſponding to the points z, m, x, ſhew the beginning, middle, and end, of the eclipſe. And, if tr be meaſured upon the ſcale, it will ſhew the digits eclipſed. This method will give the time ſufficiently near, when we only want to predict the eclipſe, as we may depend upon the time to a minute, if the radius CB be ſix or ſeven inches. We may alſo proceed the ſame if the eclipſe be total.

To CALCULATE an ECLIPSE of the SUN for any PARTICULAR PLACE.

An eclipſe of the Sun, or rather of the Earth, without reſpect to any particular place, may be calculated exactly in the ſame manner as an eclipſe of the Moon, that is, the times when the Moon's umbra or penumbra firſt touches and leaves the Earth; but to find the times of the beginning, middle, and end, at any particular place, the apparent place of the Moon, as ſeen from thence, muſt be determined, and conſequently its parallax in latitude and longitude muſt be computed, which renders the calculation of a ſolar eclipſe extremely long and tedious.

Having determined that there will be an eclipſe ſomewhere upon the Earth, compute, by the aſtronomical tables, the true longitudes of the Sun and Moon, and the Moon's true latitude, at the time of mean conjunction; find alſo the horary motions of the Sun and Moon in longitude, and the moon's horary motion in latitude; and compute the time of the ecliptic conjunction of the Sun and Moon, in the ſame manner as the time of the ecliptic oppoſition was computed. At the time of the ecliptic conjunction, compute the Sun's and Moon's longitude, and the Moon's latitude; find alſo the equatorial horizontal parallax of the Moon from the tables of the Moon's motion, and reduce it to the horizontal parallax for the given latitude, from which ſubtract the Sun's horizontal parallax, and you get the horizontal parallax of the Moon from the Sun; reduce alſo the apparent latitude of the place on the ſpheroid to the latitude on a ſphere.

To this reduced latitude of the place, and the correſponding horizontal parallax of the Moon from the Sun, (which we here uſe inſtead of the horizontal parallax of the Moon, as we want to find what effect the parallax has in altering their apparent relative ſituations,) at the time of the ecliptic conjunction, compute the Moon's parallax in latitude and longitude from the Sun; the parallax in latitude applied to the true latitude gives the apparent latitude (L) of the Moon from the Sun; and the parallax in longitude ſhews the apparent difference (D) of the longitudes of the Sun and Moon. Thus, in the annexed figure, Let S be the Sun, E C the ecliptic; take $SM=D$, draw M N perpendicular to M S and take it $=L$, then N is the apparent place of the Moon, and $SN=\sqrt{D^2+L^2}$ is the apparent diſtance of the Moon from the Sun.



If the Moon be to the *eaſt* of the nonageſimal degree, the parallax increaſes the longitude; if to the *weſt*, it *diminiſhes* it; hence if the *true* longitudes of the Sun and Moon be equal, in the former caſe the apparent place will lie from S towards E, and in the latter towards C. To ſome time, as an hour, *after* the true conjunction if the apparent place be towards C, or if the Moon be to the *weſt* of the nonageſimal degree; or *before* the true conjunction if the apparent place be towards E, or if the Moon be to the *eaſt* of the nonageſimal degree, find the Sun's and Moon's true longitude, and the Moon's true latitude, from their horary motions; and to the ſame time compute the Moon's parallax in latitude and longitude from the Sun; apply the parallax in latitude to the true latitude, and it gives the apparent latitude (l) of the Moon from the Sun; take the difference of the Sun's and Moon's true longitude, and apply the parallax in longitude, and it gives the apparent diſtance (d) of the Moon from the Sun in longitude. From S ſet off $SP=d$, and to E C erect the perpendicular P Q equal to l, and Q is the apparent place of the Moon at one hour from the true conjunction; and $SQ=\sqrt{d^2+l^2}$ is the apparent diſtance of the Moon from the Sun; draw the ſtraight line N Q, and it will repreſent the relative apparent path of the Moon, conſidered as a ſtraight line, in general it being very nearly ſo; its value alſo repreſents the relative horary motion of the Moon in the apparent orbit, the relative horary motion in longitude being M P.

The difference between the Moon's apparent diſtance in longitude from the Sun at the time of the true ecliptic conjunction, and at the interval of an hour, gives the apparent horary motion (r) in longitude of the Moon from the Sun; the difference (D) between the true longitude at the ecliptic conjunction and the Moon's apparent longitude is the apparent diſtance of the Moon from the Sun in longitude at the true time of the ecliptic conjunction; hence, $r : D ::$ 1 hour : the time from the true to the apparent conjunction, conſequently we know the time of the apparent conjunction. To find whether this time is accurate, we may compute (from the horary motions of the Sun and Moon) their true longitudes, and the Moon's parallax in longitude from the Sun, and apply it to the true longitude, and it gives the apparent longitude; and, if this be the ſame as the Sun's longitude, the time of the apparent conjunction is truly found; if they be not the ſame, find from thence the true time, as before. To the true time of the apparent conjunction, find the Moon's true latitude from its horary motion, and compute the parallax in latitude, and you get the apparent latitude at the time of the apparent conjunction. Draw SA perpendicular to CE and equal to this apparent latitude; then the point A will probably not fall in NQ; firſt let it fall in QN, to which draw SB perpendicular, and NR parallel, to PM. Then knowing NR ($=PM$), and QR ($=QP \sim MN$), we have

$$NR : RQ :: \text{rad.} : \text{tan.}\ QNR, \text{ or } ASB$$
$$\text{Sin.}\ QNR : \text{rad.} :: QR : QN$$

The time of deſcribing NQ in the apparent orbit being equal to the time from M to P in longitude, NQ is the horary motion in the apparent orbit.

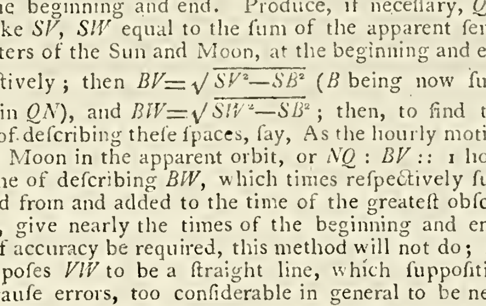
$$\text{Rad.} : \text{ſin.}\ ASB :: AS : AB.$$
$$\text{Rad.} : \text{coſ.}\ ASB :: AS : SB.$$

At the apparent conjunction the Moon appears at A, which time is known; when the Moon appears at B, it is at its neareſt diſtance from the Sun, and conſequently the time is that of the greateſt obſcuration, (uſually called the time of the middle,) provided there is an eclipſe, which will always be the caſe when SB is leſs than the *ſum* of the apparent ſemidiameters of the Sun and Moon. If therefore it appears that there will be an eclipſe, we proceed thus to find its quantity, and the beginning and end. As we may conſider the motion to be uniform, $QN : AB ::$ the time of deſcribing NQ : the time of deſcribing AB, which added to or ſubtracted from the time at A, (according as the apparent latitude is decreaſing or increaſing,) gives the time of the greateſt obſcuration. Or, inſtead of taking QN and the time of deſcribing it, we may take An and the correſponding time, which will be more accurate.

From the ſum of the apparent ſemidiameters of the Sun and Moon ſubtract BS, and the remainder ſhews how much of the Sun is covered by the Moon, or the parts deficient; hence, ſemid. ☉ : parts deficient :: 6 digits : the digits eclipſed. If SB be leſs than the *difference* of the ſemidiameters of the Sun and Moon, and the Moon's ſemidiameter be the *greater*, the eclipſe will be *total*; but, if it be the *leſs*, the eclipſe will be *annular*, the Sun appearing all round the Moon; if B and S coincide, the eclipſe will be *central.*

Let A fall out of QN; and, to increaſe the accuracy, near to the apparent conjunction, that is within ten or fifteen minutes, calculate the aparent longitude mS of the Moon from the Sun, and the apparent latitude mn; draw nr parallel to Sm; and in the triangle Anr, find the angle Anr which is equal to ASB, and compute SB, AB, as before. But, except in caſes where very great accuracy is required, this is unneceſſary. If NQ were a perfect ſtraight line, the firſt operation would give the correct values of AB, BS. Kepler, in an eclipſe in 1598, found a curvature of more than three minutes in three hours, becauſe the Moon was very near the nonageſimal. In the eclipſe in 1764, M. de la Lande found a curvature of twenty-ſix ſeconds, but he does not ſay in what time. It is owing to this circumſtance, that is, the curvature of NQ, that it is neceſſary to find another point near to A, in order to determine accurately the values of AB, SB. Having determined the value of SB, and time of the greateſt obſcuration, we thus find the beginning and end. Produce, if neceſſary, QN, and take SV, SW equal to the ſum of the apparent ſemidiameters of the Sun and Moon, at the beginning and end reſpectively; then $BV = \sqrt{SV^2 - SB^2}$ (B being now ſuppoſed in QN), and $BW = \sqrt{SW^2 - SB^2}$; then, to find the times of deſcribing theſe ſpaces, ſay, As the hourly motion of the Moon in the apparent orbit, or $NQ : BV ::$ 1 hour the time of deſcribing BW, which times reſpectively ſubtracted from and added to the time of the greateſt obſcuration, give nearly the times of the beginning and end. But, if accuracy be required, this method will not do; for it ſuppoſes VW to be a ſtraight line, which ſuppoſition will cauſe errors, too conſiderable in general to be neglected, and will never do where great accuracy is required. It may however always ſerve as a rule to aſſume the time of the beginning and end. Hence it follows, that the time of the greateſt obſcuration at B is not neceſſarily equidiſtant from the beginning and end. If the eclipſe be total, take Sv, Sw, equal to the difference of the ſemidiameters of the Sun and Moon, and then $Bv = Bw = \sqrt{Sv^2 - SB^2}$, from whence we way find the times of deſcribing Bv, Bw, as before, which we may conſider as equal, and which applied to the time of the greateſt obſcuration at B, give the time of the beginning and end of the total darkneſs.

To find more accurately the time of the beginning and end of the eclipſe, we muſt proceed thus. At the eſtimated time of the beginning, find, from the horary motions, and the computed parallaxes, the apparent latitude



MN of the Moon, and its apparent longitude MS from the Sun, and we have $SN = \sqrt{SM^2 + MN^2}$, and if this be equal to the apparent ſemid. ☾ + ſemid. ☉ (which ſum call S) the eſtimated time is the time of the beginning; but, if SN be not equal to S, aſſume (as the error directs) another time at a ſmall interval from it, *before*, if SN be *leſs* than S, but *after*, if it be *greater*; to that time compute again the Moon's apparent latitude mn, and apparent longitude Sm from the Sun, and find $Sn = \sqrt{Sm^2 + mn^2}$; and, if this be not equal to S, proceed thus: As the difference of Sn and SN is to the difference of Sn and SL (=S) ſo is the above aſſumed interval of time, or time of the motion through Nn, to the time through nL, which added to or ſubtracted from the time at n, according as Sn is greater or leſs than SL, gives the time of the beginning. The reaſon of this operation is, that, as Nn, nL, are very ſmall, they will be very nearly proportional to the differences of SN, Sn, and Sn, SL. But as the variation of the apparent diſtance of the Sun from the Moon is not exactly in proportion to the variation of the differences of the apparent longitudes and latitudes, in caſes where the utmoſt accuracy is required, the time of the beginning thus found (if it appear to be not correct) may be corrected, by aſſuming it for a third time, and proceeding as before. This correction however will never be neceſſary, except where extreme accuracy is required in order to deduce ſome conſequences from it. But the time thus found is to be conſidered as accurate, only ſo far as the tables of the Sun and Moon can be depended upon for their accuracy; and the beſt lunar tables are ſubject to an error of thirty ſeconds in longitude, which, in this eclipſe, would make an error of about a minute and half in the time of the beginning and end. Hence accurate obſervations of an eclipſe compared with the computed time, furniſhes the means of correcting the lunar tables. In the ſame manner the end of the eclipſe may be computed.

Ex. *To compute the Times of the Solar Eclipſe on April* 3, 1791; *for the Royal Obſervatory at Greenwich.*

The time of the mean conjunction is April 3, 2h. 58'. 15''. mean time, at which time we find

Mean long. of the Sun -	oſ.	11°.	51'.	16''.
Long. of the Moon's deſc. node	0	22	14	44
Mean long. of ☉ from ☾'s node	0	10	23	28

To the mean time of the new Moon, compute the Sun's and Moon's true longitudes, and they will be found to be oſ. 13°. 47'. 43''. and oſ. 14°. 49'. 24''. compute alſo the Moon's true latitude, and it will be found to be 38' 49'' N. deſcending. At the ſame time, the Sun's horary motion is found to be 2' 28'', the Moon's horaray motion in longitude is 30' 12'', and in latitude 2' 46'' decreaſing; hence the Moon's horary motion in longitude from the Sun is 27' 44''. By proceeding as directed for the eclipſe of the Moon, we find the mean time of the ecliptic conjunction of the Sun and Moon to be 3d. 0h. 44'. 48''. from which ſubtract 3' 18'' the equation of time, and it gives the apparent time 3d. 0h. 41'. 30''. at which time, the Sun's and Moon's longitude in the ecliptic is oſ. 13°. 42'. 14''. and the Moon's true latitude is 44' 59'' N. deſcending. The horizontal parallax of the Moon is 24' 46'', and of the Sun, 9''; hence the horizontal parallax of the Moon from the Sun is 54' 37''; therefore the Moon's parallax in longitude from the Sun is —20' 56'', and its parallax in latitude from the Sun is 33' 44''; hence —20' 56'' is the apparent diſtance of the Moon from the Sun in longitude; alſo the apparent latitude from the Sun is 11' 15'' north.

As the Moon is to the weſt of the nonageſimal degree, aſſume 1h. after, or 3d. 1h. 41'. 30''. at which time (from the horary motions of the Sun and Moon) the Sun's true longitude is found to be oſ. 13°. 44'. 42''. the Moon's true longitude on the ecliptic oſ. 14°. 12'. 26''. and true latitude 42' 13'' N. deſcending. The Moon's parallax in latitude is −30′ 41″; hence the Moon's apparent latitude is 11′ 32″; alſo its parallax in longitude from the Sun is −28′ 50″; but the Moon's true longitude exceeds the Sun's by 0° 27′ 44″; therefore the apparent diſtance of the Moon from the Sun in longitude is −1′ 6″. Hence

Moon's ap. diſt. in long. at 0h. 41′. 30″ = −20′ 56″
1 41 30 = − 1 6

Apparent hor. mot. ☾ from ☉ in long. 19 50 = MP.

Hence 19′ 50″ : 20′ 56″ :: 1h. : 1h. 3′. 20″. which added to the time of the true conjunction 0h. 41′. 30″. gives 1h. 44′. 50″. the time of the apparent conjunction. Alſo the apparent horary motion in latitude is $17''=RQ$; hence QN is very nearly equal to MP, as in the figure preceding the laſt.

At this time (from the horary motions) the Sun's true longitude is found to be 0ſ. 13°. 44′. 50″. the Moons 0ſ. 14°. 14′. 7″. and the Moon's true latitude 42′ 4″; hence the Moon's true longitude is greater than the Sun's by 29′ 17″. The Moon's parallax in latitude from the Sun is −30′ 32″, and in longitude −29′ 15″; hence the Moon's apparent latitude is 11′ 32″ N. alſo the apparent longitude from the Sun is 29′ 17″−29′ 15″=2″, the quantity by which the Moon's apparent longitude exceeds the Sun's true longitude. This difference ſhews the apparent conjunction, found above, to be very nearly true; and to get it accurate, ſay, 19′ 50″ : 2″ :: 1h. : 6″, which (as the Moon's apparent longitude is the greater) ſubtracted from 1h. 44′. 50″. gives 1h. 44′. 44″. the true time of the apparent conjunction, at which time the Moon's apparent longitude is 0ſ. 13°. 44′. 50″. the ſame as the Sun's true longitude, that not having ſenſibly varied in ſix ſeconds of time. The apparent latitude is 11′ 32·25″. Now at 1h. 41′. 30″. the Moon's apparent diſtance in longitude from the Sun has been ſhewn to be 1′ 6″; and at 1h. 44′. 44″. the longitude of the Sun and the Moon's apparent longitude are equal; therefore in 3′ 14″ the apparent motion of the Moon from the Sun was $1'\,6''=66''$; let this $=Sm$, or nr; alſo at 1h. 41′. 30″. the apparent latitude $mn=11'\,32''$, and at 1h. 44′. 44″. it was $11'\,32{\cdot}25''=SA$; therefore $Ar=0{\cdot}25''$. Hence, As 66″ is to 0·25″ ſo is rad. to tan. Anr, or $SAB=13'\,1''$. As the angle Anr is ſo very ſmall, we may take $An=rn=66''$ without any ſenſible error; and for the ſame reaſon SB may be taken $=SA=11'\,32''$. As rad. is to ſin. 13′ 1″ ſo is 11′ 32″ to $AB=2{\cdot}6''$. Hence, As $An=66''$ is to $AB=2{\cdot}6''$ ſo is 3′ 14″ to 8″ the time through BA, which taken from 1h. 44′. 44″. gives 1h. 44′. 36″. the time of the greateſt obſcuration at B.

The Moon's horizontal ſemidiameter is 14′ 56″, and its altitude at the time of the greateſt obſcuration (determined by a globe, which is ſufficiently near for this purpoſe) is about thirty-eight degrees; hence the augmentation of the diameter is nine ſeconds, conſequently the apparent ſemidiameter of the Moon is 15′ 5″, which added to 15′ 59″ the Sun's ſemidiameter, gives 31′ 4″, from which ſubtract $SB=11'\,32''$, and the remainder is 19′ 32″ the parts deficient; hence, As 15′ 59″ is to 19′ 32″ ſo is 6 digits to 7d. 19′. 57″. the digits eclipſed at the time of the greateſt obſcuration.

To find the time of the beginning, we muſt firſt get the time nearly in the manner above ſtated. The value of $SB=11'\,32''=692''$; and as the apparent ſemidiameter of the Moon is now 15′ 6″, we have $SV=31'\,5''=1865''$; hence $BV=1732''$. Now as MP is, in this caſe, nearly equal to QN, we may, for the purpoſe we here want it, aſſume the apparent horary motion of the Moon from the Sun in the apparent orbit equal to that in longitude, which is $19'\,50''=1190''$; hence, As 1190″ is to 1732″ ſo is 1h. to 1h. 27′. 20″. which ſubtracted from 1h. 44′. 36″. (the time at B) gives 0h. 17′. 16″. the time of the beginning, nearly. Let us therefore aſſume the beginning at 0h. 17′. at which time we find (from the horary motions of the Sun and Moon) the Sun's true longitude to be 0ſ. 13°. 41′. 15″. and the Moon's 0ſ. 13°. 29′. 55″. whoſe difference is 11′ 20″ their true diſtance in longitude; but the Moon's parallax in longitude is −17′ 45″; hence their apparent diſtance in longitude is $29'\,5''=1745''$. At the ſame time the Moon's true latitude is 46′ 7″, and its parallax in latitude −35′ 10″; hence the appareot latitude of the Moon from the Sun is 10′ 57″; therefore $SN=\sqrt{1745^2+657^2}=1864''=31'\,4''$, which being leſs than 31′ 5″ ſhews that the eclipſe is begun.

Let us next aſſume 0h. 16′. and by proceeding in the ſame manner, we find $Sn=1883''=31'\,23''$; therefore the eclipſe is not begun. Hence $31'\,23''-31'\,4''=19''$ is to $31'\,5''-31'\,4''=1''$ ſo is 1′ to 3″, which ſubtracted from 0h. 17′. gives 0h. 16′. 57″. for the beginning of the eclipſe.

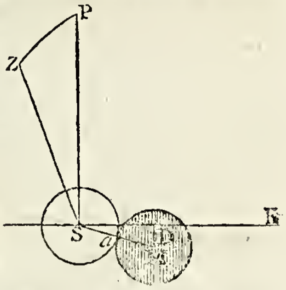
If to 1h. 44′. 36″. we add 1h. 27′. 20″. we have 3h. 11′. 56″. we will therefore aſſume 3h. 12′. for the end; and by proceeding as before, we find the apparent diſtance of the Moon from the Sun in longitude to be 30′ 37″, and the Moon's apparent latitude 10′ 48″; hence the Moon's apparent diſtance from the Sun is $\sqrt{1837^2+648^2}=1948''=32'\,28''$; but the ſum of the apparent ſemidiameters of the Sun and Moon is now 31′ 2″; conſequently the eclipſe is ended.

Let us next aſſume the time 3h. 6′. and the apparent diſtance of the Moon from the Sun in longitude is 28′ 28″; and in latitude 10′ 55″; hence the Moon's apparent diſtance from the Sun is $\sqrt{1708^2+655^2}=1829''=30'\,29''$ therefore the eclipſe is not ended. Hence, As $32'\,28''-30'\,29''=1'\,59''$ is to $31'\,2''-30'\,29''=33''$ ſo is 6′ to 1′ 39″, which added to 3h. 6′. gives 3h. 7′. 39″. for the end. Hence at the Royal Obſervatory at Greenwich, the tables give the times of the eclipſe on April 3, 1791,

Beginning - -	0h.	16′.	57″.	apparent time.
Greateſt obſcuration	1	44	36	
End - - -	3	7	39	
Digits eclipſed -	7d.	19	57	

If it be required to compute the eclipſe for any other place, inſtead of the latitude of Greenwich, uſe the latitude of the place; and reduce the apparent time at Greenwich to the apparent time at the place, according to the different meridians.

To find what point of the Sun's limb will firſt be touched by the Moon, let P, in the annexed figure, be the pole of the ecliptic ES, Z the zenith, S, M, the centres of the Sun and Moon when their limbs are in contact at a, and draw MD perpendicular to ES. PZ is the altitude of the nonageſimal degree, and SPZ is the Sun's diſtance from that point, both which are found in the computation of the parallax; alſo MD is the apparent latitude of the Moon; hence



$$\text{Rad.} : \tan. PZ :: \text{ſin.}\ SPZ : \tan. PSZ$$
$$\text{Tan.}\ SM : \text{rad.} :: \tan. DS : \text{coſ.}\ DSM$$

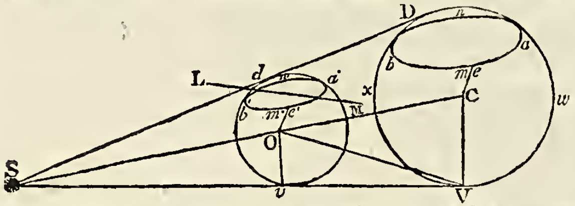
If L be the longitude of the nonageſimal degree, then $ZSD=90°PSZ$, when the Sun's longitude is between L and $L+180°$; otherwiſe $ZSD=90°+PSZ$; and $ZSD\pm MSD$ (according as the Moon's viſible latitude is S. or N. gives ZSM the diſtance of the point of the limb of the Sun firſt touched by the Moon from the higheſt point of the Sun's diſk.

In this eclipſe, $PZ=50°\,7'$, and $SPZ=25°\,16'$; hence $PSZ=27°\,3'$, which (in this caſe) added to 90° gives $117°\,3'=ZSD$; alſo $DSM=20°\,42'$, which (as the Moon's apparent latitude is north) ſubtracted from 117° 3′ gives $ZSM=96°\,21'$, the Moon's diſtance from the zenith of the Sun at the beginning of the eclipſe. In like manner, the diſtance at the middle and end of the eclipſe may be found, and thence the apparent path of the Moon over the Sun's diſk in reſpect to the horizon may be deſcribed.

In the computation of this eclipſe, the Moon's true latitude and longitude were at firſt computed from the tables, and afterwards determined from the horary motions; but, as the horary motions may be ſubject to a ſmall variation in the duration of an eclipſe, in caſes where the utmoſt accuracy is required, the true latitude and longitude ſhould be computed every time from the tables; in ſuch caſes, the decimals of the ſeconds ſhould alſo be taken into conſideration, which in this example were omitted. When we want only to predict an eclipſe, the method here practiſed will always be ſufficiently accurate, the error being always very ſmall, compared with the error to which the tables are ſubject, which may, at its maximum, be thirty ſeconds in longitude.

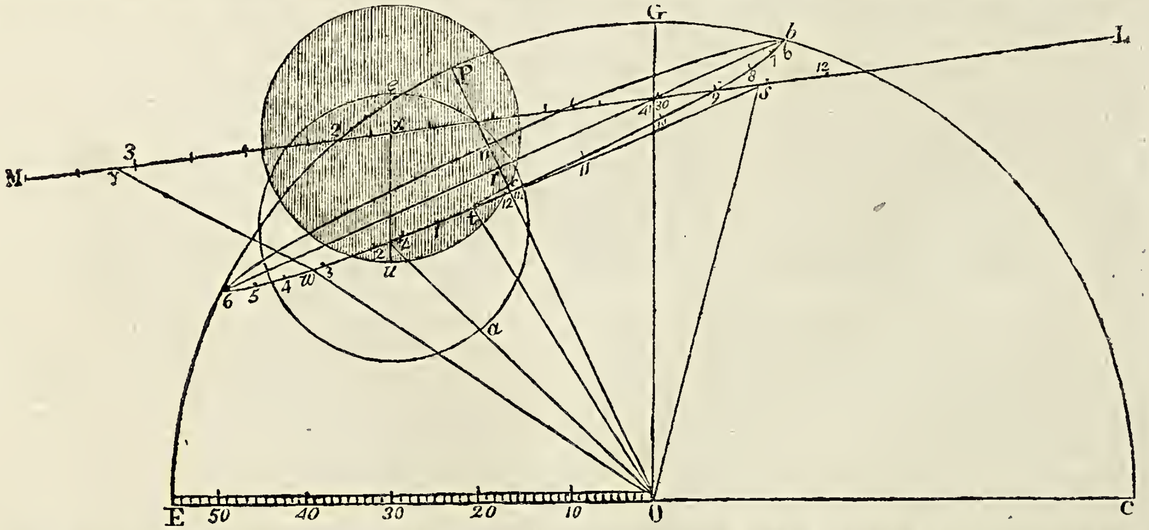
To construct a Solar Eclipse by Projection.

Let S, in the annexed figure, be the centre of the Sun, xw the enlightened hemiſphere of the Earth, which we muſt conceive to be perpendicular to SC; draw SD, SV, tangents to two oppoſite points of the Earth, and let $ambn$ be the apparent ellipſe deſcribed by any point m on the Earth's ſurface; let OC be the diſtance of the Moon from the Earth, and vd, $a'm'b'n'$ be the projection of VD, $ambn$, upon a plane at the Moon perpendicular to SC to an eye at S, and $a'm'b'n'$ will be the apparent motion of the centre of the Sun at S to the ſpectator deſcribing $ambn$. The curve $a'm'b'n'$ may be conſidered as an ellipſe; for the angle DSC being only 8¾ ſeconds, DS, CS, may be reckoned as parallel, and therefore the projection of DV upon a plane parallel to it may be conſidered as an orthographic projection, and conſequently the two figures may in all reſpects be conſidered as ſimilar. Let LM be the orbit of the Moon; then, if we know at any time the point of the ellipſe $ambn$ where the ſpectator is, we know the correſponding point where the centre of the Sun is in the ellipſe $a'm'b'n'$; if therefore we determine at the ſame time the point where the Moon is in its orbit LM, we ſhall know the apparent ſituation of the Moon in reſpect to the Sun. Hence if we find two points, one in the ellipſe $a'm'b'n'$ where the centre of the Sun is, and another in LM where the centre of the Moon is, at the ſame time, and about theſe centres, with radii equal to the apparent ſemidiameters of the Sun and Moon, we deſcribe two circles, they will repreſent the apparent ſituations of the two diſks. If that of the Moon fall upon the Sun, it ſhews how much the Sun is eclipſed at that inſtant. Now the angle $OVv = COV - OSV$, that is, the radius of projection, is equal to the difference of the horizontal parallaxes of the Moon and Sun. The projection Oe' of Ce is the parallax in altitude of the Moon from the Sun, ſuppoſing the Moon to be at the ſame altitude as the Sun; for the radius Ov repreſents the difference of the horizontal parallaxes of the Sun and Moon, or the horizontal parallax of the Moon from the Sun; and, as the parallax of each varies as the ſine of the apparent zenith diſtance, the difference of the parallaxes muſt vary as the ſine of their common apparent zenith diſtance; hence $Ov : Oe'$ :: difference of the horizontal parallaxes : difference of the parallaxes at their common apparent altitude; therefore if Ov repreſent the third term, Oe' will repreſent the fourth. In an eclipſe of the Sun therefore this will be nearly true, but not accurately ſo, except when the Sun and Moon are at the ſame altitude.



According to this projection, the apparent ellipſe deſcribed by any point of the Earth's ſurface, to an eye at the centre of the Sun, is projected upon a plane at the Moon perpendicular to a line joining the Earth and Sun; and the point of the ellipſe of projection, correſponding to any point of the other ellipſe where the ſpectator is, is the point where the centre of the Sun appears to the ſpectator. The centre of projection is in the ecliptic. If the lunar orbit be properly laid down and divided, ſhewing where the centre of the Moon is at any time, we ſhall then have the relative ſituation of the centres of the Sun and Moon at any time ſeen from the given place of the ſpectator. From theſe principles of projection, we thus conſtruct the ſolar eclipſe which we have here calculated; aſſuming ſuch elements as are neceſſary, from that calculation. For this purpoſe take a radius OE, equal to 54′ 37″, the difference of the Sun's and Moon's horizontal parallaxes, which call h, and divide it into minutes, as in the following figure, and deſcribe the ſemicircle EGC repreſenting half the circle of projection, EOC repreſenting the ecliptic, to which draw OG perpendicular. Find P the projected north pole; from the ſcale OE, take $Or = 54' 37''$ × ſin. lat. × coſ. dec. and in a line perpendicular to Or ſet off both ways $r6 = h$ × coſ. lat. and $rm = rn = h$ × cos. lat. × ſin. dec. and deſcribe the ellipſe $m6n6$, and divide it into hours, and then ſubdivide thoſe hours which you will want to make uſe of, as far as you conveniently can for the ſize of the figure. From the ſcale take Ov equal 44′ 59″, the Moon's true latitude north deſcending at the time of the ecliptic conjunction, and draw LvM

making



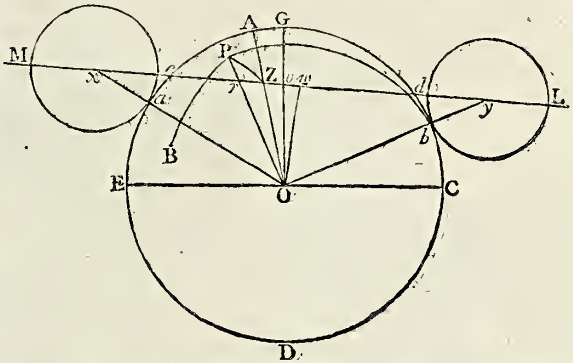
making an angle with Ov equal to 84° 18′, the complement of the angle which the relative orbit makes with the ecliptic, on the left ſide, if the latitude be north or ſouth decreaſing, and on the right, if increaſing; in this example it is on the left ſide; and LvM will repreſent the Moon's relative orbit. Mark upon the Moon's orbit at the point v, 41′ 30″, that being the time after twelve o'clock at which the true ecliptic conjunction happens; and with an extent=27′ 52″, the horary motion of the Moon from the Sun in its relative orbit, ſet off the hours each way from v, and ſubdivide them into minutes; or as far as the ſize of the figure will permit. Now to find the time of the middle of the eclipſe, take the compaſs, and find by trial what two correſponding times, as at z and x, upon the ellipſe and Moon's orbit are neareſt together, which will give the time of the greateſt obſcuration, becauſe the centres of the Sun and Moon are then at the leaſt diſtance. To find the time of the beginning, take, with the compaſs, from the ſcale, an extent equal to 31′ 5″, the ſum of the ſemidiameters of the Sun and Moon, and by trial find two correſponding times, as at s and t, at that diſtance, and it gives the time of the *beginning*; and if you find two correſponding times, as at y and w, at the diſtance 31′ 2″, the ſum of the ſemidiameters at the end, it gives the time of the *end*; or you may omit the variation of the diameter of the Moon in the interval. For the beginning muſt be when the centres of the Sun and Moon arrive at the diſtance of the ſum of their ſemidiameters; and the end muſt be when they have receded till they have got to that diſtance. To find the digits eclipſed at the greateſt obſcuration, take eu from the ſcale, and ſay, As ze is to eu ſo is ſix digits to the digits eclipſed. To find the digits eclipſed at any other time, take, with the compaſs, the interval at that time on the ellipſe and on the Moon's orbit, and apply it to the ſcale, and then ſay, As ze is to that diſtance ſo is ſix digits to the digits eclipſed.

The eclipſe may alſo be calculated from the projection, in the following manner: Aſſume the time at t of beginning, as determined by the conſtruction; draw tc perpendicular to OP, and join Ot, Os, as in the preceding figure. The time from t to m being given, convert it into degrees, a°; then ſin. $a^\circ \times rb = tc$, and cos. $a^\circ \times rm = rc$; but Or is known, hence Oc is known; therefore in the right angled triangle Oct, we know Oc, ct, to find cOt, and Ot; but POv is given, therefore $cOt \pm POv = tOv$ is known; alſo Ov and the angle Ovs are known by the conſtruction; and the time from s to v being given, and alſo the Moon's relative horary motion in LM, we know vs; hence in the triangle Ovs, we know Ov, vs, and the angle Ovs, to find Os, and the angle vOs; hence we find $tOs = tOv \pm vOs$; and laſtly, in the triangle tOs, we know tO, Os, and the angle tOs, to find ts, and if this be equal to the ſum of the ſemidiameters of the Sun and Moon, the aſſumed time is true; if it be not equal to the ſum, aſſume another time for the beginning, and find another value of ts, and proceed with theſe two as before directed. In like manner we may find the end. But this method is not ſubject to the ſame accuracy as the method of calculation before given.

Sir Iſaac Newton ſuppoſes that the aberration of rays in the focus of a teleſcope makes the image appear greater than it ought; and hence different teleſcopes will give different meaſures of the Sun's diameter, and conſequently make the eclipſe appear to begin at different times. That teleſcope which gives the diameter the leaſt, is the moſt perfect inſtrument. The excellent tranſit teleſcope at Greenwich makes the diameter of the Sun leſs by ſix ſeconds than that given by Mayer in his tables, as Dr. Maſkelyne has found by his obſervations. The diameter of the Sun aſſumed in theſe calculations has therefore been taken ſix ſeconds leſs than that which Mayer determined. M. du Sejour ſuppoſes that the rays of light coming from the Sun are inflected as they paſs by the Moon, which he attributes to the refraction which they ſuffer in paſſing through the Moon's atmoſphere; on this account the apparent contact of the limbs will not take place ſo ſoon as it otherwiſe would; this would be the ſame as a diminution of the Moon's diameter; which of theſe hypotheſes ought to be admitted M. de Sejour endeavoured to determine from the obſervations of Mr. Short, on the ſolar eclipſe, April 1, 1764, upon the diſtance of the horns of the Moon, but he could deduce nothing ſatisfactory from thence. He ſuppoſed the inflection 3·291″, and the diameter of the Moon to be diminiſhed by the ſame quantity, and calculated upon each ſuppoſition a great many diſtances of the horns, and compared them with the obſerved diſtances; but he could not decide between the two hypotheſes. An inflection of 1·8″, and a diminution of 1·5″, of the ſemidiameter, he found would ſatisfy ſome obſervations, and he ſeemed to think this concluſion moſt likely to be neareſt the truth; but he came at laſt to no determination upon the ſubject. All the requiſite obſervations ſeem not to be capable of being made to that degrees of accuracy which is neceſſary to ſettle ſo nice a matter. M. du Sejour therefore propoſed the following method to determine whether the rays of light paſſing by the limb of the Moon ſuffer any deviation. Take a teleſcope mounted upon a polar axis, with a wire micrometer annexed to it. When two ſtars come into the field of view together, and one of them is to be eclipſed by the Moon, open the wires, and bring one ſtar upon one of the wires and the other ſtar upon the other, and thus follow the ſtars until one of them be eclipſed, and at the inſtant before it diſappears obſerve whether its diſtance from the other ſtar is changed, that is, whether it be off the wire, the other ſtar remaining upon its wire; if this be found to be the caſe, the rays muſt have ſuffered a deviation. Traité Analytique, p. 420. We do not find that an obſervation of this kind has been ever made.

To trace out the Path on the Surface of the Earth, where the Eclipſe will be central, or for any number of Digits.

Let EACD be the enlightened hemiſphere of the Earth, O the centre of the diſk, or that point to which the Sun is vertical; EOC the plane of the ecliptic, OG perpendicular to it; P the north pole; join PO, and let LM repreſent the path of the centre of the penumbra, conceived to be upon the plane into which the diſk would be orthographically projected; then from the nature of that projection, the angles at O upon the ſurface will be equal to the angles into which they are projected. Now the place upon which the centre of the Moon is projected is manifeſtly that point on the Earth where the eclipſe is central, becauſe the projection is made by lines drawn to the centre of the Sun. Let Z be the projected centre of the Moon at any time, or the real centre of the penumbra, and PB any given meridian. Now we know Ov the Moon's latitude at the time of conjunction, and the angle OVz; and as the time, when the centre of the penumbra is at Z, is given, the time through Zv is known, and the relative horary motion of the Moon being known, vZ will be known; hence we can find ZO, and the angle ZOv;



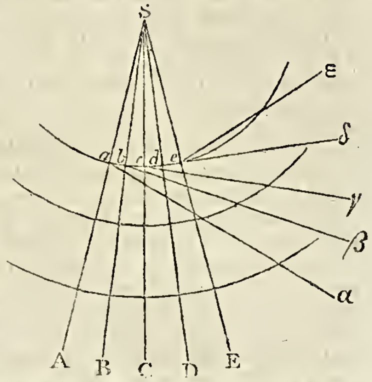
find the angle POv, and we ſhall have the angle POZ. Now conſider PO and ZO as two circles upon the Earth's ſurface, then the angle POZ between them is equal to the angle POZ of projection, and therefore known: alſo the arc PO is the complement of the Sun's declination; and to find the arc ZO, we muſt conſider ZO in the projection to be the ſine of the arc projected; hence the arc ZO is that whoſe ſine is to radius as OZ to OA, therefore we know the ſine of the arc ZO, and conſequently we get ZO itſelf; hence, in the ſpherical triangle OPZ, we know PO, OZ, and the angle POZ, to find PZ the complement of the latitude of the place where the eclipſe is central. Find alſo the angle OPZ; then the time at the meridian PB being known, the angle OPB (the Sun's diſtance from the meridian) is known; hence we know the angle BPZ the longitude of the point Z from the meridian PB; therefore, the latitude and longitude of Z being known, the point Z is determined where the eclipſe was central at the given time. Make this calculation for every quarter or half hour, for all the time the penumbra is deſcribing de, and you will trace out upon the ſurface of the Earth the path of the centre of the penumbra, or that tract where the eclipſe is central. If we bring Z to d, we get the place where the Sun riſes centrally eclipſed; and if Z be brought to e, we ſhall find where the Sun ſets centrally eclipſed. If Z coincide with r, we get the place where the Sun is centrally eclipſed upon the meridian. Let y be the centre of the penumbra when it firſt touches the Earth, and x the centre when it leaves the Earth, and draw Ow perpendicular to LM. Then knowing Ov and the angle Ovw, we can find Ow and vOw; alſo $Oy =$ ſemid. ⊖ + ſemid. penumb. known; hence in the right-angled triangle yOw, we get the angle yOw, and therefore we know yOv; and, POv being already found, we know bOP; hence in the triangle bOP, we know bO $(= 90^\circ)$, PO, and the angle POb; hence we find Pb the complement of the *latitude* of b; find alſo OPb, and we get bPB the *longitude* of b, from the given meridian PB; thus we get the place b where the eclipſe firſt begins at the Sun riſing. In like manner we get the place a where the eclipſe laſt ends at ſun-ſetting.

Ex. In the ſolar eclipſe which we have here computed, let it be required to find that place upon the Eath's ſurface where the Sun is centrally eclipſed at one o'clock, apparent time at Greenwich. In this caſe, $Ov = 44' \, 59''$, and the angle $OvZ = 5^\circ \, 42'$, and as the time at v is $41' \, 30''$, and the centre of the penumbra is at Z at one o'clock, the time through $vZ = 19' \, 30''$, which gives $vZ = 9' \, 3''$; hence $ZO = 35' \, 59''$, the angle $OZv = 81^\circ \, 22'$, and $ZOv = 13^\circ \, 56'$. Now the radius, $OG = 54' \, 56''$; hence the arc OZ upon the ſurface (correſponding to its projection $= 35' \, 59''$) $= 41^\circ \, 4'$; alſo $PO = 84^\circ \, 30'$, and $POv = 23^\circ \, 22'$; hence $POZ = 9^\circ \, 26'$; conſequently $PZ = 45^\circ \, 43'$, the complement of which is $44^\circ \, 17'$ the latitude of the place; alſo $ZPO = 8^\circ \, 51'$; but, at one o'clock apparent time at Greenwich, its meridian BP makes an angle of fifteen degrees with PO, Greenwich being upon that meridian at twelve o'clock; hence $BPZ = 23^\circ \, 51'$ the longitude of the place, weſt from Greenwich. In like manner may any of the other phenomena be calculated.

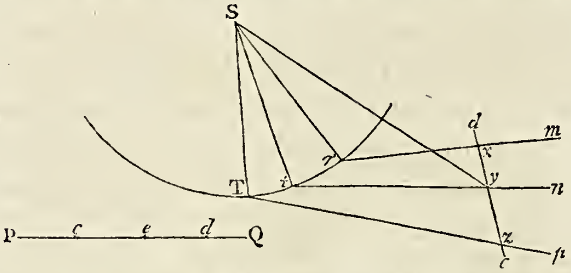
To DETERMINE the ORBIT of a COMET.

The orbit of a comet may be computed from three obſervations; but, although that data be ſufficient, the direct ſolution of the problem is impracticable. Aſtronomers therefore have ſolved this problem by indirect methods, firſt finding an orbit very near to the truth by mechanical and graphical operations, and then, by computation, correcting it, until ſuch a parabola was found as would ſatisfy the obſervations. We ſhall therefore begin, by ſhewing the methods by which the orbit may be nearly determined; and then explain the manner in which it may be corrected by calculation.

Take a firm board perfectly plane, and fix on paper for the projection; let a groove be cut near the edge, and five perpendiculars be moveable in it, ſo that they may be fixed at any diſtances. Let S repreſent the Sun, and deſcribe any number of circles about it. Compute five geocentric latitudes and longitudes of the comet, from which you will have the five elongations of the comet at the times of the reſpective obſervations. Draw SA, SB, SC, SD, SE, making the angles ASB, BSC, CSD, DSE, equal to the Sun's motion in the intervals of the obſervations; and on any one of the circles, make the angles $Sa\alpha$, $Sb\beta$, $Sc\gamma$, $Sd\delta$, $Se\varepsilon$, equal to the reſpective elongations in longitude, and fix the five perpendiculars, ſo that the edge of each may coincide with α, β, γ, δ, ε. From the points a, b, c, d, e, extend threads to the reſpective perpendiculars, making angles with the plane equal to the geocentric latitudes of the comet; then fix the focus of the parabola in S, and apply its edge to the threads; and, if it can be made to touch them all, it will be the parabola required, correſponding to the mean diſtance Sa of the Earth, which we here ſuppoſe to revolve in a circle, as it will be ſufficiently accurate for our purpoſe. If the parabola cannot be made to touch all the threads, change the points a, b, c, d, e, to ſuch of the other circles as you may judge, from your preſent trial, will be moſt likely to ſucceed, and try again; and by a few repetitions you will get ſuch a diſtance for the Earth, that the parabola ſhall touch all the threads, in which poſition, find the inclination, obſerve the place of the node, and meaſure the perihelion diſtance, compared with the Earth's diſtance, and you will get very nearly the elements of the orbit.



Another method by which we may readily get the orbit very nearly, is this. Let S be the Sun, T, t, τ, three places of the Earth at the times of the three obſervations; extend three threads Tp, Tn, τm, in the directions of the comet, as directed above. Aſſume a point y for the place of the comet at the ſecond obſervations, and meaſure Sy; then if $ST = 1$, and the velocity of the Earth be v, the velocity of the comet at y will be $\frac{\sqrt{2} \times v}{\sqrt{Sy}}$; let v be repreſented by Tt, $t\tau$; and upon a ſtraight edge PQ, ſet off $ce = \frac{\sqrt{2} \times Tt}{\sqrt{sy}}$, and $ed = \frac{\sqrt{2} \times t\tau}{\sqrt{Sy}}$; then apply the point e to y, and, by turning about the edge, try whether you can make the point c fall in Tp, and the point d in τm; if you find this cannot be done, the error will direct you to aſſume another diſtance; and by a very few trials you will find the point y where the points c and d will fall in Tp,



T*p*, τ*m*. This method is very eaſy in practice, and ſufficiently accurate to obtain a diſtance S*y* from which you may begin to compute, in order to find the orbit more correctly, when the comet is not too near to the Sun.

Having determined the parobola nearly, we firſt aſſume ſome one quantity as known at the firſt and ſecond obſervations, and thence compute the place of the comet at thoſe times, and alſo the time between; and, if that time agree with the obſerved interval, you have got a parabola which agrees with the two firſt obſervations; if the times do not agree, alter one of the aſſumed quantities, and ſee how it agrees; and then, by the rule of falſe, you may correct the ſuppoſition which was altered, and get a parabola which will agree with the two firſt obſervations. In like manner, by altering the other aſſumed quantity, you get another parabola agreeing with the two firſt obſervations. Then ſee how they agree with the third obſervation; and, if they do not, a corrrection muſt be made by proportion, and the three obſervations will be anſwered.

When great accuracy is required, we muſt take into conſideration the effect of aberration and parallax; the former may be computed by the rules already given, and the latter, by ſaying, As the horizontal parallax is to that of the Sun = 8·75″ ſo is the diſtance of the Sun to the diſtance of the comet; and then finding the parallax in latitude and longitude, as for the planets.

Ex. On Auguſt 21, 1769, the diurnal motion of a comet was ſixty-three minutes in longitude, and twenty-five minutes in latitude, and its diſtance from the Earth 0·667. Hence the aberration in longitude equal fourteen ſeconds, and in latitude equal ſix ſeconds, both to be added. Now the apparent longitude was 47° 1′ 31″, and latitude 5° 53′ 48″; hence the apparent longitude corrected for aberration was 47° 1′ 45″, and latitude 5° 53′ 54″. Alſo, As 0·667 is to 1 ſo is 8·75″ to 13″ the horizontal parallax. Hence, the parallax in longitude is found to be four ſeconds, to be added to the true, to give the apparent longitude; and, as the true longitude (by computation) was 47° 2′ 3″, the apparent ought to have been 47° 2′ 7″; hence the error in longitude was twenty-two ſeconds. Alſo the parallax in latitude was ten ſeconds, to be added to the true, to give the apparent latitude; and, as the true latitude (by computation) was 5° 54′ 16″, the apparent ought to have been 5° 54′ 26″; hence the error in latitude was thirty-two ſeconds.

Longomontanus ſhews an eaſy method of finding and tracing out the places of a comet mechanically; which is, to find two ſtars in the ſame line with the comet, by ſtretching a thread before the eye over all the three; then do the ſame by two other ſtars and the comet; this done, take a celeſtial globe, or a planiſphere, and draw a line upon it firſt through the former two ſtars, and then through the latter two; ſo ſhall the interſection of the two lines be the place of the comet at that time. If this be repeated from time to time, and all the points of interſection connected, it will ſhew the path of the comet in the heavens.

To find the Altitude and Height of Fire-balls, and other Meteors, in the Atmosphere, by the Quadrant.

Though the extreme velocity and tranſient nature of fiery meteors in the atmoſphere, in a great meaſure prevents the making of ſuch obſervations as might tend to aſcertain their diſtance, yet they form a ſubject of inquiry ſo curious and intereſting, as to render ſuch as can be made of great value. An obſerver, who perceives an appearance of this kind, ought carefully to note the buildings, trees, ſtars, &c. near which it paſſes; and, as ſoon afterwards as convenient, take their altitude and bearings. If two ſuch obſervations be taken by perſons at different places, ſufficiently diſtant from each other, the diſtance on the Earth may be conſidered as the baſe, and from this and the two obſerved angles the height of the meteor may be found. By obſervations of this kind it has been found that the larger fire-balls are elevated about ſixty miles above the Earth's ſurface, and that ſome of them are near five miles in diameter.

To find the Height of a Cloud, by Obſervation of a Flaſh of Lightning. If the altitude of that part of a cloud, from which a flaſh of lightning has iſſued, be immediately taken with the quadrant, and the number of ſeconds of time elapſed between the inſtant of the flaſh and the firſt arrival of the thunder be reckoned, theſe data will be ſufficient to determine the height of the thunder-cloud. For ſound is admitted to paſs through 1142 feet in a ſecond; but light has ſuch an extreme velocity, that it paſſes thro' 35,000 miles in a ſecond, and may therefore be reckoned inſtantaneous in all obſervations upon the Earth. Hence it follows, that the number of ſeconds obſerved, multiplied by 1142, will give the diſtance of the cloud; and, As radius is to the ſine of the obſerved angle, ſo is the diſtance of the cloud to its height.

Ex. Suppoſe the angle of elevation, from which a flaſh of lightning iſſued, was 53° 8′, and that between the flaſh and the report of the thunder 5″ were counted; then, 1142 feet multiplied by 5 gives 5710 feet for the diſtance of the cloud.

And as the radius or ſine of 90° -	10·0000000
Is to the ſine of the obſerved angle 53° 8′	9·9031084
So is the diſtance of the cloud 5710 -	3·7566361
To its height 4568 - - -	3·6597445

Or, by conſtruction. From a point in any right line, draw another right line, forming the obſerved angle. Set off on this left line, from the angular point, the diſtance of the cloud, taken from a ſcale of equal parts. From the extreme of the laſt-mentioned line let fall a perpendicular on the other line; and this perpendicular will be the height required. If the flaſh of lightning ſtrikes directly down, the height of the cloud will alſo be the length of the flaſh. But this is not often the caſe.

The Latitude of the Place, and the Zenith Diſtance of a Star, being given; to find the Declination of the Star. When the latitude of the place and zenith diſtance are of different kinds, that is, one north and the other ſouth, their *difference* is the declination; and it is of the ſame name with the latitude, when that is the greater of the two; otherwiſe it is of the contrary kind. When the latitude and zenith diſtance are of the ſame kind, that is, both north, or both ſouth, their *ſum* is the declination, and it is of the ſame kind with the latitude.

To find the Obliquity of the Ecliptic.

The obliquity of the ecliptic is a very important element of aſtronomy, becauſe it enters into the calculation of all ſpheric triangles where the ecliptic and equator are concerned. The obliquity of the ecliptic being equal to the Sun's greateſt declination, i. e. when in the tropics, the obliquity may be aſcertained by obſerving the meridian height of the Sun's centre on one of the ſolſticial days; and this quantity taken from the height of the equator, at the place of obſervation, gives the declination of the tropic. Or, more accurately, obſerve the Sun's meridian altitude in each tropic: this will give their diſtance, half of which is the diſtance of each tropic from the equator, that is, the obliquity of the ecliptic.

Of Corresponding or Equal Altitudes.

At equal diſtances from the meridian, a ſtar has equal altitudes. If, therefore, equal altitudes of an heavenly body be taken on different ſides of the meridian, the middle point of time between the obſervations will give the time when the body is upon the meridian, if it has not changed its declination. By this means the *time* when any body comes to the meridian may be aſcertained; and, when applied to the Sun, or a fixed ſtar, the rate at which a clock (adjuſted to the mean ſolar or ſiderial time) gains or loſes, may be determined with accuracy.

The method of aſcertaining time by equal altitudes is univerſally uſed by practical aſtronomers, becauſe it depends neither on an accurate knowledge of the latitude, nor on that of the declination; for theſe elements are only neceſſary in taking out the equation of declination, and any probable error therein will not ſenſibly affect that equation; neither does it depend on the exact quantity of the altitude, provided only it be the ſame in both obſervations.

To reduce Degrees of the Equator into Time, and Time into Degrees of the Equator.

To reduce degrees into time, multiply by 4, obſerving that minutes, when multiplied by 4, produce ſeconds, and divided by 4 produce degrees; and ſo on.

Reduce 23° 26′ into time.

23°	26′	
	4	
1h.	33′.	44″.

To reduce time into degrees, multiply by 10 in a ſimilar manner, and increaſe the produce one-half; or otherwiſe divide the time by 4.

Reduce 1h. 33′ 44″. into degrees.

	1h.	33′.	44″.
			10
	15	27	30
Half	7	48	40
Degrees	23	26	0

Otherwiſe.

	4)1h. 33′.	44″.
Degrees	23	26′

Of Reduction from one Meridian to another.

As all the heavenly bodies riſe, culminate, and ſet, ſooner to thoſe who are towards the eaſt, and later to thoſe who are towards the weſt, and as all tables and calculations in England for aſtronomy and navigation are adapted to the meridian of Greenwich, it is neceſſary for thoſe who may be under any other meridian to be able to find the time at Greenwich correſponding to that pointed out by their own clocks and watches. Without this reduction, no calculations can be made from ſuch tables, or from the various articles contained in the Nautical Almanac, relating to the longitude, right aſcenſion, and declination, of the Sun, the equation of time, Moon's motion, &c. ſo as to adjuſt them to any other meridian than that for which they were made.

To find the Time at Greenwich correſponding with any given Time under another Meridian. Find the difference of longitude between the two meridians, or how much the given place or meridian is to the eaſt or weſt of Greenwich, and reduce this difference to time, by the foregoing rule. If the given place be eaſt of Greenwich, ſubtract the difference of meridians from your time; if it be weſt, add the difference to your time. The reſult will give the time it then is at Greenwich. The time being given at Greenwich, the correſponding time under any other meridian is found by reverſing this rule.

Ex. What is the time at Greenwich, when it is 8h. 17′. 19″. at Jeruſalem, 35° 30′ eaſt of Greenwich, or in time 2h. 21′. 20″. Anſwer, 5h. 55′. 59″.

What is the time at Jeruſalem, when it is 21h. 49′. 17″. on the 9th of September, at Greenwich? Anſwer, 24h. 10′. 37″. or 0h. 20′. 37″. on the 10th of September.

To know the time at Paris, Genoa, &c. when it is any given time where you are, take the difference between your meridian and that of Paris, &c. and then proceed as in the foregoing rule.

To find at what Time, by a Clock keeping mean Time, any fixed Star will be on the Meridian on any given Day. The right aſcenſion of the ſtars being reckoned on the equator, they paſs the meridian ſucceſſively in times proportional to their reſpective diſtances therefrom. The diſtance of a ſtar from the meridian is therefore nothing more than its difference, in right aſcenſion, from the Sun reduced to time; from whence it is plain, that to find the time when any ſtar comes to the meridian, you muſt ſubtract the right aſcenſion of the Sun at noon from that of the ſtar, and the difference is the time required. This ſimple calculation would be ſufficient in general for finding the time when a ſtar tranſits the meridian, if it always preſerved the ſame difference in right aſcenſion from the Sun: but the Sun, by its diurnal acceleration, approaches the ſtar inſenſibly; and will conſequently paſs the meridian ſooner, by a quantity proportional to this acceleration, and its diſtance from the Sun. It is therefore neceſſary to ſubtract from the quantity firſt found, another ſmall quantity, that may be aſcertained. Hence the following rule:

Take the difference between the Sun's and planet's motion, in right aſcenſion, in twenty-four hours, if the planet is progreſſive, or their ſum if retrograde; then ſay, As twenty-four hours, diminiſhed by this ſum or difference when the planet's motion is greater than the Sun's, or increaſed by it when leſs : twenty-four hours :: the difference between the Sun's and planet's right aſcenſion at noon : the time required.

For a ſtar, Take the increaſe of the Sun's right aſcenſion in twenty-four hours and add it to twenty-four hours; then ſay, As this ſum : twenty-four hours :: the difference between the Sun's and ſtar's right aſcenſion : the time required. In the latter part of both theſe rules, the Sun's right aſcenſion is to be taken from the planet's or ſtar's right aſcenſion; and, if their right aſcenſions ſhould be leſs than the Sun's, they muſt be increaſed by twenty-four hours before you ſubtract.

Ex. On July 1, 1767, the Sun's right aſcenſion, when on the meridian of Greenwich, was 6h. 40′. 25″. and on July the 2d, it was 6h. 44′. 33″. alſo the Moon's right aſcenſion was 159° 2′; and on July 2d it was 169° 39′. Required the time of the Moon's paſſage over the meridian?

Sun's R. A. July 1,	6h.	40′.	25″.
July 2,	6	44	33
Daily increaſe	0	4	8
Moon's R. A. 159° 2′	10	36	8
169 39	11	18	36
Daily increaſe	0	42	28
Moon's motion in twenty-four hours		42	28
Sun's		4	8
Difference		38	20
Sun's R. A. at noon	6	40	25
Moon's R. A. at noon	10	36	8
Difference	3	55	43

As 24h. — 0h. 38′. 20″. = 23h. 21′. 40″. : 24 :: 3h. 55′. 43″. : 4h. 2′. 9″. the time required.

At what time will the ſtar Arcturus come to the meridian of Greenwich on the firſt of September, 1787?

Sun's R. A. Sept. 1,	10h.	41′.	59″.	Star's R. A.	1h	46′	0″
Sept. 2,	10	45	37		10	41	59
Increaſe in 24 hours	0	3	38	Diff.	3	24	1

As 24h. 3′. 38″. : 24h. :: 3h. 24′. 1″. : 3h. 23′. 31″. the time required.

To find the Altitude of the Sun, or any other celeſtial Body. The quadrant being adjuſted, as in all caſes previous to its uſe, the celeſtial body muſt be viewed through the ſights, and the plumb-line will ſhew its altitude on the graduated limb of the inſtrument. If the obſervation be made on the Sun, the dark glaſs muſt be uſed to defend the eye, or the luminous ſpot formed by the ſmall hole muſt be made to fall on the centre of the croſs immediately beneath the eye-hole.

The Sun having no viſible point to mark out its centre, you muſt take the altitude either of the upper or lower limb. If the lower limb be obſerved, you muſt add the Sun's ſemidiameter thereto, in order to find the altitude of the Sun's centre. If the altitude of the upper limb be obſerved, the ſemi-diameter muſt be ſubtracted. The mean ſemi-diameter of the Sun is ſixteen minutes, which for common obſervation may be taken as a conſtant quantity, for the greateſt deviations from this quantity ſcarcely exceed a quarter of a minute. When greater accuracy is aimed at, the ſemidiameter may be taken from the Nautical Almanac. The obſerved altitude of the Sun's lower limb being 18° 41′, add thereto 16′ for the Sun's ſemidiameter, and you obtain 18° 57′, the central altitude.

The apparent altitudes of all the heavenly bodies are increaſed by refraction, except when they are ſituated in the zenith. An obſerved angle of a ſtar, or any other object in the heavens, muſt be diminiſhed by a ſmall quantity, to be taken from the table of refractions. Where greater exactneſs is required, a ſmall quantity is to be added for the error occaſioned by parallax, or the difference between the altitude of an object as ſeen from the centre and the ſurface of the Earth. That from the centre is the true altitude, and the greateſt, except at the zenith, where parallax vaniſhes; conſequently the apparent altitude of the Sun is to be augmented by a ſmall quantity taken from the table of the Sun's parallax.

June 6, 1788, the apparent altitude of the Sun's lower limb was obſerved to be 62° 19′; required the true altitude of the Sun's centre, as ſeen from the centre of the Earth?

Obſerved altitude -	62°	19′	
Semidiameter - -		16	
	62	35	
Subtract for refraction -			30
	62	34	30
Add for parallax - -			4
True central altitude -	62	34	34

If it is a fixed ſtar that has been obſerved, there is no correction for ſemidiameter or parallax; you have only to ſubtract for refraction, in order to obtain the true altitude.

To find the Time by equal or correſponding Altitudes. This problem is of extenſive uſe, for the baſis of all aſtronomical obſervation is the determination of the exact time of any appearance in the heavens; which cannot be attained, unleſs you are aſſured of the going of your watch or clock. A mean ſolar day is always conſidered as of the ſame determinate length; but the length of an apparent day is variable, being ſometimes longer, ſometimes ſhorter, than a mean day. The inſtant, therefore, of apparent noon will ſometimes follow, at others precede, that of the mean noon. The interval between apparent and mean time is called the equation of time. To find, then, the time of apparent noon, obſerve the Sun's altitude in the morning, and alſo the time by a clock or watch. Leave the quadrant in the ſame ſituation, taking care that its poſition be not altered by any accident; and in the afternoon direct it to the Sun, by moving the index of the horizontal circle only, and obſerve the time when the Sun's altitude correſponds with that to which the quadrant was ſet in the morning. Add the times of obſervation together; the middle inſtant between thoſe times of obſervation is that of apparent noon: this being corrected, by adding or ſubtracting the equation of time, gives the time of true noon. If it be preciſely twelve, the clock is right; but, if it differ, the clock is faſter or ſlower by the quantity of the difference greater or leſs than twelve.

Thus, ſuppoſe the time in the morning to be	21h.	35′.	8″
That in the afternoon - -	2	55	43
	24	30	51
The time of noon by watch - -	12	15	25½
Equation of time - - -		13	29
Mean noon by watch - -	12	1	56½

The watch is therefore 1′ 56½″ too faſt. To be more particular and accurate: In our latitude, the altitudes ſhould be taken when the Sun is at leaſt two hours diſtant from the meridian. The beſt time is when the Sun is on or near the prime vertical, or eaſt and weſt point of the compaſs; becauſe his motion perpendicular to the horizon is greateſt at that time. About this time, in the forenoon, take ſeveral altitudes of the Sun, writing down the degrees and minutes ſhewn on the arch, and alſo the exact time ſhewn by the clock at each obſervation: the obſervations to be written one below the other, in the order they were made; the time of each obſervation being previouſly increaſed by twelve hours. In the afternoon ſet the index to the ſame degree and minute as the laſt obſervation, note exactly the time ſhewn by the clock when the Sun is come down to the ſame altitude, and write down the time oppoſite to the laſt morning altitude; proceed in the ſame manner to note the time of all the altitudes correſponding to thoſe taken in the morning, writing down each of them oppoſite to that morning one with which it correſponds.

Half the ſum of any pair of correſponding altitudes will be the time of noon by the watch uncorrected. Find the mean of all the times of noon thus deduced from each correſponding pair of obſervations; which correct for the change in the Sun's declination, and you obtain the exact time ſhewn by the clock at ſolar noon. This, corrected by the equation of time, gives the time of mean noon; and the watch will be too faſt or too ſlow, according as the time of noon thus found is more or leſs than twelve hours.

Ex. Equal altitudes taken, June 1782.

Morning.	20h.	55′.	46″.	Afternoon.	3h.	8′.	44″.
	20	57	41		3	6	48
	20	59	27		3	4	58

	First Pair.			Second Pair.			Third Pair.		
	20h.	55′.	46″.	20h.	57′.	41″.	20h.	59′.	27″.
	3	8	44	3	6	48	3	4	58
Sum	24	4	30	24	4	29	24	4	25
½ Sum	12	2	15	12	2	14½	12	2	12½

As the ſeconds differ, add them together, and divide the ſum by 3 (the number of pairs), which gives a mean of fourteen ſeconds.

Therefore the mean obſerved time is	12h.	2′.	14″.	
Equation for 6h. difference in declination				8‴.
Time of apparent noon by the watch	12	2	14	8
Equation of time - -		1	55	1
Time per watch of mean noon -	12	0	19	7

The watch is nineteen ſeconds ſeven thirds too faſt for mean time.

To find the Error of a Clock or Watch, by correſponding or equal Altitudes of a Fixed Star. Rule. 1. Add half the time elapſed between the obſervations to the time when the firſt altitude was taken, and you have the time of the ſtar's tranſit over the meridian by the watch.

Rule 2. Subtract the Sun's right aſcenſion from the ſtar's, increaſed by twenty-four hours, if neceſſary. Take the increaſe of the Sun's right aſcenſion in twenty-four hours, and add it to twenty-four hours; then ſay, As this ſum : twenty-four hours :: ſo is the difference between the Sun and ſtar's right aſcenſion : the true time of the ſtar's tranſit. If the watch be regulated to ſolar time, the difference between the true time of the ſtar's tranſit and the time ſhewn by the watch will be the error.

If your meridian be different from that of Greenwich, ſay, As twenty-four hours : the daily difference of the Sun's right aſcenſion :: the longitude in time : a proportional part, which muſt be added to the true time of the ſtar's tranſit if the longitude be eaſt, but ſubtracted if weſt. If the watch be regulated to mean ſolar time, that is, if it divides the time equally, apply the equation of time as directed in p. 2 of the Nautical Almanac, to the true apparent time of the ſtar's tranſit, before you ſubtract.

Ex. On the 6th of November, 1787, at 11h. 10′. 9″. P. M. and at 16h. 4′. 15″. ſolar time, the ſtar Aldebaran had equal altitudes at Greenwich. Was the watch too faſt or too ſlow?

	16h.	4′.	15″.	
	11	10	9	
2)	4	54	6	
Half elapſed time -	2	27	3	
Time of firſt altitude	11	10	9	
Star's tranſit by the watch	13	37	12	
Star's R. A. + 24h. =	28	23	50	
Sun's R. A. - -	14	46	15	
Difference -	13	37	35	
Sun's R. A. November 6,	14	46	15	
November 7,	14	50	15	
Increaſe in 24 hours	0	4	0	
As 24h. 4′. : 24h. :: 13h. 37′. 35″. :	13	35	19	true time
Time per watch -	13	37	12	
Watch too faſt - -	0	1	53	

To draw a Meridian Line by equal Altitudes of the Sun, or a Star. If equal altitudes of the Sun be taken, as before directed, and the place of the index on the horizon-circle be carefully noted at each time of obſervation, the middle degree or part between each, will be the place where the index will ſtand, when the ſights of the quadrant are directed to the ſouth, or north, according as the Sun is to the ſouthward or northward of the place of obſervation at noon. Set the index to this middle point, and direct the ſights of the quadrant to ſome remote and fixed object on the Earth. This object will be a ſouth meridian mark, and will ſerve to ſet the quadrant at any future time. Then take up the inſtrument, and, after ſetting the index to 0, place it again on the table, or ſupport, and move the whole inſtrument, not by any of its parts, but entirely about upon the table, till the ſights are truly directed to the meridian mark. Adjuſt the horizontal circle, and the index will then ſerve to ſhew the true bearing of any object; becauſe the diameter joining the two zero's, or 00's, anſwers to the meridian line.

If the table, or ſupport, be immoveable, it will be proper to make three marks, or indentations, to receive the points of the ſcrews; by which means the horizontal circle may be inſtantly, at any time, ſet in its proper poſition, with reſpect to the cardinal points of the horizon. It often happens, that there is not any window in a houſe from which the Sun can be ſeen morning and evening. In this caſe, the meridian may be determined by obſerving equal altitudes of the pole-ſtar, or any other near the pole.

To find the Time by the Sun's Tranſit over the Meridian. Adjuſt the quadrant to the cardinal points, a ſhort time before noon. Set the index to 0, and elevate the quadrant, ſo that the ſhadow of the ſight with the croſs-wire may fall upon the other. As the inſtant of apparent noon approaches, the bright ſpot formed by the Sun's light thro' the lower hole in the former ſight will be ſeen approaching the mark on the latter. If the obſerver chuſes to look at the Sun, he muſt now put up the dark glaſs, and apply to the obſervations. The inſtants when the firſt limb or edge of the Sun appears to touch the perpendicular wire, and the latter limb appears to leave it, muſt be noted by the clock or watch. The middle time is the apparent noon. Or, if he chuſes to obſerve by the bright ſpot only, the inſtant when the ſpot is ſeen upon the mark is the apparent noon; and this, corrected by the equation of time, will ſhew how much the clock is too faſt or ſlow.

To find the Time by an Obſervation of the Sun's Altitude and Azimuth. Adjuſt the inſtrument to the cardinal points, and obſerve the Sun's altitude. Take notice likewiſe of the angle of azimuth from the meridian, as ſhewn by the index. Then, As the ſine complement of the Sun's declination : the ſine complement of the altitude :: the ſine of the azimuth : the ſine of the Sun's horary angle. Which laſt being reduced into time, by allowing 15° to one hour, and in proportion for the other parts, gives the apparent time, if after noon; but, if before noon, it muſt be deducted from twelve hours, to give apparent time, which muſt be corrected by the equation of time.

Ex. Suppoſe that, on the 21ſt of June, the Sun's altitude was obſerved to be 46° 25′, and 112° 59′, the declination being 23° 29′.

As the coſine of the Sun's declination 23° 29′	9·9624527
Is to the coſine of the altitude 46° 25′	9·8384769
So is the ſine of the azimuth 112° 59′, or its compl. 67° 1′ - - -	9·9640797
	19·8025566
	9·9624527
To the ſine of the horary angle 43° 47′ 13″	9·8401039

As 15° : 1h. :: 43° 47′ 13″ : 2h. 55′ 8″, the apparent or true time paſt noon, or to 9h. 4′. 52″. before noon; but neither of theſe times will agree with a watch which meaſures time equally.

The equation of time for noon at Greenwich is 1′ 15·9″; the daily difference 13″; therefore, As 24h. : 13″ :: 2h. 55′. 8″. : 1.5″; conſequently 1·5″ added to 1′ 15·9″, or 1′ 17·4″, is the equation of time to be added to the given hour: but 2h. 55′. 8″. added to 1′ 17″, gives 2h. 56′. 25″. the time paſt noon by the watch.

It may be neceſſary to remark, that, whenever you apply the equation of time to that immediately deduced from calculation, you muſt add or ſubtract as the Nautical Ephemeris directs; and, if the time is not very near noon, you muſt make a proportion as above; but, if you apply the equation of time to the time by the watch, you muſt ſubtract where the ephemeris directs you to add, and *vice verſa.*

We cannot conclude this Treatiſe, without adverting to the difficulties which many perſons make, in reconciling certain paſſages of Scripture with the known and eſtabliſhed phenomena of modern aſtronomy. After what has been ſtated of the diſcoveries of Dr. Herſchel, very little doubt remains of the fixed ſtars being ſuns, which from analogy may be naturally ſuppoſed to have planets revolving round them, in the ſame manner as the planets revolve round our Sun, formed for the abodes of rational inhabitants; notwithſtanding Moſes only ſtates, in the firſt chapter of Geneſis, that they were created "*for ſigns, and for ſeaſons, for days, and for years;*" from whence many have abſurdly concluded, that they were formed ſolely for the purpoſe of being attendants upon our Earth. But can it for a moment be imagined, that the great Author of Nature, who acts with ſuch infinite wiſdom in all his operations, would have created ſo many glorious ſuns, adapted to the moſt important purpoſes, merely to give a glimmering light to the inhabitants of this Earth, when we ſhould have been more benefited by one additional Moon. Beſides, a very ſmall part only of the ſtars can be ſeen by the naked eye; ſo that inſtead of the bulk of mankind being benefited by the whole, by far the greater part can only be diſcerned by means of the teleſcope, a modern invention, which but few people, comparatively ſpeaking, can have an opportunity of uſing. It is obvious, therefore, that, when Moſes made uſe of the above language, he confined himſelf to thoſe things only that concern the Earth, and alluded to the viſible appearance of thoſe ſtars which ſhould thenceforward become the admiration of the new-formed creature man, and be made uſeful to him, not only by affording ſome additional light to the Earth, but alſo by enabling him to diſtinguiſh times and ſeaſons, nights and days; and by ſerving the many and valuable purpoſes of navigation; which, though not then underſtood, muſt undoubtedly have been in the omniſcient view of the Creator. And in this ſenſe all the univerſe may perhaps be ſaid to be reciprocally uſeful as ſigns and ſeaſons, &c. to each other.

From the expreſſion, that "*he made the ſtars alſo*," it hath been contended, both by commentators and others, that not only the whole planetary ſyſtem, but the regions and ſyſtems of the fixed ſtars, were created at the ſame time. Now, if the ſtars had no exiſtence previous to the Moſaic creation, then were there no other ſyſtems of worlds before our own; then muſt all the infinity of ſpace have been one eternal abſolute inane, and God, who made all theſe glorious luminaries, muſt be ſuppoſed to have created them all at once; which ſuppoſitions are both wild and extravagant, and by no means warranted from the context. Moſes only mentions briefly, that "*he made the ſtars alſo*," to ſhew that they were the workmanſhip of the ſame divine Creator, but doth not farther enlarge upon them, as being foreign to his ſubject, which was only that of the creation of the Earth.

In the tenth chapter of Joſhua, ver. 12, it is written, that God, at the prayer of Joſhua, *cauſed the Sun and Moon to ſtand ſtill, until the people had avenged themſelves upon their enemies*. Now, as the Earth rolls round the Sun, and not the Sun round the Earth, it implies a contradiction, which ſeems highly incompatible with the text of the ſacred writer, and on which account the Copernican ſyſtem is ſtill rejected by many people. We conceive, however, that this and all ſimilar paſſages are eaſily reconcilable to modern aſtronomy, by ſhewing, that nothing is more common in Scripture than to expreſs things, not according to the ſtrict rules of philoſophy, but according to their *appearances*, and the *vulgar apprehenſion* concerning them. For inſtance, Moſes calls the Sun and Moon *two great lights*; but, however this appellation may agree with the Sun, it cannot in the ſame ſenſe ſignify the Moon, which is now well known to be but a ſmall body, and the leaſt of all the planets, and to have no light at all but what it borrows by a reflection of the rays of the Sun; appearing to us larger than the other planets, merely becauſe it is placed nearer to us. From this appearance it was, that Moſes gave it the title of a *great light*. In like manner, becauſe the Sun ſeems to us to move, and the Earth to be at reſt, the Scripture repreſents the Earth as placed on *pillars*, *baſes*, and *foundations*; and compares the Sun to a *bridegroom iſſuing from his chamber, and rejoicing as a giant to run his courſe*, and ſpeaks of his *ariſing and going down, and haſtening to the place from whence he aroſe*, &c. Now, the general deſign of God, when he inſpired the ſacred writers, having been to form mankind to virtue, not to make them aſtronomers, it no way derogates from the reſpect due to holy writ, or from the conſideration which the writings of thoſe holy men merit, whoſe pens he directed, to ſuppoſe, that in order to accommodate themſelves to the capacity, the notions, and language, of the vulgar, they have purpoſely ſpoken of the phenomena of nature, in terms moſt conformable to the teſtimony of the external ſenſes. In the preſent caſe, Joſhua ſeems even to have had in view the modern ſyſtem, when he commanded the Moon as well as the Sun to ſtand ſtill; for, of what uſe could the preſence of the Moon be to him, while favoured with that of the Sun? What he required, without doubt, was, that the Sun and Moon might lend him their light, till he had completed the overthrow of his enemies. Now he could not be ignorant, that, if the Earth ſtood ſtill, the Sun, the Moon, and the reſt of the planets, muſt alſo ſeem to ſtand ſtill: he choſe therefore to ſpeak the common language of the people, in order to be generally underſtood. The next thing which here preſents itſelf to our conſideration is, the *place*, or *places*, where Joſhua deſired and obtained that the Sun and Moon might *appear* to ſtand. *Sun*, ſays he, *ſtand ſtill upon Gibeon; and thou, Moon, in the valley of Ajalon!* "Let thoſe two great lights ſeem ſtopped and immoveable in that part of the heavens where they at this inſtant appear to be; the one upon Gibeon, the other over Ajalon." Suppoſing the ſyſtem of the Sun's motion, Joſhua could not ſpeak this in a proper and philoſophical ſenſe. The Sun, near a million times bigger than the Earth, is many millions of miles diſtant from it. To juſtify, therefore, its being literally *upon Gibeon*, a line drawn perpendicularly from the centre of the Sun to that of the Earth, muſt exactly take Gibeon in its way; now this is impoſſible, inaſmuch as the Holy Land does not lie between the tropics. We muſt therefore neceſſarily conclude, that Joſhua here ſpeaks in the popular and figurative ſtyle; which is very intelligible, on a ſuppoſition that the Earth moves round the Sun. Even at the preſent time we continue to ſay, the *Sun riſes*, and the *Sun ſets*; altho', at the very moment we uſe theſe expreſſions, we are confident that the Sun neither riſes nor ſets, but only *appears* to do ſo, from the diurnal motion of the Earth, which, on turning its dark ſide towards the Sun, makes him appear to riſe; and, on turning away its enlightened ſide, makes him appear to ſet; as already abundantly explained in this Treatiſe.

Again, in the New Teſtament, we are told, in one of the prophecies of our Saviour, Mat. xxiv. 19. that "*immediately after the tribulation of thoſe days, the Sun ſhall be darkened, the Moon ſhall not give her light, and the ſtars ſhall fall from heaven*." Of this paſſage, moſt of the ancient commentators on the Scriptures generally underſtood, the end of the world, or day of judgment. But, in the opinion of moſt modern authors, this prophecy is found by no means to relate to any very diſtant event, but to ſomething conſequent upon the tribulation before ſpoken of, and which is evidently the deſtruction of Jeruſalem. It is true, the figures are very ſtrong; but no ſtronger than are uſed by the ancient prophets on ſimilar occaſions. See Iſai. xiii. Bp. Warburton obſerves, that this prophecy concerning the approaching deſtruction of Jeruſalem by Titus, is conceived in ſuch high and awful terms, that ſome modern interpreters, as well as the ancient, have ſuppoſed, that our Saviour interweaves into it a direct prediction of his coming to judgment: but, if we well conſider the nature of the two diſpenſations, and the neceſſity of aboliſhing the former before the introduction of the latter, it will then appear, that this prophecy doth not reſpect Chriſt's *ſecond coming*, but his *firſt*, in the abolition of the Jewiſh polity, and the eſtabliſhment of the Chriſtian diſpenſation, which commenced on the total ceaſing of the theocracy. This was the true eſtabliſhment of Chriſtianity, not that effected by the donations or converſions of Conſtantine. Thus, till the Jewiſh law was aboliſhed, over which the *Father* immediately preſided, the reign of the Son could not take place; becauſe the ſovereignty of Chriſt over mankind was that very ſovereignty of God over the Jews, which was now transferred, and more largely extended, by the coming of our Saviour. This therefore being one of the moſt important eras in the economy of our ſalvation, and the moſt awful revolution in all religions diſpenſations, we ſee the elegance and propriety of theſe metaphorical expreſſions, to denote ſo great an event, together with the deſtruction of Jeruſalem, by which it was effected: for, in the old prophetic language, the change and fall of principalities and powers, whether ſpiritual or civil, are ſignified by the *ſhaking of the heaven and Earth*, the *darkening the Sun and Moon*, and the *falling of the ſtars*; as the riſe and eſtabliſhment of new ones are by *proceſſions in the clouds of heaven*, by the *ſound of trumpets*, and the *aſſembling together of hoſts and congregations*.

Upon the ancient conſtruction of the prophecy, namely, that it related to the day of judgment, moſt readers, both laymen and divines, underſtand this paſſage in a literal ſenſe; ſo that, from the *darkening of the Sun and Moon*, and *falling of the ſtars from heaven*, they conceived that in the *laſt day* the whole univerſe was to be annihilated with the Earth; and thus millions of diſtant worlds, with the beings allotted to them, were to be extirpated and deſtroyed, in conſequence of the original ſin of Adam!! No ſentiment of the human mind can ſurely be more derogatory to the divine attributes of the Creator, nor more repugnant to the known economy of the celeſtial bodies. For, in the firſt place, who is to ſay, among the infinity of worlds, whether Adam was the only creature who was tempted by Satan, and fell, and, by his fall, involved all other worlds in his guilt. And, ſecondly, to what place in the vaſt expanſe of heaven are the ſtars to fall? or how come in contact with ſo ſmall an atom as the Earth, compared with the Sun, the ſuperior planets, and the fixed ſtars? Thus it is, that by taking metaphorical expreſſions in the literal ſenſe, inſtead of conſidering them what they really are, the dreſs and ornament of language, have the greateſt abſurdities crept into moſt of our expoſitions on the holy Scriptures; and hence a prohibition, for many centuries, was in a manner put to the progreſs and improvement of aſtronomy. See Bp. Newton, p. 281, 285. Bp. Warburton's Julian, b. i. ch. 1. p. 21. Gerhard's Diſſertations, p. 200. Clarke's Sermons, vol. v. ſerm. 2. Pearce's Diſſertation on the Deſtruction of Jeruſalem. Dr. Jackſon's Credibilities of the Scriptures.

Astronomy was painted by the ancients like a goddeſs, with a ſilver creſcent on her forehead, clothed in an azure mantle, and a watchet-ſcarf, ſpangled with golden ſtars. She has been likewiſe painted in the ſame manner as aſtrology, only with a table of aſtronomical figures in her left hand, inſtead of a celeſtial globe. And ſometimes as a lady in a ſtarry habit; her eyes looking up to heaven, in her right hand holding an aſtrolabe, and in her left a table of aſtronomical figures. Her garment denotes the night to be the moſt proper time to ſee the ſtars; her eyes and thoughts always elevated, and intent upon celeſtial bodies; the aſtrolabe meaſures the diſtance of them.

AS'TROPE-WELLS, near Banbury in Oxfordſhire, are recommended as excellent in female obſtructions, the gravel, hypochondriac and ſimilar diſorders. The water is a briſk, ſpirituous, pleaſant-taſted, chalybeate, and is alſo gently purgative.

AS'TROSCOPE, *ſ.* A kind of aſtronomical inſtrument, compoſed of two cones, on whoſe ſurface the conſtellations, with their ſtars, are delineated, by means whereof the ſtars may be eaſily known. The aſtroſcope is the invention of William Shuckhard, formerly profeſſor of mathematics at Tubingen, who publiſhed a treatiſe expreſsly on it in 1698.

ASTROSCO'PIA, *ſ.* The art of obſerving and examining the ſtars, by means of teleſcopes, in order to diſcover their nature and properties.

AS'TROSCOPY, *ſ.* [*αϛηρ*, a ſtar, and *σκοπεω*, to view.] Obſervation of the ſtars.

ASTROTHE'MATA, *ſ.* The places or poſitions of the ſtars, in an aſtrological ſcheme of the heavens.

ASTRO-THEO'LOGY, *ſ.* [from *aſtrum*, a ſtar, and *theologia*, Lat. divinity.] Divinity founded on the obſervation of the celeſtial bodies.—That the diurnal and annual revolutions are the motions of the terraqueous globe, not of the ſun, I ſhew in the preface of my *Aſtro-Theology. Derham.*

ASTROTHE'SIA, *ſ.* is uſed by ſome for a conſtellation or collection of ſtars in the heavens.

AS'TRUC (John), a phyſician of France, was born at Sauvres, a town of Lower Languedoc, the 19th of March, 1684, and died at Paris, the 5th of May, 1766. He was phyſician in ordinary to the king, profeſſor in the college royal, doctor regent of the faculty of phyſic in Paris, and ancient profeſſor of the ſame of Montpelier. He was the author of ſeveral uſeful and curious works; and perhaps it is not too much to ſay of his Libri ſex de Morbis Venereis, that it is as well digeſted and well written a book as can be found in any language. It was printed in quarto, at Paris, 1735; in two volumes quarto, 1740; and it has been tranſlated into French and Engliſh, and probably into moſt of the European languages. His Traité des Tumeurs et des Ulceres, printed in 1759, in two vols. 12mo. and that des Maladies des Femmes, 1766, in 7 vols. 12mo. are alſo very well known to the learned in the faculty.

AS'TRUM, or As'tron, *ſ.* [*αϛρον*, Gr.] A conſtellation, or aſſemblage of ſtars; in which ſenſe it is diſtinguiſhed from *aſter*, which denotes a ſingle ſtar. Some apply the term, in a more particular ſenſe, to the Great Dog, or rather to the large bright ſtar in his mouth. In old records it was uſed to ſignify an houſe or habitation.

Astrum, *ſ.* [from אש Heb. fire.] A ſtar: chemically it means that power which accrues to things from their preparation; thus, the *aſtrum* of ſalt is its reſolution into a fluid ſtate by which it can exert itſelf more.

AS'TRUP, a town of Germany, in the circle of Weſtphalia, and biſhopric of Oſnabruck: four miles north of Oſnabruck.

ASTURAGAMICOSK', a lake of Lower Canada, eighty-one leagues north-eaſt of Quebec. Lat. 50. 25. N. lon. 67. 25. W. Greenwich.

ASTU'RIA, an ancient kingdom of Spain, ſubdued by Auguſtus emperor of Rome. The inhabitants of this country, with thoſe of Cantabria, aſſerted their liberty long after the reſt of Spain had received the Roman yoke. So great was their deſire of liberty, that, after being cloſely ſhut up by the Roman army, they endured the moſt terrible calamities of famine, even to the devouring of one another, rather than ſubmit to the enemy. At length, however, the Aſturians were for ſurrendering: but the Cantabrians oppoſed this meaſure, maintaining that they ought all to die ſword in hand like brave men. Upon this the two nations quarrelled, notwithſtanding their deſperate ſituation; and, a battle enſuing, 10,000 of the Aſturians were driven to the intrenchments of the Romans, whom they begged in the moſt moving manner to receive them on any terms they pleaſed. But, Tiberius the emperor's ſon-in-law refuſing to admit them into the camp, ſome of theſe unhappy people put an end to their lives by falling upon their own ſwords; others lighting great fires threw themſelves into them, while ſome poiſoned themſelves by drinking the juice of a venomous herb.

The campaign being put an end to by the winter, the next year the Aſturians ſummoned all their ſtrength and reſolution againſt the Romans; but, notwithſtanding their utmoſt efforts of valour and deſpair, they were entirely defeated in a moſt obſtinate battle which laſted two days, and for that time entirely ſubdued. A few years afterwards they rebelled, in conjunction with the Cantabrians; but were ſoon reduced by the Romans, who maſſacred moſt of the young men that were capable of bearing arms. This did not prevent them from revolting again in a ſhort time afterwards; but without ſucceſs, being obliged to ſubmit to the Roman power, till the ſubverſion of that empire by the Goths.

ASTU'RIAS, anciently a kingdom of Aſturia, is now a principality of modern Spain, bounded by Biſcay on the eaſt, Galicia on the weſt, Caſtile and Old Leon on the ſouth, and the ſea on the north. Its greateſt length is about 110 miles, and its breadth fifty-four. On the ſouth it is ſeparated from Caſtile and Old Leon by high mountains covered with woods. The face of the country is rugged, and towards the ſouth are the mountains which divide it from Leon and Old Caſtile, branches of the Pyrenées, covered with vaſt foreſts: yet the ſoil produces a ſufficiency of corn, great quantities of fruit, and excellent wine. There are alſo mines of gold and vermillion; and the horſes of this country are in great eſteem. The inhabitants value themſelves much on being deſcended from the ancient Goths. Even the poor peaſants, who are fain to go to ſeek work in other provinces, call themſelves *illuſtrious Goths* and *Mountaineers*, thinking it ignominious to marry even with great and rich families of another race. This pride is flattered by the reſpect paid them by the reſt of the nation, and the privileges beſtowed upon them by the government. The hereditary prince of Spain is ſtyled *prince of the Aſturias*. The moſt remarkable places in this principality are Oviedo, Gyon, Santillana, and St. Andero.

ASTY'AGES, ſon of Cyaxares, the laſt king of the Medes. He dreamed that, from the womb of his daughter Mandane, married to Cambyſes king of Perſia, there ſprung a vine that ſpread itſelf over all Aſia. She being with child, he reſolved to kill the infant as ſoon as born.

Its name was Cyrus; and Harpagus, being ſent to deſtroy it, preſerved it: which Aſtyages after a long time hearing of, he cauſed Harpagus to eat his own ſon. Harpagus called in Cyrus, who dethroned his grandfather, and thereby ended the monarchy of the Medes. See Media and Persia.

ASTY'ANAX, a ſon of Hector and Andromache. He was very young when the Greeks beſieged Troy; and, when the city was taken, his mother ſaved him in her arms from the flames. Ulyſſes, who was afraid leſt the young prince ſhould inherit the virtues of his father, and one day avenge the ruin of his country upon the Greeks, ſeized him, and threw him down from the walls of Troy. According to Euripedes, he was killed by Menelaus; and Seneca ſays, that Pyrrhus the ſon of Achilles put him to death. Hector had given him the name of Scamandrius; but the Trojans, who hoped he might prove as great as his father, called him Aſtyanax, or the 'bulwark of the city.' *Homer*, *Virgil*, *Ovid*. An Arcadian, who had a ſtatue in the temple of Jupiter, on mount Lyceus. *Pauſ.* A ſon of Hercules. *Apollod.* A writer in the age of Gallienus.

ASTY'DAMAS, an Athenian, pupil to Iſocrates. He wrote 240 tragedies, of which only fifteen obtained the poetical prize. Alſo a Mileſian, three times victorious at Olympia. He was famous for his ſtrength, as well as for his voracious appetite. He was once invited to a feaſt by king Ariobarzanes, and he ate what had been prepared for nine perſons. *Athe.* Two tragic writers bore the ſame name, one of whom was diſciple to Socrates. And a comic poet of Athens.

ASTYDA'MIA, daughter of Amyntor, king of Orchomenos in Bœotia, married Acaſtus, ſon of Pelias, who was king of Iolchos. She became enamoured of Peleus, ſon of Æacus, who had viſited her huſband's court; and, becauſe he refuſed to gratify her paſſion, ſhe accuſed him of attempting her virtue. Acaſtus readily believed his wife's accuſation; and, as he would not violate the laws of hoſpitality, by puniſhing his gueſt with inſtant death, he waited for a favourable opportunity, and diſſembled his reſentment. At laſt they went in a hunting-party to mount Pelion, where Peleus was tied to a tree, by order of Acaſtus, that he might be devoured by wild beaſts. Jupiter was moved at the innocence of Peleus, and ſent Vulcan to deliver him. When Peleus was ſet at liberty, he marched with an army againſt Acaſtus, whom he dethroned, and puniſhed with death the cruel and falſe Aſtydamia. She is called by ſome Hippolyte. *Apollod. Pindar.* A daughter of Ormenus, carried away by Hercules, by whom ſhe had Tlepolemus. *Ovid.*

AS'TYLUS, one of the centaurs, who had the knowledge of futurity. He adviſed his brothers not to make war againſt the Lapithæ. *Ovid.* A man of Crotona, who was victorious three ſucceſſive times at the Olympic games.

ASTYMEDU'SA, a woman whom Oedipus married after he had divorced Jocaſta.

ASTY'NOME, the daughter of Chryſes the prieſt of Apollo, ſometimes called Cryſeis. She fell to the ſhare of Achilles, at the diviſion of the ſpoils of Lyrneſſus. Alſo a daughter of Amphion. *Hygin.*

ASTY'NOMI, in Grecian antiquity, magiſtrates in Athens, correſponding to the ædiles of the Romans; they were ten in number. See Ædile.

ASTY'OCHE, or Astyo'chia, a daughter of Actor, who had by Mars Aſcalaphus and Ialmenus, who were at the Trojan war. *Homer.* A daughter of Phylas king of Ephyre, who had a ſon called Tlepolemus, by Hercules. *Hygin.* A daughter of Laomedon, by Strymo. *Apollod.* A daughter of Amphion and Niobe. *Id.* A daughter of Simois, who married Erichthonius. *Id.* The wife of Strophius, ſiſter to Agamemnon. *Hygin.*

A'SUM, or Of'fion, a town of Africa, on the ſea-coaſt of the kingdom of Adel.

ASUMAT'Z, a town of Wallachia, eight miles eaſt of Buchoreſt.

ASUN'DER, *adv.* [*aſundran*, Sax.] Apart; ſeparately; not together.—Two indirect lines, the further that they are drawn out, the further they go *aſunder*. *Spenſer.*

The fall'n archangel, envious of our ſtate,
Seeks hid advantage to betray us worſe;
Which, when *aſunder*, will not prove too hard,
For both together are each other's guard. *Dryden.*

ASWAD', a town of Arabia, twenty-eight miles ſouth of Saade.

ASY'LUM, *ſ.* [*aſyle*, Fr. of ασυλον, Gr. of α priv. and συλη, a prey.] A ſanctuary, or place of refuge, where criminals ſhelter themſelves from the hands of juſtice. The aſyla of altars and temples were very ancient; and likewiſe thoſe of tombs, ſtatues, and other monuments, of conſiderable perſonages. Thus, the temple of Diana at Epheſus was a refuge for debtors, the tomb of Theſeus for ſlaves. Among the Romans, a celebrated aſylum was opened by Romulus between the mounts Palatine and Capitoline, in order to people Rome, for all ſorts of perſons indiſcriminately, fugitive ſlaves, debtors, and criminals of every kind. The Jews had their aſyla; the moſt remarkable of which were, the ſix cities of refuge, the temple, and the altar of burnt-offerings.

It was cuſtomary among the heathens to allow refuge and impunity even to the vileſt and moſt flagrant offenders; ſome out of ſuperſtition, and others for the ſake of peopling their cities: and it was by this means, and with ſuch inhabitants, that Thebes, Athens, and Rome, were firſt ſtocked. We even read of aſylums at Lyons and Vienne, among the ancient Gauls; and there are ſome cities in Germany which ſtill preſerve the ancient right of aſylum. Hence, on the medals of ſeveral ancient cities, particularly in Syria, we meet with the inſcription ΑΣΥΛΟΙ, to which is added ΙΕΡΑΙ. This quality of aſylum was given them, according to M. Spanheim, in regard to their temples, and to the gods revered by them.

The emperors Honorius and Theodoſius granting the like immunities to churches, the biſhops and monks laid hold of a certain tract or territory, without which they fixed the bounds of the ſecular juriſdiction: and ſo well did they manage their privileges, that convents in a little time became next akin to fortreſſes; where notorious offenders were in ſafety, and braved the power of the magiſtrate. Theſe privileges at length were extended not only to the churches and church-yards, but alſo to the biſhops' houſes; whence the criminal could not be removed without a legal aſſurance of life, and an entire remiſſion of the crime. The reaſon of the extenſion was, that they might not be obliged to live all together in the churches, &c. where ſeveral of the occaſions of life could not be decently performed. But at length theſe aſyla or ſanctuaries were alſo ſtripped of moſt of their immunities, becauſe they ſerved to make guilt and libertinage more bold and daring. In England, particularly, they were entirely aboliſhed. See Sanctuary.

ASYM'BOLIC, *ſ.* [of α priv. and συμϐολον, a ſhot.] Scot or ſhot free.

ASYM'METRAL, *adj.* In mathematics, the ſame with incommenſurable. So qualities are ſaid to be aſymmetral, when there is no common meaſure betwixt them.

ASYM'METRY, *ſ.* [from α, without, and συμμετρια, ſymmetry.] Contrariety to ſymmetry; diſproportion.—The *aſymmetries* of the brain, as well as the deformities of the legs or face, may be rectified in time. *Grew.*—This term is ſometimes uſed in mathematics, for what is more uſually called incommenſurability; when between two quantities there is no common meaſure.

ASYM'PHONY, *ſ.* [of α priv. and ζυμφονια, harmony.] A diſorder in deſcant, a diſagreement.

ASYM'PHORUS, *ſ.* [from α neg. and συμφερω, to profit.] Not inconvenient; not improper or dangerous.

ASYM'PHYTUS, *ſ.* [from α neg. and συμφυτος, of the ſame kind.] Diſſimilar in its parts; diſtinct.

A'SYMPTOTE, *ſ.* [from α priv. συν, with, and πτοω, to fall; which never meet, incoincident.] Properly a right line, which approaches continually nearer and nearer to ſome curve, whoſe aſymptote it is ſaid to be, in ſuch ſort, that, when they are both indefinitely produced, they are nearer together than by any aſſignable finite diſtance; or it may be conſidered as a tangent to the curve when conceived to be produced to an infinite diſtance. Two curves are alſo ſaid to be aſymptotical, when they thus continually approach indefinitely to a coincidence: thus, two parabolas, placed with their axes in the ſame right line, are aſymptotes to one another. Of lines of the ſecond kind, or curves of the firſt kind, that is, the conic ſections, only the hyperbola has aſymptotes, which are two in number. All curves of the ſecond kind have at leaſt one aſymptote; but they may have three. And all curves of the third kind may have four aſymptotes. The conchoid, ciſſoid, and logarithmic curve, though not reputed geometrical curves, have each one aſymptote. And the branch or leg of a curve that has an aſymptote, is ſaid to be of the hyperbolic kind. See GEOMETRY and CONIC SECTIONS.

ASYMPTO'TICAL, *adj.* Curves are ſaid to be aſymptotical, when they continually approach, without a poſſibility of meeting.

ASYN'DETON, *ſ.* [of α priv. ϲυν, with, and δεσμος, a band; or α, without, and συνδετος, bound together.] A figure in grammar, implying the want of conjunctions in a ſentence, or a figure when commas are put inſtead of copulatives; as, *veni, vidi, vici,* i. e. I came, I ſaw, I conquered; the conjunction & being omitted. Aſyndeton ſtands oppoſed to polyſyndeton, where the copulatives are multiplied.

ASYN'THES, *ſ.* [from α neg. and συνθεω, to occur.] Unaccuſtomed; unexpected.

AT, *prep.* [*æt*, Sax.] At, before a place, notes the nearneſs of the place; as, A man is *at* the houſe before he is *in* it.—This cuſtom continued among many, to ſay their prayers *at* fountains. *Stillingfleet.*—*At*, before a word ſignifying time, notes the co-exiſtence of the time with the event: the word *time* is ſometimes included in the adjective; we commonly ſay *at* a minute, *at* an hour, *on* a day, *in* a month.—We thought it *at* the very firſt a ſign of cold affection. *Hooker.*—*At* the ſame time that the ſtorm beats upon the whole ſpecies, we are falling foul upon one another. *Addiſon.*—*At*, before a caſual word, ſignifies nearly the ſame as *with*, noting that the event accompanies, or immediately ſucceeds, the action of the cauſe:

O ſir, when he ſhall hear of your approach,
If that young Arthur be not gone already,
Ev'n *at* this news he dies. *Shakeſpeare.*

At, before a ſuperlative adjective, implies *in the ſtate*; as, *at beſt*, in the ſtate of moſt perfection, &c.—Conſider any man as to his perſonal powers, they are not great; for, *at* greateſt, they muſt ſtill be limited. *South.*—We bring into the world with us a poor needy uncertain life, ſhort *at* the longeſt, and unquiet *at* the beſt. *Temple.*—*At*, before a perſon, is ſeldom uſed otherwiſe than ludicrouſly; as, He longed to be *at* him, that is, to attack him. *At*, before a ſubſtantive, ſometimes ſignifies the particular condition or circumſtances of the perſon; as, *at* peace, in a ſtate of peace.—It bringeth the treaſure of a realm into a few hands: for the uſurer being *at* certainties, and others *at* uncertainties, at the end of the game moſt of the money will be in the box. *Bacon.*—Wiſe men are ſometimes overborne, when they are taken *at* a diſadvantage. *Collier.*—*At*, before a ſubſtantive, ſometimes marks employment or attention.—We find ſome arrived at that ſottiſhneſs, as to own roundly what they would be *at*. *South.*

The creature 's *at* his dirty work again. *Pope.*

At is ſometimes the ſame as *furniſhed with*, after the French *à*:

Infuſe his breaſt with magnanimity,
And make him naked foil a man *at* arms. *Shakeſpeare.*

At ſometimes notes the place where any thing is, or acts:—He that in tracing the veſſels began *at* the heart, though he thought not at all of a circulation, yet made he the firſt true ſtep towards the diſcovery. *Grew.*—*At* ſometimes ſignifies in immediate conſequence of.—Impeachments *at* the proſecution of the houſe of commons, have received their determinations in the houſe of lords. *Hale.*—*At* marks ſometimes the effect proceeding from an act:

Reſt in this tomb, rais'd *at* thy huſband's coſt. *Dryden.*

At ſometimes is nearly the ſame as *in*, noting ſituation; as, He was *at* the bottom, or top, of the hill. *At* ſometimes marks the occaſion, like *on:*

Others, with more helpful care,
Cry'd out aloud, Beware, brave youth, beware!
At this he turn'd, and, as the bull drew near,
Shunn'd, and receiv'd him on his pointed ſpear. *Dryden.*

At ſometimes ſeems to ſignify *in the power of*, or *obedient to:*

But thou of all the kings, Jove's care below,
Art leaſt *at* my command, and moſt my foe. *Dryden.*

At ſometimes notes the relation of a man to an action.—He who makes pleaſure the vehicle of health, is a doctor *at* it in good earneſt. *Collier.*—*At* ſometimes imports the manner of an action.—One warms you by degrees, the other ſets you on fire all *at* once, and never intermits his heat. *Dryden.*—*At*, like the French *chez*, means ſometimes *application to*, or *dependence on.*—The worſt authors might endeavour to pleaſe us, and in that endeavour deſerve ſomething *at* our hands. *Pope.*—*At all.* In any manner; in any degree.

AT'ABAL, *ſ.* A kind of tabour uſed by the Moors:

Children ſhall beat our *atabals* and drums,
And all the noiſy trades of war no more
Shall wake the peaceful morn. *Dryden.*

ATA'BULUS, *ſ.* a provincial wind in Apulia, of a dry pinching quality, and very noxious in its effects. The ancient naturaliſts ſpeak of the atabulus in terms of horror, on account of the ravage it made among the fruits of the earth, which it ſcorched or withered up.

ATABY'RIS, a very high mountain in the iſland of Rhodes, on which, according to Strabo and Diodorus Siculus, there ſtood a temple of Jupiter Atabyrius, whoſe worſhip a colony of Rhodians carried into Sicily, where a temple was built to the ſame deity at Agrigentum.

ATACA'MA, or ST. FRANCIS D'ATACAMA, a town of South America, in Peru, fifteen leagues from the Pacific Ocean, and principal place of a juriſdiction on the borders of Chili. The ſoil is in ſome parts fertile, in others ſandy and barren. Lat. 20. 45. S. lon. 51. 30. W. Ferro.

ALAKKEU'I, a town of Aſiatic Turkey, in the province of Natolia, forty-four miles north-weſt of Eregri.

ATALAN'TA, an iſland in the Euripus of Eubœa, near the Locri Opuntii, ſaid to have been originally a city of the Locri, but torn from the continent in the time of an earthquake, and during an eruption of mount Etna. This happened in the fourth year of the 93d Olympiad, in the reign of Artaxerxes Mnemon. *Pliny.*

ATALANTA, a daughter of Schœneus, king of Scyros. According to ſome, ſhe was the daughter of Jaſus, or Jaſius, by Clymene; but others ſay that Menalion was her father. This uncertainty of not rightly knowing the name of her father, has led the mythologiſts into error, and ſome have maintained that there were two perſons of that name, though their ſuppoſition is groundleſs. Atalanta was born in Arcadia, and, according to Ovid, ſhe determined to live in perpetual celibacy; but her beauty gained her many admirers, and, to free herſelf from their importunities, ſhe propoſed to run a race with them. They were to run without arms, and ſhe was to carry a dart in her hand. Her lovers were to ſtart firſt, and whoever arrived at the goal before her would be made her huſband; but all thoſe whom ſhe undertook, were to be killed by the dart with which ſhe had armed herſelf. As ſhe was almoſt invincible in running, many of her ſuitors periſhed in the attempt, till Hippomenes the ſon of Macareus propoſed as her admirer. Venus had preſented him with three golden apples from the garden of the Heſperides, or, according to others, from an orchard in Cyprus; and, as ſoon as he had ſtarted in the courſe, he artfully threw down the apples at ſome diſtance one from the other. While Atalanta, charmed at the ſight, ſtopped to gather the apples, Hippomenes haſtened on his courſe, arrived firſt at the goal, and obtained Atalanta in marriage. Theſe two fond lovers, in the impatience of conſummating their nuptials, entered the temple of Cybele; and the goddeſs was ſo offended at their impiety, and at the profanation of her houſe, that ſhe changed them into two lions. Apollodorus ſays, that Atalanta's father was deſirous of raiſing a male iſſue, and that therefore ſhe was expoſed to wild beaſts as ſoon as born. She was however ſuckled by a ſhe-bear, and preſerved by ſhepherds. She dedicated her time to hunting, and reſolved to live in celibacy. She killed two centaurs who attempted her virtue. She was preſent at the hunting of the Calydonian boar, which ſhe firſt wounded, and ſhe received the head as a preſent from Meleager, who was enamoured of her. She was alſo at the games inſtituted in honour of Pelias, where ſhe conquered Peleus; and when her father, to whom ſhe had been reſtored, wiſhed her to marry, ſhe conſented to give herſelf to him who could overcome her in running, as has been ſaid above. She had a ſon called Parthenopæus, by Hippomenes. Hyginus ſays, that that ſon was the fruit of her love with Meleager; and Apollodorus ſays, ſhe had him by Milanion; or, according to others, by Mars.

ATALAN'TIS, ATLAN'TICA, or ATLAN'TIS. See ATLANTIS.

ATALA'YA, a town of Portugal, in the province of Eſtremadura, containing about two hundred inhabitants, with one pariſh. It is defended by a fortreſs on an eminence difficult of acceſs: two leagues ſouth of Tomar.

ATAMARAM', *ſ.* in botany. See ANNONA.

ATAMAS'CO LI'LY. See AMARYLLIS.

ATARAX'IA, or AT'ARAXY, *ſ.* [α priv. and ταραξις, perturbation.] Exemption from vexation; tranquillity.—The ſceptics affected an indifferent equiponderous neutrality, as the only means to their *ataraxia*, and freedom from paſſionate diſturbances. *Glanville.*

ATARGA'TIS FA'NUM, the temple of a goddeſs worſhipped by the Syrians and Parthians, having the face of a woman and tail of a fiſh, and called *Derceto* by the Greeks. Her temple ſtood in the city Bambyce, called afterwards *Hierapolis*. It was extremely rich, inſomuch that Craſſus, in his march againſt the Parthians, ſpent ſeveral days in weighing the treaſure. Voſſius makes the name of this goddeſs Phœnician, from *addir dag*, "the great fiſh."

ATARNE'A, an ancient town of Myſia, ſituated between Adrymittium and Pitane, remarkable for the marriage of Ariſtotle with the ſiſter or concubine of the tyrant Hermias; alſo for the dotage of that philoſopher.

ATAX'IR, *ſ.* [אטציר Arab.] A teneſmus; a diſeaſe of the eye.

ATAXO'RA, a town of Spain, in Navarre, four leagues from Olita.

AT'AXY, *ſ.* [*ataxia*, Lat. of αταξια, Gr.] The want of order. With phyſicians, it ſignifies irregularity of criſes and paroxyſms of fevers.

ATCHAIR'SKOI, a fortreſs of Siberia, on the Irtich, twenty-eight miles ſouth-eaſt of Omſk.

AT'CHE, *ſ.* in commerce, a ſmall ſilver coin uſed in Turkey, and worth only one-third of the Engliſh penny.

AT'CHINSK, a town of Siberia, on the Tchulim, 424 miles eaſt-ſouth-eaſt of Tobolſk. Lat. 56. 20. N. lon. 107. 20. E. Ferro.

A'TE, the goddeſs of all evil, and daughter of Jupiter. She raiſed ſuch jealouſy and ſedition in heaven among the gods, that Jupiter dragged her away by the hair, and baniſhed her for ever from heaven, and ſent her to dwell on earth, where ſhe incited mankind to wickedneſs, and ſowed commotions among them. *Homer.* She is the ſame as the *Diſcord* of the Latins.

ATE, the preterite of *eat*. See *To* EAT.—Even our firſt parents *ate* themſelves out of Paradiſe; and Job's children junketted and feaſted together often. *South.*

ATE'CA, a town of Spain, in the country of Arragon, on the river Xalon: two leagues above Calatiaud.

ATEC'NIA, *ſ.* [from α neg. and τικτω, to bring forth.] Venereal impotency; inability to procreate children.

ATE'GAR, *ſ.* [of *aeton*, Sax. to fling or throw.] A weapon, a ſort of hand-dart.

ATEGU'A, or AT'TEGUA, anciently a town of Spain, placed by ſome in the road from Antiquara, now Antequera, to Hiſpalis, or Seville; by others near Alcala Real; which laſt is the more probable ſituation, becauſe the Flumen Salſum, now the Salado, was in its neighbourhood. Now *Tebala Vieja*, or *Teivela*.

ATEL'LA, an ancient town of Campania, in Italy, between Capua and Naples. From this town the *Atellanæ fabulæ*, or *Atellani ludi*, took their name. Theſe were alſo called *Oſci*, from their inventor, in whoſe territory Atella lay. They were generally a ſpecies of farce, interlarded with much ribaldry and buffoonery; and ſometimes were exordia or interludes preſented between the acts of other plays. The actors in theſe farces were not reckoned among the common players, nor deemed infamous; but retained the rights of their tribe, and might be liſted for ſoldiers, the privilege only of free men. The ruins of this town are ſtill to be ſeen about eleven miles from the modern Averſa, which was built out of its materials.

ATELLA'RA, or ATELLA'RI, a river of Sicily, which runs into the ſea between Syracuſe and Cape Paſſaro.

A TEM'PO GIUS'TO, *ſ.* in muſic, ſignifies to ſing or play in an equal, true, and juſt, time.

ATE'NA, a town of Italy, in the kingdom of Naples, ſituated on the river Negro, in the Principato Citra: ten miles weſt of Marſico Novo.

AT'ENES, *ſ.* [from α neg. and τεινω, to extend.] Rigid, fixed, firm.

ATERAM'NIA, *ſ.* [from α neg. and τειρω, to break in pieces.] Difficulty of concoction or digeſtion.

ATE'RES, *ſ.* [from αταω, to hurt.] Noxious, hurtful.

ATERGA'TIS, in mythology, a goddeſs of the Syrians, ſuppoſed to be the mother of Semiramis. She was repreſented with the face and breaſts of a woman, but the reſt of her body reſembled a fiſh. Voſſius ſays, the term ſignifies *without fiſh*, and conjectures that the votaries of this deity abſtained from fiſh.

ATER'NUM, a town of Lucania in Italy, now *Aterni*. Alſo a town in the territory of the Piceni, now *Peſcara*, a port-town of Naples, ſituated on the Adriatic. Lat. 42. 30. N. lon. 15. 25. E.

ATES'TE, anciently a town in the territory of Venice, now called *Eſte*.

AT'FICH, or ET'FIH, a town of Egypt, on the eaſt coaſt of the Nile, and chief place of a diſtrict; thirty-five miles ſouth of Cairo. Lat. 29. 28. N. lon. 48. 54. E. Ferro.

ATH, a ſmall but populous city of Hainault, ſituated on the river Dendre, yielded to France by the treaty of Aix-la-Chapelle in 1668, and then fortified by Vauban; but reſtored to the Spaniards by the treaty of Nimeguen, in 1678. The French laid ſiege to it in May, 1697, under the command of mareſchal Catinat, and, thirteen days after the trenches were opened, the town ſurrendered; but the ſame year was reſtored to Spain. September 16, 1706, the allied army inveſted the place, under the command of field-marſhal Owerkercke, with ſixty-four pieces of cannon, and forty-two mortars. On the firſt of October, the governor, comte de St. Pierre, was obliged to capitulate, and with his troops ſurrender priſoners of war, being conducted to Bergen-op-Zoom and Breda. The Dutch remained in poſſeſſion till the year 1716, when it was given up to the emperor. It is nine miles north-weſt of Mons, and forty-one eaſt of Tournay. Lat. 50. 37. N. lon. 21. 22. E. Ferro.

ATHA'BOLI, or AGATA'POLI, a town of European Turkey, in the province of Romania, ſixty-eight miles north-eaſt of Adrianople.

ATHALI'AH, [עתליה Heb. of עת the time, and יה of the Lord; i.e. the hour or time of the Lord.] The daughter of Omri, king of Iſrael.

ATHAMADU'LET, the prime miniſter of the Perſian empire, as the grand vizier is of the Turkiſh empire. He is great chancellor of the kingdom, preſident of the council, ſuperintendant of the finances, and is charged with all foreign affairs.

ATHAMAN'TA, *ſ.* [from *Athamas*, a city or mountain of Theſſaly.] In botany, a genus of the claſs pentandria, order digynia, natural order umbellatæ, or umbelliferæ. The generic characters are—Calyx: umbel univerſal manifold, ſpreading; partial has fewer rays; involucre univerſal many-leaved, linear, a little ſhorter than the rays; partial linear, equal with the rays; perianthium proper, obſcure. Corolla: univerſal uniform; floſcules all fertile; proper with five petals, inflex-emarginate, a little unequal. Stamina: filaments five, capillary, the length of the corolla; antheræ roundiſh. Piſtillum: germ inferior; ſtyles two, diſtant; ſtigmas obtuſe. Pericarpium: none; fruit ovate-oblong, ſtriated, bipartile. Seeds: two, ovate, convex on one ſide, ſtriated; on the other flat.—*Eſſential Character.* Fruit ovate-oblong, ſtriated; petals inflex emarginate.

Species. 1. Athamanta Libanotis, or mountain ſpignel or ſtone-parſley: leaves bipinnate flat, umbel hemiſpherical, ſeeds hirſute. Root perennial; ſtem from one to two feet in height, erect, not much branched. Native of Sweden, Denmark, Germany, Switzerland, Auſtria, Carniola, and the ſouth of France. Obſerved by Mr. Ray on the banks of the Danube, and on mount Jura, abroad; alſo on Gogmagog-hills near Cambridge, at home. In this latter ſituation it was not remarked by ſucceeding botaniſts, till Mr. Relhan found it in 1783. It flowers with us in Auguſt and September.

2. Athamanta cevari, or broad-leaved ſpignel or black hart-root: leaves pinnate decuſſated, gaſh-angled; ſeeds naked. Stem five feet in height, firm, branching. This plant is recommended in the gout: and in Stiria they uſe it in intermittent fevers. Native of the mountains of France, Switzerland, Germany, Auſtria, and Carniola. Ray obſerved it on the banks of the Rhine, in vineyards, and on the hills near Geneva. It flowers in July and Auguſt. Gerard had it growing in his garden in 1597.

3. Athamanta Sibirica, or Siberian ſpignel: leaves pinnate, gaſh-angled. Gouan ſays, that the ſtem is from two cubits to the height of a man nearly, very much grooved, ſo as to be angular. Scopoli deſcribes his *libanotis daucoides* to be only eighteen inches high. Theſe plants, thus differently deſcribed, cannot poſſibly be the ſame. It was introduced in 1771 by M. Richard.

4. Athamanta condenſata, or cloſe-headed ſpignel: leaves ſub-bipinnate, leaflets imbricate downwards, umbel lens-form. Root perennial. Stem ſimple, a foot high, ſmooth, angular near the bottom, furrowed towards the top, eſpecially the peduncle. Native of Siberia.

5. Athamanta oreoſelinum, or divaricated ſpignel or mountain-parſley: leaflets divaricate. Root perennial, thick, aromatic, reſinous, crowned with briſtles. Leaves firm, ſmooth, veined underneath, very large. Petals white, with a bluſh of roſe-colour. It is gratefully aromatic, and deſerves to be better known. Native of Sweden, Germany, France, Switzerland, Carniola, Auſtria, but not of England.

6. Athamanta ſicula, or flix-weed leaved ſpignel: lower leaves ſhining, primordial umbels ſubſeſſile, ſeeds hairy. This is a perennial plant, ſending up from the root ſeveral upright ſtems, near three feet high. The flowers are white, and are ſucceeded by oblong woolly fruit. Native of Sicily; cultivated in England in 1713.

7. Athamanta Cretenſis, or Cretan ſpignel or Candy carrot: leaflets linear flat, hirſute; petals two-parted; ſeeds oblong, hirſute. The whole plant is villoſe, in a wild ſtate; when cultivated in a garden the leaves become ſucculent, brittle, and very ſhining. Native of the ſouth of Europe. Ray gathered it on the higher parts of mount Jura. It flowers in June. The ſeeds have been occaſionally employed as carminatives, and were ſuppoſed likewiſe to be diuretic and emmenagogic: lately they have been little uſed except as ingredients in theriaca and mithridate. Now that theſe ancient compounds are in a manner diſcarded, the plant no longer appears in the London Pharmacopœia. Haller however judges it to be much ſuperior to the common wild carrot in medicinal efficacy. It was celebrated anciently as a ſpecific in the ſtone: and it will ſcarcely be believed that Van Helmont affirms ſeriouſly, that it has even cured the water in a well of this diſorder.

8. Athamanta annua, or annual ſpignel: leaves many-parted; diviſions linear, roundiſh, acuminate. This is an annual plant, whereas the other ſpecies are perennial. It is ſuppoſed, however, by ſome authors to be only a variety of the foregoing. It is a native of Candia or Crete, and was introduced in 1770 by M. Richard.

9. Athamanta Chinenſis: ſeeds membranaceous-ſtriated; leaves ſuperdecompound, poliſhed, multifid. Stem angular, ſmooth, erect. Bartram, who ſent the ſeeds from Virginia, ſaid that it came originally from China.

10. Athamanta rupeſtris: leaflets briſtle-ſhaped, recurved, ſmooth; all the flowers fertile. Stem eighteen inches high, branching, ſub-villoſe, finely ſtreaked. Native of Carniola and Dauphiné. Villars ſuppoſes this to be no more than a variety of the ſeventh ſpecies; and ſays, that the root is very long and deep; the leaves ſmooth, the leaflets much longer and more diſtinct, and the ſtems ſomewhat higher.

Propagation and Culture. Theſe plants are propagated by ſeeds, which ſhould be ſown in autumn, on an open bed of light dry ground; and, when the plants come up in the ſpring, they ſhould be kept clean from weeds, and thinned where they are too cloſe, ſo that they may have room to grow till the following autumn, when they ſhould be carefully taken up, and planted at about a foot diſtance in a bed of light ſandy earth, where the roots will continue ſeveral years; except the eighth ſpecies, which is annual, and the ninth, which probably requires ſome ſhelter, but has not yet been cultivated with us.

ATHAMAN'TA ME'UM. See ÆTHUSA MEUM.

ATH'AMAS, a king of Theſſaly, and ſon of Æolus. By his wife Nephele he had two children, Phryxus and Helle, and afterward he married Ino, by whom he had Learchus and Melicerta. Ino treated the children of Nephele ſo ill, that to get away from her they mounted the ram with a golden fleece, in order to ſwim over the Helleſpont; but Helle was drowned, and gave her name to that ſtrait. Juno, angry with Ino on this account, made Athamas run mad, who taking Ino to be a lioneſs, and her children whelps, he was the death of them.

ATHANA'SIA, *ſ.* [αθανασια, immortality.] In botany, a genus of the claſs ſyngeneſia, order polygamia æqualis, natural order of compound flowers, in the diviſion of diſcoideæ. The generic characters are—Calyx: common imbricate, ovate; ſcales lanceolate, preſſed cloſe. Corolla: compound uniform, longer than the calyx; corollules hermaphrodite equal, numerous; proper funnel-formed; border five-cleft, acute, erectiſh. Stamina: filaments five, capillary, ſhort; anthera cylindric, tubular. Piſtillum: germ oblongiſh; ſtyle filiform, a little longer than the ſtamen; ſtigma bifid, obtuſe. Pericarpium: none; calyx unchanged. Seeds: ſolitary, oblong; down chaffy, of very ſhort briſtles. Receptaculum: chaffy; chaffs lanceolate, longer than the ſeed.—*Eſſential Character.* Calyx imbricate; down chaffy, very ſhort; receptaculum chaffy.

Species. 1. Athanaſia ſquarroſa, or croſs-leaved athanaſia: peduncles one-flowered lateral, leaves ovate recurved. This is an underſhrub, branching determinately, but unequally. Leaves alternate, ſeſſile, pointed, ſmooth. There is a very ſhort down to the ſeeds. Introduced in 1774 by Mr. Francis Maſſon.

2. Athanaſia ſeſſiliflora, or ſeſſile-flowered athanaſia: peduncles one-flowered, ſhorter than the leaf; leaves linear, hairy. 3. Athanaſia pumila, or dwarf athanaſia: peduncles one-flowered, longer than the leaf; leaves linear, hairy. 4. Athanaſia crenata, or notch-leaved athanaſia: flowers ſolitary terminal, leaves linear. 5. Athanaſia uniflora, or one-flowered athanaſia: flowers ſolitary, terminal, ſeſſile; leaves obovate, imbricate, ſmooth. 6. Athanaſia capitata, or hairy athanaſia: flowers terminal ſubſeſſile, leaves lanceolate hirſute. Theſe ſmall plants are all natives of the Cape.

7. Athanaſia maritima, or ſea athanaſia, cudweed, or cottonweed: peduncles two-flowered; leaves lanceolate, crenate, obtuſe, tomentoſe. Root perennial, woody, putting out many fibres, which ſpread near the ſurface. Stems ſeveral, hard, trailing, and ſending out on every ſide many ſmall branches, the whole ſeldom growing more than ſeven or eight inches in length: they are cloſely ſet with ſeſſile leaves, extremely white, with a cottony down. The flowers are produced towards the end of the branches, upon ſhort peduncles, of a bright yellow colour. The ſeeds are oval, ſmooth, and compreſſed, without any down, but covered with a kind of hood. The whiteneſs of the leaves and branches makes a pretty appearance. The long perennial roots run very deep into the ſand, and throw up ſeveral branched buſhy ſtems about a foot high, extremely brittle, round, covered with numerous alternate oblong leaves. A corymb of bright yellow flowers terminates the ſtem and ſide branches. Seeds curved, ſharp, and membraneous at the edge. Every part, eſpecially the flower, has a ſtrong aromatic ſcent. Native of the ſouth of Europe, on the ſea-coaſt. With us in Angleſea, Cornwall, Poole, Dorſet, iſle of Shepey, near Landguardfort, &c.

8. Athanaſia geniſtifolia, or broom-leaved athanaſia: corymbs ſimple; leaves lanceolate, undivided, naked, crowded. Stem underſhrubby, branching determinately, round, rough with the ſcars of fallen leaves.

9. Athanaſia pubeſcens, or villoſe-leaved athanaſia: corymbs ſimple, leaves lanceolate undivided villoſe. This riſes with a ſhrubby ſtem ſix or ſeven feet high; the flowers are yellow, and the ſeeds do not ripen in England.

10. Athanaſia annua, or annual athanaſia: corymbs ſimple contracted, leaves pinnatifid toothed. Root annual. Stem herbaceous, about nine inches high, dividing toward the top into three or four branches, having ſmooth leaves on them. Flowers large, bright yellow: they appear in July and Auguſt, but are rarely ſucceeded by ripe ſeeds in this country. There is a variety, which is the *achillea inodora* of Linnæus. It is a tender plant, with a ſingle grooved ſtem.

11. Athanaſia trifurcata, or trifid-leaved athanaſia: corymbs ſimple, leaves three-lobed cuneiform. 12. Athanaſia crithmifolia, or ſamphire-leaved athanaſia: corymbs ſimple, leaves ſemitrifid linear. Stem ſhrubby, five or ſix feet high, dividing into many irregular branches. The flowers are of a bright yellow colour, but are ſeldom ſucceeded by ripe ſeeds in England.

13. Athanaſia linifolia, or flax-leaved athanaſia: corymb ſimple, leaves linear. Stem ſimple, round, ſmooth, like that of flax. Leaves alternate; flowers ovate and ſmooth. It varies in the length of the leaves. Found at the Cape by Maſſon.

14. Athanaſia dentata, or tooth-leaved athanaſia: corymbs compound; leaves recurved, the lower linear toothed, the upper ovate ſerrate. Stem low, ſhrubby, branching, ſeldom riſing three feet high. Flowers pale yellow: they appear early in ſummer, and, if the ſeaſon proves favourable, will be ſucceeded by ripe ſeeds in autumn. It was introduced, in 1780, by the counteſs of Strathmore.

15. Athanaſia parviflora, or ſmall-flowered athanaſia: corymbs compound, leaves pinnate linear. This has a thick ſhrubby ſtem, covered with a grey bark, and riſes ſeven or eight feet high, ſending out many branches on every ſide; the leaves ſit cloſe to them, and they are terminated cloſe large roundiſh bunches of bright yellow flowers: ſome of the peduncles ſuſtain but one, others two, three, or four, flowers, upon each; they appear the beginning of July, and continue in ſucceſſion till late in autumn; thoſe which come early in the ſeaſon will ripen their ſeeds in winter.

16. Athanaſia pinnata: corymbs denſe, compound; leaves pinnate, linear, tomentoſe.

17. Athanaſia pectinata: corymb compound, leaves pinnate ſmooth. 18. Athanaſia dentata: corymb compound; leaves lanceolate, toothed, ſerrate. 19. Athanaſia filiformis, or fine-leaved athanaſia: leaves linear, ſmooth, ſpreading. 20. Athanaſia cinerea, or lavender-leaved athanaſia: corymb compound; leaves linear, tomentoſe, entire. All the ſpecies are natives of the Cape of Good Hope, except the ſeventh, which is an European. They are all perennial, except the tenth, which is annual.

Propagation and Culture. The perennial Cape ſorts of athanaſia are eaſily propagated by cuttings during the ſummer months. If theſe are planted either in pots, or upon an old hot-bed, and cloſely covered with glaſſes, ſhading them in the heat of the day, and refreſhing them with water when they require it, they will put out roots in five or ſix weeks; and in two months they may be taken up and planted in pots filled with light earth, and placed in a ſhady ſituation until they have taken new root; after which they ſhould be removed to a ſheltered ſituation, mixing them with other exotic plants, where they may remain till the middle or end of October, according as the ſeaſon proves favourable; then they ſhould be removed into a dry ſtove or glaſs-caſe, where they may enjoy as much free air as poſſible, but ſecured from froſt, with which management they will thrive, and produce plenty of flowers; but, where they are drawn weak in winter, they will not appear ſightly. The annual Cape ſort is propagated by ſeeds, when they can be obtained good: they ſhould be ſown on a moderate hot-bed the latter end of March; when the plants are come up they ſhould have air, in proportion to the warmth of the ſeaſon, admitted to them, to prevent their drawing up weak; and, ſo ſoon as they are big enough to remove, they ſhould be tranſplanted on another gentle hot-bed, at three inches diſtance, obſerving to ſhade them until they have got freſh root; after which they muſt have air and water, and, by the end of May, the plants will have acquired ſtrength enough to be tranſplanted into the open air; when ſome may be planted in pots to place among other exotic plants in ſummer, and the others into warm borders, where they will flower all the autumn, but, unleſs the ſeaſon is very warm, they will not ripen ſeeds.

The European ſpecies may be propagated by planting ſlips or cuttings during the ſummer months, in the ſame way as the African ſorts; ſome of the plants ſhould be put into pots, to be placed under a hot-bed frame in winter, the others may be planted in a warm border, where, if the winter proves favourable, they will live; but they rarely ſurvive cold winters.

ATHANA'SIAN CREED, a formulary, or confeſſion of faith, long ſuppoſed to have been drawn up by Athanaſius biſhop of Alexandria, in the fourth century, to juſtify himſelf againſt the calumnies of his Arian enemies. But it is now generally allowed among the learned not to have been his. Dr. Waterland aſcribes it to Hilary biſhop of Arles, for the following among other reaſons: 1. Becauſe Honoratus of Marſeilles, the writer of his life, tells us, that he compoſed an *Expoſition* of the Creed; a properer title for the Athanaſian than that of Creed ſimply which it now bears. 2. Hilary was a great admirer and follower of St. Auſtin; and the whole compoſition of this creed is in a manner upon St. Auſtin's plan, both with reſpect to the Trinity and incarnation. 3. It is agreeable to the ſtyle of Hilary, as far as we can judge from the little that is left of his works. Upon the whole, he concludes,

cludes, that Hilary biſhop of Arles, about the year 430, compoſed *The Expoſition of Faith*, which now bears the name of the *Athanaſian Creed*, for the uſe of the Gallican clergy, and particularly thoſe of the dioceſe of Arles: that, about the year 570, it became famous enough to be commented upon; but that all this while, and for ſeveral years lower, it had not yet acquired the name of Athanaſian, but was ſimply ſtyled The Catholic Faith. That, before 670, Athanaſius's admired name came in to recommend and adorn it, being in itſelf an excellent ſyſtem of the Athanaſian principles of the Trinity and incarnation, in oppoſition chiefly to the Arians, Macedonians, and Apollinarians. This is the hypotheſis of the learned author of the Critical Hiſtory of the Athanaſian Creed.

As to the reception of this creed in the Chriſtian churches, we find, that it obtained in France in the time of Hincmar, anno 850; that it was received in Spain about 100 years later than in France, and in Germany much about the ſame time. As to our own country, we have clear and poſitive proofs of this creed being ſung alternately in our churches in the tenth century. It was in common uſe in ſome parts of Italy, particularly in the dioceſe of Verona, about the year 960, and was received at Rome about the year 1014. As to the Greek and oriental churches, it has been queſtioned whether any of them ever received this creed at all; though ſome very conſiderable writers are of a contrary perſuaſion. It appears then, that the reception of this creed has been both general and ancient; and may vie with any, in that reſpect, except the Nicene or Conſtantinopolitan, the only general creed common to all the churches.

As to the matter of this creed, it is given as a ſummary of the true orthodox faith, and a condemnation of all hereſies ancient and modern. Unhappily it has proved a fruitful ſource of unprofitable controverſy and unchriſtian animoſity even down to the preſent time. Lately, however, attempts have been made reſtore its credit, by propoſing to omit its damnatory clauſes. But, how much more compatible would it be with the benevolent and divine ſpirit of the church of England, if this whole maſs of incomprehenſibles,—of which the wiſe and good archbiſhop Tillotſon, a century ago, wiſhed her well rid,—were cancelled altogether!

ATHANA'SIUS (St.) biſhop of Alexandria, and one of the greateſt defenders of the faith againſt the Arians, was born in Egypt. He followed St. Alexander to the council of Nice, in 325, where he diſputed againſt Arius, and the following year was made biſhop of Alexandria; but, in 335, was depoſed by the council of Tyre: when, having recourſe to the emperor Conſtantine, the Arian deputies accuſed him of having hindered the exportation of corn from Alexandria to Conſtantinople; on which the emperor, without ſuffering him to make his defence, baniſhed him to Treves. The emperor, two years after, gave orders that he ſhould be reſtored to his biſhopric: but, on his return to Alexandria, his enemies brought freſh accuſations againſt him, and choſe Gregory of Cappadocia to his ſee; which obliged Athanaſius to go to Rome and reclaim it of pope Julias. He was there declared innocent, in a council held in 342, and in that of Sardica in 347, and two years after was reſtored to his ſee by order of the emperor Conſtans: but, after the death of that prince, he was again baniſhed by the emperor Conſtantius, which obliged him to retire into the deſerts. The Arians then elected one George in his room; who, being killed in a popular ſedition under Julian in 360, St. Athanaſius returned to Alexandria, but was again baniſhed under Julian, and reſtored to his ſee under Jovian. He addreſſed to that emperor a letter, in which he propoſed that the Nicene creed ſhould be the ſtandard of the orthodox faith, and condemned thoſe who denied the divinity of the Holy Ghoſt. He was alſo baniſhed by Valens in 367, and afterwards recalled. St. Athanaſius died on the 2d of May, 373. His works principally contain a defence of the myſtery of the Trinity, and of incarnation and divinity of the Word and Holy Spirit. There are three editions of his works which are eſteemed; that of Commelin, printed in 1600; that of Nannius, in 1627; and that of Montfaucon.

ATHAN'ASY, *ſ.* [*athanaſia*, Lat. of αθανασια, Gr. of α priv. and ϑανατος, death.] Immortality.

ATHANA'TI, in Perſian antiquity, a body of cavalry, conſiſting of 10,000 men, always complete. They were called *athanati* (a word originally Greek, and ſignifying 'immortal'), becauſe, when one of them happened to die, another was immediately appointed to ſucceed him.

ATHA'NOR, *ſ.* [from αθανατος, Gr. or, as others think, from תנור Heb. an oven.] A kind of furnace, which has long ſince fallen into diſuſe. The very long and durable operations of the ancient chemiſts rendered it a deſirable requiſite, that their fires ſhould be conſtantly ſupplied with fuel in proportion to the conſumption. The athanor furnace was peculiarly adapted to this purpoſe. Beſides the uſual parts, it was provided with a hollow tower, into which charcoal was put. The upper part of the tower, when filled, was cloſely ſhut by a well-fitted cover; and the lower part communicated with the fire-place of the furnace. In conſequence of this diſpoſition, the charcoal ſubſided into the fire-place gradually, as the conſumption made room for it; but, that which was contained in the tower was defended from combuſtion by the excluſion of a proper ſupply of vital air.

ATHAPES'COW, a lake of North America, 100 miles long, and from ten to thirty wide. Lat. 59. 0. N. lon. 110. 0. W. Greenwich.

A'THARA, *ſ.* [from αθηρ, corn.] A panada or pap for children, made of bruiſed corn.

ATHA'RER, in aſtrology, a term uſed when the Moon is in the ſame degree and minute with the ſun.

A'THAROTH, or A'TROTH, the ancient name of ſeveral towns. Two appear to have been in Samaria, in the tribe of Ephraim; the one four miles to the north of Sebaſte, or the city of Samaria; the other in the confines of Benjamin and Ephraim. This is the *Atroth-Addar* mentioned Joſhua xvi. 5. from which to Upper Bethoron extends the greateſt breadth of the tribe of Ephraim.

ATH'BAY, a town of Ireland, in the county of Meath, a borough which returns two members to the Iriſh parliament: twenty-nine miles north-weſt of Dublin.

ATHE'E, a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Craon: three miles north of Craon.

A'THEISM, *ſ.* [from *atheiſt*. It is only of two ſyllables in poetry.] The diſbelief of a God.—It is the common intereſt of mankind, to puniſh all thoſe who would ſeduce men to *atheiſm*. *Tillotſon.*

A'THEIST, *ſ.* [αϑεος, without God.] One that denies the exiſtence of a God.—No *atheiſt*, as ſuch, can be a true friend, an affectionate relation, or a loyal ſubject. *Bentley.*

Atheiſt, uſe thine eyes,
And, having view'd the order of the ſkies,
Think, if thou canſt, that matter, blindly hurl'd
Without a guide, ſhould frame this wond'rous world. *Creech.*

Atheiſm, as abſurd and unreaſonable as it is, has had its martyrs. Lucilio Vanini, an Italian, native of Naples, publicly taught atheiſm in France, about the beginning of the 17th century; and, being convicted of it at Toulouſe, was condemned to death. Being preſſed to make a public acknowledgement of his crime, and to aſk pardon of God, the king, and juſtice, he anſwered, He did not believe there was a God; that he never offended the king; and, as for juſtice, he wiſhed it to the devil. He confeſſed that he was one of twelve, who parted in company from Naples to ſpread their doctrine in all parts of Europe. His tongue was firſt cut out, and then his body burnt, April 9, 1619.

ATHEIST, *adj.* Atheiſtical; denying God:

Nor ſtood unmindful Abdiel to annoy
The *atheiſt* crew. *Milton.*

ATHEIS'TIC, *adj.* Given to atheiſm.—This argument demonſtrated the exiſtence of a Deity, and convinced all *atheiſtic* gainſayers. *Ray.*

ATHEIS'TICAL, *adj.* Given to atheiſm; impious.—Men are *atheiſtical,* becauſe they are firſt vicious; and queſtion the truth of Chriſtianity, becauſe they hate the practice. *South.*

ATHEIS'TICALLY, *adv.* In an atheiſtical manner.—Is it not enormous, that a divine, hearing a great ſinner talk *atheiſtically* and ſcoff profanely at religion, ſhould, inſtead of vindicating the truth, tacitly approve the ſcoffer? *South.*—I entreat ſuch as are *atheiſtically* inclined to conſider theſe things. *Tillotſon.*

ATHEIS'TICALNESS, *ſ.* The quality of being atheiſtical.—Lord, purge out of all hearts profaneneſs and *atheiſticalneſs.* *Hammond.*

A'THEL, Atheling, Adel, and Æthel, [from *adel,* noble, Germ.] So *Æthelred* is 'noble for counſel'; *Æthelard,* 'a noble genius'; *Æthelbert,* 'eminently noble'; *Æthelward,* 'a noble protector. *Gibſon.*

A'THELIN, [perhaps from *ath,* an oath, and *helm,* Sax. i. e. a keeper of his oath.] An archbiſhop of Canterbury.

A'THELING, *ſ.* [from *ætheling,* Sax. i. e. noble.] A title given in the Saxon times to the king's eldeſt ſon.

A'THELNEY, (Iſle of,) is a riſing ſpot of ground in the county of Somerſet in England, ſurrounded by the river Thone, over which is a bridge, now called Athelney bridge. This ſpot, which was anciently environed with impaſſable marſhes and moraſſes, will be ever memorable for the retreat of king Alfred, from the fury of the Danes, who in tumultous numbers had overrun the eaſtern part of his dominions. The regiſter of Athelney ſets forth, that Alfred, after having bravely encountered his enemies for nine ſucceſſive years, was at length reduced to the neceſſity of fleeing from them, and taking refuge in the Iſle of Athelney. The place that lodged him was a ſmall cottage belonging to St. Athelwine, formerly an hermit here, the ſon of king Kynegilſus. After his emerſion from this retirement, and the total defeat of his enemies, he founded a monaſtery for Benedictine monks on the ſpot which had given him ſhelter, endowing the eſtabliſhment with the whole Iſle of Athelney, exempt from all taxes and burdens: one mile eaſt-north-eaſt of Taunton.

A'THELSTAN, a Saxon king of England, natural ſon of Edward the elder, and grandſon of the great Alfred. He ſucceeded to the crown in 925, and reigned ſixteen years. There was a remarkable law paſſed by this prince, which ſhews his juſt ſentiments of the advantages of commerce, as well as the early attention to it in this country: it declared, that any merchant who made three voyages on his own account beyond the Britiſh channel or narrow ſeas, ſhould be intitled to the privilege of a thane, or gentleman.

A'THELSTANFORD, [i. e. Athelſtan's Ford.] A place in Scotland, where Athelſtan king of the Eaſt Saxons ferried over his army againſt the Scots.

ATHELX'IS, *ſ.* [from αθελγομαι, to ſuck out.] Suction, or attraction.

ATHE'NA, a name of Minerva among the Greeks, becauſe ſhe never ſucked the breaſt of a mother or nurſe; or, as Plato thinks, from her ſkill in divine affairs.

ATHENÆ'A, *ſ.* [probably ſo named from *Athenæus* the deipnoſophiſt.] In botony, a genus of the claſs octandria, order monogynia. The generic characters are —Calyx: perianthium one-leafed, coloured, five-parted; parts oblong, acute, erect, ſpreading at top. Corolla: none. Stamina: filaments eight, filiform, erect; of which five are of the length of the calyx, the three alternate ones a little ſhorter; antheræ ſagittate; eight plumoſe briſtles, ſhorter than the filaments, growing together with the filaments, to a gland ſurrounding the germ. Piſtillum: germ ſuperior, ovate, ſurrounded at the baſe by an annular gland. Style ſetaceous, longer than the ſtamens. Stigma depreſſed, five-parted. Pericarpium: capſule globoſe, one-celled, three-valved: valves ſomewhat fleſhy. Seeds three to five, rounded, covered with a pulpy coloured membrane, affixed to the receptacle in the bottom of the capſule. *Eſſential Character.*—Calyx coloured, five-parted; corolla, none; briſtles eight, feathered between the filaments; ſtamina, five-parted; capſule globoſe, one-celled, three-valved; ſeeds, three to five.

There is but one ſpeceis, called athenæa guianenſis. It is a branching ſhrub. Stem four or five inches in diameter, covered with a wrinkled grey bark. Leaves alternate, ovate, ſmooth, toothed, deciduous, four inches long, and about two broad. Petioles very ſhort, having a ſmall ſharp ſtipule on each ſide of the baſe. The flowers come out in bundles from the axils, and upon the tubercles of the ſtem and branches, each on a ſmall peduncle: their calyx is white, and there is no corolla. Capſule green with a tinge of violet. The ſeeds are covered with a pulpy viſcid membrane of a ſcarlet colour. The bark, leaves, and fruit, are ſharp and aromatic. The laſt are called *caffé diable* by the Creoles. Native of the iſland of Cayenne and the neighbouring continent of Guiana, a quarter of a league from the ſea-ſhore, in a ſandy ſoil, flowering and bearing fruit in September.

Athenæa, *ſ.* In antiquity, a feaſt celebrated by the ancient Greeks in honour of Minerva, who was called *Athene.*

ATHENÆ'UM, *ſ.* In antiquity, a public place wherein the profeſſors of the liberal arts held their aſſemblies, the rhetoricians declaimed, and the poets rehearſed their performances. Theſe places, of which there was a great number at Athens, were built in the manner of amphitheatres, encompaſſed with ſeats, called *cunei.* The three moſt celebrated Athenæa were thoſe at Athens, at Rome, and at Lyons, the ſecond of which was built by the emperor Adrian.

ATHENÆ'US, a phyſician, born in Cilicia, cotemporary with Pliny, and founder of the pneumatic ſect. He taught that the fire, air, water, and earth, are not the true elements, but that their qualities are, viz. heat, cold, moiſture, and dryneſs; and to theſe he added a fifth element, which he called *ſpirit,* whence his ſect had its name.

Athenæus, a Greek grammarian, born at Naucratis in Egypt in the third century, one of the moſt learned men of his time. Of all his works we have none extant but his Deipnoſophis, i. e. the ſophiſts at table; there is an infinity of facts and quotations in this work which render it very agreeable to admirers of antiquity. There is alſo a mathematician of this name, who wrote a treatiſe on mechanics, which is inſerted in the works of the ancient mathematicians, printed at Paris in 1693.

ATHENA'GORAS, an Athenian philoſopher, flouriſhed about the middle of the ſecond century; and was remarkable for his zeal for Chriſtianity, and his great learning, as appears from the apology which he addreſſed to the emperor Marcus Aurelius Antoninus and Lucius Commodus.

ATHENATO'RIUM, *ſ.* In chymiſtry, a thick glaſs cover, fixed to the cucurbit in ſome kind of ſublimations.

ATHE'NE, a town of Italy, in the kingdom of Naples, and province of Principato Citra: eighteen miles N. of Policaſtro.

ATHENODO'RUS, a famous ſtoic philoſopher, born at Tarſus, went to the court of Auguſtus, and was made tutor to Tiberius. Auguſtus had a great eſteem for him, and found him by experience a man of virtue and probity. He uſed to ſpeak very freely to the emperor. Before he left the court to return home, he warned the emperor not to give himſelf up to anger, but, whenever he ſhould be in a paſſion, to rehearſe the twenty-four letters of the alphabet before he reſolved to ſay or do any thing. He did not live to ſee his bad ſucceſs in the education of Tiberius.

ATHENO'POLIS, a town of the Maſſilienſes, an ancient nation of Gaul. It is conjectured by Harduin to be the ſame with Telo Martias, now Toulon; by others to be the ſame with Antipolis or Antibes.

ATHE'RY, a town of Ireland in the county of Galway. It is governed by a portrieve, and has been a place of conſiderable ſtrength; but, like the numerous churches and caſtles which ſurround it, it has felt the reſiſtleſs force of time. Some of the walls and towers are ſtill remaining, as monuments of its former grandeur. It is a borough, and ſends two members to the Iriſh parliament.

ATHENS, a celebrated city of Greece, and capital of the ancient kingdom of Attica, ſituated in lat. 38. 2. N. long. 41. 40. E. Ferro. In early times, that which was afterwards called the citadel, was the whole city; and went under the name of Cecropia, from its founder Cecrops, whom the Athenians in after-times affirmed to have been the firſt builder of cities, and called therefore by way of eminence Polis, i. e. the city. In the reign of Erichthonius it loſt the name of Cecropia, and acquired that of Athens, on what account is not certain; the moſt probable is, that it was ſo named in reſpect to the goddeſs Minerva, whom the Greeks call Athene, and who was eſteemed its protectreſs. This old city was ſeated on the top of a rock in the midſt of a large and pleaſant plain, which, as the number of inhabitants increaſed, became full of buildings, which induced the diſtinction of Acro and Catapolis, i. e. of the upper and lower city. The extent of the citadel was ſixty ſtadia; it was ſurrounded by olive trees, and fortified, as ſome ſay, with a ſtrong palliſade; in ſucceeding times it was encompaſſed with a ſtrong wall, in which there were nine gates, one very large, and the reſt ſmall. The inſide of the citadel was adorned with innumerable edifices. The moſt remarkable of which were, 1. The magnificent temple of Minerva, ſtyled *parthenon*, becauſe that goddeſs was a virgin. The Perſians deſtroyed it; but it was rebuilt with ſtill greater ſplendour by the famous Pericles, of the fineſt marble, with ſuch ſkill and ſtrength, that, in ſpite of the rage of time and barbarous nations, it yet remains perhaps the firſt antiquity in the world, and ſtands a witneſs to the truth of what ancient writers have recorded of the prodigious magnificence of Athens in her flouriſhing ſtate. 2. The temple of Neptune and of Minerva; for it was divided into two parts: one ſacred to the god, in which was the ſalt fountain ſaid to have ſprung up upon the ſtroke of his trident; the other to the goddeſs protectreſs of Athens, wherein was the ſacred olive which ſhe produced, and her image, which it was ſaid fell down from heaven in the reign of Erichthonius. At the back of Minerva's temple was the public treaſury, which was burnt to the ground through the knavery of the treaſurers, who, having miſapplied the revenues of the ſtate, took this ſhort method of making up their accounts.

The lower city comprehended all the buildings ſurrounding the citadel, the fort Munychia, and the havens Phalerum and Piræus, the latter of which was joined to the city by walls five miles in length; that on the north was built by Pericles, and that on the ſouth by Themiſtocles; but by degrees the turrets which were at firſt erected on thoſe walls were turned into dwelling-houſes for the accommodation of the Athenians, whoſe large city was now become too ſmall for them. The lower city had thirteen noble gates. Among the principal edifices which adorned it, we may reckon, 1. The Olympian temple, erected in honour of Jupiter, the honour of Athens, and of all Greece. The foundation of it was laid by Piſiſtratus: it was carried on but ſlowly in ſucceeding times, 700 years elapſing before it was finiſhed, which happened under the reign of Adrian, who was particularly kind to Athens: this was the firſt building in which the Athenians beheld pillars. 2. The pantheon, dedicated to all the gods; a moſt noble ſtructure, ſupported by 120 marble pillars, and having over its great gate two horſes carved by Praxiteles. In ſeveral parts of it were *ſtaoi* or porticoes, wherein people walked in rainy weather, and from whence a ſect of philoſophers were denominated *ſtoics*, becauſe their maſter Zeno taught in thoſe porticoes. 3. The temple of Theſeus, a noble ſtructure, built of Pentelic marble. On the metopes in the eaſtern front, are repreſented ten of the labours of Hercules; and on the metopes next that front, both on the northern and ſouthern ſides, are eight of the achievements of Theſeus. It will appear the leſs extraordinary, that the labours of Hercules ſhould make ſo conſiderable a part of the ornaments of this temple, when we recollect the reſpect which Theſeus profeſſed for that hero, who was his kinſman, who had delivered him from a tedious captivity, and had reſtored him to his country; on his return to which, Theſeus conſecrated to Hercules all the places that the gratitude of his citizens had formerly dedicated to himſelf, four only excepted; and changed their names from Theſea to Herculea. Nor could it be eſteemed a ſlight compliment to Theſeus, when, on building this temple to his honour, their labours were then placed together. It is now a church dedicated to St. George, for whom the preſent Athenians have as high a veneration as their anceſtors had for Theſeus; and to this we probably owe that it is not in a more ruinous condition. This building exhibits a fine example of the old Doric order; the columns are about 5½ diameters high, having no baſes, a ſimple but bold capital, maſſive architrave, large frieze, and ſmall cornice; very ſimilar to the order employed in the Parthenon.

There were at Athens two places called *Ceramicus*, from Ceramus the ſon of Bacchus and Ariadne; one within the city, containing a multitude of buildings of all ſorts; the other in the ſuburbs, in which was the academy and other edifices. The Gymnaſia of Athens were many; but the moſt remarkable were the Lyceum, Academia, and Cynoſarges. The Lyceum ſtood on the banks of Iliſſus; ſome ſay it was built by Piſiſtratus, others by Pericles, others by Lycurgus. Here Ariſtotle taught philoſophy, inſtructing ſuch as came to hear him as they walked, whence his diſciples are generally thought to derive the name of *peripatetics*. The Ceramicus without the city was the diſtance of ſix ſtadia from its walls. The academy made part thereof; as to the name of which there is ſome diſpute. Some affirm that it was ſo called from Academus, an ancient hero, who, when Helen was ſtolen by Theſeus, diſcovered the place where ſhe lay hid to Caſtor and Pollux: for which reaſon the Lacedemonians, when they invaded Attica, always ſpared this place. Dicæarchus writes, that Caſtor and Pollux had two Arcadians in their army, the one named Echedemus, the other Marothus; from the former of theſe he ſays this place took its name, and that the borough of Marathon was ſo called from the other. It was a marſhy unwholeſome place, till Cimon was at great pains to have it drained; and then it became extremely pleaſant and delightful, being adorned with ſhady walks, where Plato read his lectures, and from thence his ſcholars were called *academics*. The Cynoſarges was a place in the ſuburbs not far from the Lyceum; it was famous on many accounts; but particularly for a noble gymnaſium, appointed for the ſpecial uſe of ſuch as were Athenians only by one ſide. In after times Themiſtocles derived to himſelf ill-will, by carrying many of the nobility to exerciſe with him here, becauſe, being but of the half blood, he could exerciſe no where elſe but in this gymnaſium. Antiſthenes inſtituted a ſect of philoſophers, who, from the name of this diſtrict, as many think, were ſtyled *Cynics*.

The havens of Athens were three. Firſt the Pyræus, which was diſtant about thirty-five or forty ſtadia from the city, till joined to it by the long walls before-mentioned, after which it became the principal harbour of the city. It had three docks; Cantharos, Aphrodiſium, and Zea; the firſt was ſo called from an ancient hero, the ſecond from the goddeſs Venus who had there two temples, and the third from bread-corn. There were in this port five porticoes, which joining together formed one great one, called from thence *Marca Stoa*, or the grand portico. There were likewiſe two great markets or fora: one near the long portico, the other near the city. The ſecond port was Munichia, a promontory not far diſtant from Pyræus; a place very ſtrong by nature, and afterwards rendered far ſtronger by art. It was of this that Epimenides ſaid, if the Athenians foreſaw what miſchief it would one day produce to them, they would eat it away with their teeth. The third was Phalerim, diſtant from the city, according to Thucydides thirty-five ſtadia, but according to Pauſanias only twenty. This was the moſt ancient harbour of Athens, as Pyræus was the moſt capacious.

Of this city, as it ſtands at preſent, we have the following account by Dr. Chandler. "It is now called *Athini*; and is not inconſiderable, either in extent or the number of inhabitants. It enjoys a fine temperature, and a ſerene ſky. The air is clear and wholeſome, though not ſo delicately ſoft as in Ionia. The town ſtands beneath the Acropolis, or citadel; not encompaſſing the rock as formerly, but ſpreading into the plain, chiefly on the weſt and north-weſt. Corſairs infeſting it, the avenues were ſecured, and in 1676 the gates were regularly ſhut after ſun-ſet. It is now open again; but ſeveral of the gateways remain, and a guard of Turks patroles at midnight. Some maſſes of brick-work, ſtanding ſeparate, without the town, belonged perhaps to the ancient wall, of which other traces alſo appear. The houſes are moſtly mean and ſtraggling; many with large courts or areas before them. In the lanes, the high walls on each ſide, which are commonly white-waſhed, reflect ſtrongly the heat of the ſun. The ſtreets are very irregular; and anciently were neither uniform nor handſome. They had water conveyed in channels from mount Hymettus, and in the bazar or market-place is a large fountain. The Turks have ſeveral moſques and public baths. The Greeks have convents for men and women; with many churches in which ſervice is regularly performed; and beſides theſe, they have numerous oratories or chapels, ſome in ruins or conſiſting of bare walls, frequented only on the anniverſaries of the ſaints to whom they are dedicated.

"The city of Cecrops, or the Acropolis, is now a fortreſs with a thick irregular wall, ſtanding on the brink of precipices, and incloſing a large area about twice as long as broad. Some portions of the ancient wall may be diſcovered on the outſide, particularly at the two extreme angles; and in many places it is patched with pieces of columns, and with marble taken from the ruins. The garriſon conſiſts of a few Turks who reſide there with their families, and are called by the Greeks *Caſtriana*, or the ſoldiers of the caſtle. The rock is lofty, abrupt, and inacceſſible, except the front, which is toward the Piræus; and on that quarter is a mountainous ridge, within cannon-ſhot. It is deſtitute of water fit for drinking; and ſupplies are daily carried up in earthen-jars, on horſes and aſſes, from one of the conduits of the town.

"The Acropolis furniſhed a very ample field to the ancient virtuoſi. It was filled with monuments of Athenian glory, and exhibited an amazing diſplay of beauty, of opulence, and of art; each contending as it were for the ſuperiority. It appeared as one entire offering to the Deity, ſurpaſſing in excellence, and aſtoniſhing in richneſs. Heliodorus, named Periegetes *the guide*, had employed on it fifteen books. The curioſities of various kinds, with the pictures, ſtatues, and pieces of ſculpture, were ſo many and ſo remarkable, as to ſupply Polemo Periegetes with matter for four volumes; and Strabo affirms, that as many would be required in treating of other portions of Athens and of Attica. In particular, the number of ſtatues was prodigious. Tiberius Nero, who was fond of images, plundered the Acropolis as well as Delphi and Olympia; yet Athens, and each of theſe places, had not fewer than 3000 remaining in the time of Pliny. Even Pauſanias ſeems here to be diſtreſſed by the multiplicity of his ſubject. But this banquet, as it were, of the ſenſes, has long been withdrawn; and is now become like the tale of a viſion. The ſpectator views with concern the marble ruins intermixed with mean flat-roofed cottages, and extant amid rubbiſh; the ſad memorials of a nobler people! which, however, as viſible from the ſea, ſhould have introduced modern Athens to more early notice. They who reported it was only a ſmall village, muſt, it has been ſurmiſed, have beheld the Acropolis through the wrong end of their teleſcopes.

"The Acropolis has now, as formerly, only one entrance, which fronts the Piræus. The aſcent is by traverſes and rude fortifications furniſhed with cannon, but without carriages and neglected. By the ſecond gate is the ſtation of the guard, who ſits croſs-legged under cover, much at his eaſe, ſmoking his pipe, or drinking coffee, with his companions about him in like attitudes. Over this gate-way is an inſcription in large characters on a ſtone turned upſide down, and black from the fires made below. It records a preſent of a pair of gates.

"Going farther up, you come to the ruins of the propyléa, an edifice which graced the entrance into the citadel. This was one of the ſtructures of Pericles, who began it when Euthymenes was archon, 435 years before Chriſt. It was completed in five years, at the expence of 2012 talents. It was of marble, of the Doric order, and had five doors to afford an eaſy paſſage to the multitudes which reſorted on buſineſs or devotion to the Acropolis. While this fabric was building, the architect Mneſicles, whoſe activity equalled his ſkill, was hurt by a fall, and the phyſicians deſpaired of his life: but Minerva, who was propitious to the undertaking, appeared, it was ſaid, to Pericles, and preſcribed a remedy, by which he was ſpeedily and eaſily cured. It was a plant or herb growing round about the Acropolis, and called afterwards *parthenium*. The right wing of the propyléa was a temple of Victory. They related that Ægeus had ſtood there, viewing the ſea, and anxious for the return of his ſon Theſeus, who was gone to Crete with the tributary children to be delivered to the Minotaur. The veſſel which carried them had black ſails ſuiting the occaſion of its voyage; and it was agreed, that, if Theſeus overcame the enemy, their colour ſhould be changed to white. The neglect of this ſignal was fatal to Ægeus, who, on ſeeing the ſails unaltered, threw himſelf down headlong from the rock, and periſhed. The idol was named *Victory without wings*; it was ſaid, becauſe the news of the ſucceſs of Theſeus did not arrive but with the conqueror. It had a pomegranate in the right hand, and an helmet in the left. As the ſtatue was without pinions, it was hoped the goddeſs would remain for ever on the ſpot.

"On the left wing of the propyléa, and fronting the temple of Victory, was a building decorated with paintings by Polygnotus, of which an account is given by Pauſanius. This edifice, as well as the temple, was of the Doric order, the coulmns fluted, and without baſes. Both contributing alike to the uniformity and grandeur of the deſign; and the whole fabric, when finiſhed, was deemed equally magnificent and ornamental. The interval between Pericles and Pauſanius conſiſts of ſeveral centuries. The propyléa remained entire in the time of this topographer; and continued nearly ſo to a much later period. It had then a roof of white marble, which was unſurpaſſed either in the ſize of the ſtones or in the beauty of their arrangement; and before each wing was an equeſtrian ſtatue. The propyléa has ceaſed to be the entrance of the Acropolis. The paſſage, which was between the columns in the centre, is walled up almoſt to their capitals, and above is a battery of cannon. The way now winds before the front of the ancient ſtructure; and turning to the left hand among rubbiſh and mean walls, you come to the back part, and to the five door-ways. The ſoil within is riſen higher than the top of the two ſmaller. There, under the vault and cannon, lies an heap of large ſtones, the ruin of the roof.

"The temple of Victory, ſtanding on an abrupt rock, has its back and one ſide encumbered with the modern ramparts. The columns in the front being walled up, you enter it by a breach in the ſide, within the propyléa. It was uſed by the Turks as a magazine for powder, until about the year 1656, when a ſudden exploſion, occaſioned by lightning, carried away the roof with a houſe erected on it, belonging to the officer who commanded in the Acropolis, whoſe family except a girl, periſhed. The women of the aga continued to inhabit this quarter, but it is now abandoned and in ruins. The cell of the temple of Victory, which is of white marble, very thick, and ſtrongly cemented, ſufficiently witneſſes the great violence it has undergone; the ſtones in many places being disjointed, as it were, and forced from their original poſition. Two of theſe making an acute angle, the exterior edges touching, without a crevice; and the light abroad being much ſtronger than in the room, which has a modern roof and is dark; the portion in contact, becoming pellucid, had illuminated the vacant ſpace with a dim colour reſembling that of amber. We were deſired to examine this extraordinary appearance, which the Greeks regarded as a ſtanding miracle, and which the Turks, who could not confute them, beheld with equal aſtoniſhment. We found in the gape ſome coals, which had been brought on a bit of earthen-ware for the purpoſe of burning incenſe, as we ſuppoſed, and alſo a piece of wax-taper, which probably had been lighted in honour of the ſaint and author of the wonder; but, our Swiſs unfortunately carrying his own candle too far in, the ſmoke blackened the marble, and deſtroyed the phenomenon. The building oppoſite to the temple has ſerved as a foundation for a ſquare lofty tower of ordinary maſonry. The columns of the front are walled up, and the entrance is by a low iron gate in the ſide. It is now uſed as a place of confinement for delinquents; but in 1676 was a powder-magazine. In the wall of a rampart near it are ſome fragments of exquiſite ſculpture, repreſenting the Athenians fighting with the Amazons. Theſe belong to the freeze, which was then ſtanding. In the ſecond century, when Pauſanias lived, much of the painting was impaired by age, but ſome remained, and the ſubjects were chiefly taken from the Trojan ſtory. The traces are ſince vaniſhed.

“The pediment of the temple of Victory, with that of the oppoſite wing, is deſcribed as remaining in 1676; but on each building a ſquare tower had been erected. One of the ſteps in the front of the propyléa was entire, with the four columns, their entablature and the pediment. The portico, to which the five doorways belonged, conſiſted of a large ſquare room, roofed with ſlabs of marble, which were laid on two great marble beams, and ſuſtained by four beautiful columns. Theſe were Ionic, the proportions of this order beſt ſuiting that purpoſe, as taller than the Doric; the reaſon it was likewiſe preferred in the pronaos of the temple of Victory. The roof of the propyléa, after ſtanding above 2000 years, was probably deſtroyed, with all the pediments, by the Venetians in 1687, when they battered the caſtle in front, firing red-hot bullets, and took it, but were compelled to reſign it again to the Turks in the following year. The exterior walls, and, in particular, a ſide of the temple of Victory, retain many marks of their hoſtilities.

“The Erecthéum was alſo a noble and magnificent ſtructure. Neptune and Minerva, once rival deities, were joint and amicable tenants of the Erecthéum, in which was an altar of oblivion. The building was double, a partition-wall dividing it into two temples, which fronted different ways. One was the temple of Neptune Erectheus, the other of Minerva Polias. The latter was entered by a ſquare portico connected with a marble ſkreen, which fronts towards the propyléa. The door of the cell was on the left hand; and at the farther end of the paſſage was a door leading down into the pandroſéum, which was contiguous. Before the temple of Neptune Erectheus was an altar of Jupiter *the ſupreme*, on which no living thing was ſacrificed, but they offered cakes without wine. Within it was the altar of Neptune and Erectheus; and two, belonging to Vulcan and a hero named Butes, who had tranſmitted the prieſthood to his poſterity, which were called *Butadæ*. On the walls were paintings of this illuſtrious family, from which the prieſteſs of Minerva Polias was alſo taken. It was aſſerted that Neptune had ordained the well of ſalt-water, and the figure of a trident in the rock, to be memorials of his contending for the country. The former, Pauſanias remarks, was no great wonder, for other wells of a ſimilar nature were found inland; but this, when the ſouth wind blew, afforded the ſound of waves.

“The temple of Minerva Polias was dedicated by all Attica, and poſſeſſed the moſt ancient ſtatue of the goddeſs. The demi or towns had other deities, but their zeal for her ſuffered no diminution. The image, which they placed in the Acropolis, then the city, was in after-ages not only reputed conſummately holy, but believed to have fallen down from heaven in the reign of Erichthonius. It was guarded by a large ſerpent, which was regularly ſerved with offerings of honied cakes for his food. This divine reptile was of great ſagacity, and attained to an extraordinary age. He wiſely withdrew from the temple, when in danger from the Medes; and, it is ſaid, was living in the ſecond century. Before this ſtatue was an owl; and a golden lamp. This continued burning day and night. It was contrived by a curious artiſt, named Callimachus, and did not require to be repleniſhed with oil oftener than once a year. A brazen palm-tree, reaching to the roof, received its ſmoke. Ariſton had let the holy flame expire when Sylla beſieged him, and was abhorred for his impiety. The original olive-tree, ſaid to have been produced by Minerva, was kept in this temple. When the Medes ſet fire to the Acropolis, it was conſumed; but, they aſſerted on the following day, was found to have ſhot up again as much as a cubit. It grew low and crooked, but was eſteemed very holy. The prieſteſs of Minerva was not allowed to eat of the new cheeſe of Attica; and among her perquiſites, was a meaſure of wheat, and one of barley, for every birth and burial. This temple was again burned when Callias was archon, twenty-four years after the death of Pericles. Near it was the tomb of Cecrops, and within it Erectheus was buried.

“The ruin of the Erecthéum is of white marble; the architectural ornaments of very exquiſite workmanſhip, and uncommonly curious. The column of the front of the temple of Neptune are ſtanding with the architrave; and alſo the ſkreen and portico of Minerva Polias, and with a portion of the cell retaining traces of the partition-wall. The order is Ionic. An edifice revered by ancient Attica, as holy in the higheſt degree, was in 1676 the dwelling of a Turkiſh family, and is now deſerted and neglected; but many ponderous ſtones and much rubbiſh muſt be removed before the well and trident would appear. The former, at leaſt, might probably be diſcovered. The door-way of the veſtibule is walled up, and the ſoil riſen nearly to the top of the door-way of the prandoſéum. By the portico is a battery commanding the town, from which aſcends an amuſing hum. The Turks fire from it, to give notice of the commencement of Ramazan or of their Lent, and of bairam or the holy-days, and on other public occaſions.

“The prandoſéum is a ſmall but very particular building, of which no ſatisfactory idea can be communicated by deſcription. The entablature is ſupported by women called *Caryatides*, and this is the origin of their introduction into the ornamental parts of architecture. Their ſtory is thus related. The Greeks, victorious in the Perſian war, jointly deſtroyed Carya, a city of the Peloponneſus, which had favoured the common enemy. They cut off the males, and carried into captivity the women, whom they compelled to retain their former dreſs and ornaments, though in a ſtate of ſervitude. The architects of thoſe times, to perpetuate the memory of their puniſhment, repreſented them, as in this inſtance, each with a burden on her head, one hand uplifted to it, and the other hanging down by her ſide. The images were in number ſix, all looking toward the parthenon. The four in front, with that next to the propyléa, remain, but mutilated, and their faces beſmeared with paint. The figures of two of them are given in Plate XXIII. of Architecture, p. 104, of this volume. The ſoil is riſen almoſt to the top of the baſement on which they are placed. This temple was open or latticed between the ſtatues; and in it alſo was a ſtaunta ſtunted olive-tree, with an altar of Jupiter Herceus ſtanding under it. The propylæa are nearly in a line with the ſpace dividing it from the parthenon; which diſpoſition, beſides its other effects, occaſioned the front and flank of the latter edifice to be ſeen at once by thoſe who approached it from the entrance of the Acropolis.

“The ruin of the temple of Jupiter Olympius conſiſts of prodigious columns, tall and beautiful, of the Corinthian order, fluted; ſome ſingle, ſome ſupporting the architraves; with a few maſſive marbles beneath; the remnant of a vaſt heap, which only many ages could have conſumed and reduced into ſo ſcanty a compaſs. The columns are of very extraordinary dimenſions, being about ſix feet in diameter, and near ſixty in height. The number without the cell was 116 or 120. Seventeen were ſtanding in 1676: but a few years before we arrived, one was overturned with much difficulty, and applied to the building a new moſque in the bazar or market-place. This violence was avenged by the baſhaw of Negropont, who made it a pretext for extorting from the vaiwode or governor fifteen purſes; the pillar being, he alleged, the property of their maſter, the grand ſignior. It was an angular column, and of conſequence in determining the dimenſions of the fabric. We regretted that the fall of this mighty maſs had not been poſtponed until we came, as it would have afforded us an opportunity of inſpecting and meaſuring ſome members which we found far too lofty to be attempted. On a piece of the architrave, ſupported by a couple of columns, are two parallel walls, of modern maſonry, arched about the middle, and again near the top. You are told it has been the habitation of a hermit, doubtleſs of a Stylites; but of whatever building it has been part, and for whatever purpoſe deſigned, it muſt have been erected thus high in air, while the immenſe ruin of this huge ſtructure was yet ſcarcely diminiſhed, and the heap inclined ſo as to render it acceſſible. It was remarked that two ſtones of a ſtep in the front had coaleſced at the extremity, ſo that no juncture could be perceived; and the like was diſcovered alſo in a ſtep of the parthenon. In both inſtances it may be attributed to a concretory fluid, which pervades the marble in the quarry. Some portion remaining in the pieces, when taken green as it were, and placed in mutual contact, it exuded and united them by a proceſs ſimilar to that in a bone of an animal when broken and properly ſet.

“But the chief ornament of the Acropolis, was the parthenon, or great temple of Minerva; a moſt ſuperb and magnificent edifice. The Perſians had burned the original fabric which before occupied the ſite, and was called *hecatompedon*, from its being a hundred feet ſquare. The zeal of Pericles, and of all the Athenians, was now exerted to provide a much more ample and more glorious reſidence for the patroneſs of their city; and this was completed with aſtoniſhing elegance, by the celebrated architects Callicrates and Ictinus. This noble ſtructure we have already deſcribed in our Treatiſe on Architecture, p. 74, of this volume, and have illuſtrated the ſame by two correct Views of its ancient and preſent ſtate, to which we beg leave to refer the reader.

“Beſides the more ſtable antiquities, many detached pieces are found in the town, by the fountains, in the ſtreets, the walls, the houſes, and churches. Among theſe are fragments of ſculpture; a marble chair or two, which probably belonged to the Gymnaſia or theatres: a ſundial at the catholicon or cathedral, inſcribed with the name of the maker; and, at the archiepiſcopal houſe cloſe by, a very curious veſſel of marble, uſed as a ciſtern to receive water, but once ſerving, it is likely, as a public ſtandard or meaſure. Many columns occur; with ſome maimed ſtatues; and pedeſtals, ſeveral with inſcriptions, and almoſt buried in earth. A cuſtom has prevailed, as at Chios, of fixing in the wall, over the gateways and doors of the houſes, carved ſtones, moſt of which exhibit the funeral ſupper. In the courts of the houſes lie many round ſtelæ, or pillars, once placed on the graves of the Athenians; and a great number are ſtill to be ſeen applied to the ſame uſe in the Turkiſh burying-grounds before the Acropolis. Theſe generally have conciſe inſcriptions containing the name of the perſon, and of the town and tribe to which the deceaſed belonged. Demetrius the Phalerian, who endeavoured to reſtrain ſepulchral luxury, enacted, that no perſon ſhould have more than one, and that the height ſhould not exceed three cubits. Another ſpecies, which reſembles our modern head-ſtones, is ſometimes adorned with ſculpture, and has an epitaph in verſe. Here are alſo found ſome mutilated hermæ. Theſe are buſts on long quadrangular baſes, the heads frequently of braſs, invented by the Athenians. At firſt they were made to repreſent only Hermes or Mercury, and deſigned as guardians of the ſepulchres in which they were lodged; but afterwards the houſes, ſtreets, and porticoes, of Athens, were adorned with them, and rendered venerable by a multitude of portraits of illuſtrious men and women, of heroes, and of gods: and, it is related, Hipparchus ſon of Piſiſtratus, erected them in the demi or borough towns, and by the road-ſide, inſcribed with moral apophthegms in elegiac verſe; thus making them vehicles of inſtruction.”

Of the wiſdom and excellence of the Athenian government, much has been ſaid and written. The firſt and moſt remarkable effect produced at Athens, by the promulgation of Solon's law, was the equal liberty rendered to all its citizens. If therefore the practice of the government had correſponded with its theory, the cauſes which ſhould have preſerved this ſyſtem, would have been the virtue and moderation of the rich, and the ſpirit and magnanimity of the poor. But theſe moral cauſes may be all properly referred to one principle, namely, *patriotiſm*. It is therefore obvious, that patriotiſm was a principle of the Athenian government, or at leaſt of its theory. The ſecurity of perſon and property, which was ſo well eſtabliſhed at Athens, is deſervedly conſidered as the beſt gift of liberty. The efficient cauſes of this ſecurity, were the attention paid to the characters of thoſe who were appointed judges, and the impartiality and wiſdom of the laws themſelves. It is therefore evident that juſtice is the principle to which theſe cauſes may be referred; and which may be reckoned another principle of the Athenian government. The conſtitution required, that a law, after it had been formed by the ſenate, and approved by the people, ſhould be finally referred to an aſſembly, compoſed of the wiſeſt citizens of Athens; for, although their approbation gave it no new force, yet their diſapprobation was ſufficient to annul it. Now the object being evidently to obtain the advantages of time, of deliberation, of reflection, and even of experience, we may juſtly conclude, that the principle here aſſumed was *prudence*.

The illuſtrious Monteſquieu makes honour and moderation to be the principles of a limited monarchy, and of ariſtocracy. But when we conſider the high reputation of the Athenian magiſtrates for juſtice and probity, and when we recollect how much was left in the power of the judge, we muſt ſurely acknowledge, that theſe were alſo principles in the conſtitution of Athens. For honour is the principle which diſpoſes rightly that part of our conduct with regard to others, which law cannot reach; and moderation is a principle which founded upon reaſon, co-operates with honour in reſtraining the influence of the paſſions. It was from theſe motives that Solon provided by ſeveral laws againſt the admiſſion of any perſons to the dignified ſtation of archon and areopagite, whoſe characters, and even whoſe families, bore not the reputation of virtue. No attempt even was permitted to be made to influence the paſſions in the aſſembly of the areopagites, and their decrees have undergone the ſcrutiny of hiſtorical reſearch, unblemiſhed by a ſtain. It appears therefore, that the leading principles of the Athenian conſtitution were *patriotiſm*, *juſtice*, *prudence*, *honour*, and *moderation*.

The remains of the ancient grandeur and magnificent ſtructures of this venerable city, are, we are ſorry to ſay, ſoon likely to be for ever extirpated from the face of the earth; for the Turks, who are now its maſters, are continually employed in pulling down its majeſtic ruins, to convert into materials for building and repairing their fortifications. Fortunately, however, an hiſtorical Survey of the Antiquities of Athens hath recently been completed by the joint labours of Meſſrs. Stuart and Revett, with elegant engravings of the preſent ſtate of all theſe buildings, in three volumes folio; and the accuracy with which Meſſrs. Stuart and Revett have delineated and meaſured thoſe remains; the fidelity with which they are given to the public; the candid manner in which they have cited their authorities; and the ability evinced throughout the whole performance; are ſuch as muſt ever render their work of the greateſt importance in the annals of literature: the amateur and the artiſt are equally gratified; and poſterity will be furniſhed with views of thoſe monuments of elegance, when the originals themſelves ſhall no longer exiſt. For a further account of the civil and political hiſtory of Athens, ſee ATTICA.

A'THEOUS, *adj.* [αϑεος,] Atheiſtic; godleſs.

Thy father, who is holy, wiſe, and pure,
Suffers the hypocrite, or *atheous* prieſt,
To tread his ſacred courts. *Paradiſe Regained.*

A'THER, *ſ.* [αθηρ, an ear of corn.] Sharp, prickly like an ear of corn.

ATHE'RINA, *ſ.* [from αθηρ, an ear of corn, becauſe this kind of fiſh is ſurrounded with prickles like an ear of corn.] In ichthyology, a genus of fiſhes of the order of abdominales. The characters of this genus are theſe: the upper jaw is plain: the rays of the branchioſtege membrane are ſix; and the ſide-belt or line ſhines like ſilver. The ſpecies are two, viz.

1. The hepſetus, with about twelve rays in the fin next the anus. It is found in the Mediterranean. It is alſo very common in the ſea near Southampton, where it is called a *ſmelt*. The higheſt ſeaſon is from March to the latter end of May, or beginning of June; in which months it ſpawns. It never deſerts the place; and is conſtantly taken except in hard froſt. It is alſo found on other coaſts of our iſland. The length is about five inches, and the tail is much forked. The fiſh is ſemipellucid, covered with ſcales; the colour ſilvery, tinged with yellow; beneath the ſide-line is a row of ſmall black ſpots.

2. The medina, with twenty-four rays in the fin next the anus. This is a very ſmall pellucid fiſh, with many black points interſperſed; it has many teeth in the lips, but none in the tongue or jaws. It is found in the freſh waters of Carolina, and ſpawns in April.

ATHERO'MA, *ſ.* [αϑερωμα, from αϑερα, pap or pulſe.] A ſpecies of wen, which neither cauſes pain, diſcolours the ſkin, nor yields eaſily to the touch.—If the matter forming them reſembles milk curds, the tumour is called *atheroma*; if it be like honey, meliceris; and if compoſed of fat, or a ſuety ſubſtance, ſteatoma. *Sharp.*

ATHERO'MATOUS, *adj.* Having the qualities of an atheroma, or curdy wen.—Feeling the matter fluctuating, I thought it *atheromatous*. *Wiſeman.*

A'THERSTONE, a town in Warwickſhire, ſuppoſed by antiquarians to be a corruption from Arden town. It lies within the north weſtern boundary of the county, and is the northern extremity of the extenſive and ancient foreſt of Arden. It is an hamlet in the pariſh of Mancetter, the Manduepidum of the Romans; and conſiſts chiefly of one ſtreet three quarters of a mile in length, and a neat ſquare market-place, in the midſt of which has lately been erected a handſome market-houſe, over which is an elegant aſſembly-room. The town is built on the old Roman road, called Watling-ſtreet. Here was formerly a monaſtery of mendicant friers, built upon twelve acres of ground. It has a market on Tueſdays; is a conſiderable thoroughfare between London through Cheſter to Holyhead, and carries on an extenſive trade; containing about 2500 inhabitants, the greater part of whom are employed in the manufacture of hats, ribbands, ſhalloons, and tammies. It has annually four fairs, viz. April 7, July 18, September 19, and December 4. It is diſtant from Coventry thirteen miles and an half, eighteen from Burton, and 100 from London. The navigable canal, which unites the Iſis, the Trent, and the Merſey, comes up to this town, and boats from Liverpool, Briſtol, Mancheſter, Birmingham, Burton, &c. to Coventry, Oxford, &c. are paſſing and repaſſing daily. It is a conſtablewick, governed by a conſtable and two third-boroughs. There is an exceeding good grammar-ſchool, with a good endowment. Atherſtone is remarkable for being the place where the earl of Richmond and the nobles of his party held a council the night before the battle of Boſworth field, where he gained a complete victory over Richard III. who loſt his life in the combat.

ATHE'SIS, a river of the Ciſalpine Gaul, which, riſing in the Rhetian Alps, in Mount Brenna, in the county of Tirol, runs ſouthwards and waſhes Tridentum and Verona, which laſt it divides; and after paſſing this, bends its courſe eaſtwards, in a parallel direction with the Po, and falls into the Adriatic between Foſſa Claudia and Philiſtina: it ſeparated the Euganei, an ancient people, from the Veneti. The people dwelling on it are called *Atheſini*. *Pliny.* Its modern name is the *Adige*.

A'THIE, a town of France, in the department of the Somme, and chief place of a canton in the diſtrict of Peronne: two leagues ſouth-ſouth-eaſt of Peronne.

ATHI'RST, *adv.* [from *a* and *thirſt*.] Thirſty; in want of drink.

With ſcanty meaſure then ſupply their food;
And, when *athirſt*, reſtrain 'em from the flood. *Dryden.*

A'THIS, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Domfront: thirteen miles ſouth-weſt of Falaiſe.

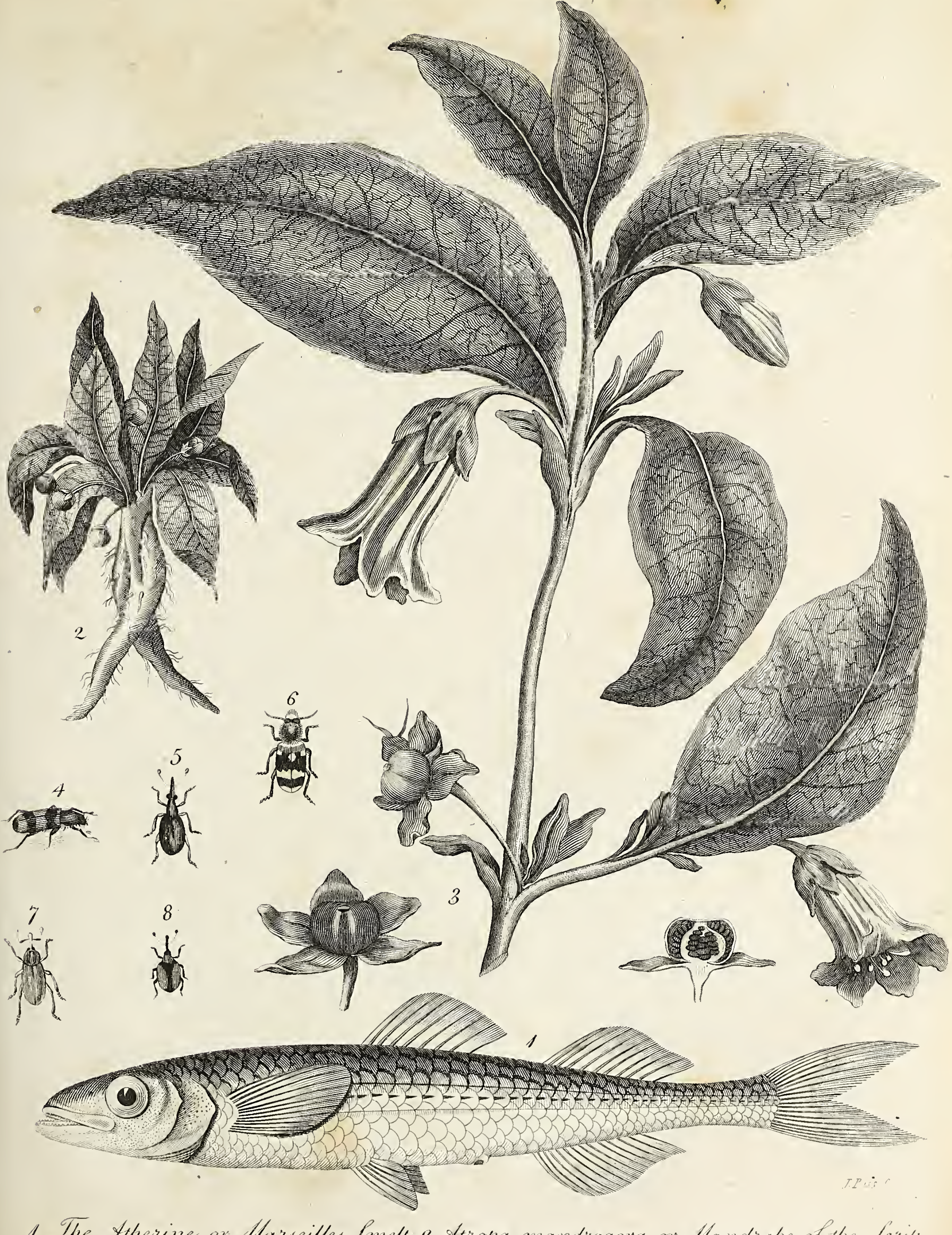
ATHLE'TÆ, *ſ.* In antiquity, perſons of ſtrength and agility, diſciplined to perform in the public games. The word is Greek, αθλητης, formed from αϑλος, *certamen*, "combat;" whence alſo αϑλον, the prize or reward adjudged the victor. Under Athletæ were comprehended wreſtlers, boxers, runners, leapers, throwers of the diſk, and thoſe practiſed in other exerciſes exhibited in the Olympic, Pythian, and other ſolemn, ſports; for the conquerors in which there were eſtabliſhed prizes.

ATHLE'TIC, *adj.* [from *athleta*, Lat. αϑλητης, Gr. a wreſtler.] Belonging to wreſtling. Strong of body; vigorous; luſty; robuſt.—Seldom ſhall one ſee in rich families that *athletic* ſoundneſs and vigour of conſtitution, which is ſeen in cottages, where nature is cook, and neceſſity caterer. *South.*

An athletic *habit* denotes a ſtrong hale conſtitution of body. Anciently it ſignified a full fleſhy corpulent ſtate, ſuch as the athletæ endeavoured to arrive at. The athletic habit is eſteemed the higheſt pitch of health: yet it is dangerous, and the next door to diſeaſe; ſince, when the body is no longer capable of being improved, the next alteration muſt be for the worſe. The chief object of the athletic diet, was to obtain a firm, bulky, weighty, body; by force of which, more than art and agility, they frequently overpowered their antagoniſt: hence they fed altogether on dry, ſolid, and viſcous, meats. In the earlier days, their chief food was dry figs and cheeſe, which was called *arida ſaginatio*, ξηρα τροφη, and ασκησις διαξηρων ις χαδων. Oribaſius, or, as others ſay, Pythagoras, firſt brought this into diſuſe, and ſubſtituted fleſh in lieu. They had a peculiar bread called καληπια. They exerciſed, ate, and drank, without ceaſing: they were not allowed to leave off eating when ſatiated; but were obliged to cram on till they could hold no more; by which means they at length acquired a degree of voracity which to us ſeems incredible, and a ſtrength proportional. Witneſs what Pauſanias relates of the four celebrated athletæ, Polydamus the Theſſalian, Milo the Crotonian, Theagenes the Thaſian,

and

ATHERINA, ATROPA, AND ATTELABUS.



1._The Atherine, or Marseilles Smelt. 2. Atropa mandragora, or Mandrake of the Scriptures. 3. Atropa belladonna, or Deadly Nightshade, with its Fructification. 4.5.6.7. and 8, curious Species of the Genus Attelabus.

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and Euthymus the Locrian. The ſecond is ſaid to have carried a bull on his back a conſiderable way, and then to have knocked him down with a blow of his fiſt.

ATHLIP'TUS *ſ.* [from *α* neg. and ϑλιϐω, to afflict.] A fever, proceeding without the uſual uneaſy ſymptoms, is ſo called.

ATHLO'NE, a town of Weſtmeath in Ireland. It is ſituated on both ſides of the Shannon, and united by a ſtrong well-built bridge, in the middle of which ſtands a monument, with queen Elizabeth's arms, and ſome inſcriptions declaring the time and founders of the building. The caſtle was founded by king John. It is built on a high-raiſed round hill, reſembling one of the Daniſh raths or forts. Athlone was formerly ſtrongly fortified, and conſidered as of very great importance. In the year 1691, a part of the Engliſh army under general Ginckle, in the very face of the Iriſh, who were ſtrongly entrenched on the oppoſite ſhore, fording the river, formed, and took poſſeſſion of the town, not loſing more than fifty men in the attack; which is eſteemed as bold and ſucceſsful an enterpriſe as any recorded in hiſtory. This town, therefore, gives title of earl to the family of Ginckle, as a reward for the noble ſervices performed by the general. It is a borough, and ſends two members to the Iriſh parliament. Lat. 53. 23. N. lon. 7. 50. W. Greenwich.

A'THOL, the moſt northern diſtrict of Perthſhire in Scotland, extending in length forty-three miles, and in breadth thirty. It is bordered on the north by Badenoch, on the weſt by Lochaber, on the eaſt and ſouth-eaſt by Mar and Gowrie, on the ſouth by Stratherne and Perth Proper, and on the ſouth-weſt by Braidalbane. The country is very rough and mountainous, and contains part of the ancient Caledonian foreſt; but theſe mountains are interſperſed with fruitful valleys. Here are ſeveral villages, but no towns of any conſideration. The moſt noted place is Blair Caſtle, ſeated on the river Tilt, near its influx into the Gurry, a pleaſant limpid ſtream that falls into the Tay. This caſtle belongs to the duke of Athol, who derives his title from this diſtrict, and lives here with great magnificence. In the ſame neighbourhood we ſee the paſs of Gillicranky, rendered memorable by the battle fought in the beginning of king William's reign, between general M'Kay and the Highlanders adhering to king James. See Gillicranky.

ATHOREC'TUS, *ſ.* [from *α* priv. and ϑοϱη, ſeed.] Not given to venery; unable to procreate from a defect of ſeed.

A'THOS, a celebrated mountain of Greece, in Macedonia, ſituated lat. 40. 10. N. lon. 26. 20. E. The ancients entertained extravagant notions concerning its height. It was a received opinion, that its ſummit was above the middle region of the air, and that it never rained there; becauſe the aſhes left on the altars erected near its top were always found as they were left, dry and unſcattered. But, if on many accounts it was famous among the ancients, it is no leſs ſo among the moderns. The Greeks, ſtruck with its ſingular ſituation, and the venerable appearance of its towering aſcent, erected ſo many churches, monaſteries, hermitages, &c. upon it, that it became in a manner inhabited by devotees, and from thence received the name of the *Holy Mountain*; which name it ſtill retains, though many of thoſe conſecrated works are now decayed. According to the accounts of modern travellers, this mountain advances into the Archipelago, being joined to the continent by an iſthmus about half a league in breadth. It is about thirty miles in circumference, and two in perpendicular height. It is ſaid to caſt its ſhadow as far as iſland of Stalimene, or Lemnos, upwards of forty miles. There is a fine proſpect from the top; but, like all other high mountains, the cold on its ſummit is exceſſive. It abounds with many different kinds of plants and trees, particularly the pine and fir. In the valley grows a plant called *elegia*, whoſe branches ſerve to make pens for writing. It is now inhabited by Caloyers, a ſort of Greek monks, of the order of St. Baſil, who never marry, tho' others of that church do. They abſtain from fleſh, their ordinary meal being olives pickled when they are ripe. They inhabit ſeveral parts of the mountain, in large old monaſteries, ſurrounded with high walls for a defence againſt banditti. They are ſo reſpected, that the Turks themſelves will often ſend them alms. Theſe monks are not idle like others; but labour with the ax, ſpade, and ſickle, dreſſing themſelves like hermits.

Through this mountain, or rather through the iſthmus behind it, Xerxes king of Perſia is ſaid to have cut a paſſage for his fleet when about to invade Greece. In this work he ſpent three whole years, and employed in it all the forces on-board the fleet. He is alſo ſaid, before the work was begun, to have written the following inſolent and ridiculous letter to the mountain: "Athos, thou proud and aſpiring mountain, that lifteſt up thy head to the very ſkies, I adviſe thee not to be ſo audacious as to put rocks and ſtones that cannot be cut in the way of my workmen. If thou makeſt that oppoſition, I will cut thee entirely down, and throw thee headlong into the ſea." The directors of this enterpriſe are ſaid to have been Bubaris the ſon of Megabyzus, and Artacheus the ſon of Arbeus, both Perſians; but, as no traces of ſuch a great work remain, the truth of the whole relation has juſtly been called in queſtion.

A'THRIX, *ſ.* [from *α* priv. and ϑϱιξ, hair.] Bald; without hair.

A'THROUS, *ſ.* [from αθϱοιζω, to collect.] Suddenly accumulated; in oppoſition to accumulated by degrees.

ATHWART', *prep.* [from *a* and *thwart.*] Acroſs; tranſverſe to any thing.—Themiſtocles made Xerxes poſt out of Grecia, by giving out a purpoſe to break his bridge *athwart* the Helleſpont. *Bacon.*

Execrable ſhape!
That dar'ſt, though grim and terrible, advance
Thy miſcreated front *athwart* my way. *Milton.*

Athwart, *adv. à tort.* In a manner vexatious and perplexing; croſsly. Wrong; *à travers:*

All *athwart* there came
A poſt from Wales, loaden with heavy news. *Shakeſpeare.*

Athwart the Fore Foot, is a phraſe that denotes the flight of a cannon-ball from one ſhip acroſs the courſe of another, to intercept the latter, and oblige her to ſhorten ſail, that the former may come near enough to examine her.

Athwart-Hause, expreſſes the ſituation of a ſhip, when ſhe is driven by wind or tide, or any other accident, acroſs the fore part of another.

A'THY, a town of Ireland, in the county of Kildare. It is a borough, and ſends two members to parliament; and the aſſizes for the county are held here and at Naas alternately: forty miles weſt of Wicklow, and twelve north of Carlow. Lat. 52. 59. N. lon. 7. 1. W. Greenwich.

ATHY'MIA, *ſ.* [αθυμια, Gr.] Dejection of the ſpirits; deſpondency.

ATIBAR', *ſ.* the name by which the inhabitants of the kingdom of Gago in Africa call gold-duſt; from which word, Europeans, and eſpecially the French, have compoſed the word *tibir*, which alſo ſignifies gold-duſt among thoſe who trade in that commodity.

ATI'CHY, a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Noyon: eight miles eaſt of Compiegne.

ATIEN'CA, a town of Spain, in Old Caſtile, with an ancient caſtle, ſituated among the mountains called *Sierra d'Atiença*: twenty miles north of Siguenca.

ATILT', *adv.* [from *a* and *tilt.*] In the manner of a tilter; with the action of a man making a thruſt at an antagoniſt:

In the city of Tours
Thou ran'ſt *atilt*, in honour of my love,
And ſtol'ſt away the ladies' hearts from France. *Shakeſ.*

To run *atilt* at men, and wield
Their naked tools in open field. *Hudibras.*

In the poſture of a barrel raiſed or tilted behind, to make it run out.—Such a man is always *atilt*; his favours come hardly from him. *Spectator*.

ATI'NO, a town of Italy, in the kingdom of Naples, and country of Lavora, once the ſee of a biſhop, ſuppreſſed by Leo III. three leagues north of Aquino.

AT'KINS (Sir Robert), lord chief baron of the exchequer, was born in 1621, and educated at the univerſity of Oxford, from whence he removed to the inns of court, and became eminent in the law. He was made knight of the Bath, with many other perſons of the firſt diſtinction, at the coronation of Charles II. In 1672, he was appointed one of the judges of the Common Pleas; in which honourable ſtation he continued till 1679, when, foreſeeing the troubles that ſoon after enſued, he thought fit to reſign, and retire into the country. In 1689, he was made by king William lord chief baron of the exchequer; and about the ſame time executed the office of ſpeaker to the houſe of lords, which had been previouſly refuſed by the marquis of Halifax. He diſtinguiſhed himſelf by an unſhaken zeal for the laws and liberties of his country. He wrote ſeveral pieces, which have been collected into one volume 8vo, under the title of Parliamentary and Political Tracts. He died in 1709, aged eighty-eight.

Atkins (Sir Robert), ſon of the preceding, was born in 1646, and was eminent for all the virtues that could adorn an Engliſh gentleman. He wrote The Ancient and Preſent State of Glouceſterſhire, in one large volume folio; and died October 29, 1711.

ATLAN'TES, *ſ.* in architecture, images of men bearing pillars, or ſupporting the pile of a building.

ATLAN'TIC OCEAN, a name given to the ſea which lies between Europe and Africa to the eaſt, and America to the weſt.

ATLANTI'DES, *ſ.* a denomination given to the Pleiades, or ſeven ſtars, ſometimes alſo called *Vergilliæ*. They are thus called, as being ſuppoſed by the poets to have been the daughters either of Atlas or his brother Heſperus, who were tranſlated into heaven.

ATLAN'TII, a people of Africa, near mount Atlas, on the European ſide. They were, according to Diodorus, the politeſt people in all Africa; and they pretended that the gods were born among them, as alſo that Uranus was their firſt king.

ATLAN'TIS, Atalan'tis, or Atlan'tica, an iſland mentioned by Plato and ſome others of the ancients, concerning the real exiſtence of which many diſputes have been raiſed. Homer, Horace, and the other poets, make two Atlanticas, calling them *Heſperides*, and *Elyſian Fields*, the habitations of the bleſſed. The moſt diſtinct account of this iſland we have in Plato's Timæus, of which Mr. Chambers gives the following abridgement. "The Atlantis was a large iſland in the weſtern ocean, ſituated before or oppoſite to the ſtraits of Gades. Out of this iſland there was an eaſy paſſage into ſome others, which lay near a large continent exceeding in bigneſs all Europe and Aſia. Neptune ſettled in this iſland (from whoſe ſon Atlas its name was derived), and divided it among his ten ſons. To the youngeſt fell the extremity of the iſland, called *Gadir*, which in the language of the country ſignifies 'fertile' or 'abundant in ſheep.' The deſcendants of Neptune reigned here from father to ſon for a great number of generations in the order of primogeniture, during the ſpace of 9000 years. They alſo poſſeſſed ſeveral other iſlands; and, paſſing into Europe and Africa, ſubdued all Libya as far as Egypt, and all Europe to Aſia Minor. At length the iſland ſunk under water; and for a long time afterwards the ſea thereabouts was full of rocks and ſhelves."

Many of the moderns alſo are of opinion, that the exiſtence of the Atlantis is not to be looked upon as entirely fabulous. Some take it to have been America; and from thence, as well as from a paſſage in Seneca's Medea, they imagine that the new world was not unknown to the ancients. But, allowing this to be the caſe, the above-mentioned continent, which was ſaid to lie beyond Atlantis, would ſeem rather to have been the continent of America than Atlantis itſelf. The learned Rudbeck, profeſſor in the univerſity of Upſal, in a work intitled Atlantica ſive Manheim, endeavours to prove that Sweden and Norway are the Atlantis of the ancients; but this its ſituation will by no means allow us to believe. By Kircher it is ſuppoſed to have been an iſland extending from the Canaries quite to the Azores; that it was really ſwallowed up by the ocean as Plato aſſerts; and that theſe ſmall iſlands are only the ſhattered remains which were left ſtanding.

Atlantis (New), is the name of a fictitious philoſophical commonwealth, of which a deſcription has been given by lord Bacon. The New Atlantis is ſuppoſed to be an iſland in the South Sea, to which the author was driven in a voyage from Peru to Japan. The compoſition is an ingenious fable, formed after the manner of the Utopia of Sir Thomas More, or Campanella's City of the Sun. Its chief deſign is to exhibit a model or deſcription of a college, inſtituted for the interpretation of nature, and the production of great and marvellous works, for the benefit of men, under the name of *Solomon's Houſe*, or the "college of the ſix days work."

AT'LAS, *ſ.* [from ατλαω, to ſuſtain, or οτλημι, to carry.] In anatomy, is the firſt vertebræ of the neck; ſo called, becauſe it ſuſtains the head, as Atlas was ſuppoſed to ſuſtain the celeſtial globe. It is a bony ring, and in its back part it receives the proceſſus dentatus of the ſecond vertebra.

Atlas, king of Mauritania, a great aſtronomer, cotemporary with Moſes. From his taking obſervations of the ſtars from a mountain, the poets feigned him to have been turned into a mountain, and to ſuſtain the heavens on his ſhoulders. Being an excellent aſtronomer, and the firſt who taught the doctrine of the ſphere, they tell us that his daughters were turned into ſtars; ſeven of them forming the Pleiades, and the other ſeven the Hyades.

Atlas (Great and Little), mountains of Africa. The Great Atlas extends from the deſert of Barca, about eighty leagues weſt of Alexandria, to the coaſt of the Atlantic ſea, to which it gives name, but often changes its name, according to the multitude of countries it runs through, and the plains and vallies by which it is interſected; it is called by the natives *Ayduacal*. The Little Atlas extends from the ſtraits of Gibraltar to Bona, in the country of Algiers, and is called by the natives *Erriff*. Both theſe are of ſuch vaſt height, and for the moſt part covered with ſnow, as to be ſeen at a great diſtance off at ſea. The higheſt parts and moſt difficult of acceſs are thoſe which run along the confines of the kingdom of Tremecen, and the coldeſt thoſe that bound the dominions of Morocco. As to the generality of the reſt, they enjoy a much kinder climate, and are not only inhabited by various tribes of Berebers, Arabs, and other African people, but, in many places, well cultivated and fertilized, and a number of towns and villages diſperſed in them, well inhabited, and ſtored with abundance of cattle; though in many of theſe they are obliged not only to retire into their caverns all the winter ſeaſon, which is there very long, but to take in with them all their numerous herds, which would otherwiſe periſh with cold.

Atlas, in literature, denotes a book of univerſal geography, containing maps of all the known parts of the world.

Atlas, in commerce, a ſilk ſatin, manufactured in the Eaſt Indies. There are ſome plain, ſome ſtriped, and ſome flowered, the flowers of which are either gold or only ſilk. The manufacture of them is admirable. In the Chineſe manufactures of this ſort, they gild paper on one ſide with leaf-gold; then cut it in long ſlips, and weave it into their ſilks; which makes them, with but little coſt, look very rich and fine. The ſame long ſlips are twiſted or turned about ſilk threads, ſo artificially, as to look finer than gold thread, though it be of no greater value.

AT'LENBURG, or At'telnburg, a town of Germany, in the circle of Lower Saxony, and duchy of Lauenburg, on the Elbe: four miles weſt of Lauenburg.

AT'LIM, a town of Siberia, on the Oby. Lat. 62. 5. N. lon. 85. 0. E. Ferro.

Atlim, a river of Siberia, which runs into the Oby, at a town of the ſame name.

AT'MOSPHERE, *ſ.* [*atmoſphera*, Lat. of ατμος, a vapour, and σφαιρα, Gr. a ſphere.] A term uſed to ſignify the whole of the fluid maſs, conſiſting of air, aqueous and other vapours, electric fluids, &c. which ſurrounds the earth to a conſiderable height, and partakes of all its motions, both annual and diurnal.

The compoſition of that part of our atmoſphere properly called *air*, was till lately but very little known. Formerly it was ſuppoſed to be a ſimple, homogeneous, and elementary, fluid. But the experiments of Dr. Prieſtley and others have diſcovered, that even the pureſt kind of air, which they call vital or dephlogiſticated, is in reality a compound, and might be artificially produced in various ways. This dephlogiſticated air, however, is but a ſmall part of the compoſition of our atmoſphere. By accurate experiments, the air we uſually breathe, is compoſed of only one-fourth part of this dephlogiſticated air, or perhaps leſs; the other three parts, or more, conſiſting of what Dr. Prieſtley calls *phlogiſticated*, and M. Lavoiſier, in the new chemiſtry, *mephitic*, air.

Beſides theſe ſorts of air, it is obvious that the whole maſs of the atmoſphere contains a great deal of water, together with the vaſt heterogeneous collection of particles raiſed from all bodies of matter on the ſurface of the earth, by effluvia, exhalations, &c. ſo that it may be conſidered as a chaos of the particles of all ſorts of matter confuſedly mingled together. And hence the atmoſphere has been conſidered as a large chemical veſſel, in which the matter of all kinds of ſublunary bodies is copiouſly floating; and thus expoſed to the continual action of that immenſe ſurface, the ſun; from whence proceed innumerable operations, ſublimations, ſeparations, compoſitions, digeſtions, fermentations, putrefactions, &c.

There is, however, one ſubſtance, namely, the electrical fluid, which is very diſtinguiſhable in the maſs of the atmoſphere. To meaſure the abſolute quantity of this fluid, either in the atmoſphere, or any other ſubſtance, is perhaps impoſſible: and all that we know on this ſubject is, that the electric fluid pervades the atmoſphere; that it appears to be more abundant in the ſuperior than the inferior regions; that it ſeems to be the immediate bond of connection between the atmoſphere and the water which is ſuſpended in it; and that, by its various operations, the phenomena of hail, rain, ſnow, lightning, and other kinds of meteors, are occaſioned. See thoſe reſpective articles; ſee alſo the article Aerology.

The uſes of the atmoſphere are ſo many and great, that it ſeems indeed abſolutely neceſſary, not only to the comfort and convenience of men, but even to the exiſtence of all animal and vegetable life, and to the very conſtitution of all kinds of matter whatever, and without which they would not be what they are: for by it we live, breathe, and have our being; and, by inſinuating itſelf into all the vacuities of bodies, it becomes the great ſpring of moſt of the mutations here below, as generation, corruption, diſſolution, &c. and without which none of theſe operations could be carried on. Without the atmoſphere, no animal could exiſt, or indeed be produced; neither any plant, all vegetation ceaſing without its aid; there would be neither rain nor dews to moiſten the face of the ground; and, though we might perceive the ſun and ſtars like bright ſpecks, we ſhould be in utter darkneſs, having none of what we call day-light, or even twilight: nor would either fire or heat exiſt without it. In ſhort, the nature and conſtitution of all matter would be changed, and ceaſe; want-this univerſal bond and conſtituting principle.

By the mechanical force of the atmoſphere, as well as by its chemical virtues, many neceſſary purpoſes are anſwered. We employ it as a moving power, in the motion of ſhips, to turn mills, and for other ſuch uſes. And it is one of the great diſcoveries of the modern philoſophers, that the ſeveral motions attributed by the ancients to a *fuga vacui*, are really owing to the preſſure of the atmoſphere. Galileo, having obſerved that there was a certain ſtandard altitude, beyond which no water could be elevated by pumping, took an occaſion from thence to call in queſtion the doctrine of the ſchools, which aſcribed the aſcent of water in pumps to the *fuga vacui*, and inſtead of it he happily ſubſtituted the hypotheſis of the weight and preſſure of the air. It was with him, indeed, little better than an hypotheſis, ſince it had not then thoſe confirmations from experiment, afterwards found out by his pupil Torricelli, and other ſucceeding philoſophers, particularly Mr. Boyle.

As to the *wholeſomeneſs* of atmoſpheric air, it is generally on the tops of mountains more ſalubrious than in pits or very deep places. Indeed denſe air is always more proper for reſpiration, as to the mere quality of denſity only, than that which is rarer. But then the air on mountains, tho' rarer, is freer from mephitic vapours than that of pits; and hence it has been found, that people can live very well on the tops of mountains, even when the air is but about half the denſity of that below.

M. de Sauſſure, in his journey upon the Alps, having obſerved the air at the foot, on the middle, and on the ſummits, of various mountains, obſerves, that the air of the very low plains ſeems to be the leſs ſalubrious; that the air of very high mountains is neither very pure, nor, upon the whole, ſeems ſo fit for the lives of men, as that of a certain height above the level of the ſea, which he eſtimates to be about 200 or 300 toiſes, that is, about 430 or 650 yards. Dr. White, in the Phil. Tranſ. vol. lxviii. giving an account of his experiments on air made at York, ſays, that the atmoſpherical air was in a very bad ſtate, and indeed in the worſt he had ever obſerved it, on the 13th of September, 1777; when the barometer ſtood at 30·30, the thermometer at 69°; the weather being calm, clear, and the air dry and ſultry, no rain having fallen for above a fortnight. A ſlight ſhock of an earthquake was perceived that day. The air of a bed-room at various times, viz. at night, and in the morning after ſleeping in it, has been alſo examined by various perſons; and it has been generally found, that after ſleeping in it the air is leſs pure than at any other time.

Dr. Ingenhouſz likewiſe ſent an account of his experiments, made in the year 1779, upon the purity of the air at ſea and other parts; which account was read before the Royal Society the 24th of April, 1780, and is inſerted in the Phil. Tranſ. vol. lxx. His firſt obſervations were made on-board a veſſel in the mouth of the Thames, between Sheerneſs and Margate, where he found that the air was purer than any other ſort of common air he had met with before. He found that the ſea-air taken farther from the land, viz. between the Engliſh coaſt and Oſtend, was not ſo pure as that tried before; yet this inferior purity ſeems not to take place always. The doctor's general obſervations, deduced from his numerous experiments, are, "That the air at ſea, and cloſe to it, is in general purer, and fitter for animal life, than the air on the land, though it ſeems to be ſubject to ſome inconſiſtency in its degree of purity with that of the land: that probably the air will be found in general much purer far from the land than near the ſhore, the former being never ſubject to be mixed with land-air.

The doctor in the ſame paper tranſcribes a journal of experiments, ſhewing the degree of purity of the atmoſphere in various places, and under different circumſtances. The method uſed in theſe experiments was to introduce one meaſure of common air into the eudiometer-tube, and then one meaſure of nitrous air. The moment that theſe two ſorts of elaſtic fluids came into contact, he agitated the tube in the water-trough, and then meaſured the diminution, expreſſing it by hundredth parts of a meaſure; thus, when he ſays, that ſuch air was found to be 130, it ſignifies, that, after mixing one meaſure of it with one of nitrous air, the whole mixed, and the diminiſhed quantity was 130 hundredths of a meaſure, viz. one meaſure and thirty hundredths of a meaſure more.

"The different degrees of ſalubrity of the atmoſphere, (ſays he,) as I found it in general in my houſe at Southall-Green, ten miles from London, from June to September, lay between 103 and 109. I was ſurpriſed when, upon my return to town to my former reſidence in Pall-Mall Court, I found the common air purer in general in October than I uſed to find it in the middle of ſummer in the country; for, on the 22d of October, at nine o'clock in the morning, the weather being fair and froſty, I found that one meaſure of common air, and one of nitrous air, occupied 100 ſub-diviſions in the glaſs-tube, or exactly one meaſure. That very day, at two o'clock in the afternoon (it being then rainy weather), the air was ſomewhat altered for the worſe. It gave 102. October the 23d, it being rainy weather, the air gave 102. October the 24th, the weather being ſerene, the air at nine o'clock in the morning gave 100. October the 25th, the ſky being cloudy at eleven o'clock in the morning, the air gave 102. At eleven o'clock at night, from five different trials, it gave 105. October the 26th, the weather being very dark and rainy, the air gave 105, as before."

The air at Oſtend was found by the doctor to be generally very good, giving between 94 and 98. At Bruges, the air taken at ſeven o'clock at night gave 103. November 8, the air at Ghent at three in the afternoon gave 103. November 12, the air at Bruſſels at ſeven o'clock P. M. gave 105½. The next day the air of the lower part of the ſame city gave 106; that of the higheſt appeared to be purer, as it gave 104: which agrees with the common popular obſervation. November the 14th, both the air of the higheſt and that of the loweſt part of the city appeared to be of the ſame goodneſs, giving 103. The weather was froſty. November the 22d, the air of Antwerp in the evening gave 109½; the weather being rainy, damp, and cold. November the 23d, the air of Breda gave 106. The next day about eleven o'clock the air gave 102; the weather being fair, cold, and inclining to froſt. At ſeven o'clock it gave 103. Next day being the 25th, the air gave 104; the weather being cold and rainy. The 26th it gave 103; the weather being very rainy, cold, and ſtormy. November the 27th, the air at the Moordyke cloſe to the water gave 101½; the weather being fair and cold, but not froſty. This ſpot is reckoned very healthy. November the 28th, the air of Rotterdam gave 103; the weather being rainy and cold. November the 29th, the air of Delft gave 103; the weather being ſtormy and rainy. November the 30th, the air of the Hague gave 104; the weather being cold, and the wind northerly. The firſt of December the weather underwent a ſudden change; the wind becoming ſoutherly and ſtormy, and the atmoſphere becoming very hot. The day after, Fahrenheit's thermometer ſtood at 54°; and the common air being repeatedly and accurately tried gave 116; and that preſerved in a glaſs phial from the preceding day gave 117; and that gathered cloſe to the ſea gave 115. December the 4th, the air of Amſterdam gave 103; the weather being rainy, windy, and cold. The day after, the weather continuing nearly the ſame, the air gave 102. December the 10th, the air at Rotterdam gave 101; the weather being rainy. December the 12th, being in the middle of the water between Dort and the Moordyke, the air gave 109; the weather being remarkably dark, rainy, and windy. December the 13th, the air of Breda in the morning gave 109; the weather continuing as the day before. And, in the afternoon, the air gave 106½; the weather having cleared up. December the 16th, the air of the lower part of the city of Antwerp gave 105, that of the higher part 104; the weather being rainy and temperate. December the 17th, the air of Antwerp gave 107; the weather continuing nearly as in the preceding day. December the 19th, the air of Bruſſels gave 109; the weather being rainy, windy, and rather warm. December the 21ſt, the air of Bruſſels gave 106; the weather being dry and cold. The next day the air and weather continued the ſame. December the 23d, the air of Mons gave 104; the weather being rainy and cold. December the 24th, the air near Bouchain gave 104½; the weather being cloudy and cold. December the 25th, the air of Peronne gave 102½; the weather being froſty. December the 26th, the air of Cuvilli gave 103; the weather froſty. December the 27th, the air of Senlis gave 102½; the weather froſty. December the 29th, the air of Paris gave 103; the weather froſty. January the 8th, 1780, the air of Paris gave 100; the weather froſty. January the 13th, the air of Paris gave 98; hard froſt.

Thus far Dr. Ingenhouſz's obſervations. The abbé Fontana, who has alſo made a great number of very accurate experiments upon this ſubject, gives his opinion in the following words: "At Paris, I examined the air of different places at the ſame time, and eſpecially of thoſe ſituations where it was moſt probable to meet with infected air, becauſe thoſe places abounded with putrid ſubſtances and impure exhalations; but the differences I obſerved were very ſmall, and much leſs than what could have been ſuſpected, for they hardly arrived at one-fiftieth of the air in the tube. Having taken the air of the hill called Mount Valerian, at the height of about 500 feet above the level of Paris, and compared it with the air of Paris taken at the ſame time, and treated alike, I found the former to be hardly one-thirtieth better than the latter. In London I have obſerved almoſt the ſame. The air of Iſlington and that of London ſuffered an equal diminution by the mixture of nitrous air; yet the air of Iſlington is eſteemed to be much better. I have examined the air of London taken at different heights (for inſtance, in the ſtreet, at the ſecond floor, and at the top of the adjoining houſes), and have found it to be of the ſame quality. Having taken the air at the iron gallery of St. Paul's cupola, at the height of 313 feet above the ground, and likewiſe the air of the ſtone gallery, which is 202 feet below the other; and, having compared theſe two quantities of air with that of the ſtreet adjoining, I found that there was ſcarcely any ſenſible difference between them, although taken at ſuch different heights. In this experiment a circumſtance is to be conſidered, which muſt have contributed to render the above-mentioned differences more ſenſible: this is, the agitation of the air of the cupola; for there was felt a pretty briſk wind upon it, which I obſerved to be ſtronger and ſtronger the higher I aſcended; whereas in the ſtreet, and indeed in all the ſtreets I paſſed through, there was no ſenſible wind to be felt. This experiment was made at four in the afternoon, the weather being clear. The quickſilver in the barometer at that time was 28·6 inches high, and Fahrenheit's thermometer ſtood at 54°."

After mentioning ſome other experiments, M. Fontana proceeds thus: "From this we clearly ſee, how little the experiments hitherto publiſhed about the differences of common air are to be depended upon. In general, I find that the air changes from one time to another; ſo that the differences between them are far greater than thoſe of the airs of different countries or different heights. For inſtance, I have found that the air of London in the months of September, October, and November, 1778, when treated with the nitrous air, gave II, I, 1·90, and II, II, 2·25, which is a mean reſult of many experiments which differed very little from each other. The 26th day of November laſt, I found the air for the firſt time much better, for it gave II, I, 1·80, and II, II, 2·20; but the 14th of February, 1779, the air gave II, I, 1·69, and II, II, 2·21; from whence it appears, that the air of this 14th of February was better than it had been ſix months before. There can be no doubt of the accuracy of the experiments, becauſe I compared the air taken at different times with that which I had firſt uſed in the month of September, and which I had preſerved in dry glaſs-bottles accurately ſtopped."

This difference in the purity of the air at different times, M. Fontana farther remarks, is much greater than the difference between the air of the different places obſerved by him: notwithſtanding this great change, as he obſerved, and as he was informed by various perſons, no particular change of health in the generality of people, or facility of breathing, was perceived. M. Fontana, therefore, concludes with obſerving, that "Nature is not ſo partial as we commonly believe. She has not only given us an air almoſt equally good every where at every time, but has allowed us a certain latitude, or a power of living and being in health in qualities of air which differ to a certain degree. By this I do not mean to deny the exiſtence of certain kinds of noxious air in ſome particular places; but only ſay, that in general the air is good every where, and that the ſmall differences are not to be feared ſo much as ſome people would make us believe. Nor do I mean to ſpeak here of ſome vapours and other bodies which are accidentally joined to the common air in particular places, but do not change its nature and intrinſical property. This ſtate of the air cannot be known by the teſt of nitrous air; and thoſe vapours are to be conſidered in the ſame manner as we ſhould conſider ſo many particles of arſenic ſwimming in the atmoſphere. In this caſe it is the arſenic, and not the degenerated air, that would kill the animals who ventured to breathe it."

With regard to the *figure* of the atmoſphere, as it envelopes all parts of the ſurface of the earth, if they both continued at reſt, and were not endowed with a diurnal motion about their common axis, then the atmoſphere would be exactly globular, according to the laws of gravity; for all the parts of the ſurface of a fluid in a ſtate of reſt muſt be equally removed from its centre. But, as the earth and the ambient parts of the atmoſphere revolve uniformly together about their axis, the different parts of both have a centrifugal force, the tendency of which is more conſiderable, and that of the centripetal leſs, as the parts are more remote from the axis; and hence the figure of the atmoſphere muſt become an oblate ſpheroid; ſince the parts that correſpond to the equator are farther removed from the axis than the parts which correſpond to the poles. Beſides, the figure of the atmoſphere muſt, on another account, repreſent a flattened ſpheroid, namely, becauſe the ſun ſtrikes more directly the air which encompaſſes the equator, and is comprehended between the two tropics, than that which pertains to the polar regions: for, from hence it follows, that the maſs of air, or part of the atmoſphere, adjoining to the poles, being leſs heated, cannot expand ſo much, nor reach ſo high. And yet, notwithſtanding, as the ſame force which contributes to elevate the air, diminiſhes its gravity and preſſure on the ſurface of the earth, higher columns of it about the equatorial parts, all other circumſtances being the ſame, may not be heavier than thoſe about the poles. In the Tranſactions of the Royal Iriſh Academy for 1788 Mr. Kirwin has an ingenious diſſertation on the figure, height, weight, &c. of the atmoſphere. He obſerves that, in the natural ſtate of the atmoſphere, that is, when the barometer would every where, at the level of the ſea, ſtand at thirty inches, the weight of the atmoſphere, at the ſurface of the ſea, muſt be equal all over the globe; and, in order to produce this equality, as the weight proceeds from its denſity and height, it muſt be loweſt where the denſity is greateſt, and higheſt where the denſity is leaſt; that is, higheſt at the equator and loweſt at the poles, with ſeveral intermediate gradations.

Though the equatorial air however be leſs denſe to a certain height than the polar, yet at ſome greater heights it muſt be more denſe: for, ſince an equatorial and polar column are equal in total weight or maſs, the lower part of the equatorial column, being more expanded by heat, &c. than that of the polar, muſt have leſs maſs, and therefore a proportionably greater part of its maſs muſt be found in its ſuperior ſection; ſo that the lower extremity of the ſuperior ſection of the equatorial column is more compreſſed, and conſequently denſer, than the correſponding part of the polar column. The ſame thing is to be underſtood alſo of the extra-tropical columns with reſpect to each other, where differences of heat prevail. Hence, in the higheſt regions of the atmoſphere, the denſer equatorial air, not being ſupported by the collateral extra-tropical columns, gradually flows over, and rolls down to the north and ſouth. Theſe ſuperior tides conſiſt chiefly of inflammable air, as it is much lighter than any other, and is generated in great plenty between the tropics; it furniſhes the matter of the auroræ borealis and auſtralis, by whoſe combuſtion it is deſtroyed, elſe its quantity would in time become too great, and the weight of the atmoſphere annually increaſed; but its combuſtion is the primary ſource of the greateſt perturbations of the atmoſphere.

As to the *weight* and *preſſure* of the air, it is evident, that the maſs of the atmoſphere, in common with all other matter, muſt be endowed with weight and preſſure; and this principle was aſſerted by almoſt all philoſophers, both ancient and modern. But it was only by means of the experiments made with pumps and the barometrical tube, by Galileo and Torricelli, that we came to the proof, not only that the atmoſphere is endued with a preſſure, but alſo what the meaſure and quantity of that preſſure is. Thus it is found, that the preſſure of the atmoſphere ſuſtains a column of quickſilver, in the tube of the barometer, of about thirty inches in height; it therefore follows, that the whole preſſure of the atmoſphere is equal to the weight of a column of quickſilver, of an equal baſe, and thirty inches height: and, becauſe a cubical inch of quickſilver is found to weigh nearly half a pound avoirdupoiſe, therefore the whole thirty inches, or the weight of the atmoſphere on every ſquare inch of ſurface, is equal to 15lb. Again, it has been found that the preſſure of the atmoſphere balances, in the caſe of pumps, &c. a column of water of about $34\frac{1}{2}$ feet high; and, the cubical foot of water weighing juſt 1000 ounces, or $62\frac{1}{2}$lb. $34\frac{1}{2}$ times $62\frac{1}{2}$, or 2158lb. will be the weight of the column of water, or of the atmoſphere, on a baſe of a ſquare foot; and conſequently the 144th part of this, or 15lb. is the weight of the atmoſphere on a ſquare inch; the ſame as before. Hence Mr. Cotes computed, that the preſſure of this ambient fluid on the whole ſurface of the earth, is equivalent to that of a globe of lead of ſixty miles in diameter. And hence alſo it appears, that the preſſure upon the human body muſt be very conſiderable; for, as every ſquare inch of ſurface ſuſtains a preſſure of 15lb. every ſquare foot will ſuſtain 144 times as much, or 2160lb. then, if the whole ſurface of a man's body be ſuppoſed to contain fifteen ſquare feet, which is pretty near the truth, he muſt ſuſtain 15 times 2160, or 32400lb. that is, near $14\frac{1}{2}$ tons weight, for his ordinary load. By this enormous preſſure we ſhould undoubtedly be cruſhed in a moment, if all parts of our bodies were not filled either with air or ſome other elaſtic fluid, the ſpring of which is juſt ſufficient to counterbalance the weight of the atmoſphere. But, whatever this fluid may be, it is certain, that it is juſt able to counteract the weight of the atmoſphere, and no more: for, if any conſiderable preſſure be ſuperadded to that of the air, as by going into deep water, or the like, it is always ſeverely felt let it be ever ſo equable, at leaſt when the change is made ſuddenly; and if, on the other hand, the preſſure of the atmoſphere be taken off from any part of the human body, as the hand for inſtance, when put over an open receiver, from whence the air is afterwards extracted, the weight of the external atmoſphere then prevails, and we imagine the hand ſtrongly ſucked down into the glaſs.

The difference in the weight of the air which our bodies ſuſtain at one time more than another, is alſo very conſiderable, from the natural changes in the ſtate of the atmoſphere. This change takes place chiefly in countries at ſome diſtance from the equator; and, as the barometer varies at times from twenty-eight to thirty-one inches, or about one-tenth of the whole quantity, it follows, that this difference amounts to about a ton and a half on the whole body of a man, which he therefore ſuſtains at one time more than at another. On the increaſe of this natural weight, the weather is commonly fine, and we feel ourſelves what we call braced, and more alert and active; but, on the contrary, when the weight of the air diminiſhes, the weather is bad, and people feel a liſtleſſneſs and inactivity about them. And hence it is no wonder, that perſons ſuffer very much in their health, from ſuch changes in the atmoſphere, eſpecially when they take place very ſuddenly, for it is to this circumſtance chiefly that a ſenſation of uneaſineſs and indiſpoſition is to be attributed; thus, when the variations of the barometer and atmoſphere are ſudden and great, we feel the alteration and effect on our bodies and ſpirits very much; but, when the change takes place by very ſlow degrees, and by a long continuance, we are ſcarcely ſenſible of it, owing, undoubtedly, to the power with which the body is naturally endowed, of accommodating itſelf to this change in the ſtate of the air, as well as to the change of many other circumſtances of life, the body requiring a certain interval of time to effect the alteration in its ſtate, proper to that of the air, &c. Thus, in going up to the tops of mountains, where the preſſure of the atmoſphere is diminiſhed two or three times more than on the plain below, little or no inconvenience is felt from the rarity of the air, if it is not mixed with other noxious vapours; becauſe that, in the aſcent, the body has had ſufficient time to accommodate itſelf gradually to the ſlow variation in the ſtate of the atmoſphere: but, when a perſon aſcends with a balloon, very rapidly, to a great height in the atmoſphere, he feels a difficulty in breathing, and an uneaſineſs of body; and the ſame is ſoon felt by an animal when incloſed in a receiver, and the air ſuddenly drawn or pumped out of it. So alſo, on the condenſation of the air, we feel little or no alteration in ourſelves, except when the change happens ſuddenly, as in very rapid changes in the weather, and in deſcending to great depths in a diving-bell, &c. The late unfortunate Mr. Spalding always found it abſolutely neceſſary to deſcend with the bell very ſlowly, and that only from one depth to another, reſting awhile at each depth before he began to deſcend farther: he firſt deſcended ſlowly for about five or ſix fathom, and then ſtopped awhile; he felt an uneaſineſs in his head and ears, which increaſed more and more as he deſcended, till he was obliged to ſtop at the depth above-mentioned, where the denſity of the air was nearly doubled; having remained there awhile, he felt his ears give a ſudden crack, and after that he was ſoon relieved from any uneaſineſs in that part, and it ſeemed as if the denſity of the air was not altered. He then deſcended other five fathoms, or thirty feet more, with the ſame precaution and the ſame ſenſations as before, being again relieved, in the ſame manner, after remaining awhile ſtationary at the next ſtage of his deſcent, where the denſity of the air was tripled. And thus he continued proceeding to a great depth, always with the ſame circumſtances repeated at every five or ſix fathoms, and adding the preſſure of one more atmoſphere at every period of his progreſs.

It has been aſſerted, that, on the tops of very high mountains, the air is ſo light as to occaſion a great difficulty of reſpiration, and even violent retching and vomiting of blood. It does not appear, however, that theſe aſſertions are well founded. Mr. Brydone found no inconvenience of this kind on the top of mount Etna; nor is any ſuch thing mentioned by Mr. Houel, who alſo aſcended this mountain. Sir William Hamilton indeed ſays, that he did feel a difficulty of reſpiration, independent of any ſulphureous ſteam. But, on the top of a volcano, the reſpiration may be affected by ſo many different cauſes, that it is perhaps impoſſible to aſſign a true one. The French mathematicians, when on the top of a very high peak of the Andes, did not make any complaint of this kind, tho' they lived there for ſome time. On the contrary, they found the wind ſo extremely violent, that they were ſcarcely able to withſtand its force; which ſeems an argument for at leaſt equal denſity of the atmoſphere in the ſuperior as in the inferior regions. Dr. Heberden, who aſcended to the top of Teneriffe, a higher mountain than Etna, makes no mention of any difficulty of reſpiration. M. Sauſſure, however, in his journey to the top of mount Blanc, the higheſt of the Alps, felt a very great uneaſineſs in this way. His reſpiration was not only extremely difficult, but his pulſe became quick, and he was ſeized with all the ſymptoms of a fever. His ſtrength was alſo exhauſted to ſuch a degree, that he ſeemed to require four times as long a ſpace to perform ſome experiments on the top of the mountain as he would have done at the foot of it. It muſt be obſerved, however, that theſe ſymptoms did not begin to appear till he had aſcended two miles and a half perpendicular above the level of the ſea. The mountain is only about a quarter of a mile higher; and in this ſhort ſpace he was reduced to the ſituation juſt mentioned. But it is improbable that ſo ſmall a difference, even at the end of his journey, ſhould have produced ſuch violent effects, had not ſome other cauſe concurred. A cauſe of this kind he himſelf mentions, viz. that the atmoſphere at the top of the mountain was ſo much impregnated with fixed air, that lime-water, expoſed to it, quickly became covered with a pellicle, occaſioned by the abſorption of that fluid. Now it is known, that fixed air is extremely pernicious to animals, and would bring on ſymptoms ſimilar to thoſe above-mentioned. There is no reaſon, therefore, to have recourſe to the rarity of the atmoſphere for ſolving a phenomenon which may more naturally be accounted for otherwiſe.

It is not eaſy to aſſign the true reaſon for the variations that happen in the gravity of the atmoſphere in the ſame place. One cauſe of it, however, either immediate or otherwiſe, it ſeems, is the heat of the ſun; for where this is uniform, the changes are ſmall and regular; thus between the tropics it ſeems the change depends on the heat of the ſun, as the barometer conſtantly ſinks about half an inch every day, and riſes again to its former ſtation in the night-time. But in the temperate zones the barometer ranges from twenty-eight to near thirty-one inches, ſhewing, by its various altitudes, the changes that are about to take place in the weather. If we could know, therefore, the cauſes by which the weather is influenced, we ſhould alſo know thoſe by which the gravity of the atmoſphere is affected. Theſe may perhaps be reduced to immediate ones, viz. an emiſſion of latent heat from the vapour contained in the atmoſphere, or of electric fluid from the ſame, or from the earth; as it is obſerved that they both produce the ſame effect with the ſolar heat in the tropical climates, viz. to rarefy the air, by mixing with it, or ſetting looſe a lighter fluid, which did not before act in ſuch large proportion in any particular place.

With regard to the alteration of heat and cold in the atmoſphere, many reaſons and hypotheſes have been given, and many experiments made. In general they ſeem to depend entirely upon the light of the ſun reflected into the atmoſphere from the earth; and, where this reflection is deficient, even though the light ſhould be preſent ever ſo much, the moſt violent degrees of cold are found to take place. Hence, on the tops of mountains, the cold is generally exceſſive, though by reaſon of the clearneſs of the atmoſphere the light of the ſun falls upon them in greater quantity than it can do on an equal ſpace on the plain. In long winding paſſages alſo, ſuch as the caverns of Etna and Veſuvius, where the air has room to circulate freely, without any acceſs of the ſun, the cold is ſcarcely tolerable; whence the uſe of theſe for cooling liquors, preſerving meat, &c.

The coldneſs of the atmoſphere on the tops of mountains has been aſcribed by M. Lambert and De Luc, to the igneous fluid, or elementary fire, being more rare in thoſe elevated ſituations than on the plains. M. Lambert is of opinion that it is rarefied above by the action of the air, and that below it is condenſed by its own proper weight. He conſiders fire as a fluid in motion, the parts of which are ſeparable, and which is rarefied when its velocity is accelerated. He does not decide with regard to the identity of fire and light, though he ſeems inclined to believe it. M. de Luc compares elementary fire to a continuous fluid, whoſe parts are condenſed by being mutually compreſſed. He denies that fire and light are the ſame; and maintains, that the latter is incapable, by itſelf, of ſetting fire to bodies, though it does ſo by putting in motion the igneous fluid they contain; and that it acts with more force near the earth than at a diſtance from its ſurface, by reaſon of this fluid, which he calls an *heavy* and *elaſtic* one, being more condenſed there than at a greater height.

M. Sauſſure, in treating of this ſubject in his account of the Alps, does not conſider fire as a fluid ſo free and detached as to be able either to aſcend with rapidity by its ſpecific levity, or to condenſe itſelf ſenſibly by its proper weight. He ſuppoſes it to be united to bodies by ſo ſtrict an affinity, that all its motions are determined, or at leaſt powerfully modified, by that affinity. As ſoon therefore as fire, diſengaged by combuſtion, or by any other cauſe, endeavours to diffuſe itſelf, all the bodies that come within the ſphere of its activity endeavour to attract it; and they abſorb ſuch quantities of it as are in the direct ratio of their affinities with it, or in the inverſe ratio of what is neceſſary for their equilibrium with the ſurrounding bodies. Now it does not appear, that in this diſtribution the ſituation of places, with regard to the horizon, has any other influence than what they receive from the different currents produced by the dilatation of the air, and by the levity which that dilatation produces. The aſcent of flame, ſmoke, &c. or of air heated in any way, perſuaded the ancients that fire is poſſeſſed of abſolute levity, by which it had a tendency to mount upwards. "But theſe effects (ſays he) are owing either to the levity of the fluid which conſtitutes flame, or to that of air dilated by heat; and not to the levity of the igneous fluid. I am, however, ſufficiently convinced, that this fluid is incomparably lighter than air, though I do not believe that it poſſeſſes the power of aſcending in our atmoſphere by virtue of its levity alone.

"The celebrated Bouguer has demonſtrated, by principles the moſt ſimple, and moſt univerſally adopted, that it is not neceſſary, in order to account for the diminution of heat on mountains, to have recourſe to hypotheſes that are at beſt doubtful. The following is his explanation of what was felt on the mountains of Peru: It was proper, in order to explain this ſubject, to inſiſt on the ſhort duration of the ſun's rays, which cannot ſtrike the different ſides of mountains but for a few hours, and even this not always. A horizontal plain, when the ſun is clear, is expoſed at mid-day to the perpendicular and undiminiſhed action of theſe rays, while they fall but obliquely on a plain not much inclined, or on the ſides of a high pile of ſteep rocks. But let us conceive for a moment an inſulated point, half the height of the atmoſphere, at a diſtance from all mountains, as well as from the clouds which float in the air. The more a medium is tranſparent, the leſs heat it ought to receive by the immediate action of the ſun. The free paſſage which a very tranſparent body allows to the rays of light, ſhews that its ſmall particles are hardly touched by them. Indeed, what impreſſion could they make on it, when they paſs through almoſt without obſtruction? Light, when it conſiſts of parallel rays, does not by paſſing through a foot of free atmoſpheric air, near the earth, loſe an hundred thouſandth part of its force. From this we may judge how few rays are weakened, or can act on this fluid, in their paſſage through a ſtratum of the diameter not of an inch or a line, but of a particle. Yet the ſubtilty and tranſparency are ſtill greater at great heights, as was obvious on the Cordilleras, when we looked at diſtant objects. Laſtly, the groſſer air is heated below by the contact or neighbourhood of bodies of greater denſity than itſelf, which it ſurrounds, and on which it reſts; and the heat may be communicated by little and little to a certain diſtance. The inferior parts of the atmoſphere by this means contract daily a very conſiderable degree of heat, and may receive it in proportion to its denſity or bulk. But it is evident, that the ſame thing cannot happen at the diſtance of a league and a half or two leagues above the ſurface of the earth, although the light there may be ſomething more active. The air and the wind therefore muſt at this height be extremely cold, and colder in proportion to the elevation. Beſides, the heat neceſſary to life is not merely that which we receive every inſtant from the ſun. The momentary degree of this heat correſponds to a very ſmall part of that which all the bodies around us have imbibed, and by which ours is chiefly regulated. The action of the ſun only ſerves to maintain nearly in the ſame ſtate the ſum of the total heat, by repairing through the day the loſs it ſuſtains through the night, and at all times. If the addition be greater than the loſs, the total heat will increaſe, as it happens in ſummer, and it will continue to accumulate in a certain degree; but, for the reaſons already given, this accumulation cannot be very great on the top of a mountain, where the ſummit, which riſes high, is never of great bulk. The loweſt ſtate of the thermometer in every place is always in proportion to the heat acquired by the ſoil; and, that heat being very ſmall on the top of a mountain, the quantity added to it by the ſun during the day muſt be comparatively greater; and the accumulated heat will be more in a condition to receive increaſe in proportion to its diſtance from the degree which it cannot paſs.

"Another particular obſervable on all the high places of the Cordilleras, and which depends on the ſame cauſe, is, that when we leave the ſhade, and expoſe ourſelves to the ſun-ſhine, we feel a much greater difference than we do here in our fine days when the weather is temperate. Every thing contributes at Quito to make the ſun exceedingly powerful: a ſingle ſtep from an expoſed place to the ſhade gives the ſenſation of cold: this would not be the caſe if the quantity of heat acquired by the ſoil were more conſiderable. We now alſo ſee why the ſame thermometer, put firſt into the ſhade and then in the ſun, does not undergo the ſame changes at all times and in all places. In the morning, upon Pichincha, this inſtrument is generally a few degrees below the freezing point, which may be reckoned the natural temperature of the place; but, when during the day we expoſe it to the ſun, it is eaſy to imagine that the effect muſt be great, and much more than double in whatever way it is meaſured."

This theory is adopted by M. Sauſſure, who adds the following fact to prove that the action of the ſun's rays, conſidered abſtractedly and independent of any extrinſic ſource of cold, is as great on mountains as on plains, viz. that the power of burning lenſes and mirrors is the ſame at all heights. To aſcertain this fact, he procured a burning-glaſs ſo weak that at Geneva it would juſt ſet fire to tinder. This he carried, with ſome of the ſame tinder, to the top of mount Saleve (a height of 3000 feet); where it not only produced the ſame effect, but apparently with greater facility than on the plain. Being perſuaded then, that the principal ſource of cold on the tops of high mountains is their being perpetually ſurrounded with an atmoſphere which cannot be much heated either by the rays of the ſun on account of its tranſparency, or by the reflection of them from the earth by reaſon of its diſtance, he wiſhed to know, whether the direct ſolar rays on the top of a high mountain had the ſame power as on the plain, while the body on which they acted was placed in ſuch a manner as to be unaffected by the ſurrounding air. For this purpoſe he inſtituted a ſet of experiments, from which he drew the following concluſions, viz. that a difference of 777 toiſes in height, diminiſhes the heat which the rays of the ſun are able to communicate to a body expoſed to the external air, 14° of the thermometer; that it diminiſhes the heat of a body partially expoſed, only 6°; and that it augments by 1° the heat of a third body completely defended from the air.

Hence it appears that the atmoſphere, though ſo eſſentially neceſſary to the ſupport of fire, is ſomehow or other the greateſt antagoniſt of heat, and moſt effectually counteracts the operation of the ſolar rays in producing it. This power it ſeems to exert in all diſtances, at the ſurface as well as in the higher regions. From ſome experiments made by M. Pictet, it appears, that even in places expoſed to the rays of the ſun, the heat, at five feet diſtance from the ground, is greater only by one or two degrees than at fifty feet above the ſurface, though the ground was at that time 15° or 20° warmer than the air immediately in contact with it. Inconſiderable as this difference is, however, it does not hold as we go higher up; for, if it did, the cold on the top of the mountain of Saleve, which is 3000 feet above the level of the lake of Geneva, would be 60° greater than at the foot of it; whereas in reality it is only 10°. In the night-time the caſe is reverſed; for the ſtratum of air, at five feet from the ground, was found by M. Pictet to be colder than that at fifty. Beſides this, different ſtrata of the atmoſphere are found to poſſeſs very different and variable degrees of cold, without any regard to their ſituation high up or low down. In the year 1780, Dr. Wilſon of Glaſgow found a very remarkable cold exiſting cloſe to the ſurface of the ground; ſo that the thermometer, when laid on the ſurface of the ſnow, ſunk many degrees lower than one ſuſpended twenty-four feet above it. It has been likewiſe obſerved, that in clear weather, though the ſurface of the earth be then moſt liable to be heated by the ſun, yet after that is ſet, and during the night, the air is coldeſt near the ground, and particularly in the valleys. Experiments on this ſubject were made for a whole year by Mr. James Sex, who has given an account of them in the Phil. Tranſ. vol. lxxviii. He ſuſpended thermometers (conſtructed in ſuch a manner as to ſhew the true maximum and minimum of heat that might take place in the obſerver's abſence) in a ſhady northerly aſpect, and at different heights, in the open air. One of theſe was placed at the height of nine feet, and the other at that of 220 feet, from the ground, and the obſervations were continued, with only a few days omiſſion, from July 1784 to July 1785. The greateſt variations of heat were in October and June; in the former the thermometers generally differed moſt in the night, and in the latter moſtly in the day. From the 25th to the 28th of October, the heat below, in the night-time, exceeded in a ſmall degree the heat above; at which time there was frequent rain mingled with hail. From the 11th to the 14th, and alſo on the 31ſt, there was no variation at all; during which time likewiſe the weather was rainy; all the reſt of the month proving clear, the air below was found colder than that above, ſometimes by nine or ten degrees. In the month of June, the greateſt variations took place from the 11th to the 15th, and from the 25th to the 30th; and at both theſe times there appeared to be two currents of wind, the upper from the ſouth-weſt and the lower from the north-eaſt. Sometimes theſe were rendered viſible by clouds, in different ſtrata, moving in different directions; and ſometimes by clouds moving in a contrary direction to a very ſenſible current of air below. On cloudy nights the loweſt thermometer ſometimes ſhewed the heat to be a degree or two greater than the upper one; but in the day-time the heat below conſtantly exceeded that above more than in the month of October.

To determine whether the nocturnal refrigeration was augmented by a nearer approach to the earth, two thermometers were placed in the midſt of an open meadow, on the bank of the river near Canterbury. One was placed on the ground, and the other only ſix feet above it. The thermometer, at ſix feet diſtance from the ground, agreed nearly with the former at nine feet; but the nocturnal variations were found to correſpond entirely with the clearneſs or the cloudineſs of the ſky: and, though they did not always happen in proportion to their reſpective altitudes, yet, when the thermometers differed in any reſpect, that on the ground always indicated the greateſt degree of cold. The difference betwixt theſe two thermometers, at the ſmall diſtance of ſix feet from each other, being found no leſs than three degrees and an half, the number of thermometers in the meadow was augmented to four. One was ſunk in the ground, another placed juſt upon it, and the third ſuſpended at three feet above it. Three others were placed on a riſing ground where the land was level with the cathedral tower, and about a mile diſtant from it. One of theſe was likewiſe ſunk in the ground, another placed juſt upon it, and a third ſuſpended ſix feet above it. With theſe ſeven thermometers, and the two firſt mentioned, which were placed in the city, he continued his obſervations for twenty days; but, as the weather happened to be cloudy during the whole of that ſpace, excepting for ſeven or eight days, no conſiderable variation happened excepting on thoſe days. The reſult of the experiments was, that the cold was generally greater in the valley than on the hill; but the variations between the thermometers on the ground and thoſe ſix feet above them, were often as great on the hill as in the valley.

Thus it was perceived, that a difference of temperature took place at the diſtance of only three feet from the ground; but the length of the thermometers hitherto made uſe of rendered it impoſſible to make any experiment at a ſmaller diſtance. Two new ones, therefore, were formed by bending down the large tube, the body or bulb of the thermometer, to an horizontal poſition, while the ſtem remained in a vertical one; by which method the temperature might be obſerved to the diſtance of a ſingle inch. Sometimes, in clear weather, theſe two horizontal thermometers were placed in the open air, one within an inch of the ground, and the other nine inches above it. When the variation among the other thermometers was conſiderable, a difference was likewiſe perceived between theſe; the lower one ſometimes indicating more than two degrees leſs heat than the upper one, though placed ſo near each other. From theſe experiments Mr. Sex concludes, that a greater diminution of heat frequently takes place near the earth in the night-time than at any altitude in the atmoſphere, within the limits of his inquiry, that is, 220 feet from the ground; and at ſuch times the greateſt degrees of cold are always met with near the ſurface of the earth. This is a conſtant and regular operation of nature, under certain circumſtances and diſpoſitions of the atmoſphere, and takes place at all ſeaſons of the year; and this difference never happens in any conſiderable degree but when the air is ſtill, and the ſky perfectly unclouded. The moiſteſt vapour, as dews and fogs, did not at all impede, but rather promote, the refrigeration. In very ſevere froſts, when the air frequently depoſits a quantity of frozen vapour, it is commonly found greateſt; but the exceſs of heat which in the day-time was found at the loweſt ſtation in ſummer, diminiſhed in winter almoſt to nothing.

It has been obſerved, that a thermometer, included in a receiver, always ſinks when the air begins to be rarefied. This has been thought to ariſe, not from any degree of cold thus produced, but from the ſudden expanſion of the bulb of the thermometer in conſequence of the removal of the atmoſpherical preſſure. But from ſome late experiments related, Phil. Tranſ. vol. lxxviii. by Mr. Darwin, it appears, that the atmoſphere always becomes warm by compreſſion, and cold by dilatation from a compreſſed ſtate. Theſe experiments were: 1. The blaſt from the air-gun was repeatedly thrown upon the bulb of a thermometer, and it uniformly ſunk it about two degrees. In making this experiment, the thermometer was firmly fixed againſt a wall, and the air-gun, after being charged, was left for an hour in its vicinity, that it might previouſly loſe the heat it had acquired in the act of charging; the air was then diſcharged in a continued ſtream on the bulb of the thermometer, with the effect already mentioned. 2. A thermometer was fixed in a wooden tube, and ſo applied to the receiver of an air-gun, that, on diſcharging the air by means of a ſcrew preſſing on the valve of the receiver, a continued ſtream of air, at the very time of its expanſion, paſſed over the bulb of the thermometer. This experiment was four times repeated, and the thermometer uniformly ſunk from five to ſeven degrees. During the time of condenſation there was a great difference in the heat, as perceived by the hand, at the two ends of the condenſing ſyringe: that next the air-globe was almoſt painful to the touch; and the globe itſelf became hotter than could have been expected from its contact with the ſyringe. "Add to this (ſays Mr. Darwin), that in exploding an air-gun the ſtream of air always becomes viſible, which is owing to the cold then produced precipitating the vapour it contained; and, if this ſtream of air had been previouſly more condenſed, or in greater quantity, ſo as not inſtantly to acquire heat from the common atmoſphere in its vicinity, it would probably have fallen in ſnow." 3. A thermometer was placed in the receiver of an air-pump, and, the air being haſtily exhauſted, it ſunk two or three degrees; but after ſome minutes regained its former ſtation. The experiment was repeated with a thermometer open at the top, ſo that the bulb could not be affected by any diminution of the external preſſure; but the reſult was the ſame. Both during exhauſtion and re-admiſſion of the air into the receiver, a ſteam was regularly obſerved to be condenſed on the ſides of the glaſs; which, in both caſes, was in a few minutes re-abſorbed, and which appeared to be precipitated by being deprived of its heat by the expanded air. 4. A hole, about the ſize of a crow-quill, was bored into a large air-veſſel placed at the commencement of the principal pipe of the water-works of Derby. There are four pumps worked by a water-wheel, the water of which is firſt thrown into the lower-part of this air-veſſel, and riſes from thence to a reſervoir about thirty-five or forty feet above the level; ſo that the water in this veſſel is conſtantly in a ſtate of compreſſion. Two thermometers were previouſly ſuſpended on the leaden air-veſſel, that they might aſſume the temperature of it, and, as ſoon as the hole above-mentioned was opened, had their bulbs applied to the ſtream of air which iſſued out; the conſequence of which was, that the mercury ſunk ſome degrees in each.

There is a curious phenomenon obſerved in the fountain of Hiero, conſtructed on a very large ſcale, in the Chemniſcenſian mines in Hungary. In this machine the air, in a large veſſel, is compreſſed by a column of water 260 feet high; a ſtop-cock is then opened; and as the air iſſues with great vehemence, and in conſequence of its previous condenſation becomes immediately much expanded, the moiſture it contains is not only precipitated, as in the exhauſted receiver above-mentioned, but falls down in a ſhower of ſnow, with iſicles adhering to the noſe of the cock. See Phil. Tranſ. vol. lii. From this phenomenon, as well as the four experiments above related, Mr. Darwin thinks "there is good reaſon to conclude, that, in all circumſtances where air is mechanically expanded, it becomes capable of attracting the fluid matter of heat from other bodies in contact with it.

"Now (continues he), as the vaſt region of air which ſurrounds our globe is perpetually moving along its ſurface, climbing up the ſides of the mountains, and deſcending into the valleys; as it paſſes along it muſt be perpetually varying the degree of heat according to the elevation of the country it traverſes: for, in riſing to the ſummits of mountains, it becomes expanded, having ſo much of the preſſure of the ſuperincumbent atmoſphere taken away; and, when thus expanded, it attracts or abſorbs heat from the mountains in contiguity with it; and, when it deſcends into the valleys and is compreſſed into leſs compaſs, it again gives out the heat it has acquired to the bodies it comes in contact with. The ſame thing muſt happen to the higher regions of the atmoſphere, which are regions of perpetual froſt, as has lately been diſcovered by the aërial navigators. When large diſtricts of air, from the lower parts of the atmoſphere, are raiſed two or three miles high, they become ſo much expanded by the great diminution of the preſſure over them, and thence become ſo cold, that hail or ſnow is produced by the precipitation of the vapour: and as there is, in theſe high regions of the atmoſphere, nothing elſe for the expanded air to acquire heat from after it has parted with its vapour, the ſame degree of cold continues till the air, on deſcending to the earth, acquires its former ſtate of condenſation and of warmth. The Andes, almoſt under the line, reſts its baſe on burning ſands: about its middle height is a moſt pleaſant and temperate climate, covering an extenſive plain, on which is built the city of Quito: while its forehead is encircled with eternal ſnow, perhaps coeval with the mountain. Yet, according to Don Ulloa, theſe three diſcordant climates ſeldom encroach much on each other's territories. The hot winds below, if they aſcend, become cooled by their expanſion; and hence they cannot affect the ſnow upon the ſummit; and the cold winds that ſweep the ſummit become condenſed as they deſcend, and of temperate warmth before they reach the fertile plains of Quito."

Various attempts have been made to aſcertain the *height* to which the atmoſphere is extended all round the earth. Theſe commenced ſoon after it was diſcovered, by means of the Torricellian tube, that air is endued with weight and preſſure. And had not the air an elaſtic power, but were it every where of the ſame *denſity*, from the ſurface of the earth to the extreme limit of the atmoſphere, like water, which is equally denſe at all depths, it would be a very eaſy matter to determine its height from its denſity and the column of mercury it would counterbalance in the barometer-tube: for, it having been obſerved, that the weight of the atmoſphere is equivalent to a column of thirty inches or 2½ feet of quickſilver, and the denſity of the former to that of the latter, as 1 to 11040; therefore the height of the uniform atmoſphere would be 11040 times 2½ feet, that is, 27600 feet, or little more than 5¼ miles. But the air, by its elaſtic quality, expands and contracts; and it being found, by repeated experiments in moſt nations of Europe, that the ſpaces it occupies, when compreſſed by different weights, are reciprocally proportional to thoſe weights themſelves; or, that the more the air is preſſed, ſo much the leſs ſpace it takes up; it follows that the air in the upper regions of the atmoſphere muſt grow continually more and more rare, as it aſcends higher; and indeed that, according to that law, it muſt neceſſarily be extended to an indefinite height. Now, if we ſuppoſe the height of the whole divided into innumerable equal parts, the quantity of each part will be as its denſity; and, the weight of the whole incumbent atmoſphere being alſo as its denſity, it follows, that the weight of the incumbent air is every where as the quantity contained in the ſubjacent part; which cauſes a difference between the weights of each two contiguous parts of air. But, by a theorem in arithmetic, when a magnitude is continually diminiſhed by the like part of itſelf, and the remainders the ſame, theſe will be a ſeries of continued quantities decreaſing in geometrical progreſſion: therefore if, according to the ſuppoſition, the altitude of the air, by the addition of new parts into which it is divided, do continually increaſe in arithmetical progreſſion, its denſity will be diminiſhed, or, which is the ſame thing, its gravity decreaſed, in continued geometrical proportion. And hence, again, it appears that, according to the hypotheſis of the denſity being always proportional to the compreſſing force, the height of the atmoſphere muſt neceſſarily be extended indefinitely. And, farther, as an arithmetical ſeries adapted to a geometrical one, is analogous to the logarithms of the ſaid geometrical one; it follows therefore, that the altitudes are proportional to the logarithms of the denſities, or weights of air; and that any height taken from the earth's ſurface, which is the difference of two altitudes to the top of the atmoſphere, is proportional to the difference of the logarithms of the two denſities there, or to the logarithm of the ratio of thoſe denſities, or their correſponding compreſſing forces, as meaſured by the two heights of the barometer there. This law was firſt obſerved and demonſtrated by Dr. Halley, from the nature of the hyperbola;

bola; and afterwards by Dr. Gregory, by means of the logarithmic curve. See Phil. Tranſ. No. clxxxi. or Abridg. vol. ii. p. 13, and Greg. Aſtron. lib. v. prop. 3.

It is now eaſy, from the foregoing property, and two or three experiments, or barometrical obſervations, made at known altitudes, to deduce a general rule to determine the abſolute height anſwering to any denſity, or the denſity anſwering to any given altitude above the earth. And accordingly, calculations were made upon this plan by many philoſophers, particularly by the French; but, it having been found that the barometrical obſervations did not correſpond with the altitudes as meaſured in a geometrical manner, it was ſuſpected, that the upper parts of the atmoſpherical regions were not ſubject to the ſame laws with the lower ones, in regard to the denſity and elaſticity. And indeed, when it is conſidered that the atmoſphere is a heterogeneous maſs of particles of all ſorts of matter, ſome elaſtic, and others not, it is not improbable but this may be the caſe, at leaſt in the regions very high in the atmoſphere, which it is likely may more copiouſly abound with the electrical fluid. Be this however as it may, it has lately been diſcovered, that the law above given holds very well for all ſuch altitudes as are within our reach, or as far as to the tops of the higheſt mountains on the earth, when a correction is made for the difference of the heat or temperature of the air only, as was fully evinced by M. de Luc, in a long ſeries of obſervations, in which he determined the altitudes of hills both by the barometer, and by geometrical meaſurement, from which he deduced a practical rule to allow for the difference of temperature. See his Treatiſe on the Modifications of the Atmoſphere. Similar rules have alſo been deduced from accurate experiments, by Sir George Shuckburgh and general Roy, both concurring to ſhew, that ſuch a rule for the altitudes and denſities holds true for all heights that are acceſſible to us, when the elaſticity of the air is corrected on account of its denſity: and the reſult of their experiments ſhewed, that the difference of the logarithms of the heights of the mercury in the barometer, at two ſtations, when multiplied by 10000, is equal to the altitude in Engliſh fathoms, of the one place above the other; that is, when the temperature of the air is about 31° or 32° of Fahrenheit's thermometer; and a certain quantity more or leſs, according as the actual temperature is different from that degree.

But it may here be ſhewn, that the ſame rule may be deduced independent of ſuch a train of experiments as thoſe above, merely by the denſity of the air at the ſurface of the earth alone. Thus, let D denote the denſity of the air at one place, and d the denſity at the other; both meaſured by the column of mercury in the barometrical tube: then the difference of the altitude between the two places will be proportional to the log. of D — the log. of d, or to the log. of $\frac{D}{d}$. But, as this formula expreſſes only the relation between different altitudes, and not the abſolute quantity of them, aſſume ſome indeterminate, but conſtant, quantity h, which multiplying the expreſſion log. $\frac{D}{d}$, may be equal to the real difference of altitude a; that is, $a = h \times$ log. of $\frac{D}{d}$. Then, to determine the value of the general quantity h, let us take a caſe in which we know the altitude a which correſponds to a known denſity d; as, for inſtance, taking $a = 1$ foot, or 1 inch, or ſome ſuch ſmall altitude: then, becauſe the denſity D may be meaſured by the preſſure of the whole atmoſphere, or the uniform column of 27600 feet, when the temperature is 55°; therefore, 27600 feet will denote the denſity D at the lower place, and 27599 the leſs denſity d at 1 foot above it; conſequently, $1 = h \times$ log. of $\frac{27600}{27599}$, which, by the nature of logarithms, is nearly $= h \times \frac{\cdot 43429448}{27600}$, or $\frac{1}{63551}$ nearly; and hence we find $h = 63551$ feet; which gives us this formula for any altitude a in general, viz. $a = 63551 \times$ log. of $\frac{D}{d}$, or $a = 63551 \times$ log. of $\frac{M}{m}$ feet, or $10592 \times$ log. of $\frac{M}{m}$ fathoms; where M denotes the column of mercury in the tube at the lower place, and m that at the upper. This formula is adapted to the mean temperature of the air 55°: but it has been found, by the experiments of Sir George Shuckburgh and general Roy, that, for every degree of the thermometer different from 55°, the altitude a will vary by its 435th part; hence, if we would change the factor h from 10592 to 10000, becauſe the difference 592 is the 18th part of the whole factor 10592, and becauſe 18 is the 24th part of 435; therefore the change of temperature, anſwering to the change of the factor h, is 24°, which reduces the 55° to 31°. So that, $a = 10000 \times$ log. of $\frac{M}{m}$ fathoms, is the eaſieſt expreſſion for the altitude, and anſwers for the temperature of 31°, or very nearly the freezing point: and for every degree above that, the reſult muſt be increaſed by ſo many times its 435th part, and diminiſhed when below it.

From this theorem it follows, that, at the height of $3\frac{1}{2}$ miles, the denſity of the atmoſphere is nearly 2 times rarer than it is at the ſurface of the earth; at the height of 7 miles, 4 times rarer; and ſo on, according to the following table:

Height in miles.	Number of times rarer.
$3\frac{1}{2}$	2
7	4
14	16
21	64
28	256
35	1024
42	4096
49	16384
56	65536
63	262144
70	1048576

And, by purſuing the calculations in this table, it might be eaſily ſhewn, that a cubic inch of the air we breathe would be ſo much rarefied at the height of 500 miles, that it would fill a ſphere equal in diameter to the orbit of Saturn. Hence we may perceive how very ſoon the air becomes ſo extremely rare and light, as to be utterly imperceptible to all experience; and that hence, if all the planets have ſuch atmoſpheres as our earth, they will, at the diſtances of the planets from one another, be ſo extremely attenuated, as to give no ſenſible reſiſtance to the planets in their motion round the ſun for many, perhaps hundreds or thouſands of ages to come. Even at the height of about fifty miles, it is ſo rare as to have no ſenſible effect on the rays of light: for it was found by Kepler, and De la Hire after him, who computed the height of the ſenſible atmoſphere from the duration of twilight, and from the magnitude of the terreſtrial ſhadow in lunar eclipſes, that the effect of the atmoſphere to reflect and intercept the light of the ſun is only ſenſible to the altitude of between forty and fifty miles: and at that altitude we may collect, from what has been already ſaid, that the air is above 10,000 times rarer than at the ſurface of the earth. It is well known, that the twilight begins and ends when the centre of the ſun is about 18° below the horizon, or only 17° 27′, by ſubtracting 33′ for refraction, which raiſes the ſun ſo much higher than he would be. And a ray coming from the ſun in that poſition, and entering the earth's atmoſphere, is refracted and bent into a curve-line in paſſing through it to the eye.

M. de la Hire took great pains to demonſtrate, that, ſuppoſing the denſity of the atmoſphere proportional to its weight, this curve is a cycloid: he alſo ſays, that, if the ray be a tangent to the atmoſphere, the diameter of its generating circle will be the height of the atmoſphere; and that this diameter increaſes, till at laſt, when the rays are perpendicular, it becomes infinite, or the circle degenerates into a right line. This reaſoning ſuppoſes that the refracting ſurface of the atmoſphere is a plane; but ſince it is in reality a curve, he obſerves that theſe cycloids become in fact epicycloids. But Herman detected the error of M. de la Hire, and ſhewed that this curve is infinitely extended, and has an aſymptote. And it is obſerved by Dr. Brook Taylor, in his Methodus Increm. p. 168, &c. that this curve is one of the moſt intricate and perplexed that can well be propoſed. The ſame ingenious author computes, that the refractive power of the air is to the force of gravity at the ſurface of the earth, as 320,000,000 to 1.

Conſidering the extreme rarity of the atmoſphere at only forty or fifty miles in height, it ſeems to be ſurprizing that ſome meteors ſhould be inflamed at ſuch great heights as they have been ſeen. A very remarkable one of this kind was obſerved by Dr. Halley in the month of March 1719, the altitude of which he computed at between ſixty-nine and ſeventy-three and an half Engliſh miles; its diameter 2800 yards, or more than a mile and an half; and its velocity about 350 miles in a minute. Others, apparently of the ſame kind, but whoſe altitude and velocity were ſtill greater, have been obſerved; particularly that very remarkable one, of Auguſt 18, 1783, whoſe diſtance from the earth could not be leſs than ninety miles, its diameter at leaſt as large as the former, while its velocity was certainly not leſs than 1000 miles in a minute. Now, from analogy of reaſoning, it ſeems very probable, that the meteors which appear at ſuch great heights in the air, are not eſſentially different from thoſe which are ſeen on or near the ſurface of the earth. The difficulty with regard to the former is, that, at the great heights above-mentioned, the atmoſphere ought not to have any denſity ſufficient to ſupport flame, or to propagate ſound; and yet ſuch meteors are commonly ſucceeded by one exploſion or more, and it is ſaid are even ſometimes accompanied with a hiſſing noiſe as they paſs over our heads. The meteor of 1719 was not only very bright, ſeeming for a ſhort time to turn night into day, but was attended with an exploſion heard over all the iſland of Britain, cauſing a violent concuſſion in the atmoſphere, and ſeeming to ſhake the earth itſelf. And yet, in the regions in which this meteor moved, the air ought to have been 300,000 times rarer than that of the air we breathe, or 1000 times rarer than the vacuum commonly made by a good air-pump. Dr. Halley offers a conjecture, indeed, that the vaſt magnitude of ſuch bodies might compenſate for the thinneſs of the medium in which they moved. But appearances of this kind are, by ſome others, attributed to electricity; though the circumſtances of them cannot be reconciled to that cauſe; for the meteors move with all different degrees of velocity; and, though the electrical fire eaſily pervades the vacuum of an air-pump, yet it does not in that caſe appear in bright well-defined ſparks, as in the open air, but rather in long ſtreams reſembling the aurora borealis; and from ſome late experiments it has been concluded that the electric fluid cannot even penetrate a perfect vacuum.

It has been obſerved above, that the atmoſphere has a refractive power, by which the rays of light are bent from the right-lined direction, as in the caſe of twilight; and many other experiments manifeſt the ſame virtue, which is the cauſe of many phenomena. Alhazen, the Arabian, who lived about the year 1100, was more inquiſitive into the nature of refraction than former writers. But neither Alhazen, nor his follower Vitella, knew any thing of its juſt quantity, which was not known, to any tolerable degree of exactneſs, till Tycho Brahe, with great diligence, ſettled it. But neither did Tycho nor Kepler diſcover in what manner the rays of light were refracted by the atmoſphere. Tycho thought the refraction was chiefly cauſed by denſe vapours, very near the earth's ſurface: while Kepler placed the cauſe wholly at the top of the atmoſphere, which he thought was uniformly denſe; and thence he determined its altitude to be little more than that of the higheſt mountains. But the true conſtitution of the denſity of the atmoſphere, deduced afterwards from the Torricellian experiment, afforded a juſter idea of theſe refractions, eſpecially after it appeared, by a repetition of Mr. Lowthord's experiment, that the refractive power of the air is proportional to its denſity. By this variation in the denſity and refractive power of the air, a ray of light, in paſſing through the atmoſphere, is continually refracted at every point, and thereby made to deſcribe a curve, and not a ſtraight line, as it would have done were there no atmoſphere, or were its denſity uniform; as is ſhewn under ASTRONOMY.

The atmoſphere has alſo a reflective power; and this power is the means by which objects are enlightened ſo uniformly on all ſides. The want of this power would occaſion a ſtrange alteration in the appearance of things; the ſhadows of which would be ſo very dark, and their ſides enlightened by the ſun ſo very bright, that probably we could ſee no more of them than their bright halves; ſo that for a view of the other halves, we muſt turn them half round, or, if immoveable, muſt wait till the ſun could come round upon them. Such a pellucid unreflective atmoſphere would indeed have been very commodious for aſtronomical obſervations on the courſe of the ſun and planets among the fixed ſtars, viſible by day as well as by night; but then ſuch a ſudden tranſition from darkneſs to light, and from light to darkneſs, immediately upon the riſing and ſetting of the ſun, without any twilight, and even upon turning to or from the ſun at noon-day, would have been very inconvenient and injurious to our eyes. However, though the atmoſphere be greatly aſſiſtant in the illumination of objects, yet it muſt alſo be obſerved that it ſtops a great deal of light. By M. Bouguer's experiments, it ſeems that the light of the moon is often 2000 times weaker in the horizon than at the altitude of ſixty-ſix degrees; and that the proportion of her light at the altitudes of ſixty-ſix and nineteen degrees, is about 3 to 2; and the lights of the ſun muſt bear the ſame proportion to each other at thoſe heights; which Bouguer made choice of, as being the meridian heights of the ſun, at the ſummer and winter ſolſtices, in the latitude of Croiſic in France; effects that are ſolely produced by the matter or ſubſtance of the atmoſphere.

ATMOSPHE'RICAL, *adj.* Conſiſting of the atmoſphere; belonging to the atmoſphere.—We did not mention the weight of the incumbent *atmoſpherical* cylinder, as a part of the weight reſiſted. *Boyle.*

AT'MUS, *ſ.* [ατμος, from αω, to breathe.] Vapour, breath, flatus.

ATO'CIA, *ſ.* [ατοκια, from α neg. and τικτω, to bring forth.] Inability to bring forth children. Difficult labour.

ATO'CUS, *ſ.* [ατοκος, from α neg. and τικτο, to bring forth.] Barren; not able to procreate.

ATOL'LI, *ſ.* A ſort of pap, made of the meal of maize and water, which the Indians mix with their chocolate.

ATOL'MIA, *ſ.* [ατολμια, from α neg. and τολμαω, to dare.] Diffidence, dejection of mind.

A'TOM, *ſ.* [*atome*, Fr. *atomus*, Lat. of ατομος, of α priv. and τεμνο, Gr. to cut or divide.] Such a ſmall particle as cannot be phyſically divided: and theſe are the firſt rudiments, or the component parts, of all bodies.—Innumerable minute bodies are called *atoms*, becauſe, by reaſon of their perfect ſolidity, they were really indiviſible. *Ray.*

See plaſtic nature working to this end,
The ſingle *atoms* each to other tend,
Attract, attracted to, the next in place
Form'd and impell'd its neighbour to embrace. *Pope.*

Any thing extremely ſmall.—It is as eaſy to count *atoms*, as to reſolve the propoſitions of a lover. *Shakeſpeare.*

ATO'MICAL, *adj.* Conſiſting of atoms.—Vitrified and pellucid bodies are clearer in their continuities, than in powders and *atomical* diviſions. *Brown.*—Relating to atoms.—Vacuum is another principal doctrine of the *atomical* philoſophy. *Bentley.*

ATOMICAL PHILOSOPHY, or the doctrine of atoms, is a ſyſtem which, from the hypotheſis that atoms are endued with gravity and motion, accounted for the origin and formation of things. This philoſophy was firſt broached by Moſchus, ſome time before the Trojan war; but was much cultivated and improved by Epicurus; whence it is denominated the *Epicurean Philoſophy*.

A'TOMIST, *ſ.* One that holds the atomical philoſophy, or doctrine of atoms.—The *atomiſts*, who define motion to be a paſſage from one place to another, what do they more than put one ſynonymous word for another? *Locke.*

To ATO'NE, *v. n.* [from *at one*, as the etymolygiſts remark, *to be at one*, is the ſame as *to be in concord*. This derivation is much confirmed by the following paſſage of Shakeſpeare, and appears to be the ſenſe ſtill retained in Scotland.] To agree; to accord.

He and Aufidus can no more *atone*,
Than violenteſt contrariety. *Shakeſpeare.*

To ſtand as an equivalent for ſomething; and particularly uſed of expiatory ſacrifices, with the particle *for* before the thing for which ſomething elſe is given.—The good intention of a man of weight and worth, or a real friend, ſeldom *atones for* the uneaſineſs produced by his grave repreſentations. *Locke.*

His virgin ſword Ægyſthus' veins imbru'd;
The murd'rer fell, and blood *aton'd for* blood. *Pope.*

To ATONE, *v. a.* To reduce, to concord.—If any contention aroſe, he knew none fitter to be their judge, to *atone* and take up their quarrels, but himſelf. *Drummond.*—To expiate; to anſwer for.

Soon ſhould yon boaſters ceaſe their haughty ſtrife,
Or each *atone* his guilty love with life. *Pope.*

ATO'NEMENT, *ſ.* Agreement; concord. Expiation; expiatory equivalent: with *for*.—And the Levites were purified, and Aaron made an *atonement for* them to cleanſe them. *Numbers.*—Surely it is not a ſufficient *atonement for* the writers, that they profeſs loyalty to the government, and ſprinkle ſome arguments in favour of the diſſenters, and, under the ſhelter of popular politics and religion, undermine the foundations of all piety and virtue. *Swift.*

A'TONY, *ſ.* [from α neg. τείνω, to ſtretch.] Defect of muſcular power. Relaxation, laxity, debility, or diſtemperature. This word was much in uſe among the methodic ſect, who aſcribed the cauſes of all diſtempers to relaxation, ſtricture, or a mixture of theſe. It is generally ſynonymous with palſy.

ATOO'I, or ATTOW'I, one of the Sandwich Iſlands, diſcovered by captain Cook, ſituated in lat. 21. 57. N. lon. 200. 20. E. Greenwich. Towards the north-eaſt and north-weſt, the face of the country is ragged and broken; but to the ſouthward it is more even. The hills riſe from the ſea-ſide with a gentle acclivity, and at a little diſtance back are covered with wood. Its produce is the ſame with that of the other iſlands of this cluſter; but its inhabitants greatly excel in the management of their plantations. In the low grounds, contiguous to the bay wherein our navigators anchored, theſe plantations were regularly divided by deep ditches; the fences were formed with a neatneſs approaching to elegance, and the roads through them were finiſhed in ſuch a manner as would have reflected credit even on an European engineer.

The iſland is about 300 miles in circumference. The road, or anchoring-place, is on the ſouth-weſt ſide of the the iſland, about two leagues from the weſt end, before a village named Wymoa. As far as was ſounded, the bank was free from rocks; except to the eaſtward of the village, where there projects a ſhoal on which are ſome rocks and breakers. This road is ſomewhat expoſed to the trade-wind; notwithſtanding which defect, it is far from being a bad ſtation, and greatly ſuperior to thoſe which neceſſity continually obliges ſhips to uſe, in countries where the winds are not only more variable but more boiſterous; as at Maderia, Teneriffe, the Azores, &c. The water in the neighbourhood is excellent, and may be conveyed with eaſe to the boats. But no wood can be cut at any convenient diſtance, unleſs the iſlanders could be prevailed upon to part with the few etooa trees (*cordia ſebeſtina*) that grow about their villages, or a ſpecies called *dooe dooe*, which grows farther up the country. The ground, from the wooded part to the ſea, is covered with an excellent kind of graſs, about two feet in height, which ſometimes grows in tufts, and appeared capable of being converted into abundant crops of fine hay. But on this extenſive ſpace not even a ſhrub grows up naturally. Beſides taro, the ſweet potatoe, and other ſimilar vegetables uſed by our crews as refreſhments, among which were at leaſt five or ſix varieties of plantains, the iſland produces bread-fruit; which, however, ſeems to be ſcarce. There are alſo a few cocoa palms; ſome yams; the kappe of the Friendly iſlands, or Virginian arum; the etooa tree, and odoriferous gardenia, or cape jaſmine. Our people alſo met with ſeveral trees of the dooe dooe, that bear the oily nuts, which are ſtuck upon a kind of ſkewer and made uſe of as candles. There is a ſpecies of ſide, or Indian mallow; alſo the morinda citrifolia, which is here called *none*; a ſpecies of convolvulus; the ava or intoxicating pepper, beſides great quantities of gourds.

The ſcarlet birds, which were brought for ſale, were never met with alive; but one ſmall one was ſeen, about the ſize of a canary bird, of a deep crimſon colour; alſo a large owl, two brown hawks or kites, and a wild duck. Other birds were mentioned by the natives; among which were the otoo, or bluiſh heron, and the torata, a ſort of whimbrel. It is probable that theſe ſpecies of birds are numerous, if we may judge by the quantity of fine yellow, green, and ſmall velvet-like blackiſh, feathers uſed upon the cloaks and other ornaments worn by theſe people. Fiſh, and other productions of the ſea, were to appearance not various. The only tame or domeſtic animals found here were hogs, dogs, and fowls, which were all of the ſame kind that had been met with at the iſlands of the South Pacific.

The inhabitants of Atooi are of the middle ſize, and in general ſtoutly made. Their viſage, particularly that of the women, is ſometimes round, but others have it long; nor can it be juſtly ſaid that they are diſtinguiſhed as a nation by any general caſt of countenance. Their complexion is nearly of a nut-brown; but ſome individuals are of a darker hue. They are far from being ugly, and have, to all appearance, few natural deformities of any kind. Their ſkin is not very ſoft nor ſhining; but their eyes and teeth are, for the moſt part, pretty good. Their hair in general is ſtraight; and though its natural colour is uſually black, they ſtain it, as at the Friendly and other iſlands. They are active, vigorous, and moſt expert ſwimmers; leaving their canoes upon the moſt frivolous occaſion, diving under them, and ſwimming to others, though at a conſiderable diſtance. Women with infants at the breaſt, when the ſurf was ſo high as to prevent their landing in the canoes, frequently leapt over-board, and ſwam to the ſhore, without endangering their little ones. They appeared to be of a frank cheerful diſpoſition; and are equally free from the fickle levity which characteriſes the inhabitants of Otaheite, and the ſedate caſt which is obſervable among many of thoſe of Tongataboo. They ſeem to cultivate a ſocial intercourſe with each other; and, except the propenſity to thieving, which is as it were innate in moſt of the people in thoſe ſeas, they appeared extremely friendly. It was pleaſing to obſerve with what affection the women managed their infants, and with what alacrity the men contributed their aſſiſtance in ſuch a tender office; thus diſtinguiſhing themſelves from thoſe ſavages who conſider a wife and child as things rather neceſſary than deſirable or worthy of their regard and eſteem. From the numbers that were ſeen aſſembled at every village in coaſting along, it was conjectured that the inhabitants of this iſland amount to upwards of 50,000.

ATOP', *adv.* [from *a* and *top.*] On the top; at the top.—What is extracted by water from coffee is the oil, which often ſwims *atop* of the decoction. *Arbuthnot.*

A'TOPUS, *ſ.* [ατοπος, from α priv. τοπος, place.] Abſurd, irregular; applied to the behaviour of inſane or dejected perſons.

ATOU'GIA, a town of Portugal, in the province of Eſtramadura, ſituated on an eminence near the ſea, oppoſite the rocks called Barlings, or Burlings: two miles and a half E. Peniche.

ATRABILA'RIAN, *adj.* [from *atra bilis*, Lat. black choler.] Melancholy; replete with black choler.—The *atrabilarian* conſtitution, or a black, viſcous, pitchy, conſiſtence of the fluids, makes all ſecretions difficult and ſparing. *Arbuthnot.*

ATRABILA'RIOUS, *adj.* Melancholic.—The blood, deprived of its due proportion of ſerum, or finer and more volatile parts, is *atrabilarious*; whereby it is rendered groſs, black, unctuous, and earthly. *Quincy.*

ATRABILA'RIOUSNESS, *ſ.* The ſtate of being melancholy; repletion with melancholy.

A'TRA BI'LIS, *ſ.* Ater ſuccus; bilis atra; mercurialis; black bile, or melancholy. According to the ancients it hath a two-fold origin: 1ſt, From the groſſer parts of the blood, and this they called the melancholy humour. 2dly, From yellow bile being highly concocted. Dr. Percival in his Eſſays Med. and Exp. ſuggeſts, that it is the gall rendered acrid by ſtagnation in the gall-bladder, and viſcid by the abſorption of its fluid parts. Bile in this ſtate diſcharged into the duodenum, occaſions univerſal diſturbance and diſorder, until it is evacuated: it occaſions violent vomiting, or purging, or both, and previous to this the pulſe is quick, the head aches, a delirium comes on, a hiccough, intenſe thirſt, inward heat, and a fetid breath. Some deſcribe this kind of bile as being acid, harſh, corroding, and, when poured on the ground, bubbling up, and raiſing the earth after the manner of a ferment. Dr. Percival ſays, that by the uſe of the infuſ. ſenæ limoniat. warmed with the tinct. columb. he had checked the vomitings occaſioned by this matter.

A'TRA D'IES, *ſ.* In antiquity, denotes a fatal day whereon the Romans received ſome memorable defeat. The word literally imports a black day; a denomination taken from the colour; which is the emblem of death and mourning. Whence the Thracians had a cuſtom of marking all their happy days with white ſtones or calculi, and their unhappy days with black ones; which they caſt, at the cloſe of each day, into an urn. At the perſon's death the ſtones were taken out; and from a compariſon of the numbers of each complexion, a judgment was made of the felicity or infelicity of his courſe of life. The *dies atræ*, or *atri*, were afterwards denominated *neſaſti* and *poſteri.* Such in particular was the day when the tribunes were defeated by the Gauls at the river Allia, and loſt the city; alſo that whereon the battle of Cannæ was fought; and ſeveral others marked in the Roman calendar, as *atræ* or unfortunate. From this cuſtom is moſt probably derived the preſent mode of balloting with black and white balls; and wherein the candidate who is ſo unfortunate as not to ſucceed, is ſaid to be *black-balled.*

ATRAC'TYLIS, *ſ.* [ατρακτος, a ſpindle.] DISTAFF-THISTLE. In botany, a genus of the claſs ſyngeneſia, order polygamia æqualis, natural order of compound flowers. The generic characters are—Calyx: outer many-leaved, linear, larger, roughened, permanent, impriſoning the common one; common ovate, imbricate; the ſcales oblong, very many, lanceolate, converging, unarmed. Corolla: compound radiate; corollules hermaphrodite numerous, tubular in the diſk: hermaphrodite ligulate in the ray; proper: of the diſk funnel-form, five-cleft: of the ray ligulate, flat, five-toothed. Stamina: filaments five, capillary, very ſhort; anthera cylindric, tubular. Piſtillum: of the diſk; germ very ſhort; ſtyle filiform, the length of the ſtamens; ſtigma bifid, of the ray very like that of the diſk, but obſcure and withered. Pericarpium: none; calyx converging. Seeds: turbinate, compreſſed; down plumoſe. Receptaculum: villoſe, flat.—*Eſſential Character.* Corolla radiated; corollules of the ray five-toothed.

Species. 1. Atractylis gummifera, or gummy-rooted atractylis: flower ſtemleſs. Root perennial, ſending out many narrow leaves which are deeply ſinuated, and armed with ſpines on their edges. Theſe lie cloſe on the ground, and between them the flower is ſituated. The florets on the border are white, but thoſe which compoſe the diſk are of a yellowiſh colour. It is a native of Italy, and the iſlands of the Archipelago. It flowers in July, but never perfects ſeeds in England. The roots, if wounded when freſh, yield a viſcous milky juice, which concretes into tenacious maſſes, whitiſh and reſembling wax. It was formerly chewed for the ſame purpoſes as maſtic.

2. Atractylis humilis, or dwarf atractylis: leaves tooth-ſinuated: flower radiated, fenced with an expanding involucre, ſtem herbaceous. Stem near a foot high, with indented leaves, having ſmall ſpines on their edges; the upper part is divided into two or three ſlender branches, each ſupporting a head of purple flowers. The roots will live two or three years; it flowers in June, but unleſs the ſummer be warm and dry, it will not perfect ſeeds in England. Native of France and Spain. Miller ſays, that he received the ſeeds from the neighbourhood of Madrid.

3. Atractylis cancellata, or netted atractylis: involucres latticed, bellying, linear, toothed; calyxes ovate; flowers floſculous. This is an annual plant, which ſeldom riſes more than eight or nine inches high, with a ſlender ſtem, at the top of which are two or three ſlender branches, each terminated by a head of flowers, like thoſe of the thiſtle; with an involucre compoſed of ſeveral narrow leaves, armed with ſpines on their ſides, and longer than the head of flowers: it is curiouſly netted over, and by a ſurpriſing artifice of nature keeping off the flies. It grows naturally in Spain, Sicily, and other warm parts of Europe; flowers with us in July, and, if the ſeaſon be warm and dry, will ripen its ſeeds in September. It appears from Parkinſon, that it was cultivated among us in 1640.

4. Atractylis lancea, or lance-leaved atractylis: involucres pinnate; leaves lanceolate, ciliate, ſmooth. 5. Atractylis ovata, or ovate-leaved atractylis: involucres pinnate; leaves ovate ciliate ſmooth. Stem erect, near a foot high. Theſe are both natives of Japan.

6. Atractylis oppoſitifolia, or oppoſite-leaved atractylis: leaves oppoſite. Native of the Cape of Good Hope.

7. Atractylis purpurata, or purple-flowered atractylis: leaves haſtate, runcinate. Stem round, cloſely woolly, ſeeming to be ſhrubby. Leaves crowded, a long ſpan in length, acute, irregularly toothed, veined, when they firſt break forth covered with white wool, but afterwards becoming very ſmooth, and green; they are however always white and cloſely tomentoſe underneath; the terminating lobe is very large. Found by Mutius in New Granada.

8. Atractylis Mexicana, or Mexican atractylis; leaves oblong, quite entire. Stem ſhrubby. Branches quite ſimple, ſlender, leafy, ſomewhat flexuoſe, round, ſtreaked, covered with a white cottony ſubſtance, without ſpines. Leaves alternate, lanceolate, acuminate, with netted veins; above naked, bright green, ſhining; beneath ſnow-white, tomentoſe, with ſcattered dots ſeeming to be glandular. Found by Mutius in Mexico.

Propagation and Culture. The three firſt ſpecies are propagated by ſeeds, which muſt be obtained from the countries where they grow naturally: theſe ſhould be ſown upon a border of light earth, in a warm ſituation, early in April, and when the plants come up, and are fit to tranſplant, they ſhould be thinned, and thoſe which are drawn out may be tranſplanted, leaving the others two feet aſunder; after which the only culture they require is, to keep them clean from weeds in ſummer, and in winter to cover the roots with ſome old tanners bark, to prevent the froſt from penetrating the ground. The other ſorts are yet ſtrangers to the European gardens; and, whenever they are introduced, will require the protection of a greenhouſe or ſtove. See CARTHAMUS.

ATRA'GENE, *ſ.* In botany, a genus of the claſs polyandria, order polygynia, natural order of multiſiliquæ. The generic characters are—Calyx: perianth four-leaved, leaflets oval, ſpreading, obtuſe, deciduous. Corolla: petals twelve (in atragene Capenſis about twenty) linear, very narrow at the baſe, obtuſe, ſpreading. Stamina: filaments very many, very ſhort; antheræ oblong, acuminate, ſhorter than the calyx. Piſtillum: germs very many, oblong; ſtyles villoſe, permanent; ſtigma ſimple, the length of the antheræ. Pericarpium: none. Seeds: very many, ending in a hairy tail.—*Eſſential Character.* Calyx four-leaved; petals twelve; ſeeds tailed.

Species. 1. Atragene japonica, or Japoneſe atragene: erect, leaves oppoſite triternate, leaflets ovate gaſhed. Stem angular and ſtreaked, two feet high. Leaves petioled, ſpreading: petals more than twenty, nearly equal, or the inner ones a little ſhorter, ovate, bluntiſh, purple within, white-tomentoſe without. It has all the appearance of anemone, but it is referred to this genus on account of the number of petals. Native of Japan.

2. Atragene alpina, or alpine atragene: leaves doubly-ternate ſerrate, outer petals four-fold. Stems ſlender, weak, the lower part woody; the bark brown and thin; Haller deſcribes the ſtem as very ſhort, two-leaved and one-flowered. Native of the high Alps of Switzerland. Remarked on mont Baldo by Pono, on mont Cenis, &c. by Allioni, on the mountains of Auſtria by Jacquin, and in Siberia by Gmelin. According to Jacquin, it flowers in June, and the ſeeds ripen in Auguſt. Miller ſays that the flowers appear in March and April with us. He informs us that Gmelin ſent the ſeeds to Peterſburgh, and that in 1753 he was favoured with ſome of them from thence; that they ſucceeded at Chelſea, and that the plants flowered many years there, but without perfecting their ſeeds.

3. Atragene capenſis, or Cape atragene: leaves ternate, leaflets gaſhed toothed, outer petals five-fold. 4. Atragene tenuifolia, or fine-leaved atragene: leaves doubly-pinnate, pinnules linear entire. Natives of the Cape of Good Hope.

5. Atragene zeylanica, or Ceyloneſe atragene: tendrils two-leaved. Native of the iſland of Ceylon.

Propagation and Culture. The ſecond ſort may be increaſed by cuttings or layers, in the ſame manner as clematis. In a ſtrong ſoil, and trained againſt a wall, it will riſe to the height of ſix or eight feet. The flowers appear early, and, if the ſeaſon prove favourable, they make a handſome figure: but, as this plant is apt to put out leaves very early in the ſpring, it is frequently nipped by the froſts, as are many plants and trees of Siberia and Tartary. The others have not yet been cultivated in England.

ATRAMEN'TAL, *adj.* [from *atramentum*, Lat. ink.] Inky; black.—If we enquire in what part of vitriol this *atramental* and denigrating condition lodgeth, it will ſeem eſpecially to lie in the more fixed ſalt thereof. *Brown.*

ATRAMEN'TOUS, *adj.* Inky; black.—I am not ſatisfied, that thoſe black and *atramentous* ſpots, which ſeem to repreſent them, are ocular. *Brown.*

ATRAPHAX'IS, *ſ.* [*ατραφαξις, παρα το αθροως αυξειν*, from its coming up quickly from ſeed, viz. on the eighth day.] In botany, a genus of the claſs hexandria, order digynia, natural order holoraceæ. The generic characters are—Calyx: perianthium two-leaved; leaflets oppoſite, lanceolate, coloured, permanent. Corolla: petals two, roundiſh, ſinuate, larger than the calyx, permanent. Stamina: filaments ſix, capillary, the length of the calyx; antheræ roundiſh. Piſtillum: germ compreſſed; ſtyle none; ſtigmas two capitate. Pericarpium: none; calyx cloſed, including the ſeed. Seed: one, roundiſh, compreſſed.—*Eſſential Character.* Calyx two-leaved; petals two ſinuate; ſtigmas capitate; ſeed one.

Species. 1. Atraphaxis ſpinoſa, or prickly-branched atraphaxis: branches ſpiny. This ſhrub riſes four or five feet high, ſending out many weak lateral branches, armed with ſpines, and garniſhed with ſmall, ſpear-ſhaped, ſmooth leaves, of an aſh-colour. The flowers come out at the ends of the ſhoots in cluſters, each conſiſting of two white petals tinged with purple, included in a two-leaved calyx, of a white herbaceous colour. They appear in Auguſt. Native of Armenia, Siberia, and Perſia. Cultivated by Miller, in 1759.

2. Atraphaxis undulata, or waved-leaved atraphaxis: without ſpines. The ſecond ſort ſends out many ſlender branches, trailing on the ground; leaves ſmall, oval, about the ſize of thoſe of knot-graſs, waved and curled on their edges, embracing the ſtalk half round at their baſe, and placed alternate. Native of the Cape of Good Hope.

Propagation and Culture. The ſeeds of theſe plants not ripening in England, they are propagated by cuttings, during any of the ſummer-months. In winter they muſt be ſcreened from hard froſt, which commonly deſtroys ſuch as are planted in the open air.

ATREBA'TII, one of thoſe Belgic colonies which came out of Gaul into Britain, and there retained their ancient name. They originally inhabited the country which is now called Artois, and are mentioned by Cæſar among the nations which compoſed the Belgic confederacy againſt him. Calliva Atrebatum, mentioned in the 7th, 12th, 13th, and 14th, Itinera of Antoninus, and called by Ptolemy *Calcua*, ſeems to have been the capital of the Atrebatii; though our antiquaries differ in their ſentiments about the ſituation of this ancient city, ſome placing it at Wallingford, and others at Ilcheſter.

ATRE'MIA, *ſ.* [*ατρεμια*, from *ατρεμεω*, to reſt.] Reſt, freedom from pain.

ATRE'SIA, *ſ.* [*ατρησια*, from *α* neg. and *τιτραω*, to perforate.] Imperforation. A diſeaſe where the anus or genitals have not their uſual orifices.

A'TREUS, in fabulus hiſtory, the ſon of Pelops and Hippodamia, and the father of Agamemnon and Menelaus, is ſuppoſed to have been king of Mycenæ and Argos about 1228 years before the Chriſtian era. He drove his brother Thyeſtes from court, for having a criminal commerce with Ærope his wife: but, underſtanding that he had had two children by her, he ſent for him again, and, inviting him to a feaſt, made him eat them; at which horrid action, the ſun, it is feigned by the poets, withdrew his light.

A'TRI, a town of Italy, in the farther Abruzzo, in the kingdom of Naples, with the title of a duchy; it is the ſee of a biſhop, and is ſeated on a craggy mountain, four miles from the Adriatic ſea. N. lat. 42. 45. E. lon. 13. 8.

ATRI'BA, a town of Egypt: five miles north-weſt of Achmim.

A'TRICES, *ſ.* [*ατριχες*, from *α* priv. and *θριξ*, hair.] Small tubercles about the anus upon which hairs will not grow.

ATRI'DES, a name given by Homer to Agamemnon, and Menelaus, as ſons of Atreus; but Heſiod and others ſay, that his ſon Pliſthenes was their father, and that theſe princes were brought up under the eye of their grandfather.

ATRIEN'SES, *ſ.* In antiquity, a kind of ſervants or officers in the great families at Rome, who had the care and inſpection of the *atria*, and the things lodged therein. Theſe are otherwiſe called *atriarii*, though ſome make a diſtinction between *atrienſes* and *atriarii*; ſuggeſting that the latter were an inferior order of ſervants. The atrienſes are repreſnted as ſervants of authority and command over the reſt: they acted as procurators, or agents, of their maſter, in ſelling his goods. To their care were committed the ſtatues and images of their maſter's anceſtors, &c. which were placed round the atrium; and which they carried in proceſſion at funerals. In the villas or country-houſes, the atrienſes had the care of the other furniture and utenſils, particularly thoſe of metal. They were clothed in a ſhort white linen habit, to diſtinguiſh them, and prevent their loitering from home.

ATRIP', *ſ.* in nautical language, is applied either to the anchor or ſails. The anchor is atrip, when it is drawn out of the ground in a perpendicular direction, either by the cable or buoy-rope. The top-ſails are atrip, when they are hoiſted up to the maſt-head, or to their utmoſt extent.

A'TRIPLEX, *ſ.* [*ab atro colore*, Lat. from a livid colour which it occaſions to thoſe who eat it.] In botany, a genus of the claſs polygamia, order monoecia, natural order holoraceæ. The generic charcters are—I. Hermaphrodite flower. Calyx: perianthium five-leaved, concave, permanent; diviſions ovate, concave, membranaceous at the edge. Corolla: none. Stamina: filaments five, ſubulate, oppoſite to the leaves of the calyx, and longer than them; antheræ roundiſh, twin. Piſtillum: germ orbiculate; ſtyle two-parted, ſhort; ſtigmas reflex. Pericarpium: none; calyx cloſed, pentagon, with the angles compreſſed, deciduous. Seed: one, orbicular, depreſſed: II. Female flower on the ſame plant. Calyx: perianthium two-leaved; leaflets flat, erect, ovate, acute, large, compreſſed. Corolla: none. Piſtillum: germ compreſſed; ſtyle two-parted; ſtigmas reflex, acute. Pericarpium: none; valves of the calyx very large, cordate, including the ſeed between them. Seed: one, orbiculate compreſſed.—*Eſſential Character.* Hermaphrodite. Calyx five-leaved; corolla none; ſtamina five; ſtyle two-parted; ſeed one, depreſſed. Female. Calyx two-leaved; corolla none; ſtamina none; ſtyle two-parted; ſeed one, compreſſed.

Species. 1. Atriplex halimus, or tall ſhrubby orach, or Spaniſh ſea-purſlane: ſtem ſhrubby; leaves deltoid entire. Root perennial, woody, dividing into many branches. The whole ſhrub white. Stems from four to ſix feet high or more, with many thick, woody, brittle, branches. Leaves irregularly diſpoſed on the branches on long petioles, thick, ſucculent, ſomewhat ſhining, having a ſubacid flavour. Flowers ſmall, purpliſh, at the ends of the branches. Seeds ſmall, brown. It grows in hedges near the ſea about Nice; in Spain, Portugal, Sicily, &c. Ray ſays that he found it in great plenty about Meſſina. It was cultivated here in 1640, according to Parkinſon, as a ſhrub, and by ſome was formed into hedges, and conſtantly ſheared; but this plant is by no means fit for this purpoſe, for it grows too vigorouſly; the ſhoots, in one month, at the growing ſeaſon of the year, will be two feet long, in a good ſoil; ſo that a hedge of this plant cannot be kept in tolerable order, nor will it ever form a thick hedge. But a worſe inconvenience attends it; for in very hard winters it is often deſtroyed, and in very dry ſummers, many of the plants will decay. But, although this ſhrub be not proper for hedges, yet it may have a place in wilderneſs quarters, where it will ſerve to thicken; and the ſilver-coloured leaves will add to the variety, among other ſhrubs of the ſame growth. It will grow eight or ten feet high; and, if ſuffered to grow wild, without pruning, will ſpread ſeveral feet in compaſs, and ſometimes produce flowers.

2. Atriplex portulacoides, or dwarf ſhrubby orach, or common ſea-purſlane: ſtem ſhrubby, leaves obovate. This is a low underſhrub, ſeldom riſing above two feet and a half, or at moſt three feet, high, but becoming very buſhy. The leaves are narrow, and of a whitiſh colour, but not ſo white as thoſe of the former. In its wild ſtate, it varies in height from ſix inches to a yard. The branches generally recline, are angular, and of a whitiſh green. The flowers are yellow, and terminate the branches in cluſtered ſpikes. It is wild on the ſhores of the European ocean, and in ſalt marſhes, flowering in July and Auguſt. In plantations it may have a place among other low ſhrubs; and, if planted on a poor gravelly ſoil, will abide ſeveral years, and make a pretty diverſity.

3. Atriplex glauca: ſtem under-ſhrubby, procumbent; leaves ovate, ſeſſile, quite entire; the lower ones ſubdentate. Stem the thickneſs of a finger, covered with an aſh-coloured bark, and divided into declining branches, three or four feet long, ſubdividing into other ſhorter ones. At each axil of the upper branchlets come out three or four hermaphrodite flowers, with a few females among them, of a yellowiſh colour. Native of France, about Thoulouſe; and of Spain, about Toledo.

4. Atriplex roſea: ſtem herbaceous; leaves hoary, ſerrated; fruits quadrangular, toothed. Stem erect, a foot and a half or two feet high, ſomewhat angular, white, and ſmooth, very branching; the branches alternate, ſubdividing, all diffuſed. It is an annual plant, native of the ſouthern countries of Europe.

5. Atriplex Sibirica, or Siberian orach: ſtem herbaceous; leaves deltoid, angular; the calyxes of the fruit muricated on the outſide. The leaves are ſilvery beneath, and the flowers white. Native of Siberia, and annual.

6. Atriplex Tartarica, or Tartarian orach: ſtem herbaceous; leaves deltoid, ſinuate-toothed, waved, alternate. This grows to the height of a man, according to Linnæus, and the leaves are aſh-coloured beneath. Gmelin affirms, that the leaves are green on both ſides.

7. Atriplex hortenſis, or garden orach: ſtem erect, herbaceous; leaves triangular. Root annual. Stem three feet high and more, thick, ſhining. Leaves thick, pale green, of a ſlightly acid flavour; they differ in ſhape, ſome ſtretch out into a long point from a broad baſe, being entire about the edge, ſome are deltoid, others are ſerrate or ſinuate, and others again are triangular. It is a native of Tartary, and was cultivated in 1596, by Gerard. It is of many uſed, ſays Parkinſon, boiled and buttered, to make the ſtomach and belly ſoluble; and is put among other herbs into the pot to make pottage. There are many diſhes of meat made with it while it is young, for, being almoſt without ſavour, it is more convertible into what reliſh any one will make it, with ſugar, ſpice, &c. The red orach is found to dye wool of a good olive colour. It was formerly cultivated in the kitchen-gardens as a culinary herb, being uſed as ſpinage, and is now, by ſome perſons, preferred to it; though, in general, it is not eſteemed among the Engliſh; but the French cultivate this plant for uſe.

8. Atriplex laciniata, or jagged ſea-orach: ſtem herbaceous; leaves deltoid, toothed, ſilvered underneath. The whole plant is covered with a ſkin that peels off, and is of a grey hoary colour. Stem two feet high, ſmooth, with many ſpreading branches. It is an annual plant, flowering in July and Auguſt, and is a native of the ſea ſhores of Europe.

9. Atriplex haſtata, or broad-leaved wild orach; vulgarly called fat-hen: ſtem herbaceous; valves of the calyx in the female flowers large, deltoid, ſinuated. Root annual. Stem generally upright, from one to three feet in height, four-cornered, the angles obtuſe, the ſides ſomewhat grooved, a little ſwelling at the joints, ſmooth, of a purpliſh colour, and branched quite to the bottom: the branches oppoſite; the lowermoſt very long, ſometimes almoſt equal with the ſtalk itſelf, and for the moſt part procumbent. Lower leaves triangular, with the edge more or leſs indented, ſprinkled on the under ſide with meal; ſometimes quite ſmooth, oppoſite, petioled: the upper ones oval, pointed, entire, alternate. Flowers on the tops of the ſtalks and branches, in narrow reddiſh ſpikes. It varies much according to age and ſituation: on dunghills it is very ſtrong and luxuriant; by road ſides it is weaker, and its branches are long and procumbent; in wet places it becomes more upright, and the leaves are very mealy on the under ſide, particularly when it grows on the ſea ſhore; at other times they are altogether ſmooth. In its young ſtate this plant is frequently eaten inſtead of ſpinage. Birds are very fond of the ſeeds, but cattle do not ſeem much to like the plant. In gardens and other cultivated grounds it is a troubleſome weed; it ſhould not therefore be ſuffered to grow and ſeed on dunghills.

10. Atriplex patula, or narrow-leaved wild or ſpreading orach: ſtem herbaceous, expanding; leaves ſubdeltoid-lanceolate; calyxes of the ſeeds toothed in the diſk. Root annual. Stem furrowed; the branches long and widely divaricated, almoſt at right angles with the ſtem, and often

weighing it down to the ground. Native of Europe, in waſte places, on ditch-banks, and in cultivated grounds; flowering in Auguſt.

11. Atriplex littoralis, or graſs-leaved ſea orach: ſtem herbaceous, erect; all the leaves linear, quite entire. Root annual. Stems numerous, at firſt trailing, afterwards declining or upright, much branched. Native of Europe, on the ſea-coaſt, flowering in Auguſt: at Ramſgate, in Kent; Yarmouth, Blakeney, and Wells, in Norfolk.

12. Atriplex pedunculata, or peduncled orach: ſtem herbaceous, divaricated; leaves lanceolate, obtuſe, entire; calyxes of the female flowers peduncled. Stem much branched. Native of the ſea ſhores of Denmark and England; as near Boſton; in the iſle of Thanet; near Yarmouth, Lynn, &c. It flowers from July to September.

13. Atriplex marina, or ſerrated ſea orach: ſtem herbaceous, erect; leaves linear, ſerrate. This is an annual plant. Native of Sweden and England, on ſea ſhores and in waſte places; flowering in Auguſt.

14. Atriplex albicans, or white orach: ſtem ſhrubby, erect; leaves haſtate, quite entire, acute; ſpikes terminating. Native of the Cape of Good Hope, where it was found by Mr. Francis Maſſon. It was introduced here in 1774; and flowers in June and July.

Propagation and Culture. The three firſt ſorts may be increaſed by cuttings, planted in any of the ſummer months on a ſhady border; where, if they be duly watered, they will ſoon take root, and be fit to tranſplant the Michaelmas following; when they ſhould be planted where they are to remain, for they do not ſucceed well in tranſplanting, eſpecially when they are grown large and woody. The ſeventh muſt be ſown for uſe early in the ſpring, or at Michaelmas, ſoon after the ſeeds are ripe; at which time it generally ſucceeds better than when it is ſown in the ſpring, and will be fit for uſe at leaſt a month earlier. Theſe plants require no other culture but to hoe them when they are about an inch high, to cut them down where they are too thick, leaving them about four inches aſunder, and to cut down all the weeds. This muſt be done in dry weather, otherwiſe the weeds will take root again, and render the work of little or no uſe. When the plants are grown about four inches high, it will be proper to hoe them a ſecond time, in order to clear them from weeds; and, if you obſerve the plants are left too cloſe in any part, they ſhould then be cut out. If this be well performed, and in dry weather, the ground will remain clean until the plant is fit for uſe. Where it is ſown on a rich ſoil, and the plants are allowed a proper diſtance, the leaves will be very large, and in that the excellence of the herb conſiſts. It muſt be eaten when young, for, when the ſtalks become tough, it is good for nothing. The ſeeds will ripen in Auguſt, when the plants may be cut or pulled up, and laid on a cloth to dry; after which the ſeeds may be beaten out, and laid up in bags for uſe. Moſt of the other ſorts, ſo far from being cultivated in gardens, are to be rooted out of them with care, as rank weeds. See ATRAPHAXIS, AXYRIS, BLITUM, CHENOPODIUM, and GALENIA.

A'TRIUM, *ſ.* in eccleſiaſtical antiquity, denotes an open place or court before a church, making part of what was called the *narthex* or *ante-temple*. The atrium in the ancient churches was a large area or ſquare plot of ground, ſurrounded with a portico or cloiſter, ſituate between the porch or veſtibule of the church and the body of the church. Some have miſtakenly confounded the atrium with the porch or veſtibule, from which it was diſtinct; others with the narthex, of which it was only a part. The atrium was the manſion of thoſe who were not ſuffered to enter farther into the church. More particularly, it was the place where the firſt claſs of penitents ſtood to beg the prayers of the faithful as they went into the church.

ATRIUM is alſo uſed in the canon-law, for the cemetery or church-yard. In this ſenſe we find a law prohibiting buildings to be raiſed *in atrio eccleſiæ*, except for the clergy; which the gloſſary explains thus, *id eſt in cemeterio*, which includes the ſpace of forty paces around a large church, or thirty round a little church or chapel.

ATRO'CIOUS, *adj.* [*atrox*, Lat.] Wicked in a high degree; enormous; horribly criminal.—An advocate is neceſſary, and therefore audience ought not to be denied him in defending cauſes, unleſs it be an *atrocious* offence. *Ayliffe.*

ATRO'CIOUSLY, *adv.* In an atrocious manner; with great wickedneſs.

ATRO'CIOUSNESS, *ſ.* The quality of being enormouſly criminal.

ATRO'CITY, *ſ.* [*atrocitas*, Lat.] Horrible wickedneſs; exceſs of wickedneſs.—They deſired juſtice might be done upon offenders, as the *atrocity* of their crimes deſerved. *Clarendon.*

A'TROPA, *ſ.* [from *Atropos*, the third Fate, who was ſuppoſed to cut the thread of life.] DEADLY NIGHTSHADE. In botany, a genus of the claſs pentandria, order monogynia, natural order of luridæ. The generic characters are—Calyx: perianthium one-leafed, five-parted, gibbous; diviſions acute, permanent. Corolla: one-petalled, bell-ſhaped; tube very ſhort; border ventricoſe, ovate, longer than the calyx; mouth ſmall, five-cleft, ſpreading; diviſions ſubequal. Stamina: filaments five, ſubulate, from the baſe of the corolla, and of the ſame length with it, converging at the baſe, above diverging outwards, bowed; antheræ thickiſh, riſing. Piſtillum: germ ſemiovate; ſtyle filiform, the length of the ſtamens, inclined; ſtigma headed, riſing, tranſverſely oblong. Pericarpium: berry globular, ſitting on a large calyx, two-celled; receptacle fleſhy, convex on both ſides, reniform. Seeds: very many, reniform.—*Eſſential Character.* Corolla, bell-ſhaped; ſtamina, diſtant; berry globular, two-celled.

Species. 1. Atropa mandragora, or mandrake: ſtemleſs, ſcapes one-flowered. Mandrake has a long taper root ſhaped like a parſnip, which runs three or four feet deep in the ground; it is ſometimes ſingle, and at others divided into two or three branches, almoſt of the colour of the parſnip, but a little darker: immediately from the crown of the root ariſes a circle of leaves, which at firſt ſtand erect, but when grown to their full ſize, ſpread open, and lie upon the ground: they are more than a foot in length, and are four or five inches broad in the middle, growing narrow toward both ends, of a dark green colour, and a fetid ſcent. Among theſe come out the flowers, each on a ſcape about three inches long: they are five-cornered, of an herbaceous white colour, ſpreading open at top like a primroſe, having five hairy ſtamens, and a globular germ ſupporting an awl-ſhaped ſtyle, which becomes a globular ſoft berry, when full grown as large as a nutmeg, of a yellowiſh green colour when ripe, full of pulp. Haller adds, that the leaves are ovate-lanceolate, and waved about the edges; that the flowers have a tinge of violet; and that a circular gland ſurrounds the germ, produced into two horns. Native of Spain, Portugal, Italy, and the Levant. It flowers here in March, and the ſeeds are ripe in July; and it appears from Turner's Herbal to have been cultivated in 1562. The roots have been ſuppoſed to bear a reſemblance to the human form, and are figured as ſuch in the old herbals, being diſtinguiſhed into the male with a long beard, and the female with a prolix head of hair. Mountebanks carry about fictitious images, ſhaped from roots of briony and other plants, cut into form, or forced to grow through moulds of earthen ware, as mandrake-roots. It was fabled to grow under a gallows, where the matter falling from the dead body gave it the ſhape of a man; to utter a great ſhriek, or terrible groans, at the digging up; and it was aſſerted, that he, who would take up a plant of mandrake, ſhould in common prudence tie a dog to it for that purpoſe; for, if a man ſhould do it himſelf, he would ſurely die ſoon after. The bare mention of ſuch fables are a ſufficient confutation of them; nor would they have been noticed here, had it not been for the alluſions to them which occur in ancient authors. The whole plant is fetid, and reputed to be poiſonous, though in ſmall doſes it was uſed medicinally, and particularly as an opiate.

2. Atropa belladonna, or deadly nightſhade, or dwale: ſtem herbaceous, leaves ovate entire, peduncles one-flowered. Deadly nightſhade has a perennial, thick, long, branching, root, ſending out ſtrong, herbaceous, upright, round, trichotomous, branching, ſtems, from three to five feet, and ſometimes ſix feet, in height, frequently tinged with purple. The branches are dichotomous. The root-leaves are often a foot long, and five inches broad; the ſtem-leaves are petioled, acute, ſoft, duſky green above and paler green beneath, a little hairy on both ſides, and fattiſh to the touch, changing to a purple colour in the autumn: there are generally two leaves at each branch, one ſmaller than the other, running down along the ſhort petiole. Peduncles axillary, one-flowered. Flowers large, nodding, void of ſcent. Calyx dirty green. It is a native of Europe, particularly of Auſtria and England, in church-yards and on dung-hills, ſkulking in gloomy lanes and uncultivated places: in other countries it is ſaid to be common in woods and hedges. With us it is not ſo common in a wild ſtate, but that the places where it has been found may be ſet down. About Fulborn in Cambridgeſhire; near Wiſbeach, in the iſle of Ely; Holland in Lincolnſhire; between Temsford-mills and Welwyn in Herts; Charley-foreſt and Grace Dieu in Leiceſterſhire; North Luffenham, in Rutland; Sutton-Colfield, in Warwickſhire; Clifton-hill, near Nottingham and Mansfield, in the ſame county; and in Weſtmoreland. Mr. Miller obſerved it in Woodſtock-park in Oxfordſhire; and in Up-park in Hampſhire. In the counties round London it is not very common; it has however been remarked about Rocheſter, between that and Maidſtone, and near Feverſham, in Kent; about Harefield and More-park, near Rickmanſworth; at Dorking, in Surrey; and by old Gerarde, near Highgate. When this plant was found to differ from the ſolanums or nightſhades, it aſſumed the Italian name of *belladonna*, which was given it, according to ſome, becauſe it was uſed as a waſh among the ladies, to take off pimples and other excreſcences from the ſkin; or, according to others, from its quality of repreſenting phantaſms of beautiful women to the diſturbed imagination. The qualities of this plant are malignant, and it is extremely poiſonous in all its parts. Numerous inſtances have occurred of the berries proving fatal, after cauſing convulſions, delirium, &c. Buchanan relates the deſtruction of the army of Sweno the Dane, when he invaded Scotland, by the berries of this plant, which were mixed with the drink which the Scots, according to truce, were to ſupply the Danes with. The Danes became ſo inebriated, that the Scottiſh army fell on them in their ſleep, and ſlew ſuch numbers that there were ſcarcely men enough left to carry off their king. The caſe related by Mr. Ray is remarkable, viz. the dilatation of the pupil of the eye, cauſed by a part of the leaf of this plant applied outwardly, and which took place ſucceſſively on the repetition of the experiment. With reſpect to the berries, they have been frequently known to have been fatal to children; and, if a conſiderable number are eaten, to grown perſons likewiſe. The ſymptoms are ſaid to occur in leſs than half an hour after taking them, and conſiſt of vertigo, great thirſt, delirium, ſwelling and redneſs of the face, &c. The general ſenſibility of the ſyſtem is ſaid to be weakened to a great degree, ſo that the ſtomach will bear a far larger doſe of emetic medicines than it would otherwiſe have done. Vinegar liberally drunk has been found efficacious in obviating the effects of the poiſon. Dr. Hill relates a very remarkable caſe which occurred under his own obſervation: a labourer found ſome of the plant in the park of a nobleman where he was repairing the pales: he ate heartily of the berries, and gave ſome to his children. After two hours he grew giddy, and was unable to ſtand; was extremely thirſty, complained of dreadful pain in his breaſt, and difficulty of breathing. He afterwards fell into violent ravings, which continued, with ſlight intervals, during great part of the night. All this time he was alſo afflicted with a very painful ſtranguary. He recovered, however, ſometime afterwards, without the aſſiſtance of medicine; but both the children died in the night. A remarkable inſtance of the malignant powers of this plant occurred a few years ſince in the botanic garden at Cambridge, which fully proved, that the young ſhoots, early in the year, are not leſs deleterious than the berries. The leaves are ſaid to have been ſometimes ſucceſsfully applied in cancerous tumours. The ingenious Dr. Milne, in his "Indigenous Botany," has very properly remarked, that nature has been more parſimonious in her warnings, with reſpect to this plant, than to others of the ſame natural family. Neither the ſmell nor the taſte is offenſive; and, if the colour of the flowers proves in ſome degree a repellent, that of the fruit, on the other hand, is in an equal degree, at leaſt, attractive and inviting. Accordingly belladonna, notwithſtanding its deleterious nature, is not totally excluded the precincts of phyſic: nay ſome diſeaſes, and thoſe of the moſt malignant kind, have been known to yield to the anodyne and antiſpaſmodic virtues of this plant, when adminiſtered with caution, after reſiſting the force of medicines, more innocent indeed, but of leſs powerful efficacy. Bergius relates, that he has often given relief in epilepſy and convulſions, by the internal uſe of the powder of the leaves, taken in doſes of from one to four grains twice a day; and Geſner, in his Medical Epiſtles, recommends the expreſſed juice of the berries, boiled with ſugar into a ſyrup, and given a tea-ſpoonful at a time, as excellent in every caſe requiring an opiate, and as peculiarly efficacious in the cure of the dyſentery.

3. Atropa phyſaloides, or Peruvian deadly nightſhade, or blue-flowered atropa: ſtem herbaceous, leaves ſinuate-angular, calyxes cloſed acutangular. Root fibrous, annual. Stem two feet high, ſpreading, erect; branches angular. The ſtem, though herbaceous, is very ſtrong; in our gardens four or five feet high, and of a purpliſh colour, dividing into ſeveral branches, ſpreading out wide on every ſide. Leaves oblong, deeply ſinuate, deep green. Berries about the ſize of common cherries, incloſed in a large ſwelling bladder, having five ſharp angles. It flowers in July, and the ſeeds ripen in autumn. Father Feuillée, who firſt diſcovered this plant in Peru, recommends it greatly for its virtues, and ſays, the Indians make great uſe of its berries to bring away the gravel, and to relieve perſons who have a ſtoppage of urine, and gives the manner of uſing them; which is, to bruiſe four or five of them either in common water or white wine. The younger Juſſieu ſent the ſeeds to Mr. Miller, who cultiuated this plant in 1759.

4. Atropa ſolanacea: ſtem ſhrubby, peduncles ſolitary, corollas bell-ſhaped, leaves ſubovate. Stem ſix feet high, ſhrubby, ſomewhat branching, and angular. Native of the Cape of Good Hope.

5. Atropa arboreſcens, or tree atropa: ſtem ſhrubby, peduncles crowded, corollas revolute, leaves oblong. This is a ſmall tree, or rather a ſhrub. Stem ſmooth, branched; branches ſubdivided, round, ſcarred, rugged. Native of South America and Jamaica, on the temperate mountains; flowering in autumn. The berries are commonly full of ſome worm.

6. Atropa fruteſcens, or ſhrubby atropa: ſtem ſhrubby, peduncles crowded, leaves cordate-ovate, obtuſe. This riſes with a ſhrubby ſtem to the height of ſix or eight feet, and divides into many branches. Leaves alternate, round, in ſhape like thoſe of the ſtorax tree. The flowers come out between the leaves upon ſhort peduncles, and are ſhaped like thoſe of deadly nightſhade, but are much ſmaller, of a dirty yellowiſh colour, with a few brown ſtripes: they are never ſucceeded by berries in England. It is a native of Spain; and was cultivated by Mr. Miller in 1739.

7. Atropa herbacea, or herbaceous atropa: ſtem herbaceous, leaves ovate-nerved, with waved edges. Root perennial, putting out ſeveral channelled herbaceous ſtems, about two feet high, dividing towards the top into two or three ſmall branches. Leaves four inches long and three broad, having ſeveral tranſverſe prominent ribs on their

under ſide. The flowers come out from between the leaves on ſhort peduncles; they are white, and ſhaped like thoſe of deadly nightſhade, but ſmaller. It flowers in July and Auguſt, but ſeldom ripens its fruit in England. The ſeeds were ſent to Mr. Miller from Campeachy.

8. Atropa procumbens, or wheel-flowered atropa: ſtem procumbent, herbaceous; leaves twin, unequal, ovate, ſmooth; flowers in umbels. Root annual. Stem grooved, much branched, three feet high. Native of Mexico. Cultivated in the royal garden at Madrid, where it flowers and fruits in October.

Propagation and Culture. Mandrake is propagated by ſeeds, which ſhould be ſown upon a bed of light earth ſoon after they are ripe, for, if they are kept until the ſpring, they ſeldom ſucceed well; but thoſe which are ſown in autumn will come up in the ſpring, when they ſhould be carefully cleared from weeds; and in very dry weather they muſt be refreſhed with water, which will greatly promote their growth. In this bed they ſhould remain till the end of Auguſt, when they muſt be taken up very carefully, and tranſplanted into the places where they are to remain: the ſoil ſhould be light and deep, for their roots run far down; but, if the ſoil be wet, they are often rotted in winter, and, if it be too near gravel or chalk, they will make little progreſs: but, if the ſoil be good, and they are not diſturbed, the plants will grow to a large ſize in a few years, and will produce great quantities of flowers and fruit. It has been aſſerted by perſons of credit, that a root of mandrake will remain ſound above fifty years, and be as vigorous as a young plant; but they ſhould never be removed after their roots have arrived to any conſiderable ſize, for it breaks their lower fibres, and ſo ſtints the plants, as that, if they live, they will not recover their former ſtrength in two or three years. Theſe plants ſhould have a warm ſituation, otherwiſe in ſevere winters they will be deſtroyed. Deadly nightſhade may be propagated both by its roots and by ſeeds. It loves a ſhady ſituation, but on account of its deadly poiſon is rarely admitted into gardens. It ſhould by no means be ſuffered to grow where children or common people reſort, becauſe they are likely to be attracted by the ſplendid black colour of the berries. If the ſeeds of the third ſort be permitted to ſcatter, the plants will come up the following ſpring; or, if the ſeeds be ſown on a bed of rich earth in the ſpring, the plants will riſe eaſily, and may be afterwards tranſplanted to the borders of the pleaſure-garden, where they muſt be allowed room; for, if the ground be good, the plants will grow very large. The reſt may be propagated by ſeeds, which ſhould be ſown in the ſpring on a hot-bed; when they are fit to remove, they ſhould be each put into a ſeparate ſmall pot, filled with loamy earth, and ſhaded until they take root. The fourth and ſixth may be placed with other hardy exotic plants in a ſheltered ſituation, and in October they muſt be removed into the greenhouſe. The fifth, ſeventh, and eighth, muſt be kept in the bark ſtove, to have them thrive well in this country. The ſeventh may be increaſed by parting the roots in the ſpring.

A'TROPHY, *ſ.* [from α neg. and τρεφω, to nouriſh.] In medicine, a diſeaſe, wherein the body, or ſome of its parts, does not receive the neceſſary nutriment, but waſtes and decays inceſſantly. See MEDICINE.

A'TROPOS, *ſ.* [*ατροπος*, i. e. unchangeable or inexorable, of α priv. or without, and τρεπω, to turn.] In fabulous hiſtory, the name of the third of the Parcæ, or Fates, whoſe buſineſs it was to cut the thread of life. She is repreſented in a black veil, with a pair of ſciſſars in her hand.

AT'TA, *ſ.* [from α neg. and αττω, to leap.] One who, by reaſon of the tenderneſs of his feet, touches the ground lightly and delicately.

To ATTACH', *v. a.* [*attacher*, Fr.] To arreſt; to take or apprehend by commandment:

Eftſoons the guards, which on his ſtate did wait,
Attach'd that traitor falſe, and bound him ſtrait. *Spenſer.*

Sometimes with the particle *of*, but not in preſent uſe:

You, lord archbiſhop, and you, lord Mowbray,
Of capital treaſon I *attach* you both. *Shakeſpeare.*

To lay hold on, as by power. To win; to gain over; to enamour:

Songs, garlands, flow'rs,
And charming ſymphonies, *attach'd* the heart
Of Adam. *Milton.*

To fix to one's intereſt.—The great and rich depend on thoſe whom their power or their wealth *attaches* to them. *Rogers.*

To ATTACH, in law, is to take or apprehend by commandment of a writ or precept. *Lamb. Eiren.* lib. i. c. 16. It differs from arreſt, in that he who arreſteth a man carrieth him to a perſon of higher power to be forthwith diſpoſed of; but he that attaches keepeth the party attached, and preſents him in court at the day aſſigned; as appears by the words of the writ. Another difference there is, that arreſt is only upon the body of a man; whereas an attachment is oftentimes upon his goods. *Kitch.* 279. A capias taketh hold of immoveable things, as lands or tenements, and properly belongs to real actions; but attachment hath place rather in perſonal actions. *Bract.* lib. iv. *Fleta*, lib. v. c. 24.

ATTACHIAMEN'TA BONO'RUM, in law, is a diſtreſs taken upon goods or chattels, where a man is ſued for perſonal eſtate or debt, by the legal attachiators or bailiffs, as ſecurity to anſwer an action. There is likewiſe *attachiamenta de ſpinis & boſco*, a privilege granted to the officers of a foreſt, to take to their own uſe, thorns, bruſh, and wind-fall, within their precincts. *Kennet's Paroch. Antiq.* p. 209.

ATTACH'MENT, *ſ.* [*attachement*, Fr.] Adherence; fidelity.—The Jews are remarkable for an *attachment* to their own country. *Addiſon.*—Attention; regard.—The Romans burnt this laſt fleet, which is another mark of their ſmall *attachment* to the ſea. *Arbuthnot.*

ATTACHMENT, in law, is a proceſs from a court of record, awarded by the juſtices at their diſcretion, on a bare ſuggeſtion, or on their own knowledge; and is properly grantable in caſes of contempts, againſt which all courts of record, but more eſpecially thoſe of Weſtminſter-hall, and above all the court of B. R. may proceed in a ſummary manner. *Leach's Hawk. P. C.* ii. c. 22. The moſt remarkable inſtances of contempts ſeem reducible to the following heads: 1. Contempts of the king's writs. 2. Contempts in the face of a court. 3. Contemptuous words or writings concerning the court. 4. Contempts of the rules or awards of the court. 5. Abuſe of the proceſs of the court. 6. Forgeries of writs and other deceits tending to impoſe on the court. All courts of record have a kind of diſcretionary power over their own officers, and are to ſee that no abuſes be committed by them, which may bring diſgrace on the courts themſelves; therefore if a ſheriff or other officer ſhall be guilty of a corrupt practice in not ſerving a writ; as, if he refuſe to do it, unleſs paid an unreaſonable gratuity from the plaintiff, or receive a bribe from the defendant, or give him notice to remove his perſon or effects, in order to prevent the ſervice of any writ; the court which awarded it may puniſh ſuch offences in ſuch a manner as ſhall ſeem proper by attachment. *Dyer*, 218. 2 *Hawk. P. C.* 22. But if there be no palpable corruption, nor extraordinary circumſtance of wilful negligence or obſtinacy, the judgment whereof is to be left to the diſcretion of the court, it ſeems not uſual to proceed in this manner; but to leave the party to his ordinary remedy againſt the ſheriff, either by action or by rule to return the writ, or by an *alias* and *pluries*, which if he have no excuſe for not executing, an attachment goes of courſe. *Hob.* 62, 264. *Noy*, 101. *F. N. B.* 38. *Finch*, 237. 5 *Mod.* 314, 315.

Attachment lies againſt attornies for injuſtice, and baſe dealing by their clients, in delaying ſuits, &c. as well as for contempts to the court. 2 *Hawk.* c. 22. If affidavits to ground an attachment are full as to the charge; yet if the party deny ſuch charge by as plain and poſitive affidavits, he ſhall be diſcharged; but, if he take a falſe oath, he may be indicted of perjury. *Mod. Caſ. in L. & E.* 81. Againſt ſheriffs making falſe returns of writs, and againſt bailiffs for frauds in arreſts, and exceeding their power, &c. attachment may be had. For contempts againſt the king's writs; uſing them in a vexatious manner; altering the teſte, or filling them up after ſealed, &c. attachment lies. And for contempts of an enormous kind, in not obeying writs, &c. attachment may iſſue againſt peers. 2 *Hawk.* c. 22. For perſuading jurors not to appear on a trial, attachment lies againſt the party, for obſtructing the proceeding of the court. 1 *Lill.* 121. The court of B. R. may award attachment againſt any inferior courts uſurping a juriſdiction, or acting contrary to juſtice. *Salk.* 207. Though it is uſual firſt to ſend out a prohibition. Attachment lies for proceeding in an inferior court, after a *habeas corpus* iſſued, and a *ſuperſedeas* to ſtay proceedings. 21 *Car.* B. R. An attachment may be granted againſt juſtices of peace, for proceeding on an indictment after a *certiorari* delivered to them to remove the indictment. 1 *Lill.* 121. But it does not lie againſt a corporation, the mode of compulſion being by ſequeſtration. *Cowp.* 377. Attachment lies againſt a lord that refuſes to hold his court, after a writ iſſued to him for that purpoſe, ſo that his tenant cannot have right done him. *New Nat. Br.* 6, 27.

An attachment is the proper remedy for diſobedience of the rules of court; as of thoſe made in ejectment, arbitrament, &c. So where a defendant in account, being adjudged to account before the auditors, refuſes to do it, unleſs they will allow matter diſallowed by the court before; or where one refuſes to pay coſts taxed by the maſter, whoſe taxation the law looks upon as a taxation by the court. 1 *Mod.* 21. 1 *Salk.* 71. But an attachment is not granted for diſobedience of a rule of *niſi prius*, unleſs it be firſt made a rule of court; nor for diſobedience of a rule made by a judge at his chamber, unleſs it be entered; nor for diſobedience of any rule without perſonal ſervice. 1 *Salk.* 84. Alſo an attachment is proper for abuſes of the proceſs of the court; as for ſuing out execution where there is no judgment; bringing an appeal for the death of one known to be alive; making uſe of the proceſs of a ſuperior court, to bring the defendant within the juriſdiction of an inferior court, and then dropping it; uſing ſuch proceſs in a vexatious, oppreſſive, or unjuſt, manner, without colour of ſerving any other end by it. 2 *Hawk. P. C.* c. 22. It ſeems alſo that counſellors are puniſhable by attachment for foul practices. *Ib.* Gaolers are thus puniſhable for miſbehaviour in their offices; and witneſſes for non-attendance on a trial. Peers are liable to attachment for certain outrageous contempts, as a diſobedience to a writ of *habeas corpus*, and generally of other writs.

Attachments are uſually granted on a rule to ſhew cauſe; unleſs the offence complained of be of a flagrant nature, and poſitively ſworn to; in which laſt caſe the party is ordered to attend, which he muſt do in perſon, as muſt every one againſt whom an attachment is granted; and, if he ſhall appear to be apparently guilty, the court in diſcretion, on conſideration of the nature of the crime, and other circumſtances, will either commit him immediately, in order to anſwer interrogatories to be exhibited againſt him concerning the contempt complained of, or will ſuffer him to enter into recognizance to anſwer ſuch interrogatories; which if they be not exhibited within four days, the party may move to have the recognizance diſcharged; otherwiſe he muſt anſwer them, though exhibited after the four days; but in all caſes, if he fully anſwer them, he ſhall be diſcharged as to the attachment, and the proſecutor ſhall be left to proceed againſt him for the perjury, if he thinks fit; but if he deny part of the contempts only, and confeſs other part, he ſhall not be diſcharged as to thoſe denied, but the truth of them ſhall be examined, and ſuch puniſhment inflicted as from the whole ſhall appear reaſonable; and, if his anſwer be evaſive as to any material part, he ſhall be puniſhed in the ſame manner as if he had confeſſed it. 2 *Hawk. P. C.* c. 22. 1 *Salk.* 84. 6 *Mod.* 73. 2 *Jones*, 178. Upon all theſe examinations the maſter is to make his report, and the party is then and not before acquitted, or adjudged in contempt. *Hardw.* 23. And in the latter caſe is either immediately ſentenced or committed to the marſhal; unleſs the court wave giving judgment (as they ſometimes do from motives of lenity), and order the recognizances to be diſcharged. 3 *Burr.* 1256; or the attorney-general conſent that the party may continue on the recognizance to appear under a rule of court at ſome future time. 2 *Burr.* 797. Attachments for non-payment of coſts, and for non-performance of an award, are in the nature of civil executions. 1 *Term Rep.* 266.

ATTACHMENT out of **CHANCERY** may be had of courſe, upon affidavit made that the defendant was ſerved with a *ſubpœna*, and appeared not; or upon non-performance of any order or decree; alſo after the return of this attachment, that the defendant *non eſt inventus*, &c. then attachment with proclamation iſſues againſt him. *Weſt. Symb.* And for contempts, when a party appears, he muſt upon his oath anſwer interrogatories exhibited againſt him; and, if he be found guilty, he ſhall be fined. On attachment the party is not obliged to anſwer any interrogatories tending to convict him of any other offence. *Stra.* 444; or which may ſubject him to a penalty. *Hardw.* 239.

ATTACHMENT OF PRIVILEGE, is where a man by virtue of his privilege calls another to that court whereto he himſelf belongs, and in reſpect thereof is privileged, there to anſwer ſome action (as an attorney, &c.) or it is a power to apprehend a man in a place privileged. *Book Entr.* 431. Corporation courts have ſometimes power by charter to iſſue attachments, and ſome courts-baron grant attachments of debt. *Kitch.* 79.

ATTACHMENT FOREIGN, is an attachment of the goods of foreigners, found in ſome liberty, to ſatisfy their creditors within ſuch liberty. *Carth. Rep.* 66. Foreign attachment under the cuſtom of London is thus: if a plaint be entered in the court of the mayor or the ſheriff againſt A. and the proceſs be returned *nichil*, and thereupon plaintiff ſuggeſts that another perſon within London is indebted to A. the debtor ſhall be warned (whence he is called the *garniſhee*,) and if he does not deny himſelf to be indebted to A. the debt ſhall be attached in his hands. *Com. Dig.* tit. *Attachment foreign*, cites 22 *E.* 4. 30. This plaint may be exhibited in the mayor's or the ſheriffs' court; but the proceeding in the former is moſt advantageous. *Id. ib.* This cuſtom of foreign attachment is ſaid to prevail in Exeter, and other places. But a foreign attachment cannot be had when a ſuit is depending in any of the courts at Weſtminſter. *Cro. Eliz.* 691. And nothing is attachable but for a certain and due debt: though by the cuſtom of London money may be attached before due, as a debt; but not levied before due. *Sid.* 327. 1 *Nelſ. Abr.* 282, 283.

Foreign attachments in London, upon plaint of debt, are made after this manner: A. oweth B. 100l. and C. is indebted to A. 100l. B. enters an action againſt A. of 200l. and by virtue of that action a ſerjeant attacheth 100l. in the hands of C. as the money of A. to the uſe of B. which is returned upon that action. The attachment being made, and returned by the ſerjeant, the plaintiff is immediately to fee an attorney before the next court, or the defendant may then put in bail to the attachment, and nonſuit the plaintiff: four court days muſt paſs before the plaintiff can cauſe C. the garniſhee, in whoſe hands the money was attached, to ſhew cauſe why B. ſhould not condemn the 100l. attached in the hands of C. as the money of A. the defendant in the action (though not in the attachment) to the uſe of B. the plaintiff: and the garniſhee C. may appear in court by his attorney, wage his law, and plead that he hath no money in his hands of the defendant's, or other ſpecial matter; but the plaintiff may hinder his waging of law, by producing two ſufficient citizens to ſwear that the garniſhee had either money or goods in his hands of A. at the time of the attachment, of which affidavit is to be made before the lord-mayor, and, being filed, may be pleaded by way of eſtoppel: then the plaintiff muſt put in bail, that if the defendant come within a year and a day into court, and he can diſcharge himſelf of the money condemned in court, and that he owed nothing to the plaintiff at the time in the plaint mentioned, the ſaid money ſhall be forth-coming, &c. If the garniſhee fail to appear by his attorney, being warned by the officer to come into court to ſhew cauſe as aforeſaid, he is taken by default for want of appearing, and judgment given againſt him for the goods and money attached in his hands, and he is without remedy either at common law or in equity; for, if taken in execution, he muſt pay the money condemned, though he hath not one penny, or go to priſon; but the garniſhee appearing to ſhew cauſe why the money or goods attached in his hands ought not to be condemned to the uſe of the plaintiff, having feed an attorney, may plead as aforeſaid, that he hath no money or goods in his hands, of the party's againſt whom the attachment is made; and it will then be tried by a jury, and judgment awarded; but, after trial, bail may be put in, whereby the attachment ſhall be diſſolved, but the garniſhee and his ſecurity will then be liable to what debt the plaintiff ſhall make out to be due, upon the action: and an attachment is never thoroughly perfected, till there is a bail, and ſatisfaction upon record. *Privileg. Lond.* But the original defendant muſt be ſummoned and have notice, otherwiſe judgment againſt the garniſhee will be erroneous; and the money paid or levied in execution, or it will not diſcharge the debt from the garniſhee to the defendant: (though it was alleged that the cuſtom of the city court is to give no notice.) 3 *Wilſ.* 297. 2 *Black. Rep.* 834. See 1 *Ld. Raym.* 727. Where a foreign attachment is pleaded to an action, the cuſtom is to ſet forth, that he who levied the plaint ſhall have execution of the debt owing by himſelf, and by which he was attached, if the plaintiff in the original action ſhall not diſprove of it within a year and a day; now, if the plaintiff in the action below doth not ſet forth ſuch conditional judgment given by the court, it is wrong, becauſe he doth not bring his caſe within the cuſtom. *Vide* 2 *Lutw.* 985.

In aſſumpſit, there was evidence given, that the debt was attached by the cuſtom of London before the action brought, and that it was condemned there before the plea pleaded; and this evidence was given upon the general iſſue *non aſſumpſit*; and it being inſiſted for the defendant, that this ſhould relate ſo as to defeat the plaintiff's action, it was adjudged, that, where there is an attachment and condemnation before the action brought, it may be given in evidence upon the general iſſue, becauſe there is an alteration of the property; but if the attachment be only before the action brought, and the condemnation afterwards, the attachment may be pleaded in abatement, and the condemnation may be pleaded in bar, but ſhall not be given in evidence on the general iſſue, becauſe by the condemnation the property is altered, but not before. 1 *Salk.* 280, 291.

Action of debt, &c. the defendant pleaded in bar, that there was a cuſtom in London to attach the debt before the day of payment came; *et per curiam,* ſuch a cuſtom may be good, but to have judgment to recover the debt before the day of payment is come cannot be a good cuſtom, becauſe the debtee himſelf could not recover in ſuch caſe, and therefore he who made the attachment ſhall not. This cuſtom was pleaded, that the debtee in perſon, or by his attorney, may ſwear that the debt is due; but this cannot be good as to the attorney: it was agreed, that goods might be attached by a foreign attachment, and that the value thereof ought to be found before judgment; but that this plea was ill, becauſe the defendant did not aver it, viz. *et hoc paratus eſt verificare. W. Jones,* 406.

A ſum of money was to be paid at Michaelmas, and it was attached before that day; adjudged, that a foreign attachment cannot reach a debt before it is due; therefore, though the judgment on the attachment was after Michaelmas, yet, the money being attached before it was due, it is for that reaſon void. *Cro. Eliz.* 184.

Money due to an executor or adminiſtrator, as ſuch, cannot be attached. It would give a ſimple contract creditor priority over judgments, &c. Fiſher *v.* Lane and others, 3 *Wilſ.* 297. Nor truſt-money in the hands of the garniſhee. See *Doug.* 380.

In an action on the caſe the plaintiff had judgment againſt the defendant, and he owing 60l. to one G. D. he entered a plaint againſt him in London, and attached the 60l. in the hands of the ſaid defendant, againſt whom the plaintiff had recovered as aforeſaid, and had execution according to the cuſtom; afterwards the plaintiff brought a *ſci. fa.* againſt the defendant, to ſhew cauſe why he ſhould not have execution upon the judgment which he had recovered, to which the defendant pleaded the execution upon the attachment; and upon demurrer to that plea it was adjudged againſt the defendant, becauſe a duty which accrueth by matter of record cannot be attached by the cuſtom of London; for judgments obtained in the king's courts ſhall not be defeated or avoided by ſuch particular cuſtoms, they being of ſo high a nature, that they cannot be reached by attachment. 1 *Leon.* 29.

Debtor and creditor being both citizens of London, the debtor delivered ſeveral goods to the Exeter carrier then in London, to carry and deliver them at Exeter, and the creditor attached them in the hands of the carrier for the debt due to him from his debtor; adjudged, that the action ſhould be diſcharged, becauſe the carrier is privileged in his perſon and goods, and not only in the goods which are his own, but in thoſe of other men, of which he is in poſſeſſion, for he is anſwerable for them. 1 *Leon.* 189.

An executor ſubmitted to an award, and the arbitrators awarded, that the defendant ſhould pay the executor 350l. This money is not attachable in his hands by any creditor of his teſtator, though it is aſſets in his hands when recovered; becauſe it was not due to the teſtator *tempore mortis,* and the cuſtom of foreign attachments extends only to ſuch debts. 1 *Vent.* 111.

ATTACHMENT OF THE FOREST, is one of the three courts held there. *Manwood,* 90, 99. The lower court is called the *attachment*; the middle one, the *ſwainmote*; the higheſt, the *juſtice in Eyre's ſeat.* The court of attachment ſeemeth to be ſo called, becauſe the verderors of the foreſt have therein no other authority but to receive the attachments of offenders againſt vert and veniſon, taken by the reſt of the officers, and to enroll them, that they may be preſented and puniſhed at the next juſtice ſeat. *Manwood,* 93. And this attaching is by three means: 1. By goods and chattels. 2. By the body, pledges, and mainpriſe. 3. By the body only. This court is kept every forty days.

To ATTA'CK, *v. a.* [*attaquer*, Fr.]. To aſſault an enemy: oppoſed to *defence.*—Thoſe that *attack* generally get the victory, though with diſadvantage of ground. *Cane's Campaigns.*—To impugn in any manner, as with ſatire, confutation, calumny; as, The declaimer *attacked* the reputation of his adverſaries.

ATTACK, *ſ.* An aſſault upon an enemy:

I own 'twas wrong, when thouſands call'd me back,
To make that hopeleſs ill-adviſ'd *attack.* *Young.*

ATTAC'KER, *ſ.* The perſon that attacks.

ATTACOT'TI, an ancient people of Britain, mentioned by Ammianus Marcellinus and St. Jerome, as well as in the *Notitia Imperii.* They are repreſented as allies and confederates of the Scots and Picts, and therefore probably their neighbours: though their preciſe ſituation has not been determined by antiquarians.

To ATTAIN', *v. a.* [*atteindre*, Fr. *attineo*, Lat.] To gain; to procure; to obtain.—Is he wiſe who hopes to *attain* the end without the means, nay by means that are quite contrary to it? *Tillotſon.*—To overtake; to come up with: *a ſenſe now little in uſe.*—The earl hoping to have overtaken the Scottiſh king, and to have given him battle, but not *attaining* him in time, ſet down before the caſtle of Aton. *Bacon.*—To come to; to enter upon:

Canaan he now *attains*; I ſee his tents
Pitch'd about Sichem. *Milton.*

To reach; to equal.—So the firſt precedent, if it be good, is ſeldom *attained* by imitation. *Bacon.*

To **Attain**, *v. n.* To come to a certain ſtate: with *to.* —Milk will ſoon ſeparate itſelf into a cream, and a more ſerous liquor, which, after twelve days, *attains to* the higheſt degree of acidity. *Arbuthnot.*—To arrive at.—Such knowledge is too wonderful for me; it is high; I cannot *attain* unto it. *Pſalm* cxxxix. 6.—To have knowledge in moſt objects of contemplation, is what the mind of one man can hardly *attain* unto. *Locke.*

Attain, *ſ.* The thing attained; attainment: *a word not in uſe.*—Crowns and diadems, the moſt ſplendid terrene *attains,* are akin to that which to-day is in the field, and to-morrow is cut down. *Glanville.*

ATTA'INABLE, *adj.* That which may be attained; procurable.—He wilfully neglects the obtaining unſpeakable good, which he is perſuaded is certain and *attainable.* *Tillotſon.*

ATTA'INABLENESS, *ſ.* The quality of being attainable.—Perſons becoming often enamoured of outward beauty, without any particular knowledge of its poſſeſſor, or its *attainableneſs* by them. *Cheyne.*

ATTAIN'DER, *ſ.* [from *to attain.*] The act of attainting in law; conviction of a crime.—The ends in calling a parliament were chiefly to have the *attainders* of all his party reverſed; and, on the other ſide, to attaint by parliament his enemies. *Bacon.*—Taint; ſully of character:

So ſmooth he daub'd his vice with ſhew of virtue,
He liv'd from all *attainder* of ſuſpect. *Shakeſpeare.*

Attainder, in law, the ſtain or corruption of the blood of a criminal capitally condemned; the immediate inſeparable conſequence, by the common law, on the pronouncing the ſentence of death. He is then called attaint, *attinctus,* ſtained or blackened. He is no longer of any credit or reputation; he cannot be a witneſs in any court; neither is he capable of performing the functions of another man; for, by an anticipation of his puniſhment, he is already dead in law. 3 *Inſt.* 213. This is after judgment: for there is great difference between a man convicted and attainted; though they are frequently through inaccuracy confounded together; when judgment is once pronounced, both law and fact conſpire to prove him completely guilty; and there is not the remoteſt poſſibility left of any thing to be ſaid in his favour. Upon judgment therefore of death, and not before, the attainder of a criminal commences: or upon ſuch circumſtances as are equivalent to judgment of death; as judgment of outlawry on a capital crime, pronounced for abſconding or fleeing from juſtice, which tacitly confeſſes the guilt. And therefore either upon judgment of outlawry, or of death, for treaſon or felony, a man ſhall be ſaid to be attainted. 4 *Comm.* 380, 1.

A man is attainted by appearance, or by proceſs: attainder on appearance is by confeſſion, or verdict, &c. Confeſſion, when the priſoner upon his indictment being aſked whether guilty or not guilty, anſwers guilty, without putting himſelf upon his country; (and formerly confeſſion was allowed before the coroner in ſanctuary; whereupon the offender was to abjure the realm, and this was called attainder by abjuration.) Attainder by verdict is when the priſoner at the bar pleadeth not guilty, and is found guilty by the verdict of the jury of life and death. And attainder by proceſs, (otherwiſe termed attainder by default or outlawry,) is when the party flieth, and is not found, until he hath been five times publicly called or proclaimed in the county, on the laſt whereof he is outlawed upon his default. *Staundf. Pl. Co.* 44, 122, 182. Alſo perſons may be attainted by act of parliament.

Acts of attainder of criminals have been paſſed in ſeveral reigns, on the diſcovery of plots and rebellions, from the reign of king Charles II. when an act was made for the attainder of ſeveral perſons guilty of the murder of king Charles I. to this time; among which, that for attainting Sir John Fenwick, for conſpiring againſt king William, is the moſt remarkable; it being made to attaint and convict him of high treaſon on the oath of one witneſs, juſt after a law had been enacted, That no perſon ſhould be tried or attainted of high treaſon where corruption of blood is incurred, but by the oath of *two* lawful witneſſes, unleſs the party confeſs, ſtand mute, &c. Stat. 7 and 8 Will. III. c. 3. But in the caſe of Sir John Fenwick, there was ſomething extraordinary; for he was indicted of treaſon on the oaths of two witneſſes, though but one only was produced againſt him on his trial. It was alleged Sir John had tampered with, and prevailed on one of the witneſſes to withdraw.

The conſequences of attainder are forfeiture and corruption of blood; which latter cannot regularly be taken off but by act of parliament. *Co. Lit.* 391. *b.* As to corruption of blood, this operates upwards and downwards, ſo that an attainted perſon can neither inherit lands or other hereditaments from his anceſtors, nor retain thoſe he is already in poſſeſſion of, nor tranſmit them by deſcent to any heir; but the ſame ſhall eſcheat to the lord of the fee, ſubject to the king's ſuperior right of forfeiture: and the perſon attainted ſhall alſo obſtruct all deſcents to his poſterity, wherever they are obliged to derive a title through him to a remoter anceſtor. This is one of thoſe notions which our laws have adopted from the feodal conſtitutions, at the time of the Norman conqueſt, as appears from its being unknown in thoſe tenures which are indiſputably Saxon, or *Gavelkind:* wherein, though by treaſon, according to the ancient Saxon laws, the land is forfeited to the king, yet no corruption of blood, no impediment of deſcent, enſues; and, on judgment of mere felony, no eſcheat accrues to the lord. And therefore, as every other oppreſſive mark of feodal tenures is now happily worn away in theſe kingdoms, it is to be hoped that the corruption of blood, with all its connected conſequences not only of preſent eſcheat, but of future incapacities of inheritance even to the twentieth generation, may in proceſs of time be aboliſhed by act of parliament: as it ſtands upon a very different footing from the forfeiture of lands for high treaſon, affecting the king's perſon or government. And indeed the legiſlature has, from time to time, appeared very inclinable to give way to ſo equitable a proviſion; by enacting that, in certain treaſons reſpecting the papal ſupremacy, ſtatute 5 Eliz. c. 1; and the public coin, ſtatutes 5 Eliz. c. 11. 18 Eliz. c. 1. 8 and 9 Will. III. c. 26. 15 and 16 Geo. II. c. 28; and in many of the new-made felonies created ſince the reign of Henry VIII. by act of parliament, corruption of blood ſhall be ſaved. But as, in ſome of the acts for creating felonies, (and thoſe not of the moſt atrocious kind,) this ſaving was neglected, or forgotten to be made, it ſeems to be highly reaſonable and expedient to antiquate the whole of this doctrine by one undiſtinguiſhing law: eſpecially as by the ſtat. of 7 Anne, c. 21. (the operation of which is poſtponed by ſtat. 17 Geo. II. c. 39,) after the death of the ſons of the late pretender, no attainder for treaſon will extend to the diſinheriting any heir, nor the prejudice of any perſon, other than the offender himſelf; which virtually aboliſhes all corruption of blood for treaſon, though (unleſs the legiſlature ſhould interpoſe) it will ſtill continue for many ſorts of felony. 4 *Comm.* 388, 9. In treaſon for counterfeiting the coin, although by the ſtatutes corruption of blood is ſaved, yet the lands of the offender are forfeited immediately to the king on attainder, it being a diſtinct penalty from corruption of blood: for the corruption may be ſaved, and the forfeiture remain, &c. And accordingly ſo it is provided by ſome ſtatutes. 1 *Salk.* 85.

Attainders may be reverſed or falſified, by writ of error, or by plea. If by writ of error, it muſt be by the king's leave, &c. and, when by plea, it may be by denying the treaſon, pleading a pardon by act of parliament, &c. 3 *Inſt.* 232. By a king's taking the crown upon him, all attainders of his perſon are *ipſo facto* purged, without any reverſal. 1 *Inſt.* 26. *Finch. L.* 82. *Wood,* 17. This was the declaration of parliament, made in favour of Henry VII. See 1 *Comm.* 248.

The ſtat. 8 Will. III. c. 5, requires Sir George Barclay, major-general Holmes, and other perſons, to ſurrender themſelves to the lord chief juſtice, or ſecretaries of ſtate; or to be attainted. By the 13 Will. III. c. 3, the pretended prince of Wales is under attainder of treaſon, &c. And, by 1 Geo. I. c. 16, the duke of Ormond and others are attainted. And, beſides theſe acts of attainder, bills for inflicting pains and penalties are ſometimes paſſed; as that againſt the biſhop of Rocheſter; ſtat. 9 Geo. I. c. 17.

ATTAIN'MENT, *ſ.* That which is attained; acquiſition.—Our *attainments* are mean, compared with the perfection of the univerſe. *Grew.*—The act or power of attaining.—The Scripture muſt be ſufficiect to imprint in us the character of all things neceſſary for the *attainment* of eternal life. *Hooker.*

To ATTAINT', *v. a.* [*attenter*, Fr.] To diſgrace; to cloud with ignominy. To taint; to corrupt:

My tender youth was never yet *attaint*
With any paſſion of inflaming love. *Shakeſpeare.*

ATTAINT, *ſ.* Any thing injurious; as illneſs, wearineſs. *This ſenſe is now obſolete:*

Nor doth he dedicate one jot of colour
Unto the weary and all-watched night;
But freſhly looks, and overbears *attaint*
With cheerful ſemblance. *Shakeſpeare.*

Stain; ſpot; taint.—No man hath a virtue that he has not a glimpſe of; nor any man an *attaint*, but he carries ſome ſtain of it. *Shakeſpeare.*

ATTAINT, in law, a writ that lieth to enquire whether a jury of twelve men gave a falſe verdict (*Finch*, 484); that ſo the judgment following thereupon may be reverſed: and this muſt be brought in the life-time of him for whom the verdict was given, and of two at leaſt of the jurors who gave it. This lay at the common law, only upon writs of aſſiſe; and ſeems to have been coeval with that inſtitution by king Henry II. at the inſtance of his chief juſtice Glanvil: being probably meant as a check upon the vaſt power then repoſed in the recognitors of aſſiſe, of finding a verdict according to their own perſonal knowledge, without the examination of witneſſes. And even here it extended no farther than to ſuch inſtances, where the iſſue was joined upon the very point of aſſiſe, (the heirſhip, diſſeiſin, &c.) and not on any collateral matter; as villainage, baſtardy, or any other diſputed fact.

In theſe caſes the aſſiſe was ſaid to be turned into an inqueſt or jury, or that the aſſiſe ſhould be taken in *modum juratæ, et non in modum aſſiſæ*; that is, that the iſſue ſhould be tried by a common jury or inqueſt, and not by recognitors of aſſiſe: and then it ſeems that no attaint lay againſt the inqueſt or jury that determined ſuch collateral iſſue. *Br.* 4. 1. 34. 2. *Flet.* l. v. c. 22. Neither is mention made by our ancient writers, of ſuch a proceſs obtaining after the trial by inqueſt or jury, in the old Norman or feodal actions proſecuted by writ of entry. Nor did any attaint lie in treſpaſs, debt, or other action perſonal, by the old common law: becauſe thoſe were always determined by common inqueſts or juries. At length the ſtatute of Weſtminſter 1. (3 Eliz. 1.) c. 38. allowed an attaint to be ſued upon inqueſts as well as aſſiſes, which were taken upon any plea of land or of freehold. But this was at the king's diſcretion, and is ſo underſtood by the author of *Fleta*, (l. v. c. 22. § 8, and 16,) a writer cotemporary with the ſtatute; though Sir Edw. Coke (2 *Inſt.* 130, 237) ſeems to hold a different opinion. Other ſubſequent ſtatutes (1 Eliz. 3. ſt. 1. c. 6. 5 Eliz. 3. c. 7. 28 Edw. III. c. 8) introduced the ſame remedy in all pleas of treſpaſs, and the ſtat. 34 Eliz. 3. c. 7. extended to all pleas whatſoever, perſonal as well as real; except only the writ of right, in ſuch caſes where the miſe or iſſue is joined on the mere right, and not on any collateral queſtion. For, though the attaint ſeems to have been generally allowed in the reign of Henry II. at the firſt introduction of the grand aſſiſe, (which at that time might conſiſt of only twelve recognitors, in caſe they were all unanimous,) yet ſubſequent authorities have holden, that no attaint lies on a falſe verdict given upon the mere right, either at common law or by ſtatute; becauſe that is determined by the grand aſſiſe, appealed to by the party himſelf, and now conſiſting of ſixteen jurors. *Bract.* 290. *Flet.* 5, 227. *Britt.* 243 *b.* 12 Henry VI. 6 *Bro. Abr.* tit. Atteint 42. 1 *Roll. Abr.* 280.

The jury, who are to try this falſe verdict, muſt be twenty-four, and are called the grand jury; for the law wills not that the oath of one jury of twelve men ſhould be attainted or ſet aſide by an equal number, nor by leſs indeed than double the former. *Bract.* l. 4. tr. 5. c. 4. § 1. *Flet.* l. 5. c. 22. § 7. If the matter in diſpute be of 40l. value in perſonals, or of 40s. a-year in lands and tenements, then, by ſtat. 15 Hen. VI. c. 5, each grand juror muſt have a freehold to the annual value of 20l. And he that brings the attaint can give no other evidence to the grand jury than what was originally given to the petit: for, as their verdict is now trying, and the queſtion is, whether or no they did right upon the evidence that appeared to them, the law adjudged it the higheſt abſurdity to produce any ſubſequent proof upon ſuch trial, and to condemn the prior juriſdiction for not believing evidence which they never knew. But thoſe againſt whom it is brought are allowed, in affirmance of the firſt verdict, to produce new matter (*Finch L.* 486); becauſe the petit jury may have formed their verdict upon evidence of their own knowledge, which never appeared in court. If the grand jury found the verdict a falſe one, the judgment by the common law was, that the jurors ſhould loſe their *liberam legem* and become for ever infamous; ſhould forfeit their goods and the profits of their lands; ſhould themſelves be impriſoned, and their wives and children thrown out of doors; ſhould have their houſes raſed, their trees extirpated, and their meadows ploughed; and that the plaintiff ſhould be reſtored to all that he loſt by reaſon of the unjuſt verdict. But, as the ſeverity of this puniſhment had its uſual effect in preventing the law from being executed, therefore by the ſtat. 11 Hen. VII. c. 24, (revived by 23 Hen. VIII. c. 3, and made perpetual by 13 Eliz. c. 25,) an attaint is allowed to be brought after the death of the party, and a more moderate puniſhment was inflicted upon attainted jurors, viz. perpetual infamy, and, if the cauſe of action were above 40l. value, a forfeiture of 20l. a-piece by the jurors; or, if under 40l. then 5l. a-piece, to be divided between the king and the party injured. So that a man may now bring an attaint either upon the ſtatute or at common law, at his election (3 *Inſt.* 164); and in both of them may reverſe the former judgment. But the practice of ſetting aſide verdicts upon motion, and granting new trials, has ſo ſuperſeded the uſe of both ſorts of attaints, that very few inſtances of an attaint appear in our books later than the ſixteenth century. *Cro. Eliz.* 309. *Cro. Jac.* 90.

ATTAINT, among farriers, a knock or hurt in a horſe's leg, proceeding either from a blow with another horſe's foot, or from an over-reach in froſty weather, when a horſe, being rough ſhod, or having ſhoes with long caulkers, ſtrikes his hinder feet againſt his fore leg.

ATTAIN'TURE, *ſ.* Legal cenſure; reproach; imputation:

Hume's knavery will be the ducheſs's wreck,
And her *attainture* will be Humphry's fall. *Shakeſpeare.*

ATTA'LICÆ VES'TES, *ſ.* in antiquity, garments made of a kind of cloth of gold. They took the denomination from Attalus, ſurnamed Philomater, a wealthy king of Pergamus, who was the firſt, according to Pliny, who procured gold to be wove into cloth.

ATTA'LICUS, *ſ.* [from ατταλος, tender.] A medicine which nouriſhes tenderly.

AT'TAL SAR'SIN, *ſ.* The term by which the inhabitants and miners of Cornwall call an old deſerted mine, that is given over; i. e. the leavings of the *Saraſins*, *Saſſins*, or *Saxons.*

To ATTAM'INATE, *v. a.* [*attamino*, Lat.] To corrupt; to ſpoil.

ATTEL'ABUS, *ſ.* [αττέλαβος, Gr. from עטלף Heb.] In zoology, a genus of inſects belonging to the order of coleoptera, or beetle-kind. It has four wings, of which the ſuperior are cruſtaceous, and ſerve as a ſheath or cover to the inferior, which are membraneous. The head tapers behind, and is inclined; the feelers turn thicker towards the apex. The ſpecies are thirteen, viz.

1. The coryli is black, with red elytra or cruſtaceous wings. 2. The avellana is black, with the breaſt, feet, and elytra, red. 3. The curculionoides is black, with red elytra and breaſt. The above three ſpecies frequent the leaves of the hazel and filbert nut-trees.

4. The Surinamenſis has a double indentation (or two teeth) in the top of the elytra. It is a native of Surinam.

5. The Penſilvanicus is black, with red elytra, a black belt round the middle, and another towards the apex of the elytra. It is a native of Philadelphia.

6. The melanurus is black, with teſtaceous elytra, black at the apex. It is a native of Sweden.

7. The betula has ſaltatory or ſpringy legs, and the whole body is of a dark-red colour. It frequents the leaves of the birch-tree.

8. The formicarius is black, with red elytra, and a double white belt towards the baſe. Native of Europe.

9. The ſipylus is green, with a hairy breaſt, and a double yellow belt upon the elytra.

10. The apiarius is bluiſh, with red elytra, and three black belts. It is a native of Germany.

11. The mollis is yellowiſh and hairy, with pale elytra, and three belts. It is a native of Europe.

12. The ceramboides is of a blackiſh red colour, and the elytra is furrowed. It frequents the ſpongy boletus, a ſpecies of muſhroom.

13. The bupreſtoides is of a dark-red colour, with a globular breaſt, and nervous elytra. Native of Europe.

To ATTEM'PER, *v. a.* [*attempero*, Lat.] To mingle; to weaken by the mixture of ſomething elſe; to dilute:

Attemper'd ſuns ariſe,
Sweet-beam'd, and ſhedding oft through lucid clouds
A pleaſing calm. *Thomſon.*

To ſoften; to mollify.—His early providence could likewiſe have *attempered* his nature therein. *Bacon.*

Thoſe ſmiling eyes, *attemp'ring* ev'ry ray,
Shone ſweetly lambent with celeſtial day. *Pope.*

To mix in juſt proportions; to regulate; to fit to ſomething:

She to her gueſts doth bounteous banquet dight,
Attemper'd, goodly, well for health and for delight. *Spenſer.*

To ATTEM'PERATE, *v. a.* [*attempero*, Lat.] To proportion to ſomething.—Hope muſt be proportioned and *attemperate* to the promiſe; if it exceed that temper and proportion, it becomes a tumour and tympany of hope. *Hammond.*

To ATTEMPT', *v. a.* [*attenter*, Fr.] To attack; to invade; to venture upon:

Who, in all things wiſe and juſt,
Hinder'd not Satan to *attempt* the mind
Of man, with ſtrength entire and free-will arm'd. *Milton.*

To try; to endeavour.—I have nevertheleſs *attempted* to ſend unto you, for the renewing of brotherhood and friendſhip. 1 *Mac.* xii. 17.

To ATTEMPT, *v. n.* To make an attack—Horace his monſter, with woman's head above, and fiſhy extreme below, anſwers the ſhape of the ancient Syrens that *attempted* upon Ulyſſes. *Brown.*

ATTEMPT, *ſ.* An attack.—If we be always prepared to receive an enemy, we ſhall long live in peace and quietneſs, without any *attempts* upon us. *Bacon.*—An eſſay; an endeavour:

He would have cry'd; but, hoping that he dreamt,
Amazement ty'd his tongue, and ſtopp'd th' *attempt*. *Dryd.*

ATTEMPT'ABLE, *adj.* Liable to attempts or attacks.—The gentleman vouching his to be more fair, virtuous, wiſe, and leſs *attemptable*, than the rareſt of our ladies. *Shakeſpeare.*

ATTEMPT'ER, *ſ.* The perſon that attempts; an invader. An endeavourer.—We are no factors for glory or treaſure, but diſintereſted *attempters* for the univerſal good. *Glanville.*

AT'TENBY, a town of Sweden, in the iſland of Oeland.

To ATTEND', *v. a.* [*attendre*, Fr. *attendo*, Lat.] To regard; to fix the mind upon.—The diligent pilot, in a dangerous tempeſt, doth not *attend* the unſkilful words of a paſſenger. *Sidney.*—To wait on; to accompany as an inferior, or a ſervant:

His companion, youthful Valentine,
Attends the emperor in his royal court. *Shakeſpeare.*

To accompany as an enemy.—He was at preſent ſtrong enough to have ſtopped or *attended* Waller in his weſtern expedition. *Clarendon.*—To be preſent with, upon a ſummons. To accompany; to be appendant to:

England is ſo idly king'd,
Her ſcepter ſo fantaſtically borne,
That fear *attends* her not. *Shakeſpeare.*

To expect. *This ſenſe is French.*—So dreadful a tempeſt, as all the people *attended* therein the very end of the world, and judgment-day. *Raleigh.*—To wait on, as on a charge. To be conſequent to.—The duke made that unfortunate deſcent upon Rhé, which was afterwards *attended* with many unproſperous attempts. *Clarendon.*—To remain to; to await; to be in ſtore for.—To him, who hath a proſpect of the ſtate that *attends* all men after this, the meaſures of good and evil are changed. *Locke.*—To wait for inſidiouſly.—Thy interpreter, full of deſpight, bloody as the hunter, *attends* thee at the orchard end. *Shakeſpeare.*—To be bent upon any object:

Their hunger thus appeas'd, their care *attends*
The doubtful fortune of their abſent friends. *Dryden.*

To ATTEND, *v. n.* To yield attention.—Since man cannot at the ſame time *attend* to two objects, if you employ your ſpirit upon a book or a bodily labour, you have no room left for ſenſual temptation. *Taylor.*—To ſtay; to delay. To wait; to be within reach or call.—If any miniſter refuſed to admit a lecturer recommended by him, he was required to *attend* upon the committee, and not diſcharged till the houſes met again. *Clarendon.*

ATTEND'ANCE, *ſ.* [*attendance*, Fr.] The act of waiting on another; or of ſerving.—For he, of whom theſe things are ſpoken, pertaineth to another tribe, of which no man gave *attendance* at the altar. *Heb.* vii. 13.—Service.

Why might not you, my lord, receive *attendance*
From thoſe that ſhe calls ſervants? *Shakeſpeare.*

The perſons waiting; a train. Attention; regard.—Give *attendance* to reading, to exhortation, to doctrine. 1 *Tim.* iv. 13.—Expectation: *a ſenſe now out of uſe.*—That which cauſeth bitterneſs in death, is the languiſhing *attendance* and expectation thereof ere it come. *Hooker.*

ATTEND'ANT, *adj.* [*attendant*, Fr.] Accompanying as ſubordinate, or conſequential:

Other ſuns, perhaps,
With their *attendant* moons, thou wilt deſcry,
Communicating male and female light. *Milton.*

ATTENDANT, *ſ.* One that attends. One that belongs to the train:

When ſome gracious monarch dies,
Soft whiſpers firſt and mournful murmurs riſe
Among the ſad *attendants*. *Dryden.*

One that waits the pleaſure of another, as a ſuitor or agent.—I endeavour that my reader may not wait long for my meaning: to give an *attendant* quick diſpatch is a civility. *Burnet.*—One that is preſent at any thing.—He was a conſtant *attendant* at all meetings relating to charity, without contributing. *Swift.*—In law, one that oweth a duty or ſervice to another; or, after a ſort, dependeth upon another. *Cowell.* That which is united with another, as a concomitant or conſequent:

Govern well thy appetite, leſt ſin
Surpriſe thee, and her black *attendant*, death. *Milton.*

ATTEND'ER, *ſ.* Companion; aſſociate.

AT'TENDORN, a town of Germany, in the duchy of Weſtphalia, ſeven leagues ſouth of Arenſberg.

AT'TENHOVE, a town of Brabant, one league north-eaſt of Landen.

ATTENT', *adj.* [*attentus*, Lat.] Intent; attentive; heedful; regardful.—Now mine eyes ſhall be open, and mine ears *attent* unto the prayer that is made in this place. 2 *Chron.* vii. 15.

AT'TENTATES, *ſ.* [*attentata*, Lat.] Proceedings in a court of judicature, pending ſuit, and after an inhibition is decreed and gone out; thoſe things which are done after an extrajudicial appeal may likewiſe be ſtyled *attentates.* *Ayliffe.*

ATTEN'TION, *ſ.* [*attention*, Fr.] The act of attending or heeding; the act of bending the mind upon any thing.—*Attention* is a very neceſſary thing; truth doth not always ſtrike the ſoul at firſt ſight. *Watts.*

But him the gentle angel by the hand
Soon rais'd, and his *attention* thus recall'd. *Milton.*

Attention of mind is not properly an act of the underſtanding, but rather of the will; by which it calls the underſtanding from the conſideration of other objects, and directs it to the thing in hand. Nevertheleſs, our attention is not always voluntary: an intereſting object ſeizes and fixes it beyond the power of controul. Attention, in reſpect of hearing, is the ſtretching or ſtraining of the *membrana tympani*, ſo as to make it more ſuſceptible of ſounds, and better prepared to catch even a feeble agitation of the air. Or it is the adjuſting the tenſion of that membrane to the degree of loudneſs or lowneſs of the ſound to which we are attentive. Bacon obſerves, that "ſounds are meliorated by the intention of the ſenſe, where the common ſenſe is collected moſt to the particular ſenſe of hearing, and the ſight ſuſpended. Therefore ſounds are ſweeter, as well as greater, in the night than in the day; and ſweeter to blind men than to others; and it is manifeſt, that between ſleeping and waking, when all the ſenſes are bound and ſuſpended, muſic is far ſweeter than when one is fully waking." And thus, according to the degree of attention, objects make a ſtronger or weaker impreſſion. Attention is requiſite even to the ſimple act of ſeeing: the eye can take in a conſiderable field at one look; but no object in the field is ſeen diſtinctly but that ſingly which fixes the attention: in a profound reverie that totally occupies the attention, we ſcarcely ſee what is directly before us. In a train of perceptions, no particular object makes ſuch a figure as it would do ſingly and apart; for, when the attention is divided among many objects, no particular object is entitled to a large ſhare. Hence, the ſtillneſs of night contributes to terror, there being nothing to divert the attention:

Horror ubique animos, ſimul ipſa ſilentia terrent. *Æn.* ii.

Zara. Silence and ſolitude are ev'ry where!
Through all the gloomy ways and iron doors
That hither lead, nor human face nor voice
Is ſeen or heard. A dreadful din was wont
To grate the ſenſe, when enter'd here, from groans
And howls of ſlaves condemn'd, from clink of chains,
And craſh of ruſty bars and creaking hinges;
And ever and anon the ſight was daſh'd
With frightful faces, and the meagre looks
Of grim and ghaſtly executioners.
Yet more this ſtillneſs terrifies my ſoul
Than did that ſcene of complicated horrors.
Mourning Bride, act 5, ſc. 3.

In matters of ſlight importance, attention is moſtly directed by will; and, for that reaſon, it is our own fault if trifling objects make any deep impreſſion. Had we power equally to with-hold our attention from matters of importance, we might be proof againſt any deep impreſſion. But our power fails us here; an intereſting object ſeizes and fixes the attention beyond the poſſibility of controul; and, while our attention is thus forcibly attached to one object, others may ſolicit for admittance; but in vain, for they will not be regarded. Thus a ſmall misfortune is ſcarcely felt in preſence of a greater:

Lear. Thou think'ſt 'tis much, that this contentious ſtorm
Invades us to the ſkin: ſo 'tis to thee:
But, where the greater malady is fix'd,
The leſſer is ſcarce felt. Thou'dſt ſhun a bear;
But, if thy flight lay tow'rd the roaring ſea,
Thou'dſt meet the bear i' th' mouth. When the mind's free,
The body's delicate: the tempeſt in my mind
Doth from my ſenſes take all feeling elſe,
Save what beats there. *King Lear*, act 3, ſc. 5.

ATTEN'TIVE, *adj.* Heedful; regardful; full of attention.—Being moved with theſe, and the like your effectual diſcourſes, whereunto we gave moſt *attentive* ear, till they entered even unto our ſouls. *Hooker.*—A critic is a man, who, on all occaſions, is more *attentive* to what is wanting than what is preſent. *Addiſon.*

Muſic's force can tame the furious beaſt;
Can make the wolf or foaming boar reſtrain
His rage; the lion drop his creſted mane,
Attentive to the ſong. *Prior.*

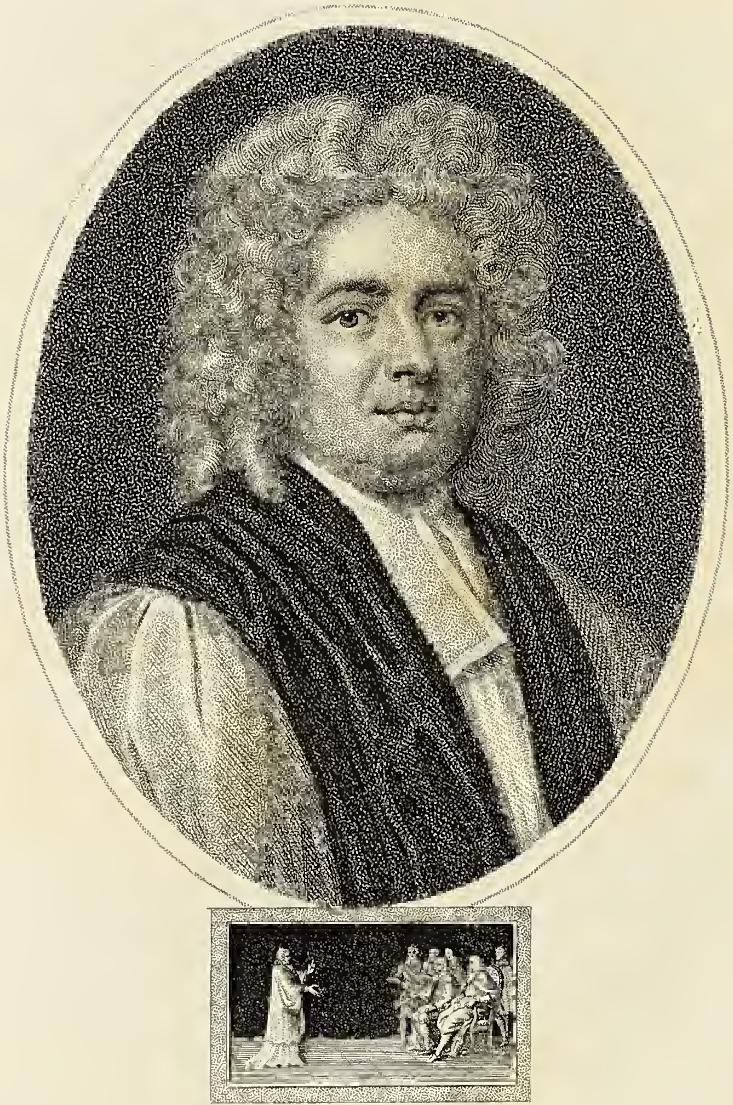
ATTEN'TIVELY, *adv.* Heedfully; carefully.—If a man look ſharply and *attentively*, he ſhall ſee Fortune; for, though ſhe be blind, ſhe is not inviſible. *Bacon.*

ATTEN'TIVENESS, *ſ.* The ſtate of being attentive; heedfulneſs; attention.—At the relation of the queen's death, bravely confeſſed and lamented by the king, how *attentiveneſs* wounded his daughter. *Shakeſpeare.*

ATTEN'UANT, *adj.* [*attenuans*, Lat.] That has the power of making thin, or diluting.

ATTEN'UANTS, or ATTENUATING MEDICINES, *ſ.* are ſuch as ſubtilize and break the humours into finer parts; and thus diſpoſe them for motion, circulation, excretion, &c. Attenuating and inciding medicines are of very extenſive uſe in phyſic, and come under different denominations, according to the different effects they produce. Thus, when tenacious and viſcid juices not only ſtagnate in the cavities of the veſſels, but obſtruct the minute ducts of the viſcera and emunctories, theſe medicines, by the inciding and attenuating quality, diſcharge the humours, and remove the obſtructions; for which reaſon they are not improperly called *aperients.* Attenuants produce ſo great a variety of effects, that it is proper we ſhould be well acquainted with their ſeveral kinds, as appropriated to the ſeveral diſorders, and know which will prove moſt ſerviceable in each. According to Hoffman, the diſſolving and attenuating of viſcid crudities in the ſtomach and *primæ viæ*, is well anſwered by the roots of arum, acorus, pepper, ginger, and the like; as alſo by ſal ammoniac, vitriolated tartar, the fixed alkaline ſalts, and the ſimple or dulcified ſpirit of ſalt. When crude and unconcocted humours are to be evacuated by ſtool, this intention is very well anſwered by the neutral ſalts, as the ſalts of the purging waters, and the *ſal polycreſtum*, with a ſufficient quantity of a watery vehicle.

When viſcid humours, occaſioning diſorders of the breaſt, are to be attenuated and expectorated, the intention is moſt effectually anſwered by elecampane and orice roots: and by gum ammoniacum, myrrh, or benjamin, and balſam of Peru; or by regenerated tartar, oxymel of ſquills, a ſolution of crabs eyes in diſtilled vinegar, and the ſyrups of tobacco, and the like. When the maſs of blood is tainted by thick and tenacious ſordes, and the emunctories are by that means obſtructed, and the hu-



J. Chapman sc.

FRANCIS ATTERBURY, BISHOP of ROCHESTER.

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mours contaminated by a ſaline ſulphureous and ſcorbutic dyſcracy, the moſt efficacious of the attenuants are the horſe-radiſh, ſcurvy-graſs, water and garden creſſes, muſtard, gum ammoniacum, benjamin, myrrh, the oil of fixed nitre, oil of tartar *per deliquium*, ſolutions of nitre, ſpirit of ſal ammoniac, ſalt of wormwood with lemon-juice, and the ſalts of the medicinal waters. When grumous or coagulated blood, occaſioned by contuſions or blows, is to be attenuated, and again diſſolved, the intention is generally anſwered by the roots of Solomon's ſeal, vinegar, and crabs eyes, the regenerated tartar, and nitre prepared with antimony. And in caſes where the lymph has acquired a preternatural thickneſs and viſcidity, eſpecially if from a venereal taint, the curative intention is moſt effectually anſwered by guaiacum, the acrid tincture of antimony, calomel, æthiops mineral, and the like; which, when ſkilfully uſed, are of ſingular efficacy in diſſolving and attenuating the viſcid juices impacted in the glands of the liver. See MEDICINE.

To ATTEN'UATE, *v. a.* [*attenuo*, Lat.] To make thin, or ſlender: oppoſed to *condenſe*, or *incraſſate*, or *thicken*.—The finer part belonging to the juice of grapes, being *attenuated* and ſubtilized, was changed into an ardent ſpirit. *Boyle.*—Vinegar curd, put upon an egg, not only diſſolves the ſhell, but alſo *attenuates* the white contained in it into a limpid water. *Wiſeman.*—It is of the nature of acids to diſſolve, or *attenuate*, and of alkalies to precipitate or incraſſate. *Newton.*

ATTEN'UATE, *adj.* Made thin, or ſlender.—Vivification ever conſiſteth in ſpirits *attenuate*, which the cold doth congeal and coagulate. *Bacon.*

ATTENUA'TION, *ſ.* The act of making any thing thin or ſlender; leſſening.—Chiming with a hammer upon the outſide of a bell, the ſound will be according to the inward concave of the bell; whereas the eliſion or *attenuation* of the air can be only between the hammer and the outſide of the bell. *Bacon.*

ATTENUATION, among alchemiſts, was alſo uſed for pulverization, or the act of reducing a body into an impalpable powder, by grinding, pounding, or the like.

AT'TER, *ſ.* [*ater*, Sax. venom.] Corrupt matter. A word much uſed in Lincolnſhire.

ATTER, or OTTER, of ROSES. See ROSE.

AT'TERBURY (Dr. Francis), ſon of Dr. Lewis Atterbury, was born at Milton in Buckinghamſhire, in 1662; educated at Weſtminſter; and from thence elected to Chriſt-Church in Oxford, where he ſoon diſtinguiſhed himſelf by his fine genius and turn for polite literature. The year he was made M. A. 1687, he exerted himſelf in the controverſy with the papiſts, vindicated Luther in the ſtrongeſt manner, and ſhewed an uncommon fund of learning, enlivened with great vivacity. In 1690 he married Miſs Oſborn, a diſtant relation of the duke of Leeds; a lady of great beauty, but with little or no fortune. In 1691 he was elected lecturer of St. Bride's church in London, and preacher at Bridewell chapel. An academic life, indeed, muſt have been irkſome and inſipid to a perſon of his active and aſpiring temper. It was hardly poſſible that a clergyman of his fine genius, improved by ſtudy, with a ſpirit to exert his talents, ſhould remain long unnoticed; and we find that he was ſoon appointed chaplain to king William and queen Mary.

In 1700, a large field of activity opened, in which Atterbury was engaged four years with Dr. Wake, afterwards archbiſhop of Canterbury, and others, concerning the "Rights, Powers, and Privileges, of Convocations:" in which, whatever way the truth of the queſtion may be ſuppoſed to lie, he diſplayed ſo much learning and ingenuity, as well as zeal for the intereſts of his order, that the lower houſe of convocation returned him their thanks, and the univerſity of Oxford complimented him with the degree of D. D. January 29, 1700, he was inſtalled archdeacon of Totneſs, being promoted to that dignity by Sir Jonathan Trelawney, biſhop of Exeter. The ſame year he was engaged, with ſome other learned divines, in reviſing an intended edition of the "Greek Teſtament," with Greek "Scholia," collected chiefly from the fathers, by Mr. archdeacon Gregory. At this period he was popular as preacher at the Rolls Chapel; an office which had been conferred on him by Sir John Trevor, a great diſcerner of abilities, in 1698, when he reſigned Bridewell, which he had obtained in 1693. Upon the acceſſion of queen Anne in 1702, Dr. Atterbury was appointed one of her majeſty's chaplains in ordinary; and, in October 1704, was advanced to the deanery of Carliſle. About two years after this, he was engaged in a diſpute with Dr. Hoadly, concerning the advantages of virtue with regard to the preſent life; occaſioned by his ſermon, preached Auguſt 30, 1706, at the funeral of Mr. Thomas Bennet a bookſeller. In 1707, Sir Jonathan Trelawny, biſhop of Exeter, appointed him one of the canons reſidentaries of that church. In 1709, he was engaged in a freſh diſpute with Dr. Hoadly, concerning "Paſſive Obedience;" occaſioned by his Latin Sermon, entitled "Concio ad Clerum Londinenſem, habita in Eccleſia S. Elphegi." In 1710, came on the famous trial of Dr. Sacheverell, whoſe remarkable ſpeech on that occaſion was generally ſuppoſed to have been drawn up by Atterbury, in conjunction with Dr. Smalridge and Dr. Freind. The ſame year Dr. Atterbury was unanimouſly choſen prolocutor of the lower houſe of convocation, and had the chief management of affairs in that houſe. May 11, 1711, he was appointed by the convocation one of the committee for comparing Mr. Whiſtone's doctrines with thoſe of the church of England; and in June following, he had the chief hand in drawing up "A Repreſentation of the Preſent State of Religion." In 1712, Dr. Atterbury was made dean of Chriſt-Church, notwithſtanding the ſtrong intereſt and warm applications of ſeveral great men in behalf of his competitor Dr. Smalridge. The next year ſaw him at the top of his preferment, as well as of his reputation: for, in the beginning of June 1713, the queen, at the recommendation of lord chancellor Harcourt, advanced him to the biſhopric of Rocheſter, with the deanery of Weſtminſter in commendam; he was confirmed July 4, and conſecrated at Lambeth next day.

At the beginning of the ſucceeding reign, his tide of proſperity began to turn; and he received a ſenſible mortification ſoon after the coronation of George I. when, upon his offering to preſent his majeſty with the chair of ſtate or royal canopy, his own perquiſites as dean of Weſtminſter, the offer was rejected, not without ſome evident marks of perſonal diſlike. During the rebellion in Scotland, when the Pretender's declaration was diſperſed, the archbiſhop of Canterbury, and the biſhops in and near London, had publiſhed A Declaration of their Abhorrence of the preſent Rebellion, and an Exhortation to the Clergy and People to be zealous in the diſcharge of their Duties to his Majeſty King George: but the biſhop of Rocheſter refuſed to ſign it; and engaged biſhop Smalridge in the ſame refuſal, on account of ſome reflections it contained againſt the high-church party. He appeared generally among the proteſtors againſt the meaſures of the miniſtry under the king, and drew up the reaſons of the proteſts with his own hand.

On April 26, 1722, he ſuſtained a ſevere trial in the loſs of his lady; by whom he had four children; Francis, who died an infant; Oſborn, ſtudent of Chriſt-Church; Elizabeth, who died in September 29, 1716, aged ſeventeen; and Mary, who had been then ſeven years married to Mr. Morice. And in this memorable year, on a ſuppoſition of his being concerned in a plot in favour of the Pretender, he was apprehended Auguſt 24, and committed priſoner to the tower. Two officers, the under-ſecretary, and a meſſenger, went to the biſhop's houſe at Weſtminiſter, with orders to bring him and his papers before the council. He happened to be in his night-gown when they came in; and, being made acquainted with their buſineſs, he deſired time to dreſs himſelf. In the mean time his ſecretary came in; and the officers went to ſearch for his papers; in the ſealing of which, the meſſenger brought a paper, which he pretended to have found in his cloſe-ſtool, and deſired it might be ſealed up with the reſt. His lordſhip obſerving it, and believing it to be a forged one of his own, deſired the officers not to do it, and to bear witneſs that the paper was not found with him; nevertheleſs they ſealed it up among his papers. When he came before the council, he behaved with a great deal of calmneſs, and they with much civility towards him. He had liberty to ſpeak for himſelf as much as he pleaſed, and they liſtened to his defence with a great deal of attention; and, what is more unuſual, after he was withdrawn, he had twice liberty to re-enter the council-chamber, to make for himſelf ſuch repreſentations and requeſts as he thought proper. It is ſaid, that, while he was under examination, he made uſe of our Saviour's anſwer to the Jewiſh council, while he ſtood before them: "If I tell you, ye will not believe me; and if I alſo aſk you, ye will not anſwer me, nor let me go." After his examination, he was ſent to the Tower, without noiſe or obſervation.

This commitment of a biſhop upon ſuſpicion of high treaſon, as it was a thing rarely practiſed ſince the reformation, ſo it occaſioned various ſpeculations among the people. Thoſe who were the biſhop's friends, and pretended to the greateſt intimacy with him, laid the whole odium of the matter upon the miniſtry. They knew the biſhop ſo well, they ſaid, his love to our conſtitution, and attachment to the proteſtant ſucceſſion, his profeſſed abhorrence of popery, and ſettled contempt of the Pretender, and his caution, prudence, and circumſpection, to be ſuch, as would never allow him to engage in an attempt of ſubverting the government, ſo hazardous in itſelf, and ſo repugnant to his principles; and therefore they imputed all to the malice and management of the miniſtry, who were reſolved to remove him, on account of ſome perſonal prejudices, as well as the conſtant moleſtation he gave them in parliament, and the particular influence and activity he had ſhewn in the late election. The friends of the miniſtry, on the other hand, were ſtrongly of opinion, that the biſhop was ſecretly a favourer of the Pretender's cauſe, and had formerly been tampering with things of that nature, even in the queen's time. Theſe, and many more ſpeculations, amuſed the nation at that time; and men, as uſual, judged of things by the meaſure of their own affections and prejudices.

March 23, 1722-3, a bill was brought into the houſe of commons, for "inflicting certain pains and penalties on Francis lord biſhop of Rocheſter;" a copy of which was ſent to him, with notice that he had liberty of counſel and ſolicitors for making his defence. Under theſe circumſtances, the biſhop applied, by petition, to the houſe of lords, for their direction and advice, as to his conduct in this conjuncture; and April 4, he acquainted the ſpeaker of the houſe of commons, by a letter, that he was determined to give that houſe no trouble, in relation to the bill depending therein; but ſhould be ready to make his defence againſt it when it ſhould be argued in another houſe, of which he had the honour to be a member. On the 9th the bill paſſed the houſe of commons, and was the ſame day ſent up to the houſe of lords for their concurrence. May 6th, being the day appointed by the lords for the firſt reading of the bill, biſhop Atterbury was brought to Weſtminiſter to make his defence. The counſel for the biſhop were, Sir Conſtantine Phipps, and William Wynne, Eſq. for the king, Mr. Reeve, and Mr. Wearg. The proceedings continued above a week; and on Saturday May 11th, the biſhop was permitted to plead for himſelf. This he did in a very eloquent ſpeech; which he feelingly opens by complaining of the uncommon ſeverity he had experienced in the Tower; which was carried to ſo great a length, that not even his ſon-in-law Mr. Morice was permitted to ſpeak to him in any nearer mode than ſtanding in an open area, whilſt the biſhop looked out of a two-pair-of-ſtairs window. In the courſe of his defence he obſerves, "Here is a plot of a year or two ſtanding, to ſubvert the government with an armed force; an invaſion from abroad, an inſurrection at home: juſt when ripe for execution, it is diſcovered; and twelve months after the contrivance of this ſcheme, no conſultation appears, no men correſponding together, no proviſion made, no arms, no officers provided, not a man in arms; and yet the poor biſhop has done all this. What could tempt me to ſtep thus out of my way? Was it ambition, and a deſire of climbing into a higher ſtation in the church? There is not a man in my office farther removed from this than I am. Was money my aim? I always deſpiſed it too much, conſidering what occaſion I am now like to have for it: for out of a poor biſhopric of 500l. per annum, I have laid out no leſs than 1000l. towards the repairs of the church and epiſcopal palace; nor did I take one ſhilling for dilapidations. Was I influenced by any diſlike of the eſtabliſhed religion, and ſecretly inclined towards a church of greater pomp and power? I have, my lords, ever ſince I knew what popery was, oppoſed it; and the better I knew it, the more I oppoſed it. I began my ſtudy in divinity, when the popiſh controverſy grew hot, with that immortal book of Tillotſon's, when he undertook the proteſtant cauſe in general: and as ſuch, I eſteemed him above all. You will pardon me, my lords, if I mention one thing: Thirty years ago I wrote in defence of Martin Luther; and have preached, expreſſed, and wrote, to that purpoſe from my infancy; and, whatever happens to me, I will ſuffer any thing, and, by God's grace, burn at the ſtake, rather than depart from any material point of the proteſtant religion as profeſſed in the church of England. Once more: Can I be ſuppoſed to favour arbitrary power? The whole tenor of my life has been otherwiſe: I was always a friend to the liberty of the ſubject; and, to the beſt of my power, conſtantly maintained it. I may have been thought miſtaken in the meaſures I took to ſupport it; but it matters not by what party I was called, ſo my actions are uniform." Afterwards, ſpeaking of the method of proceeding againſt him as unconſtitutional, he ſays, "My ruin is not of that moment to any number of men, to make it worth their while to violate, or even ſeem to violate, the conſtitution in any degree, which they ought to preſerve againſt any attempts whatſoever. Though I am worthy of no regard, though whatſoever is done to me may for that reaſon be looked upon to be juſt; yet your lordſhips will have ſome regard to your own laſting intereſt and that of poſterity. This is a proceeding with which the conſtitution is unacquainted; which, under the pretence of ſupporting it, will at laſt effectually deſtroy it. For God's ſake lay aſide theſe extraordinary proceedings; ſet not up theſe new and dangerous precedents. I, for my part, will voluntarily and cheerfully go into perpetual baniſhment, and pleaſe myſelf that I am in ſome meaſure the occaſion of putting a ſtop to ſuch precedents, and doing ſome good to my country: I will live, wherever I am, praying for its proſperity; and do, in the words of father Paul to the ſtate of Venice, ſay, *Eſto perpetua.* It is not my departing from it I am concerned for. Let me depart, and let my country be fixed upon the immoveable foundation of law and juſtice, and ſtand for ever." After a ſolemn proteſtation of his innocence, and an appeal to the Searcher of hearts for the truth of what he had ſaid, he concludes thus: "If, on any account, there ſhall ſtill be thought by your lordſhips to be any ſeeming ſtrength in the proofs againſt me; if, by your lordſhip's judgments, ſpringing from unknown motives, I ſhall be thought to be guilty; if, for any reaſons or neceſſity of ſtate, of the wiſdom and juſtice of which I am no competent judge, your lordſhips ſhall proceed to paſs the bill againſt me; I ſhall diſpoſe myſelf quietly and tacitly to ſubmit to what you do; God's will be done: Naked came I out of my mother's womb, and naked ſhall I return; and, whether he gives or takes away, bleſſed be the name of the Lord!"

On the 15th, the bill was read the third time; and, after a long and warm debate, paſſed on the 16th, by a majority of eighty-three to forty-three. On the 27th, the king came to the houſe, and confirmed it by his royal aſſent. June 18, 1723, this eminent prelate, having the day before taken leave of his friends, who, from the time of paſſing the bill againſt him to the day of his departure, had free acceſs to him in the Tower, embarked on-board the Aldborough man-of-war, and landed the Friday following at Calais. When he went on ſhore, having been informed that lord Bolingbroke, who had, after the riſing of the parliament, received the king's pardon, was arrived at the ſame place on his return to England, he ſaid, with an air of pleaſantry, "Then I am exchanged!" and it was, in the opinion of Mr. Pope on the ſame occaſion, "a ſign of the nation's being curſedly afraid of being over-run with too much politeneſs, when it could not regain one great man but at the expence of another." But the ſeverity of his treatment did not ceaſe even with his baniſhment. The ſame vindictive ſpirit purſued him in foreign climes. No Britiſh ſubject was even permitted to viſit him without the king's ſign manual, which Mr. Morice was always obliged to ſolicit, not only for himſelf, but for every one of his family whom he carried abroad with him, for which the fees of office were very high.

When biſhop Atterbury firſt entered upon his baniſhment, Bruſſels was the place deſtined for his reſidence; but, by the arts and inſtigations of the Britiſh miniſters, he was compelled to leave that place, and retire to Paris. There being ſolicited by the friends of the Pretender to enter into their negociations, he changed his abode for Montpelier in 1728; and, after reſiding there about two years, returned to Paris, where he died Feb. 15, 1731-2. The affliction which he ſuſtained by the death of his daughter, in 1729, was thought to have haſtened his own diſſolution. The former event he hath himſelf related in a very affecting manner, in a letter to Mr. Pope: "The earneſt deſire of meeting one I dearly loved, called me abruptly to Montpelier; where, after continuing two months under the cruel torture of a ſad and fruitleſs expectation, I was forced at laſt to take a long journey to Toulouſe; and even there I had miſſed the perſon I ſought, had ſhe not, with great ſpirit and courage, ventured all night up the Garronne to ſee me, which ſhe above all things deſired to do before ſhe died. By that means ſhe was brought where I was, between ſeven and eight in the morning, and lived twenty hours afterwards; which time was not loſt on either ſide, but paſſed in ſuch a manner as gave great ſatisfaction to both, and ſuch as, on her part, every way became her circumſtances and character: for ſhe had her ſenſes to the very laſt gaſp, and exerted them to give me, in thoſe few hours, greater marks of duty and love than ſhe had done in all her life-time, though ſhe had never been wanting in either. The laſt words ſhe ſaid to me were the kindeſt of all; a reflection on the goodneſs of God, which had allowed us in this manner to meet once more, before we parted for ever. Not many minutes after that, ſhe laid herſelf on her pillow, in a ſleeping poſture,

Placidaque ibi demum morte quievit.

Judge you, ſir, what I felt, and ſtill feel, on this occaſion, and ſpare me the trouble of deſcribing it. At my age, under my infirmities, among utter ſtrangers, how ſhall I find out proper reliefs and ſupports? I can have none, but thoſe which reaſon and religion furniſhed me; and thoſe I laid hold on, and graſp as faſt as I can. I hope that he who laid the burden upon me (for wiſe and good purpoſes no doubt) will enable me to bear it, in like manner as I have borne others, with ſome degree of fortitude and firmneſs."

How far the biſhop might have been attached in his inclinations to the Stuart family, to which he might be led by early prejudices of education, and the divided opinions of the times, it is not neceſſary here to inquire: but that he ſhould have been weak enough to engage in a plot ſo inconſiſtent with his ſtation, and ſo clumſily deviſed, is utterly inconſiſtent with that cunning which his enemies allowed him. The duke of Wharton, it is well known, was violent againſt him, till convinced by his unanſwerable reaſoning. It has been ſaid that Atterbury's wiſhes reached to the biſhopric of London, or even to York or Canterbury. But thoſe who were better acquainted with his views, knew that Wincheſter would have been much more deſirable to him than either of the others. And there are thoſe now living, who have been told from reſpectable authority, that that biſhopric was offered to him whenever it ſhould become vacant (and till that event ſhould happen, a penſion of 5000l. a-year beſides an ample proviſion for Mr. Morice), if he would ceaſe to give the oppoſition he did to Sir Robert Walpole's adminiſtration, by his ſpeeches and proteſts in the houſe of lords. When that offer was rejected by the biſhop, then the contrivance for his ruin was determined on.

His body was brought over to England, and interred on the 12th of May following in Weſtminſter abbey, in a vault which in the year 1722 had been prepared by his directions. There is no memorial over his grave: nor could there well be any, unleſs his friends would have conſented (which it is moſt probable they refuſed to do) that the words implying him to have died biſhop of Rocheſter ſhould have been omitted on his tomb. Some time before his death, he publiſhed a vindication of himſelf, biſhop Smalridge, and Dr. Aldrich, from a charge brought againſt them by Mr. Oldmixon, of having altered and interpolated the copy of lord Clarendon's "Hiſtory of the Rebellion." Biſhop Atterbury's "Sermons" are extant in four volumes in octavo: thoſe contained in the two firſt were publiſhed by himſelf, and dedicated to his great patron Sir Jonathan Trelawney biſhop of Wincheſter; thoſe in the two laſt were publiſhed after his death by Dr. Thomas Moore his lordſhip's chaplain. Four admirable "Viſitation Charges" accompany his "Epiſtolary Correſpondence."

As to biſhop Atterbury's character, however the moral and political part of it may have been differently repreſented by oppoſite parties, it is univerſally agreed, that he was a man of great learning and uncommon abilities, a fine writer, and a moſt excellent preacher. His learned friend Smalridge, in the ſpeech he made when he preſented him to the upper houſe of convocation, as procurator, ſtyles him "Vir in nullo literarum genere hoſpes, in pleriſque artibus et ſtudiis diu et feliciter exercitatus, in maxime perfectis literarum diſciplinis perfectiſſimus." In his controverſial writings, he was ſometimes too ſevere upon his adverſary, and dealt rather too much in ſatire and invective; but this his panegyriſt imputes more to the natural fervour of his wit than to any bitterneſs of temper or propenſe malice. In his ſermons, however, he is not only every way unexceptionable, but highly to be commended. The truth is, his talent as a preacher was ſo excellent and remarkable, that it may not improperly be ſaid, that he owed his preferment to the pulpit; nor is it hard to trace him, through his writings, to his ſeveral promotions in the church. We ſhall conclude biſhop Atterbury's character, as a preacher, with the encomium beſtowed on him by the author of "the Tatler;" who, having obſerved that the Engliſh clergy too much neglect the art of ſpeaking, makes a particular exception with regard to this prelate; who, ſays he, "has ſo particular a regard to his congregation, that he commits to his memory what he has to ſay to them; and has ſo ſoft and graceful a behaviour, that it muſt attract your attention. His perſon (continues this author), it is to be confeſſed, is no ſmall recommendation; but he is to be highly commended for not loſing that advantage, and adding to propriety of ſpeech, an action which would have been approved by Demoſthenes. He never attempts your paſſions, till he has convinced your reaſon. All the objections which you can form are laid open and diſperſed before he uſes the leaſt vehemence in his ſermon; but, when he thinks he has your head, he very ſoon wins your heart, and never pretends to ſhew the beauty of holineſs, till he has convinced you of the truth of it." In his letters to

Pope, &c. biſhop Atterbury appears in a pleaſing light, both as a writer and as a man. In eaſe and elegance they are ſuperior to thoſe of Pope, which are more ſtudied. There are in them ſeveral beautiful references to the claſſics. The biſhop alſo excelled in his alluſions to ſacred as well as prophane authors.

AT'TERCOB, *ſ.* A ſpider's web.

ATTERKLA'A, a town of Germany, in the archduchy of Auſtria, ſix miles N. W of Entzerſtorff.

ATTER'MINING, *ſ.* [from *atterminer*, Fr.] In law, the granting a time or term for payment of a debt. *Ordinatio de libertatibus perquirendis, anno* 27 Edw. I. And ſee ſtat. *Weſt.* 2. c. 4.

ATTE'RN, a town of Hindoſtan, in the country of Agra, thirty-eight miles ſouth-ſouth-eaſt of Agra, and thirty-nine north-eaſt of Gwalior.

To ATTEST', *v. a.* [*atteſtor*, Lat.] To bear witneſs of; to witneſs.—Many particular facts are recorded in holy writ, *atteſted* by particular pagan authors. *Addiſon.*—To call to witneſs; to invoke as conſcious.

The ſacred ſtreams, which heav'n's imperial ſtate
Atteſts in oaths, and fears to violate. *Dryden.*

ATTEST, *ſ.* Witneſs; teſtimony; atteſtation.—The *atteſt* of eyes and ears. *Shakeſpeare.*

With the voice divine
Nigh thunderſtruck, th' exalted man, to whom
Such high *atteſt* was giv'n, a while ſurvey'd
With wonder. *Milton.*

ATTESTA'TION, *ſ.* Teſtimony; witneſs; evidence.—We may derive a probability from the *atteſtation* of wiſe and honeſt men by word or writing, or the concurring witneſs of multitudes who have ſeen and known what they relate. *Watts.*

AT'TIA, a town of Perſia, ten leagues ſouth of Kin.

AT'TIC, *adj.* any thing relating to Attica, or to the city of Athens: thus *Attic ſalt* in philology, is a delicate poignant ſort of wit and humour peculiar to the Athenian writers; *Attic witneſs*, a witneſs incapable of corruption, &c.

Attic Base, a peculiar kind of baſe uſed by the ancient architects in the Ionic order; and by Palladio, and ſome others, in the Doric.

Attic Story, in architecture, a ſtory in the upper part of a houſe, where the windows are uſually ſquare.

AT'TICA, an ancient kingdom of Greece, ſituated on the north coaſt of the gulph of Saron, bounded on the weſt by Megara, mount Cithæron, and part of Bœotia; on the north by the gulph of Euripus, now *Stretto di negro ponte*, and the reſt of Bœotia; and on the eaſt by the Europius. It extends in length from north-weſt to ſouth-eaſt about ſixty miles; its breadth from north to ſouth was fifty-ſix, decreaſing as it approached the ſea. The ſoil of this country was naturally barren and craggy, though by the induſtry of its inhabitants it produced all the neceſſaries of life. On this account Attica was leſs expoſed to invaſions than other more fertile counties; and hence it preſerved its ancient inhabitants beyond all the other kingdoms in its neighbourhood; ſo that they were reputed to be the ſpontaneous production of the ſoil; and as a badge of this, Thucydides tells us, they wore golden graſshoppers in their hair. The chief cities in the kingdom of Attica were Athens the capital; next to it Eleuſis, ſituated on the ſame gulph, near the coaſts of Megara; and next to that Rhamus, famed for the temple of Amphiaraus and the ſtatue of the goddeſs Nemeſis.

The firſt king of this country, of whom we have any diſtinct account, was Cecrops. Others indeed are ſaid to have reigned before him, particularly Actæus, whoſe daughter Cecrops married, and in her right laid the foundation of his new monarchy. Cecrops is ſaid to have been a native of Egypt, who leading a colony of his countrymen into Attica, was the firſt who defied Jupiter, ſet up altars and idols, and inſtituted marriage among the Greeks. He is likewiſe affirmed to have taught his ſubjects navigation; and for the better adminiſtration of juſtice, and promoting intercourſe among them, to have divided them into the firſt four tribes, called *Cecropis Autochthon*, *Actea*, and *Paralia*; and he is alſo by ſome ſaid to be the founder of the Areopagus. From this monarch the Athenians affected to call themſelves *Cecropidæ*, till the reign of Erectheus their ſixth king, after whom they took the name of *Erecthydæ*.

Cecrops, dying after a reign of fifty years, left three daughters; by marrying one of which, probably, Cranus a wealthy citizen aſcended the throne. He enjoyed his crown peaceably for ten years; till, having married one of his daughters named *Attis*, to Amphictyon the ſon of Deucalion, he was by him dethroned, and forced to lead a private life to the laſt. From this daughter, the country, which before had been called *Actea*, took the name of *Attica*. After a reign of ten or twelve years, Amphictyon was himſelf depoſed by Ericthonius, ſaid to be the ſon of Vulcan and Tethys. Being lame of both his feet, he is ſaid to have invented coaches, or, as others will have it, inſtituted horſe and chariot races, in honour of Minerva. He is alſo reported to have been the firſt who ſtamped ſilver coin. He reigned fifty years, and was ſucceeded by his ſon Pandion the father of Progne and Philomela; whoſe hard fate, ſo famous among the poets, is ſuppoſed to have broke his heart, after a reign of about forty years. In his time Triptolemus taught the Athenians agriculture, which he had learned from Ceres.

Pandion was ſuceeded by his ſon Erectheus, who being reckoned the moſt powerful prince of his time, Boreas king of Thrace demanded his daughter Orithia in marriage, and on being refuſed carried her off by force. After a reign of fifty years, Erectheus being killed in a battle with the Eleuſians, was ſucceeded by his ſon Cecrops II. who is generally ſuppoſed to have been the firſt who gathered the people into towns: they having till then lived in houſes and cottages ſcattered here and there, without order or regular diſtance. After a reign of forty years he was driven out by his brethren Metion and Pandorus, who forced him to fly into Ægialea, where he died. He was ſucceeded by his ſon Pandion II. and he was likewiſe driven out by Metion, who aſſumed the government. Pandion in the mean time fled into Megara, where he married Pelia the daughter of Pylas king of that place, and was appointed ſucceſſor to the kingdom. Here he had four ſons, who returning to Athens, whether with or without their father is uncertain, expelled the ſons of Metion, and after the deceaſe of Pandion their father, divided the government among themſelves; notwithſtanding which, the royal dignity did in effect remain with Ægeus the eldeſt.

Ægeus, when he aſcended the throne, finding himſelf deſpiſed by his ſubjects becauſe he had no ſons, and ſometimes inſulted by his brother Pallas who had no leſs than fifty, conſulted the oracle of Apollo at Delphi. Receiving here, as was commonly the caſe, an anſwer which could not be underſtood without a commentator, he applied to Pittheus king of Torezen, famous for his ſkill in expounding oracles. This prince eaſily prevailed with him to lie with his daughter Æthra, who proved with child; and, as none but theſe three were privy to the ſecret, Ægeus, before his return to Athens, hid a ſword and pair of ſhoes under a ſtone, leaving orders with the princeſs, that, if the child proved a boy, ſhe ſhould ſend him to Athens with theſe tokens as ſoon as he was able to lift up that ſtone. He charged her moreover to uſe all imaginable ſecrecy, leſt the ſons of his brother Pallas ſhould way-lay and murder him. Æthra being delivered of a ſon, Pittheus gave out that Neptune was the father of it. This child was named Theſeus, and proved one of the moſt famous heroes of antiquity. Being arrived at the age of ſixteen, his mother brought him to the ſtone above-mentioned; and he, having lifted it with eaſe, was deſired to take up the ſword and ſhoes, and prepare himſelf to go to his father. He was adviſed to go by ſea rather than by land, as, ever ſince the departure of Hercules, the roads had been exceedingly infeſted by banditti. Theſeus, however, who had already began to diſcover marks of uncommon ſtrength and courage, no ſooner heard the name of Hercules mentioned, than he became deſirous of imitating ſo great a pattern; and after performing a number of glorious exploits, for which ſee the article THESEUS, he arrived ſafe at his father's capital.

The atchievements of this young hero procured him a welcome reception at the court of Ægeus, though his birth was unknown to all except Medea, to whom the king had lately been married. This queen being a ſorcereſs, it is not to be ſuppoſed any thing could be concealed from her: ſhe therefore, by her diabolical penetration, quickly found out that Theſeus was the king's ſon; after which ſhe became ſo jealous of him on account of his valour, that ſhe perſuaded her old huſband to invite the young ſtranger to a banquet, and poiſon him in a glaſs of wine. The poiſon was accordingly prepared, and Theſeus invited; but, the prince ſuddenly drawing his ſword, it was immediately recognized by Ægeus to be the ſame he had formerly buried below the ſtone. Upon this he ſtepped forward to Theſeus, throwing down the poiſoned draught in his way; and, embracing him with much tenderneſs, owned him for his ſon before all the court.

At that time the king of Attica had great occaſion for ſuch a champion as Theſeus. The ſons of Pallas, who had all along behaved with great inſolence, upon Theſeus being diſcovered to be the king's ſon, and heir apparent to the crown, broke out in open rebellion. They were ſoon diſcomfited; but Ægeus and the whole country of Attica were ſtill in great diſtreſs on the following account. Some years before, Androgeus, the ſon of Minos king of Crete, came to Athens to be preſent at one of their feaſts. During this viſit he contracted ſuch an intimacy with the fifty ſons of Pallas, that Ægeus, fearing ſome fatal conſequences, cauſed him to be privately murdered. According to others, Androgeus, having undertaken to encounter the Marathonian bull, was killed by it. Be that as it may, Minos, having received news of his ſon's death, imputed it to the people of Attica; and therefore, after ſeveral unſucceſsful attempts to revenge his own quarrel, prayed to the gods to do it for him. The Athenians, in conſequence of this prayer, are ſaid to have been viſited with earthquakes, famine, and peſtilence; on account of which they applied to the oracle. Here they were informed, that no relief was to be had till they were reconciled to the Cretan king. Minos, reſolving to make them pay dear for their deliverance, impoſed upon them a tribute of ſeven young men and as many virgins, whom he condemned to be devoured by the minotaur, a monſter feigned by the poets to have been half man and half bull. This bloody tribute had been twice paid, and Minos had already ſent his meſſengers the third time, when Theſeus willingly offered himſelf to be one of the unhappy victims; and, embarking with them in one ſhip, he gave the pilot two ſails, the one black to ſail with, and the other white to be hoiſted up at his return, in caſe he came off victorious. Theſeus had all the ſucceſs he could wiſh: he killed the minotaur, prevailed with Minos to remit the tribute, and his daughter Ariadne to run away with him; but her he left with child in the iſle of Naxos. Unfortunately, however, for Ægeus, the joy of Theſeus and his company was ſo great, that at their return they forgot to hoiſt the white flag in token of their victory: upon which the old king, taking for granted that his ſon was killed, threw himſelf into the ſea, which ever ſince has from him been called the *Ægean Sea*.

Theſeus, being thus left in poſſeſſion of the kingdom of Attica, began immediately to think of indulging his warlike genius, and rendering the civil affairs of his kingdom as little troubleſome as poſſible. To accompliſh his purpoſe, he began with gathering moſt of the people of Attica into the old and new town, which he incorporated into one city. After this he diveſted himſelf of all his regal power, except the title of king, the command of the army, and the guardianſhip of the laws. The reſt he committed to magiſtrates choſen out of three different orders of the people, whom he divided into nobles, huſbandmen, and artificers. The firſt he inveſted with the power of interpreting and executing the laws, and regulating whatever related to religion. The other two choſe their inferior magiſtrates from among themſelves, to take care of whatever related to their ſeparate orders: ſo that the kingdom was in ſome meaſure reduced to a common-wealth, in which the king had the greateſt poſt, the nobles were next to him in honour and authority, the huſbandmen had the greateſt profit, and the artiſts exceeded them in number. He likewiſe aboliſhed all their diſtinct courts of judicature, and built one common council-hall called *Prytaneum*, which ſtood for many ages afterwards.

Having thus new-modelled the government, his next care was to join to his dominions the kingdom of Megara, in right of his grandfather Pandion II. who had married the daughter of Pylas as above-mentioned. On this occaſion he erected the famous pillar in the Iſthmus, which ſhewed the limits of the two countries that met there. On the one ſide of this pillar was inſcribed, "This is not Peloponneſus, but Ionia;" and on the other, "This is Peloponneſus, not Ionia." After this he undertook an expedition againſt the Amazons, whom he overcame, took their queen Hippolita, and afterwards married her. Soon after this, Theſeus contracted an intimacy with Perithous, the ſon of Ixion: and being invited to his nuptials, aſſiſted him in killing a number of Centaurs, or rather Theſſalian horſemen (who in their cups had offered violence to their female gueſts), and drove the reſt out of the country. Theſe two aſſociates then proceeded to Sparta, where Theſeus fell in love with the famed Helena, at that time not above nine years old, while he himſelf was upwards of fifty. Her they carried off: and of the rape there are various accounts; but the following one, which is given by Plutarch, is generally allowed to be the moſt authentic.

According to that hiſtorian, they ſtole this beauty, the greateſt in the world, out of the temple of Diana Ortia, where Helena happened to be dancing. They were purſued as far as Tegea, but made their eſcape out of Peloponneſus; and, thinking themſelves now ſecure of their prey, they agreed to caſt lots for her, upon condition that he to whoſe lot ſhe fell ſhould aſſiſt the other in procuring ſome celebrated beauty. Fortune having declared for Theſeus, he aſſiſted his companion in the like attempt upon Proſerpina daughter of Aidonius king of the Moloſſi in Epirus; who, being the next beauty to Helena, was guarded, as the poets feign, by the dog Cerberus, which had three heads, and conſequently a very formidable enemy. Her father, however, underſtanding that they deſigned to ſteal away his daughter, threw Perithous to be torn in pieces by Cerberus, and put Theſeus in priſon, from whence he was afterwards relieved at the interceſſion of Hercules. After theſe adventures, Theſeus returned to Athens, but found himſelf very coolly received by his ſubjects. Mneſtheus, the ſon of Peteus, and great-grandſon of Erectheus, had made uſe of the king's abſence to ingratiate himſelf with the people; and, upon the commencement of a war with Caſtor and Pollux, the two brothers of Helena, he perſuaded the people of Athens to open their gates to the two brothers. Upon this, Theſeus was under the neceſſity of conveying away himſelf and family with all poſſible privacy. This he luckily accompliſhed; and deſigned to have ſailed to Crete, to have obtained aſſiſtance from Deucalion, the ſon of Minos, and now brother-in-law to Theſeus, he having married Phædra, ſiſter to Deucalion. Unfortunately, however, Theſeus was ſhipwrecked on the iſland of Scyros. Here he was at firſt kindly received by Lycomedes, king of that iſland; but was ſoon after killed by a fall from a high rock, over which ſome ſay he was puſhed by Lycomedes himſelf, who had been prevailed upon to deſtroy Theſeus in that manner by Mneſtheus, that he might with the more ſecurity enjoy the kingdom of Attica.

Mneſtheus reigned twenty-four years, but loſt his life at the ſiege of Troy; and was ſucceeded by Demophon one of the ſons of Theſeus by Phædra, who was likewiſe at the ſiege of Troy, but had the good fortune to return in ſafety. In his reign was erected the famous court of the Ephetæ; conſiſting originally of fifty Athenians and as many Argives, for trying wilful murder. By this court the king himſelf afterwards ſubmitted to be tried for having accidentally killed one of his ſubjects. He reigned thirty-three years, and was ſucceeded by his ſon, according to ſome, or according to others his brother, Oxyntes, who reigned twelve years. Oxyntes was ſucceeded by his ſon Aphydas, who was murdered by Thymætes, the baſtard ſon of Oxyntes.

This king diſcovered many baſe qualities unworthy of his dignity; and at laſt was depoſed by his ſubjects on the following occaſion: Xanthus, king of Bœotia, had a conteſt with the Athenians, about one of their frontier towns. He offered to decide the matter by ſingle combat with the king; but this was declined by Thymætes. It happened, that at that time Melanthus a Meſſenian, who had been driven out of his country by the Heraclidæ, was come to Athens; who accepted the king of Bœotia's challenge. At the firſt onſet, Melanthus aſked his adverſary, why he had, contrary to the articles, brought a ſecond into the field with him? and, as Xanthus immediately looked about to ſee who was behind him, Melanthus run him through with his lance. This victory, though it did little honour to him who gained it, was ſo agreeable to the Athenians, that they depoſed their cowardly king Thymætes, after he had reigned eight years; and appointed Melanthus in his ſtead, who, after a reign of thirty-ſeven years, left the kingdom to his ſon Codrus. This prince reigned about twenty-one years; during which time the Dores and Heraclidæ had regained all Peloponneſus, and were upon the point of entering into Attica. Codrus, being informed that the oracle had promiſed them victory provided they did not kill the king of the Athenians, came immediately to a reſolution of dying for his country. Diſguiſing himſelf, therefore, like a peaſant, he went into the enemy's camp, and, quarrelling with ſome of the ſoldiers, was killed by them. On the morrow, the Athenians, knowing what was done, ſent to demand the body of their king; at which the invaders were ſo terrified, that they decamped without ſtriking a blow.

Upon the death of Codrus, a diſpute which happened among his ſons concerning the ſucceſſion, furniſhed the Athenians with a pretence for ridding themſelves of their kings altogether, and changing the monarchical form of government into a republican one. It was improbable, they ſaid, that they ſhould ever have ſo good a king as Codrus; and, to prevent their having a worſe, they reſolved to have no king but Jupiter. That they might not, however, ſeem ungrateful to the family of Codrus, they made his ſon Medon their ſupreme magiſtrate, with the title of *archon*. They afterwards rendered that office decennial, but continued it ſtill in the family of Codrus. The extinction of the Medontidæ at laſt left them without reſtraint; upon which they not only made this office annual, but created nine archons. By the latter invention they provided againſt the too great power of a ſingle perſon, as by the former they took away all apprehenſion of the archons having time to eſtabliſh themſelves, ſo as to change the conſtitution. In a word, they now attained what they had long ſought, viz. the making the ſupreme magiſtrates dependent on the people.

There is a liſt of theſe archons for upwards of 600 years, beginning with Creon, who lived about 684 years before Chriſt, to Herodes, who lived only ſixty years before that era. The firſt archon is named *Draco*. He reigned in the ſecond, or, as others ſay, in the laſt, year of the 39th Olympiad, when, it is ſuppoſed, he publiſhed his laws: but, though his name is very frequently mentioned in hiſtory, yet no connected account can be found either of him or his inſtitutions, only, in general, his laws were exceedingly ſevere, inflicting death for the ſmalleſt faults; which gave occaſion to Demades the orator to obſerve, that the laws of Draco were written with blood, and not with ink. For this extraordinary ſeverity he gave no other reaſon, than that ſmall faults ſeemed to him to be worthy of death, and he could find no higher puniſhment for the greateſt. He was far advanced in years when he gave laws to Athens; and, to give his inſtitutions the greater weight, he would not ſuffer them to be called *nomoi*, or laws, but *theſmoi*, or ſanctions proceeding from more than human wiſdom. The extreme ſeverity of theſe laws, however, ſoon made the Athenians weary of the author of them; upon which Draco was obliged to retire to Ægina. Here he was received with the higheſt honours: but the favour of the inhabitants of this place proved more fatal to him than the hatred of the Athenians; for, coming one day into the theatre, the audience, to ſhew their regard, threw, as the cuſtom then was, their cloaks upon him; and the multitude of theſe being very great, they ſtifled the old man, who was too weak to diſengage himſelf from them.

After the expulſion of Draco, nothing remarkable happened at Athens till the year before Chriſt 606, when the republic engaged in a war with the Mitylenians about the city Sigæum, ſituated near the mouth of the river Scamander. The Athenian army was commanded by Phrynon, a perſon equally remarkable for the comelineſs of his perſon and the generoſity of his mind. The Mitylenians were commanded by Pittacus, one of the celebrated ſages of Greece. As theſe commanders looked upon the honour of their reſpective countries to be concerned, they exerted themſelves to the utmoſt. At laſt they met in ſingle combat: wherein Phrynon depended on his valour only; but Pittacus concealed behind his ſhield a net, wherewith he ſuddenly entangled his antagoniſt, and eaſily ſlew him. This, however, not putting an end to the war, Periander tyrant of Corinth interpoſed; and, both parties having ſubmitted to his arbitration, he decreed that Sigæum ſhould belong to the Athenians.

About ſeven years after this war, a conſpiracy was formed by Cylon, ſon-in-law to Theagenes tyrant of Megara, who, having by his affable behaviour procured many friends, formed a deſign of ſeizing the ſovereignty of Athens. Having conſulted the oracle as to the moſt proper time, he was directed to make the attempt when the citizens of Athens were employed in celebrating their higheſt feaſts to Jupiter. When moſt of the citizens therefore were gone to the Olympic games, Cylon and his aſſociates made themſelves maſters of the citadel. Here they were beſieged by Megacles, at that time archon, and ſoon reduced to great diſtreſs for want of water. The chief, together with his brother, found means to make their eſcape, but the meaner ſort were left to ſhift for themſelves. In this extremity they fled to the temple of Minerva; from whence Megacles prevailed upon them to come down and ſubmit themſelves to the mercy of their country. Having at laſt aſſented to this, they tied a cord to the image of the goddeſs, and carried the clue with them, to demonſtrate, that though they were out of the temple they were ſtill under Minerva's protection. Unfortunately for them, however, as they paſſed the temple of the furies, the line ſnapped of itſelf; which Megacles conſtruing into a renunciation by the goddeſs, cauſed his men to fall upon them and diſpatch as many as they could find. Such as were without the temple were immediately maſſacred, and thoſe who fled thither again were murdered in their ſanctuary. In ſhort, none eſcaped but ſuch as bribed the wives of the ſoldiers. This carnage, however, did not put an end to the ſedition. The remains of Cylon's faction created great diſturbances, by inſinuating that the violation of Minerva's ſanctuary had drawn down the anger of the gods; and theſe diſcourſes had ſuch an effect, that Megacles and his officers were ſtyled *execrable*, and held to be perſons under the diſpleaſure of heaven. During the time of this confuſion, the Megarenſians attacked Niſea, which they took, as well as Salamis; and ſo completely routed the

Athenians in every attempt to recover the latter, that a law was at laſt paſſed, by which it ſhould be capital for any one even to propoſe the recovery of Salamis.

It was at this time, about 597 years before the Chriſtian era, that Solon, the famous legiſlator, firſt grew into the notice of his country. He is ſaid to have been lineally deſcended from Codrus; but left by his father in circumſtances rather neceſſitous, which obliged him to apply to merchandiſe: it is plain, however, both from his words and writings, that he was a diſintereſted patriot. The decree, that none under pain of death ſhould propoſe the recovery of Salamis, grieved him ſo much, that having compoſed an hundred verſes, ſuch as he thought would inflame the minds of the people, he ran into the market-place, loudly repeating his elegy. A croud being gathered round him, his kinſman Piſiſtratus mingled among the reſt, and, obſerving the people moved with Solon's words, he ſeconded him with all the eloquence he was maſter of; and they prevailed ſo far as to have the law repealed, and a war was immediately commenced againſt the people of Megara. Who was commander in this expedition is not certain; but the city was recovered, according to the moſt general account, by the following ſtratagem: Solon coming with Piſiſtratus to Colias, and finding the women buſy in celebrating, according to cuſtom, the feaſt of Ceres, he ſent a confidant to Salamis, who pretended to be no friend to the people of Attica, telling the inhabitants of Salamis, that, if they had a mind to ſeize the faireſt of the Athenian ladies, they might now do it by paſſing over to Colias. The Megarenſians, giving eaſy credit to what the man ſaid, immediately fitted out a ſhip; which Solon perceiving from the oppoſite ſhore, diſmiſſed the women, and, having dreſſed a number of beardleſs youths in female habits, under which they concealed every one a dagger, he ſent them to the ſea-ſide to dance and divert themſelves as the women were wont to do. When thoſe who came from Salamis ſaw theſe young perſons ſkipping up and down, they ſtrove who ſhould be the firſt on-ſhore; but were every one of them killed, and their veſſel ſeized; aboard which the Athenians embarking, ſailed immediately to Salamis, and took it.

From this event Solon was greatly honoured by the people; to whom another occaſion of admiring his wiſdom was quickly afforded. The inhabitants of Cirrha, a town ſituated in the bay of Corinth, after having by repeated incurſions waſted the territory of Delphi, at laſt beſieged the capital itſelf, with a view of making themſelves maſters of the treaſures contained in the temple of Apollo. Advice of this intended ſacrilege being ſent to the Amphictyons, who were the ſtates-general of Greece, Solon adviſed that the matter ſhould be univerſally reſented, and that all the ſtates ſhould join in puniſhing the Cirrhæans, and ſaving the Delphic oracle. This advice was complied with, and a general war againſt Cirrha declared. Clyſthenes, tyrant of Sicyon, commanded in chief, and Alcmæon was general of the Athenian quota. Solon went as counſellor to Clyſthenes, and by following his advice the war was conducted to a proſperous iſſue.

On the return of Solon to Athens he found things in the utmoſt confuſion. The remnant of Cylon's faction gave out, that all ſorts of misfortunes had befallen the republic on account of the impiety of Megacles and his followers; which clamour was heightened by the re-taking of Salamis about this time by the Megarenſians. Solon interpoſed, and perſuaded thoſe who were ſtyled *execrable* to abide a trial, and 300 perſons were choſen to judge them. The event was, that 300 of Megacles's party who were alive were ſent into perpetual baniſhment, and the bones of ſuch as were dead were dug up and ſent without the limits of their country. But, though this deciſion reſtored the public quiet for the preſent, it was not long before the people were divided into three factions, contending about the proper form of government. Theſe were called the *Diacrii*, *Pediæi*, and *Parali*; the firſt of theſe were the inhabitants of the hill country, who declared poſitively for democracy; the ſecond, dwelling in the lower parts, and who were far more opulent than the former, declared for an oligarchy, as ſuppoſing the government would fall moſtly into their hands; the third party, who lived on the ſea-coaſt, were people of moderate principles, and therefore were for a mixed government. Beſides the diſturbances raiſed on this account, others were occaſioned by the rich oppreſſing the poor. According to Plutarch, the poor, being indebted to the rich, either tilled their grounds and paid them the ſixth part of the produce, or engaged their bodies for their debts, ſo that many were made ſlaves at home, and many ſold into other countries; nay, ſome were obliged to ſell their children to pay their debts, and others in deſpair quitted Attica altogether. The greateſt part, however, were for throwing off the yoke, and began to look about for a leader, openly declaring, that they intended to change the form of government, and make a repartition of lands. In this extremity, the eyes of all the citizens were caſt upon Solon. The moſt prudent were for offering him the ſovereignty; but he, perceiving their intentions, conducted himſelf in ſuch a manner as to pleaſe both parties, and ſhewed a ſpirit of patriotiſm perhaps never equalled. He refuſed the ſovereignty as far as it might have benefited himſelf; and yet took upon himſelf all the care and trouble of a prince, for the ſake of his people. He was choſen archon without having recourſe to lots, and after his election diſappointed the ſelfiſh hopes of both parties. It was Solon's fundamental maxim, That thoſe laws will be beſt obſerved which power and juſtice equally ſupport. Wherever, therefore, he found the old conſtitution conſonant to juſtice in any tolerable degree, he refuſed to make any alteration; and he was at extraordinary pains to ſhew the reaſon of the changes he did make. In ſhort, being a perfect judge of human nature, he ſought to rule only by ſhewing his ſubjects that it was their intereſt to obey, and not by forcing upon them what he himſelf eſteemed beſt. Therefore, to a perſon who aſked whether he had given the Athenians the beſt laws in his power, he replied, "I have eſtabliſhed the beſt they could receive."

As to the main cauſe of ſedition, which was the oppreſſed ſtate of the meaner ſort, Solon removed it by a contrivance which he called *ſiſachthia*, i.e. 'diſcharge;' but what this really was, authors are not agreed. Some ſay that he releaſed all debts then in being, and prohibited the taking any man's perſon for payment of a debt for the future. According to others, the poor were eaſed, not by cancelling the debts, but by lowering the intereſt, and increaſing the value of money; a mina, which before was made equal to ſeventy-three drachms only, being by him made equal to 100; which was of great advantage to the debtor, and did the creditor no hurt. It is, however, moſt probable that the ſiſachthia was a general remittance of all debts whatever, otherwiſe Solon could not have boaſted in his verſes that he had removed ſo many marks of mortgages as were every where frequent; for the Athenians had a cuſtom of hanging up billets to ſhew that houſes were engaged for ſuch and ſuch ſums of money; from all of which they were now made free. But, in the midſt of Solon's glory, an occurrence happened, which, for a time, impaired his reputation, and almoſt defeated his ſchemes. He had conſulted Conon, Clinias, and Hipponicus, his three friends, on an oration prepared with a view to engage the people's conſent to the diſcharge; and theſe three men, thus knowing there was to be a general diſcharge of debts, baſely took the opportunity of borrowing vaſt ſums before the law was promulgated, in conſequence of which they were never obliged to return them. This was thought at firſt to have been done with Solon's conſent, and that he had ſhared in the money; but this aſperſion was quickly wiped off when it appeared that the lawgiver himſelf was a very conſiderable loſer by his own law. His friends, however, could never recover their credit, but were ever after ſtigmatiſed with the opprobrious appellation of *chreocopidæ*, or 'debt-ſinkers.'

Solon, being now inveſted with unlimited authority, ſet about the arduous taſk of compiling new laws for the turbulent people of Attica; which, having at laſt completed, he procured them to be ratified for 100 years. Such as related to private actions were preſerved on parallelograms of wood, with caſes which reached from the ground, and turned about upon a pin like a wheel. Theſe were thence called *Axones*; and were placed firſt in the citadel, and afterwards in the prytaneum, that all the ſubjects might have acceſs to them when they pleaſed. Such as concerned public inſtitutions and ſacrifices were contained in triangular tables of ſtone called *Cyrbes*. The Athenian magiſtrates were ſworn to obſerve both: and in proceſs of time theſe monuments of Solon's wiſdom became ſo famous, that all public acts were from them named *axones* and *cyrbes*. After the promulgation of theſe laws, Solon found himſelf obliged to leave Athens, to prevent his being continually teazed for explanations and alterations of them. He therefore pretended an inclination to merchandiſe, and obtained leave to abſent himſelf for ten years, during which time he hoped the laws would be grown familiar. From Athens Solon travelled into Egypt, where he converſed with Pſenophis the Heliopolitan, and Sonchis the Saite, the moſt learned prieſts of that age. From theſe he learned the ſituation of the iſland Atlantis, of which he wrote an account in verſe, which Plato afterwards continued. From Egypt he went to Cyprus, where he was well received by one of the petty kings. This prince lived in a city called *Apeia*, built by Demophon, the ſon of Theſeus, on an eminence near the river Clairus, but in a ſoil craggy and barren. Solon obſerving a very pleaſant plain below, engaged the king to remove thither; aſſiſted in executing the ſcheme he had formed; and ſucceeded ſo well that a new city was formed, which ſoon became populous, and out of gratitude to the Athenian legiſlator was called *Solos*.

But, while Solon was thus travelling in queſt of wiſdom, and with a view to benefit thoſe among whom he came, his countrymen, who ſeem to have reſolved on being diſſatisfied at all events, had again divided themſelves into three factions. Lycurgus put himſelf at the head of the country people; Megacles the ſon of Alcmæon was at the head of thoſe who lived on the ſea coaſt; and Piſiſtratus put himſelf at the head of the poorer ſort, to protect them, as he pretended, from tyranny, but in reality to ſeize on the ſovereignty for himſelf. All the factions pretended to have a vaſt regard for Solon and his laws, at the ſame time that they were very deſirous of a change; but how they were to be bettered, none of them knew, or pretended to know. In the midſt of this confuſion the legiſlator returned. Each of the factions paid their court to him, and affected to receive him with the deepeſt reverence and reſpect; beſeeching him to re-aſſume his authority, and compoſe the diſorders which they themſelves kept up. This Solon declined on account of his age, which, he ſaid, rendered him unable to ſpeak and act for the good of his country as formerly: however, he ſent for the chiefs of each party, beſeeching them in the moſt pathetic manner not to ruin their common parent, but to prefer the public good to their own private intereſt.

All the wiſe counſels of Solon, however, were loſt upon the Athenians. Piſiſtratus had got the meaner ſort entirely at his devotion, and therefore reſolved to cheat them out of the liberty which they certainly deſerved to loſe. With this view he wounded himſelf, and, as Herodotus ſays, the mules that drew his chariot; then he drove into the market-place, and there ſhewed his bleeding body, imploring the protection of the people from thoſe whom his kindneſs to them had rendered his implacable enemies. A concourſe of people being inſtantly formed, Solon came among the reſt, and, ſuſpecting the deceit, openly taxed Piſiſtratus with his perfidious conduct; but to no purpoſe. A general aſſembly of the people was called, wherein it was moved by Ariſton, that Piſiſtratus ſhould have a guard. Solon was the only perſon who had reſolution enough to oppoſe this meaſure; the richer Athenians perceiving that the multitude implicitly followed Piſiſtratus, and applauded every thing he ſaid, remained ſilent through fear. Solon himſelf, when he ſaw he could prevail nothing, left the aſſembly, ſaying he was *wiſer* than ſome, and *ſtouter* than others. A guard of four hundred men was now unanimouſly decreed to Piſiſtratus; and this inconſiderable body he made uſe of to enſlave the people, but in what manner he accompliſhed his purpoſe is not agreed. Piſiſtratus, having thus ſeiſed the ſovereignty, did not overturn the laws, but uſed his power with the greateſt moderation. It is not to be expected, however, that ſo turbulent a people as the Athenians could be ſatisfied by any form of government. At the beginning of his adminiſtration, Megacles and his family retired out of Athens to ſave their own lives, yet without deſpairing of being able ſome time or other to return. With this view Megacles and his aſſociates entered into a treaty with Lycurgus; and, having brought him and his party into a ſcheme for depoſing Piſiſtratus, they concerted matters ſo well, that Piſiſtratus was ſoon obliged to ſeek for ſhelter ſomewhere elſe, and, on his departure, the Athenians ordered his goods to be ſold. Nobody, however, except Callias, would venture to buy any of them, from an apprehenſion that they would ſoon be reſtored to their proper owner, which accordingly happened in a very ſhort time.

As Megacles and his party had negociated with Lycurgus to turn out Piſiſtratus, ſo they now entered into a treaty with Piſiſtratus to reinſtate him in his principality, as ſoon as they found Lycurgus would not be implicitly governed by them. To accompliſh this, they fell upon a ridiculous project; which, however, was attended with ſucceſs. They found out a woman whoſe name was *Phya*, of a mean family and fortune, but of a great ſtature, and very handſome. Her they dreſſed in armour, placed her in a chariot, and, having diſpoſed things ſo as to make her appear with all poſſible advantage, they conducted her towards the city, ſending heralds before, with orders to ſpeak to the people in the following terms: "Give a kind reception, O Athenians, to Piſiſtratus, who is ſo much honoured by Minerva above all other men, that ſhe herſelf condeſcends to bring him back to the citadel." The report being univerſally ſpread that Minerva was bringing home Piſiſtratus, and the ignorant multitude believing this woman to be the goddeſs, addreſſed their prayers to her, and received Piſiſtratus with the utmoſt joy. When he had recovered the ſovereignty, Piſiſtratus married the daughter of Megacles as he had promiſed, and gave the pretended goddeſs to his ſon Hipparchus.

Piſiſtratus did not long enjoy the authority to which he had been reſtored in ſo ſtrange a manner. He had married the daughter of Megacles, as already obſerved; but, having children by a former wife, and remembring that the whole family of Megacles was reprobated by the Athenians, he thought proper to let his new ſpouſe remain in a ſtate of perpetual widowhood. This ſhe patiently bore for ſome time, but at laſt acquainted her mother. An affront ſo grievous could not fail to be highly reſented. Megacles inſtantly entered into a treaty with the malcontents, of whom there were always great plenty at Athens. This Piſiſtratus being appriſed of, and perceiving a new ſtorm gathering, he voluntarily quitted Athens, and retired into Eretria. Here having conſulted with his ſons, it was reſolved to reduce Athens by force. With this view he applied to ſeveral of the Greek ſtates, who furniſhed him with the troops he deſired, but the Thebans exceeded all the reſt in their liberality; and with this army he returned to Attica, according to Herodotus, in the eleventh year of his baniſhment. They firſt reduced Marathon, the inhabitants of which had taken no meaſures for their defence. The republican forces in the mean time marched out of Athens to attack him; but, conducting themſelves in a ſecure and careleſs manner, they were ſurpriſed by Piſiſtratus, and totally routed. While they were endeavouring to make their eſcape, he cauſed his two ſons to ride before him with all ſpeed, and tell thoſe they came up with that they had nothing to fear, but that they might every one return home. This ſtratagem ſo effectually diſperſed the republican army, that it was impoſſible to rally them, and Piſiſtratus became a third time maſter of Attica.

Piſiſtratus being once more in poſſeſſion of the ſovereignty, took a method of eſtabliſhing himſelf on the throne directly oppoſite to what Theſeus had done. Inſtead of collecting the inhabitants from the country into cities, Piſiſtratus made them retire from the cities into the country, in order to apply themſelves to agriculture. This prevented their meeting together, and caballing againſt him in ſuch bodies as they had been accuſtomed to do. By this means alſo the country was greatly meliorated, and plantations of olives were made over all Attica, which had before not only been deſtitute of corn, but even bare of trees. He alſo commanded, that, in the city, men ſhould wear a kind of ſheep-ſkin veſt, reaching to the knees; but ſo intolerable were the laws of Piſiſtratus to his ſubjects, that this kind of garment in ſucceeding times became proverbially the habit of ſlavery.

As prince of Athens, Piſiſtratus received the tenth part every man's revenues, and even of the fruits of the earth; and this alſo, though for the ſervice of the ſtate, ſeemed to the Athenians a moſt grievous burden. In ſhort, though Piſiſtratus behaved in all reſpects as a moſt excellent prince, his ſubjects fancied themſelves oppreſſed by tyranny, and were perpetually diſſatisfied from the time he firſt aſcended the throne to the day of his death, which happened about thirty-three years after he had firſt aſſumed the ſovereignty, of which time, according to Ariſtotle, he reigned ſeventeen years. Piſiſtratus left behind him two ſons named *Hipparchus* and *Hippias*, both men of great abilities, who ſhared the government between them, and behaved with lenity and moderation. But, though by the mildneſs of their government the family of the Piſiſtratidæ ſeemed to be fully eſtabliſhed on the throne, a conſpiracy was formed againſt both the brothers, by which Hipparchus was taken off, and Hippias narrowly eſcaped. The moſt material facts relating to this conſpiracy are what follow:

There were at that time in Athens two young men called *Harmodius* and *Ariſtogiton*; the former of theſe was exquiſitely beautiful in his perſon, and, on that account, according to the infamous cuſtom of the Greeks, violently beloved of the other. This Harmodius was alſo beloved of Hipparchus; who, if we may believe Thucydides, forced him. This was grievouſly reſented, and revenge determined on; to haſten which, another accident concurred. Hipparchus, finding that Harmodius endeavoured to avoid him, publicly affronted him, by not ſuffering his ſiſter to carry the offering of Minerva, as if ſhe was a perſon unworthy of that office. The two young men, not daring to ſhew any public ſigns of reſentment, conſulted privately with their friends; among whom it was reſolved, that at the approaching feſtival of Panathenæa, when the citizens were allowed to appear in arms, they ſhould attempt to reſtore Athens to its former liberty. In this they imagined, that they ſhould find themſelves ſeconded by the whole body of the people. But, when the appointed day was come, they perceived one of their number talking very familiarly with Hippias; and, fearing that they were diſcovered, they immediately fell upon Hipparchus, and diſpatched him with a multitude of wounds. In this exploit the people were ſo far from ſeconding them, as they expected, that they ſuffered Harmodius to be killed by Hipparchus's guards, and, ſeizing Ariſtogiton themſelves, delivered him up to Hippias. Some time afterwards, however, the reſpect they paid to theſe two young men exceeded all bounds. They cauſed their praiſes to be ſung at the Panathenæa, forbade any citizen to call a ſlave by either of their names, and erected ſtatues to them in the forum; which ſtatues were afterwards carried into Perſia by Xerxes, and ſent back from thence by Alexander the Great, Antiochus, or Seleucus, for authors are not agreed by which. Several immunities and privileges were alſo granted to the deſcendants of theſe two patriots, and all poſſible means were taken to render their memory venerable and reſpected by poſterity.

Hippias being now ſole maſter of Athens, and probably exaſperated by the murder of his brother, began to alter his conduct greatly, and to treat his ſubjects in an oppreſſive and cruel manner. He began with torturing Ariſtogiton, to make him confeſs his accomplices: but this proved fatal to his own friends; for, Ariſtogiton impeaching ſuch as he knew to be beſt affected to Hippias, they were immediately put to death. Hippias next vented his rage on a woman named *Leæna*, who was kept by Ariſtogiton. She endured the torture as long as ſhe could; but, finding herſelf unable to bear it any longer, ſhe at laſt bit off her tongue, that ſhe might not have it in her power to make any diſcovery. To her the Athenians erected the ſtatue of a lioneſs, alluding to her name, without a tongue, on which was engraved a ſuitable inſcription. After the conſpiracy was, as Hippias thought, thoroughly ſubdued, he ſet himſelf about ſtrengthening his government by all the means he could think of. He contracted leagues with foreign princes, increaſed his revenues by various methods, &c. But theſe precautions were of little avail; the lenity of Piſiſtratus's government had alone ſupported it; and Hippias, purſuing contrary methods, was deprived of the ſovereignty in leſs than four years after the death of his brother.

This revolution was likewiſe owing to the family of Megacles, who were ſtyled *Alcmæonidæ*, and had ſettled at Lipſydrum. In times of diſcontent, which at Athens were very frequent, this family was the common refuge of all who fled from that city; and at laſt they thought of a method of expelling the Piſiſtratidæ altogether. The method they took to accompliſh their purpoſe was as follows: They agreed with the Amphictyons to rebuild the temple at Delphi; and, being poſſeſſed of immenſe riches, they performed their engagement in a much more magnificent manner than they were bound to do; for, having agreed only to build the front with common ſtone, they built it of Parian marble. At the ſame time they corrupted the propheteſs Pythia, engaging her to exhort all the Lacedæmonians that came to conſult the oracle, either in behalf of the ſtate or their own private affairs, to attempt the delivery of Athens. This had the deſired effect: the Lacedæmonians, ſurpriſed at hearing this admonition inceſſantly repeated, at laſt reſolved to obey the divine command, as they imagined it to be; and ſent Anchimolius, a man of great quality, at the head of an army into Attica, though they were at that time in league with Hippias, and accounted by him his good friends and allies. Hippias demanding aſſiſtance from the Theſſalians, they readily ſent him 1000 horſe, under the command of one of their princes named *Sineas*. The Lacedemonians being landed, Hippias fell upon them ſo ſuddenly, that he defeated them with great ſlaughter, killed their general, and forced the ſhattered remains of their army to fly to their ſhips. The Spartans, incenſed at this unfortunate expedition, determined to ſend another army into Attica; which they accordingly did under their king Cleomenes: who, on his entrance into the Athenian territories, defeated the Theſſalian horſe, and obliged Hippias to ſhut himſelf up in the city of Athens, which he was ſoon after forced to abandon altogether. He was, however, in no want of a place of refuge; the Theſſalian princes inviting him into their country, and the king of Macedon offering his family a city and territory, if they choſe to retire into his dominions. But Hippias choſe rather to go to the city of Sigeum, which Piſiſtratus had conquered, and left to his own family.

After the expulſion of the Piſiſtratidæ, the Athenians did not long enjoy the quiet they had propoſed to themſelves. They were quickly divided into two factions; at the head of one was Clyſthenes, one of the chief of the

Alcmæonidæ; and of the other, Iſagoras, a man of great quality, and highly in favour with the Athenian nobility. Clyſthenes applied himſelf to the people, and endeavoured to gain their affection by increaſing their power as much as poſſible. Iſagoras, perceiving that by this means his rival would get the better, applied to the Lacedemonians for aſſiſtance, reviving at the ſame time the old ſtory of Megacles's ſacrilege, and inſiſting that Clyſthenes ought to be baniſhed as being of the family of Megacles. Cleomenes king of Sparta readily came into his meaſures, and diſpatched a herald to Athens with a declaration of war, in caſe all the Alcmæonidæ were not immediately baniſhed. The Athenians did not heſitate to baniſh their benefactor Clyſthenes, and all his relations; but this ingratitude did not anſwer their purpoſe. Cleomenes entered Attica at the head of a Spartan army; and, arriving at Athens, condemned to baniſhment 700 families more than what had been ſent into exile before. Not content with this, he would have diſſolved the ſenate, and veſted the government in 300 of the chief of Iſagoras's faction. This the Athenians would by no means ſubmit to; and therefore took up arms, and drove Cleomenes and his troops into the citadel, where they were beſieged for two days. On the third day Cleomenes ſurrendered, on condition that all thoſe who were in the citadel ſhould retire unmoleſted. This, though agreed to, was not performed by the Athenians. They fell upon ſuch as were ſeparated from the army, and put them to death without mercy. Among the number of thoſe who fell on this was Timeſitheus the brother of Cleomenes.

The Spartan king was no ſooner withdrawn from Athens, than he formed a ſtrong combination in favour of Iſagoras. He engaged the Bœotians to attack Attica on the one ſide, and the Chalcidians on the other, while he at the head of a powerful army entered the territories of Eleuſina. In this diſtreſs, the Athenians, not being able to cope with ſo many enemies at once, reſolved to ſuffer their territories to be ravaged by the Chalcidians and Bœotians, contenting themſelves with oppoſing the army commanded by Cleomenes in perſon. But this powerful confederacy was quickly diſſolved: the Corinthians, who were allied with Cleomenes, doubting the juſtice of their cauſe, returned home; his other allies likewiſe beginning to waver, and his colleague Ariſton, the other king of Sparta, differing in ſentiment, Cleomenes was obliged to abandon the enterpriſe. The Spartans and their allies being withdrawn, the Athenians took a ſevere revenge of the Bœotians and Chalcidians, totally routing their forces, and carrying off a great number of priſoners. The priſoners taken in this war were put in irons, but afterwards ſet at liberty on paying a ranſom of two minæ per head. Their fetters were, however, hung up in the citadel; and the Athenians, conſecrating the tenth of what they had received for ranſom, purchaſed a ſtatue, repreſenting a chariot and four horſes, which they ſet up in the portico of the citadel, with a triumphant inſcription in token of their victory. Theſe indignities rouſing the Bœotians, they meditated revenge, and engaged on their ſide the people of Ægina, who had an hereditary hatred to the Athenians; and, while the latter bent all their attention to the Bœotian war, the Æginetans landed a conſiderable army, and ravaged the coaſts of Attica.

But, while the Athenians were thus employed againſt the Bœotians and Æginetans, a jealouſy ſprung up on the part of Lacedemon, which was never afterwards eradicated. Cleomenes, after his unſucceſsful expedition againſt Attica, produced at Sparta certain oracles which he ſaid he had found in the citadel of Athens; the purport of them was, that Athens would in time become a rival to Sparta. At the ſame time it was diſcovered, that Clyſthenes had bribed the prieſteſs of Apollo to cauſe the Lacedemonians to expel the Piſiſtratidæ from Athens; which was ſacrificing their beſt friends to thoſe whom intereſt obliged to be their enemies. This had ſuch an effect, that the Spartans, repenting their folly in expelling Hippias, ſent for him from Sigeum, to reſtore him to his principality: but, this not being agreed to by the reſt of the ſtates, they were forced to abandon their enterpriſe. About this time too, Ariſtagoras the Mileſian having ſet on foot a revolt in Ionia againſt the Perſian king, applied to the Spartans for aſſiſtance; but, they declining to have any hand in the matter, he next applied to the Athenians, and was by them furniſhed with twenty ſhips under the command of Melanthus, a nobleman univerſally eſteemed. This raſh action coſt the Greeks very dear, as it brought upon them the whole power of the Perſian empire; for, no ſooner did the king of Perſia hear of the aſſiſtance ſent from Athens to his rebellious ſubjects, than he declared himſelf the ſworn enemy of that city, and ſolemnly beſought God that he might one day have it in his power to be revenged on them.

Athens, however, enjoyed internally the ſweets of the liberty procured her by the introduction of Solon's laws; and produced many citizens of extraordinary wiſdom and valour; among whom Miltiades, Ariſtides, and Themiſtocles, chiefly diſtinguiſhed themſelves. Miltiades was a proficient in the art of war, and no perſon could boaſt of equal ſkill in conducting an army. He had a particular cauſe of hatred againſt the Perſians; by whom, on their entering Thrace, he had been deprived of a government he then held in that country. Ariſtides and Themiſtocles, though much younger than Miltiades, gave proofs of the greateſt abilities. But their different diſpoſitions generally occaſioned a contrariety in their opinions. Themiſtocles was a plebeian by birth, was naturally ambitious, and being attached by prejudice and education to the party of the people, he made it his chief ſtudy to gain the good will of the multitude. For that purpoſe, he behaved on all occaſions with extreme complaiſance to the citizens, whom he ſhewed himſelf ever ready to oblige; and he appeared very little ſcrupulous about the means he employed to accompliſh his enterpriſes. Ariſtides, on the other hand, being noble by birth, and an admirer by principle of the Spartan conſtitution, entertained a ſtrong attachment to ariſtocracy. He was perfectly indifferent about popularity, and made juſtice the governing rule of his whole conduct as well in public as in private life. The public welfare was the chief object of his attention; and his love for his country, his ſingular ſkill in public buſineſs, and his diſintereſted and upright behaviour, procured him the admiration, the confidence, and the eſteem, of his fellow-citizens.

It was at the time the Athenian liberty nouriſhed ſuch citizens as theſe, that Darius reſolved to fall upon them with all his forces. But, deſirous previouſly to ſound the inclinations of the people with reſpect to the ſuperiority he intended to claim over them, he diſpatched heralds through all the cities of Greece, to demand earth and water; a ſymbol which denoted the ſubmiſſion and dependence of thoſe from whom it was required on him who required it. The Eginetæ, and a few other cities, dreading the power of the Perſians, admitted the ſuperiority claimed. But the Athenians and Spartans, far from agreeing to the demand of the heralds, were ſo provoked at the arrogance of their commiſſion, that they tranſgreſſed the law of nations in the perſons of the heralds; one of whom they threw into a well, and another into a deep ditch, telling them, with a ſpirit of raillery, that they might take from thence as much earth and water as they pleaſed.

Darius, perceiving that he ſhould meet with the moſt obſtinate reſiſtance in his undertaking, made more formidable preparations for war than before, and increaſed his armament to 500,000 men and 500 ſhips; the whole commanded by Datis and Artaphernes. Hippias, happy in ſo favourable an opportunity of revenging himſelf on the Athenians, acted as guide and conductor of the expedition under Artaphernes, by whom he had been treated in the kindeſt and moſt hoſpitable manner. The Perſians quickly reduced all the iſlands in the Ægean ſea; and, having taken Eretria, a city in Eubœa, burnt it to the ground. Then they entered Attica, and encamped at Marathon, a ſmall town on the ſea-coaſt; whence they ſent to inform the Athenians of the chaſtiſement inflicted on the obſtinate and diſobedient Eretrians.

Upon this the Athenians applied for aſſiſtance to the Lacedemonians, who granted them 2000 men. But a ſuperſtitious maxim that prevailed at Sparta prevented thoſe forces from beginning their march till after the full moon; by which means they did not arrive at Athens till four days after the enſuing battle. The terror of the Perſian name reſtrained the other ſtates from furniſhing the expected aſſiſtance. Platea alone ſent 1000 ſoldiers to join the Athenians. In this extremity the Athenians armed even their ſlaves; a meaſure that had never been practiſed before: but, after all, they could muſter up no more than 10,000 men. This ſmall army was commanded by ten generals; each of whom was to exerciſe the chief command in his turn for no longer ſpace than a day at a time. But, when it came to be Ariſtides's turn to command, that magnanimous patriot, ſenſible of the ſuperior ſkill and experience of Miltiades as a general, intreated him to accept the command in his ſtead. This example was followed by all the reſt. When the public welfare is the ſole object in view, great minds never fail to ſacrifice every meaner motive to that higheſt conſideration.

They next deliberated whether they ought to wait for the enemy in the city, or to march out and give them battle: and indeed how little probability was there, that ſuch a handful of men ſhould in the open field be able to ſuſtain the ſhock of the Perſian multitude? Miltiades, however, was of opinion, that they ought to march out and fight the enemy; and, being ſeconded by Ariſtides, the other generals aſſented likewiſe. That ſkilful commander deſired to take advantage of the imprudent ſituation of the Perſians; who, being hemmed in by the ſea, by a ſteep mountain, and by the moraſs of Marathon, could bring but a ſmall part of their forces into action, and could make no uſe at all of their cavalry. The Athenians, therefore, in the year 490 B. C. to the number of 10,000 men, marched forth againſt an army of 100,000 foot, and 10,000 horſe. This memorable day reflected the higheſt glory on Miltiades. To prevent his little army from being ſurrounded by the enemy, he drew it up with a mountain in the rear; extended his front as much as poſſible; placed his chief ſtrength in the wings; and cauſed a great number of trees to be cut down, to keep off the enemies cavalry from charging them in flank. The Athenians ruſhed forwards on the Perſians like ſo many furious lions. This is remarked to have been the firſt time that they advanced to the attack running. By their impetuoſity, they opened a lane through the enemy, and ſupported with the greateſt firmneſs the charge of the Perſians. The battle was at firſt fought by both parties with great valour and obſtinacy; but the wings of the Athenian army, where, as we have juſt ſaid, Miltiades had placed his chief ſtrength, attacking the main body of the enemy in flank, threw them into irretrievable confuſion. Six thouſand Perſians periſhed on the ſpot, and among the reſt the traitor Hippias, the principal occaſion of the war. The reſt of the Perſian army quickly fled, and abandoned to the victors their camp full of riches.

Thus the Athenians obtained a victory more real than probable. Animated by their ſucceſs, they purſued the Perſians to their very ſhips, of which they took ſeven, and ſet fire to ſeveral more. On this occaſion Cynegirus, an Athenian, after performing prodigies of valour in the field, endeavoured to prevent a particular galley from putting to ſea, and for that purpoſe held her faſt with his right hand; which being cut off, he next ſeized her with his left; which being likewiſe cut off, he took hold of her with his teeth, and kept her ſo till he died. Another ſoldier, all covered over with the blood of the enemy, ran to announce the victory at Athens; and, after crying out, "Rejoice, we are conquerors!" fell dead in the preſence of his fellow-citizens. The Athenians, in this engagement, loſt only 200 men. Ariſtides and Themiſtocles diſtinguiſhed themſelves very highly in the battle; but Miltiades gained the chief glory. As a reward for ſo ſignal a piece of ſervice to his country, and to perpetuate the memory of his ſkill and bravery, they cauſed him to be painted in a large picture, repreſenting the battle, in the attitude of giving orders at the head of his 10,000 Athenians. They likewiſe raiſed monuments to the memory of thoſe who had fallen in the engagement, and thereon inſcribed the names both of the deceaſed and of their particular tribe. Their ſucceſs at Marathon, as having made the Athenians ſenſible of their own ſtrength, is accounted the principal cauſe of their future victories; and, indeed, the conſideration of having with a handful of men defeated ſo vaſt an army, might juſtly inſpire them with great confidence. But what may not a ſkilful general perform at the head of a ſmall number of diſciplined ſoldiers, actuated by the moſt ardent love for their country, and ready in its defence to confront death in every ſhape? The Perſian fleet, in the mean time, attempted to ſurpriſe Athens before the Grecian army ſhould arrive to its relief: but the victorious Greeks, by a forced march, fruſtrated the deſign of the enemy, by arriving before them.

The Athenians, thus delivered from the Perſians, reſolved to chaſtiſe the iſlands that had aſſiſted their enemies. For that purpoſe they ſent out a fleet under the command of Miltiades, who very ſoon ſubdued a great number of the iſlands, and made them tributary to his countrymen. But he was unſucceſsful at Paros, where, upon a falſe alarm of the arrival of the Perſians, he precipitately abandoned the undertaking, and returned with his fleet to Athens. Being obliged to confine himſelf to his houſe, by a dangerous wound he had received in the courſe of the ſiege, his enemies took advantage of that circumſtance to prepoſſeſs the public againſt him, with a belief of his keeping up a traitorous correſpondence with the Perſian monarch. The inconſiderate multitude immediately condemned him to death. Every man of ſenſe was aſhamed and ſhocked at the injuſtice and cruelty of this ſentence. In vain did his friends conſtantly remind the people of his behaviour at Marathon. All they were able to obtain, was a commutation from the ſentence of death to a fine of fifty talents. His great exploits had already excited the jealouſy of his fellow-citizens, who either thought that they owed him too much, or were afraid leſt he might aſpire at ſovereign authority; and, careleſs of being called ungrateful, they accounted his late misfortune a crime. Miltiades, being unable to pay ſo large a fine, was thrown into priſon; where his grief and indignation at ſuch unworthy treatment rendered his wound incurable, and ſoon brought him to the grave. Thus did that great man afford a ſtriking example of the ingratitude and cruelty of his inconſtant and capricious countrymen. His ſon Cimon, who afterwards made ſo great a figure, having been enabled, with the aſſiſtance of his friends, to diſcharge the fine, obtained the privilege of burying the dead body of his unfortunate father; whoſe death opened the eyes of the Athenians, and made them ſenſible of the injuſtice of their behaviour. But their ſorrow was too late, and could not redeem that excellent commander from the grave, nor even prevent their repeating the ſame cruelty and folly on future occaſions.

The wiſe Ariſtides very ſoon became a ſecond victim to their capricious diſpoſition; but his diſgrace was honourable, being confeſſedly occaſioned by his ſteady adherence to juſtice. We have already mentioned, that an extreme contrariety of manners and principles ſubſiſted between him and Themiſtocles. The latter, though of mean extraction, was extravagantly ambitious, very bold and enterpriſing, and of ſo active a diſpoſition, that quiet and repoſe ſeemed a burden to him. He affected to roam through the ſtreets in the night; and, when aſked the reaſon, anſwered, That he could not ſleep for thinking on the trophies of Miltiades. He was exceedingly artful in finding out and availing himſelf of the ruling paſſions of men;

and was ſo much the more dangerous by being very eloquent. Ariſtides, on the contrary, was of a reſerved, modeſt, ſteady, diſpoſition; governed all his actions by the moſt ſcrupulous rules of juſtice; and regarded the lofty projects of Themiſtocles as ſo many ſteps to ſovereign power. Themiſtocles, impatient of being continually thwarted in his ambitious ſchemes by ſo rigid a cenſor as Ariſtides, reſolved to free his hands of him at once. For that purpoſe he applied himſelf privately to form a party againſt him; and at laſt got him baniſhed by the ſentence of oſtraciſm. It is ſaid, that on this occaſion a peaſant, who did not know Ariſtides, and could not write, having by accident applied to him to write his own name on his ſhell, was aſked by Ariſtides, Whether he had ever received any provocation from the perſon he wanted to baniſh? "None at all, ſir," anſwered the peaſant, "but I cannot bear to hear him always called *the juſt*." Ariſtides, without ſaying a word, took the ſhell, wrote his own name upon it, and returned it to the man. When going out of the city, he begged of the gods, that no misfortune might happen to his countrymen which might oblige them to recal him from baniſhment. Themiſtocles, in the mean time, foreſeeing an approaching ſtorm from the quarter of Perſia, perſuaded the Athenians to employ all the wealth they drew from their ſilver-mines in fitting out a powerful fleet for the protection of their country.

Darius, more exaſperated than ever againſt the Athenians, by the defeat of his army at Marathon, reſolved to exert his utmoſt efforts to wipe away that diſgrace, and to reſtore the glory of his arms. He gave orders, therefore, to make new levies of troops through all his provinces; and conſumed no leſs than three years in preparing for this third expedition; which, though then pretty far advanced in years, he intended to conduct in perſon. But death diſappointed all his projects. His ſon Xerxes ſucceeded him in the kingdom of Perſia, and proſecuted the warlike preparations begun by his father. Xerxes, therefore, aſſembling his council, informed them, that he was reſolved to undertake this expedition, in order to puniſh the Athenians for having been acceſſory to the burning of Sardis, to wipe away the diſgrace of the defeat at Marathon, and to execute the other intentions of his father. Mardonius, brother-in-law to Xerxes, behaved on this occaſion with all the baſeneſs of a ſervile flatterer. He aſſured him, that no nation in the world would dare to oppoſe his power; and he affected to vilify and to deſpiſe extremely the courage of the Athenians. Before ſetting out for Greece, he made an alliance with the Carthaginians, and ſent money to their general, Hamilcar, to induce him to make war on the Greek ſtates in Sicily, in order to prevent them from ſending aſſiſtance to their countrymen on the continent. With this money Hamilcar, having levied in Spain and Gaul an army of 300,000 men, invaded Sicily accordingly.

Xerxes departed from Suſa in the fifth year of his reign, for Sardis, the place of rendezvous of his army; and, having paſſed through Cappadocia, he halted at Cylene, a town of Phrygia. He then proceeded, and paſſed the winter at Sardis. From this place he ſent deputies to demand earth and water of all the cities of Greece, except Athens and Sparta, whom he affected thus tacitly to ſingle out for vengeance. In the ſpring he advanced towards the Helleſpont; where he enjoyed the pleaſure of ſeeing the ſea covered with his fleet, and the land with his army. Artabanus took this opportunity to make ſome reflections, in the preſence of the king, on the many miſeries incident to mankind, which it is the firſt duty of ſovereigns to alleviate as much as poſſible. He inſiſted, at the ſame time, on the great uncertainty of human affairs; and could not help applying his obſervation to the preſent enterpriſe of Xerxes, whoſe army was ſo numerous, that no country could for any conſiderable time furniſh it with ſubſiſtence, and whoſe fleet was too large for any harbour to contain.

To tranſport his troops from Aſia into Europe, Xerxes ordered a bridge to be thrown over a ſtrait of the Helleſpont, about a quarter of a league broad, known at preſent by the name of *Gallipoli*. But the work was deſtroyed by a ſtorm. Xerxes, enraged at this accident, vented his reſentment upon the ſea. Herodotus ſays, he ordered it to be chaſtiſed with 300 laſhes, and chains to be thrown into it, as if to bind it. Then he commanded two new bridges to be conſtructed, one for the army, and the other for the baggage. One of theſe bridges conſiſted of 360, and the other of 314, ſhips, moored end-ways acroſs the ſtrait. They were ſecured by large anchors againſt the violence of the winds and waves; and were joined together by ſix large cables, reaching from one ſide of the ſtrait to the other, and faſtened on both ſides to large wooden ſtakes fixed in the ground. The ſhips were covered with a ſort of deck, and the army was ſeven days in paſſing. When the army arrived at Doriſca in Thrace, Xerxes deſired to review it; and, for that purpoſe, ordered it to be drawn up in the plains in the neighbourhood. By Herodotus's account it was found to amount to 1,800,000 foot, and 80,000 horſe, which, joined with the forces furniſhed him by the nations whom he had ſubdued after paſſing the Helleſpont, formed, all together, a multitude of 2,100,000 men. His fleet conſiſted of 1207 galleys of three benches of oars, each carrying 200 men; which, when reinforced by 120 more of the ſame ſize furniſhed by the European ſtates, formed a fleet of 1327 veſſels, carrying 301,606 men, excluſive of 3000 tranſports. The army was commanded by ſix generals, of whom Mardonius was the chief. Datis was general of the cavalry; and Hydarnes of the immortal troop, compoſed of 6000 choſen men. Herodotus, who gives this account of Xerxes's armament, lived at the time; and further informs us, that theſe vaſt forces were ſupplied with proviſions by a great number of ſhips, ſolely employed for that purpoſe, which attended the army along the coaſt, and continually brought them freſh ſupplies of all kinds of proviſions. He likewiſe tells us, that, beſides the preparations for this expedition made by Darius, no leſs than four years were employed for the ſame purpoſe by Xerxes.

The Greeks, ſeeing the ſtorm ready to fall upon them, were ſomewhat alarmed at firſt, but by no means diſcouraged. They held an aſſembly in the Iſthmus, where it was agreed to ſuſpend all private conteſts, and to unite their whole forces againſt the common enemy. But the Bœotians, Theſſalians, and ſeveral other ſtates, who were more immediately expoſed to the impending danger, having declared for the Perſians, the whole burden of the war devolved on the Athenians and Lacedemonians. The former applied for aſſiſtance to their allies, to the Argives, to the Sicilians, and to the inhabitants of the iſlands of Corcyra and Crete; moſt of whom declined to join them, under the affected pretence, that they could not be admitted to an equal ſhare in the command; the Sicilians even inſiſted for the chief command. Moſt of them therefore ſubmitted to Xerxes. The ſtates of Theſpia and Platea alone took part with the Athenians and Spartans. But this general deſertion of the other ſtates ſerved only to make thoſe of Athens and Sparta prepare for their defence with greater vigour and circumſpection. Themiſtocles, who had on former occaſions diſplayed a ſingular ſagacity in ſeizing the deciſive moment of action, was unanimouſly choſen commander in chief of the Athenian forces. Ariſtides was recalled, after a three-years baniſhment, together with all the other baniſhed citizens; no oppoſition having been made to the return of his rival by Themiſtocles, who, on this occaſion, ſet an example highly worthy the imitation of all men of influence in a ſtate, by whom jealouſy and rivalſhip ought to be ſacrificed to the intereſts of their country.

Themiſtocles was confident in his own mind, from the time of the battle of Marathon, that the war would not be finiſhed by that engagement; and being ſenſible that Athens, poſſeſſing ſuch a barren and narrow territory, was much too weak to make head againſt the powerful forces of the Perſians by land; had from that moment applied all his attention to the increaſe of the naval ſtrength of his countrymen. In this he had ſo far ſucceeded, that they at preſent had a fleet of 100 large galleys, beſides many veſſels of three banks of oars; and, on the approach of Xerxes, he perſuaded them to equip 100 more: to this ſmall fleet Greece owed its preſervation. Eurybiades, a Lacedemonian, was named commander in chief of the united forces of both ſtates. Here we have another proof of the moderation of Themiſtocles, who readily ſacrificed his ambition to the advantage of the common cauſe. For, although the Athenians were entitled to claim the chief command, as having furniſhed two-thirds of the fleet, Themiſtocles nevertheleſs cheerfully acquieſced in the appointment of Eurybiades.

The firſt ſtep taken by the allies was to diſpatch Leonidas at the head of 10,000 men, to take poſſeſſion of the defile of Thermopylæ, ſituated at the foot of mount Oeta, between Theſſaly and Phocis, a paſs no more than ninety feet broad, and the only one by which the army of Xerxes could penetrate into Achaia. In the mean time, the fleet of Xerxes coaſted along the ſhore, regulating its motions by thoſe of the army. Every thing gave way to the Perſians; and the cities through which they paſſed furniſhed them with proviſions in abundance. Xerxes, after marching through Thrace and Macedonia, came at laſt to the paſs of Thermopylæ, guarded by the Grecian troops; which, according to Pauſanias, amounted all together to no more than 11,000; and of theſe only 4000 were more immediately deſtined to defend the paſſage. But every man of that number was fully determined to conquer or to die. Xerxes was far from thinking that the Greeks would dare to diſpute his paſſage. But finding himſelf miſtaken, and being informed by Demaratus that a handful of men might at this place ſtop for a conſiderable time all his forces, he endeavoured to corrupt Leonidas by magnificent preſents, and the moſt tempting promiſes, even that of making him ſupreme lord of Greece. But, Leonidas having rejected all his temptations with diſdain, Xerxes thereupon commanded him, by a meſſenger, to ſend him his arms: "Let your king come and take them," anſwered Leonidas. Then the Medes advanced againſt the Greeks; but, being unable to ſuſtain their attack, were obliged to retreat. The troop of Perſians, diſtinguiſhed by the name of *immortal*, next charged the Greeks, and fought with great valour, ſo that the paſs was choaked up with the dead. While the beſt troops of Xerxes were thus ſacrificed to the Grecian valour, an inhabitant of the country having diſcovered to the Perſians a ſecret path conducting to an eminence that commanded the paſs, a large detachment was immediately ſent to take poſſeſſion of it.

Leonidas receiving intelligence that the tops of the rocks forming the paſs were occupied by 20,000 Perſian troops, whoſe darts muſt ſoon overwhelm him and his ſmall party, intreated the greater part of his men to retire, and reſerve themſelves for a more advantageous opportunity of ſerving their country; while he himſelf, with about 300 Spartans and a few Theſpians, would maintain the paſs to the laſt. The reſt having accordingly departed, "Come, my friends," ſaid Leonidas, "let us dine cheerfully, in the hope of ſupping together in the other world." His brave companions, who are ſuperior to all praiſe, encouraged by the example of their chief, thought of nothing now but to ſell their lives as dearly as poſſible; believing it incumbent on them to devote themſelves to certain death, thereby to convince the Perſians how much it muſt coſt them to reduce a free people to ſlavery. In the dead of night, this heroic troop, advancing directly forwards to the tent of the king, penetrated to the middle of the Perſian camp, cut off all that came in their way, and ſpread the moſt dreadful conſternation among the enemy. But, day-light at laſt diſcovering them diſtinctly to the Perſians, they were immediately ſurrounded, and, being rather overwhelmed than conquered, breathed their laſt above heaps of ſlaughtered enemies; leaving to after-ages an example of intrepidity before unknown, and hardly to be paralleled in hiſtory. The Perſians are ſaid to have loſt upwards of 20,000 men in this engagement, and, among the reſt, the two brothers of Xerxes. To the memory of thoſe brave defenders of Greece, a ſuperb monument was afterwards erected, bearing two inſcriptions: the one in honour of all thoſe who had ſerved on that occaſion, importing, that an army of 4000 Peloponneſian Greeks had there ſtopped the progreſs of the whole Perſian force; the other in honour of Leonidas and his 300 Spartans.

The very day that Leonidas fell at Thermopylæ, the Athenian fleet, commanded by Themiſtocles, having diſcovered, while cruizing off Artemiſa, a promontory of Eubœa, a detachment of the enemy's fleet, amounting to 200 veſſels, attacked them in the night, and ſunk more than thirty of them; and the reſt were that ſame night wrecked on the coaſt of Eubœa by a ſtorm that ſucceeded the engagement. The Athenians receiving next day a reinforcement of fifty-three ſhips more, attacked thoſe of the Cilicians, and ſunk many of them. A general engagement enſued the ſame day, in which both parties fought with great bravery; and, though neither could boaſt of the victory, yet the loſs was moſt conſiderable on the ſide of the Perſians. From the event of theſe ſeveral actions, the Athenians learned, that victory is not always determined by the greater number of ſhips. Hearing, in the mean time, of what had paſſed at Thermopylæ, the Greeks thought it adviſable to retire nearer home, and therefore ſet ſail for Salamis, a ſmall iſland near Attica. The very ſame day too of the action at Thermopylæ, the Carthaginian army, amounting to 300,000 men, which co-operated with the Perſians, and was endeavouring to reduce the Greek ſtates in Sicily, was totally defeated by Gelon, tyrant of Syracuſe.

Xerxes having now advanced into Phocis, after marking his march all along with the effects of his reſentment, the Peloponneſians reſolved to fortify themſelves within the Iſthmus. The Athenians, therefore, ſeeing themſelves on the eve of being cruſhed under the whole weight of the Perſian power, ſent, in this extremity, to conſult the oracle; who told them, "That the only means of preſerving their city were wooden walls." Theſe wooden walls pointed out by the oracle were interpreted by Themiſtocles to be their ſhips; and he told his countrymen, that the ſole means of preſervation left was, to abandon the city, and to betake themſelves to their fleet. This advice was not at all reliſhed by the people, who ſhuddered at the thoughts of deſerting their gods and the tombs of their anceſtors. Themiſtocles, however, ſucceeded at laſt, in perſuading them, that the exiſtence of Athens depended neither on its houſes nor its temples, but on the lives of its citizens; and that the gods themſelves had, by the mouth of the oracle, plainly declared it to be their pleaſure, that the Athenians ought to leave their city for a while. The people, at laſt, convinced by his eloquence, conſented to go on-board their ſhips. It is here difficult to ſay, whether we are more affected on this occaſion by the melancholy ſituation of the Athenians, thus compelled by an arbitrary prince to deſert their native country; or by the heroic reſolution of thoſe Athenians to go in this manner into a ſort of voluntary baniſhment, rather than to ſubmit to their oppreſſor.

The Athenians conveyed their women, children, and the greater part of their old men, to Trazene, a ſmall town on the ſea-coaſt of Peloponneſe, where they were received with all the marks of humanity that their ſituation required. But many of their oldeſt men were left in the citadel, being unable, by reaſon of their great age and infirmities, to undergo the fatigue of a removal. Xerxes in the mean time, approaching towards Athens, ſent a detachment to plunder the temple of Delphos, which contained immenſe riches. But Herodotus and Diodorus Siculus both tell us, that moſt of the ſoldiers ſent on this errand periſhed by the way in a violent tempeſt. The Perſian army, arriving, found nothing but ſilence and ſolitude within the Athenian walls. They attacked the citadel, which, after a brave reſiſtance by its feeble garriſon, was taken by ſtorm, and all within it were put to the ſword. Xerxes ordered the reſt of the city to be ſet on fire.

In the mean time differences were like to ariſe in the Grecian fleet commanded by Eurybiades, one-half of them being of opinion that they ought to advance towards the iſthmus of Corinth, to be at hand to ſupport their army; and the other, that they ought by no means to quit the advantageous poſt at Salamis. The latter opinion was ſupported by Themiſtocles, who on this occaſion gave another proof of his extraordinary moderation and coolneſs of temper. For, while he was maintaining his opinion with ſome warmth againſt Eurybiades, who was a man of a very choleric diſpoſition, the latter flew in a paſſion, and lifted up his cane to ſtrike him. Themiſtocles called out to him, "Strike, but hear me." His eloquence and firmneſs at laſt prevailed; and the Greeks ſaw that, being extremely inferior to the enemy in the number as well as in the ſize of their ſhips, it was of the higheſt importance to avail themſelves of their preſent ſituation, and to give battle in ſuch a narrow ſtrait as that of Salamis, where the enemy could not bring all their fleet into action. They reſolved, therefore, to prepare to fight the Perſians in this ſtrait. The Perſians too determined to give battle, contrary to the opinion of queen Artemiſa, one of their allies, who repreſented to them, that the loſs of a ſea-fight muſt be inevitably attended with the deſtruction of their army at land: but her advice was rejected. Xerxes, who was on-ſhore, being deſirous of ſeeing the battle, ordered a ſuperb throne to be erected for him on an eminence. The fleet of the Greeks conſiſted of 380 ſail. Themiſtocles, who that day commanded it, waited for the raiſing of a wind, which regularly began to blow at a certain hour, in a direction exactly in the face of the enemy. The Perſians began the attack with great bravery; but the ſmall fleet of the Greeks, acting by the ſkill of its commanders under every advantage, ſoon threw the enemy's firſt line into confuſion, and ſunk the Perſian admiral. Thoſe that followed him, intimidated by his fate, partly betook themſelves to flight, and partly were ſunk. On the wings, however, the action continued very warm and obſtinate; but, the wind being againſt the Perſians, the unwieldy ſize of their ſhips rendering them very difficult to be managed, and their great number rather embarraſſing than availing them in ſuch a narrow ſtrait, they could not long ſuſtain the impetuoſity of the Athenians, but fell into a general diſorder. The Ionians, mindful of their Grecian extraction, were the firſt that fled; and they were quickly followed by the reſt of the Perſian fleet, which were ſoon ſcattered up and down in flight and confuſion. The victory coſt the Athenians forty ſhips; but of the Perſians 200 were either taken or ſunk.

This engagement, one of the moſt memorable recorded in ancient hiſtory, acquired immortal fame to Attica. The renowned Cimon, though yet but a young man, diſtinguiſhed himſelf highly on that occaſion, and gave evident ſigns of his future greatneſs. But as the principal glory of the victory belonged to Themiſtocles, the eyes of all the Greeks were fixed on him as their deliverer; and the higheſt honours were conferred on him. At this time every ſyſtem of jealouſy was overlooked, and none exceeded the Lacedemonians in their encomiums on Themiſtocles, whom they crowned with laurel, the reward of wiſdom and valour. When he appeared at the Olympic games, the whole aſſembly roſe up to give him place; every eye was fixed on him alone; and that day was the moſt glorious of his life. In the mean time this important defeat aſtoniſhed and diſconcerted Xerxes in the higheſt degree. Mardonius, however, endeavoured to compoſe his mind by palliating his loſs; but at the ſame time adviſed him to ſet out for Perſia; aſſuring him, that, with 300,000 of his forces, he, Mardonius, did not doubt of being able to conquer the Greeks, notwithſtanding the late diſaſter. The remains of the Perſian fleet took refuge in Cumes, a harbour in Eolia. On the other hand, Themiſtocles, in concert with Ariſtides, ſent private intelligence to Xerxes, that the Greeks were preparing to deſtroy his bridge over the Helleſpont. That credulous prince believed the information, and leaving Greece in a violent hurry, with a ſtrong guard of his beſt troops, arrived, after a painful march of forty-five days, (attended with the double miſery of famine and diſeaſe, which deſtroyed the greateſt part of his troops,) at the bridge, but had the mortification to find it already demoliſhed by a great ſtorm. This mighty prince, therefore, whoſe numerous fleet had lately covered the ſea, and who had arrogantly preſumed to bind the waves, was reduced to the neceſſity of paſſing the ſtrait in a poor fiſhing-bark. Thus was his vanity effectually humbled, and thus ended all the lofty projects of this preſumptuous man, who, before leaving his own dominions, had ordered all the Greek temples of Aſia to be burnt, and the immenſe riches contained in them to be applied to defray the expences of his expedition.

Mardonius, after wintering in Theſſaly, took the field, and began his operations, by making very advantageous offers to the Athenians, to detach them from their confederacy with the other ſtates, promiſing not only to rebuild their city, and to give them a vaſt ſum of money, but to ſet them at the head of all Greece. Ariſtides, then archon, anſwered the meſſengers of Mardonius, that all the gold in the world was inſufficient to corrupt the Athenians, or to induce them to deſert the defence of the common liberty of their country; that, while the ſun continued to light the world, the Athenians would remain the mortal enemies of the Perſians, and would revenge, to the utmoſt of their power, the miſchief they had brought upon Attica, and the burning of their houſes and temples. As ſoon as Mardonius received the anſwer of the Athenians, and ſaw that no motive could induce them to break their engagements, he ordered his army to advance into Attica. The Athenians, on the approach of the Perſian army, left their city a ſecond time, and retired to Salamis. Mardonius, thereupon, ſent new deputies to them, with terms ſtill more advantageous than the former. But the Athenians were ſo far from accepting them, that they ſtoned to death Lycidas, only for ſaying, that they ought to give an audience to the deputies. The Perſian general, provoked at the contempt with which the Athenians treated all his propoſals, entered Athens, and burnt every thing that had before eſcaped the fury of Xerxes.

In this ſituation, the Athenians complained to the Lacedemonians of their not having ſent them the ſtipulated ſuccours. The latter were then ſolely intent on maintaining their ground within the Peloponneſe, and defending the entry of the iſthmus; but, in compliance with the requiſition of the Athenians, who made a great outcry againſt the ſlowneſs of their proceedings, they ſent to their aſſiſtance 5000 Spartans, each of whom was attended by ſeven Helots. Theſe forces, joined with thoſe of the Athenians and Peloponneſians, formed all together an army of about 70,000 men; which, after aſſembling at Eleuſis, followed Mardonius into Bœotia, and encamped at the foot of mount Citheron. Pauſanias, ſon of Cleombrotus, and viceroy of Sparta, commanded the Lacedemonian troops, and Ariſtides thoſe of the Athenians. The Perſian army then amounted to 300,000 men. Pauſanias, in the mean time, advanced towards Platea, with his forces drawn up in battle array; the Athenians being on the right wing, and oppoſed to the Perſian troops; and the Lacedemonians on the left, oppoſed to the Greek troops in the ſervice of the Perſians. The Megareans, who were encamped on the plain, having been attacked by the Perſian cavalry, were, after a very brave and long reſiſtance, on the point of giving way, when 300 Athenians ran to their relief. The battle then became more obſtinate than before. But Magiſtius, who commanded the Perſian cavalry, being ſlain, his men betook themſelves to flight. The death of this officer, who was reckoned the ableſt in the Perſian army, ſpread univerſal conſternation through all their troops. Ten days intervened between this action and the general engagement. Artabazus was of opinion, that the Perſians ought to avoid a general battle; but Mardonius, a man of a violent fiery diſpoſition, thought otherwiſe. Pauſanias and Ariſtides, informed of the deſign of the Perſians to attack them, drew up their army near to the city of Platea; which Mardonius perceiving, he changed the intended order of his attack. That day was wholly taken up with theſe evolutions. But the Greeks, finding themſelves ſtraitened for water in their preſent ſituation, reſolved to decamp. Mardonius, believing this movement to be a flight, immediately advanced with his men, uttering loud ſhouts, and charged the rear of the Greek army, compoſed of the Lacedemonians; who, forming themſelves into a column, oppoſed the enemy, and, falling on the Perſians with the greateſt fury, made a dreadful ſlaughter. Mardonius fell in the beginning of the action. The main body of the Greek army advancing in the mean time to the charge, in ſeparate detachments, completed the overthrow of the Perſians. In another quarter of the field, the 40,000 Greeks in the Perſian ſervice, who were engaged with the troops commanded by Ariſtides, hearing of the flight of the Perſians, followed their example, and retreated likewiſe; but rallied in their camp, and there intrenched themſelves. The Lacedemonians, however, ſupported by the Athenians, attacked and forced their intrenchments; after which nothing was to be ſeen but a general maſſacre: for the Perſians, being too numerous to be made priſoners, received no quarter, and were all put to the ſword. Artabazus, after diſtinguiſhing himſelf both as a ſkilful officer and as a brave ſoldier, collected the ſcattered remains of the Perſian army, amounting now to no more than 44,000 men, and returned with all expedition towards Perſia. The loſs of the Greeks in this engagement was about 10,000 men.

The Perſian fleet having, in the mean time, ſailed towards Samos; that of the Greeks, under the command of Leotychides the Lacedemonian, and Xantippus the Athenian, advanced as far as Delos. The Perſians, hearing of the approach of the Greeks, retired to Mycale in Aſia Minor, where they drew their veſſels on ſhore, and ſurrounded them with a deep ditch. The Greeks, however, purſued them thither; and, with the aſſiſtance of the Ionians, attacked them. The battle was at firſt bravely fought on both ſides; but the Mileſians and Samians, followed by the reſt of the Aſiatic Greeks, having deſerted from the Perſians, the latter were vanquiſhed, and 40,000 of them cut in pieces. The Athenians took poſſeſſion of the enemy's camp, burnt the Perſian fleet, and returned to Samos with a vaſt deal of plunder. This engagement happened on the ſame day with that of Platea. Thus did that memorable day for ever free Attica from any future Perſian invaſions, and deliver them from thoſe innumerable armies, which, like clouds of locuſts, had conſumed their country for two whole years. Theſe grievous defeats were never forgotten by the Perſian monarchs; and they entirely cured Xerxes of all deſire of undertaking any other enterpriſes of the ſame kind; while, on the other hand, the ſevere effects of tyranny, formerly experienced by the Athenians, had excited in them ſuch a ſtrong deſire of liberty, that to preſerve it they boldly hazarded the greateſt dangers. Their bravery, however, was admirably ſupported and conducted by the wiſdom and ſkill of their generals, who were particularly attentive to chooſe ſuch a ſituation for giving battle, that the enemy could not much avail themſelves of their vaſt ſuperiority in point of numbers.

The Athenians, having now recovered perfect tranquillity, brought back their wives and children to Athens; of which they rebuilt the walls, and conſiderably increaſed the extent. The Lacedemonians taking umbrage at this, from an apprehenſion leſt Athens ſhould become too powerful, repreſented to the Athenians, that it was the general intereſt of Greece to have no fortified place without the Peloponneſe, becauſe, in caſe of a freſh invaſion, it might ſerve for a retreat and warlike magazine to the enemy. Themiſtocles having procured himſelf to be named ambaſſador to Lacedemon, there, to juſtify the conduct of his countrymen, maintained in open ſenate, that it was as much for the common advantage of the allies as for that of the Athenians, that the latter had fortified their city with good walls; that beſides, it was but equitable that they, as well as the reſt, ſhould take proper meaſures for their own ſafety; and, in fine, that they were able to defend themſelves either againſt foreign or domeſtic enemies.

In the next place, Themiſtocles, ſolely intent on increaſing the power of the republic, fortified the Pyreum, or port of Athens, in the ſame manner as he had done the city; and perſuaded the Athenians to augment their fleet yearly with twenty ſhips. The object of this ſkilful politician, was to deprive the Lacedemonians of the ſuperiority hitherto poſſeſſed by them over the other ſtates of Greece. But it muſt be confeſſed, that he was not very ſcrupulous with regard to the means employed by him for that purpoſe. An inſtance of this was his project of burning the Grecian fleet in the harbour of Pegazus, whither it had retired to winter after the defeat of Mardonius; but, not daring openly to propoſe this ſcheme, he was deſired by the people to communicate the matter privately to Ariſtides; who declared that the project of Themiſtocles was highly uſeful, but very unjuſt. Themiſtocles was therefore prohibited from putting it in execution. How becoming, thus to ſee a whole ſtate prefer what was juſt to what was uſeful! and what a high idea of the juſtice of Ariſtides muſt we not conceive, when we ſee him choſen ſingly by a whole people, to determine whether a project of the utmoſt national importance was juſt or unjuſt!

Ariſtides, having nothing in view but the welfare of his country, was continually employed in promoting her intereſts. His prudence prevented diſturbances that were likely to ariſe in Athens by the turbulent diſpoſition of the people, who, finding themſelves now in peace and ſecurity, deſired to take the whole power of government into their own hands. To theſe projects they were chiefly inſtigated by Themiſtocles, partly from motives of oppoſition to his rival Ariſtides, who ſupported the party of the better ſort; but principally from partiality to the party of the commons, to which his birth naturally attached him. Ariſtides, to quiet them, procured the office of archon, hitherto confined to the richer tribes, to be rendered attainable by every rank in the ſtate. By this conceſſion he, for the preſent, ſatiſfied the people, and diverted them from a ſcheme that muſt infallibly have occaſioned a civil war.

As the Perſians were ſtill in poſſeſſion of ſome cities in Aſia Minor, the Athenians and Lacedemonians reſolved to diſpoſſeſs them; and, for that purpoſe, ſent out a fleet under the command of Pauſanias, Ariſtides, and Cimon the ſon of Miltiades. This expedition was attended with the deſired ſucceſs, and the Perſian garriſons were every where expelled. Then the fleet ſailed up the Helleſpont, and attacked Byzantium, which Pauſanias had the glory of taking. But the haughty diſpoſition natural to that Spartan appeared to be greatly increaſed by his late ſucceſs. He treated the officers in the moſt arrogant and overbearing manner, and ſoon became perfectly unſupportable. This exceſſive pride ſtained the glory of his actions, and at laſt brought on his ruin. For, deſirous to become the ſon-in-law of Xerxes, his vanity induced him to betray his country, and he offered to make that monarch maſter of Sparta, and of all the reſt of Greece, on condition of receiving his daughter in marriage, and of being inveſted with ſovereign authority over the country he ſhould thus betray. Xerxes embraced the propoſal, and tranſmitted to Pauſanias large ſums of money, to enable him to make good his engagements. The plot, however, was diſcovered; but as the Lacedemonians could not, for the preſent, procure ſufficient evidence of his treaſon to juſtify a capital puniſhment, they were ſatisfied with depoſing him.

The allies, now weary of their ſubjection to Sparta, which Pauſanius had exerciſed over them with the utmoſt ſeverity, and charmed at the ſame time with the mildneſs, affability, and juſtice, of Ariſtides and Cimon, conferred on them the chief command of the fleet, and put themſelves under the protection of the Athenians. Thus did Sparta, by the imperious behaviour of Pauſanias, loſe that ſuperiority over the reſt of Greece, which her juſtice and moderation had at firſt procured her.

Cimon ſoon began to appear in a very intereſting light, as chief commander in Aſia. After delivering the Greek colonies from the Perſian yoke, he continued to puſh on his conqueſts in Aſia, and reduced ſeveral of the enemy's cities. He next attacked, near the iſland of Cyprus, with a fleet of 250 ſail, that of the Perſians, amounting to 340 ſail, and ſupported by a powerful army encamped along the ſhore. The engagement was deſperately ſupported at firſt. But the Greeks, having ſunk ſeveral of the enemy's ſhips, put the reſt to flight. Then Cimon, ſailing towards the Thracian Cherſoneſe, took the city of Eione, on the banks of the Strymon. On this occaſion, the Perſian, Butes, who was governor of the city, finding it impoſſible to preſerve the city, threw his riches into the river, and then burnt himſelf and all his family on a funeral pile. After this, Cimon ſubdued the other ſtates in that country, drove from Syrops the pirates that infeſted the Egean ſea, eſtabliſhed an Athenian colony in their place, and made himſelf maſter of Naxus. Cruiſing along the coaſts of Aſia, he reduced all the maritime cities of Caria and Lycia, and left not the Perſians in poſſeſſion of a ſingle inch of ground between Ionia and Pamphylia. Hearing that the Perſian fleet lay at anchor at the mouth of the river Eurymedon, waiting for a reinforcement of Phenician ſhips, that they might attack him with their united forces; he immediately ſailed againſt the former to prevent their junction; charged them with ſuch vigour, that they were obliged, in ſpite of their great ſuperiority in number, to run their ſhips aground, and took more than one hundred of them. Without giving his men time to breathe after their victory, he inſtantly landed them, and attacked the army of the enemy, which was drawn up on the banks of the Eurymedon. The Perſians ſuſtained the firſt charge of the Greeks with great firmneſs; but the troops of Cimon, animated by their late ſucceſs, broke them at laſt, put them fairly to flight, made a great number of them priſoners, and got a vaſt booty. Cimon crowned his victories with the capture of the Phenician fleet which was coming to the aſſiſtance of the Perſians, and by that means gave a fatal blow to the Perſian naval power.

The Lacedemonians, importuned by continual complaints againſt Pauſanias, ſummoned him to return home to juſtify his conduct. He obeyed, and was for the preſent acquitted, either through the defect of evidence, or the gratitude of his countrymen for his paſt important ſervices. He returned, therefore, to Byzantium; but immediately renewed his negociations with Artabazus, to whom Xerxes had referred him, that they might together ſettle the plan of operations. The whole matter, however, was at laſt clearly brought to light. A ſlave, whom he had charged with certain diſpatches for Aſia, having obſerved, that, of all his companions formerly diſpatched thither on buſineſs of the ſame kind, none had returned, became apprehenſive of meeting with the ſame fate himſelf. He was therefore tempted to open the letter of his maſter; where, perceiving at once all the importance of his commiſſion, he reſolved to deliver his diſpatches to the ephori, who, after maturely weighing every circumſtance, ordered the ſlave to take refuge in the temple of Neptune; and then propagated a report, that the reaſon of his doing ſo was to beg pardon of the god for having opened a letter of his maſter. Pauſanias haſtened to the temple, where the ephori being concealed, they overheard his whole converſation with the ſlave; were thereby entirely convinced of the full extent of his treaſon, and reſolved to bring him to immediate puniſhment. Pauſanias, perceiving his danger, fled for ſafety to the temple of Minerva. The ephori, not chuſing to violate the privilege of the temple, but deſiring, at the ſame time, to puniſh the traitor, ordered the entry to be ſhut up, and part of the roof to be uncovered, that he might be ſtarved to death; which happened accordingly.

The ardent paſſion of Themiſtocles for power at length offended the Athenians; who, provoked at his conſtantly reminding them of his ſervices, baniſhed him from Athens. Themiſtocles was obliged to take refuge at Argos. In the mean time, it was alleged, that ſome paſſages in letters, found in the poſſeſſion of Pauſanias after his death, ſeemed to indicate a ſecret underſtanding between him and Themiſtocles. But the truth of this fact was never properly aſcertained. The Lacedemonians, however, upon whoſe ambition he had been a conſtant check, took advantage of this circumſtance to ruin him, and communicated the pretended diſcovery to the Athenians. Themiſtocles endeavoured to juſtify himſelf by letter; but his enemies, glad of ſo fair an opportunity of accompliſhing his deſtruction, uſed every argument to convince his countrymen of his guilt, and were at laſt ſucceſsful. Themiſtocles, having notice of theſe proceedings, retired to the iſland of Corcyra, and from thence into Epire. But, thinking himſelf unſafe even there, he next took refuge at the court of Admetus king of the Moloſſi. This was a very dangerous and daring ſtep in Themiſtocles. That prince entertained a ſtrong reſentment againſt him, on account of ſome ſuit of his having been harſhly refuſed by the Athenians, while the authority of Themiſtocles was at its height among that people. Touched, however, at ſeeing at his feet, and in his power, the greateſt man of Greece, he gave him a kindly reception, and reſolved to protect him.

The Athenians, being now in the undiſputed poſſeſſion of the principal authority in Greece, and, by conſequence, enjoying uncontrolled influence in the management of public affairs, reſolved, in compliance with the requeſt of ſeveral of the ſtates, to put the funds furniſhed for the purpoſe of the general defence of the country on a new footing, by impoſing on each city a tax proportionable to its whole revenue. It required a man of great integrity and diſintereſtedneſs to proportion and to collect this tax. Ariſtides was unanimouſly looked up to for that purpoſe: and he diſcharged the truſt repoſed in him to the ſatisfaction of all the parties concerned, and in ſuch a manner as did honour to the choice of his countrymen. The period of his adminiſtration is juſtly conſidered as the happieſt in the hiſtory of Attica. For, under the management of Pericles and his ſucceſſors, the increaſe of unneceſſary expences required the tax to be firſt doubled, and afterwards tripled; the conſequent misfortune of proſperity and ſucceſs in all civilized countries.

The leading men who ſucceeded Ariſtides, repleniſhed Athens with beautiful porticos, with ſtatues, and with other decorations; but his ſtudy, ſays Plutarch, was to adorn it with virtue. He was not always, adds the ſame author, a magiſtrate; but he was always employed in the ſervice of his country. His houſe was a public ſchool for ſound policy, wiſdom, and virtue; and was ever open to all the Athenian youth, who repaired thither as if to conſult an oracle, and were liſtened to and inſtructed by him in the moſt familiar and obliging manner. Though he had, on ſeveral occaſions, given ſignal marks of his courage, yet equity was his diſtinguiſhing characteriſtic. He poſſeſſed uncommon equality of temper, which did not deſert him even in his baniſhment, but enabled him to preſerve his affection for his country, and to petition the gods in favour of his fellow-citizens, at the very inſtant when they were treating him with the moſt cruel ingratitude. His only object was the glory of Athens; and, provided ſhe were ſucceſsful againſt her enemies, he was little ſolicitous whether it was by his means or thoſe of another. Of this he gave a ſtrong proof with reſpect to Themiſtocles. After ſharing with him the whole danger and conduct of the war, he never offered to diſpute with him the glory of the ſucceſs, but ſuffered him to enjoy it without a rival. Ariſtides was in all reſpects the perfect model of a good citizen.

The reader cannot fail to be anxious to know the circumſtances attending the laſt part of the life, and the final exit, of this great man. But hiſtorians have left us altogether in the dark on that point. It is probable, however, that he ended his days in peace. Hiſtory only informs us, that, after poſſeſſing for a long while the ſole management of the public money, he died in ſuch abſolute poverty, as not to leave ſufficient funds to bury him. But the republic charged itſelf with this laſt duty to its beſt citizen; and likewiſe with the care of providing ſuitable matches for his daughters; and his ſon Lyſimachus was maintained in the Prytaneum at the public expence. It was nearly about this time, i. e. 445 years before Chriſt, that the Romans, having heard of the wiſdom of the Greek inſtitutions, ſent ten of their citizens to Athens, to inform themſelves of the different laws there eſtabliſhed. It was from the collection made at Athens by thoſe ten citizens, that the laws of the twelve tables were compoſed, which formed the baſis of the after ſyſtem of Roman juriſprudence.

Let us once more look back to Themiſtocles. The Athenians, reſolved not to permit him to remain in quiet under the protection of Admetus, required that prince to deliver him up, under pain of their diſpleaſure. Themiſtocles, informed by Admetus of the dilemma into which he had brought himſelf on his account, determined, without heſitation, to retire to a greater diſtance ſtill from his cruel and ungrateful countrymen. He went on-board a ſhip; and, after eſcaping ſeveral dangers, arrived at Cumes in Armenia. The Perſian monarch Artaxerxes, having heard of his being proſcribed by his countrymen, had already ſet a price on his head; and iſſued orders, that all perſons who arrived in any part of the coaſt of his dominions ſhould be ſtrictly examined. Themiſtocles, however, found means to reach Eolia undiſcovered; and, by the friendſhip of his hoſt, a man of conſiderable ſubſtance in that country, he was from thence conducted in a covered waggon to Suza; the conductor of the waggon telling thoſe he met, that the perſon conveyed in the waggon was an Ionian lady, whom he was conducting to a nobleman at court. He was permitted therefore to paſs without further inquiry, the ladies in Perſia being always carefully guarded from public view. As ſoon as he came to the court of Artaxerxes, he told that he was a Greek, and begged an audience of the king. Being admitted into the royal preſence, he proſtrated himſelf, as uſual, before the monarch, and made a moſt moving ſpeech to obtain his protection. You ſee at your feet, ſays he, Themiſtocles; a man who has indeed done much harm to the Perſians, but who has it in his power to render them important ſervices. My life is in your power. If you ſave it, you will eternally oblige a man who begs it at your hands; if you deprive me of it, you will deſtroy the greateſt enemy of Greece. Artaxerxes was aſtoniſhed at his intrepidity, and could not help admiring him. He made him no anſwer for the preſent; but, on being left alone, he gave himſelf up to the higheſt tranſports of joy, crying out from time to time, "I have Themiſtocles in my power!" Next day, however, after deliberating coolly on this unforeſeen event, he reſolved to act the generous part, and to bind Themiſtocles to his intereſts by loading him with favours. He therefore called him into his preſence; received him in the kindeſt and moſt obliging manner; preſented him with 200 talents, and queſtioned him much about the affairs of Greece. Themiſtocles, that he might be able to converſe more freely with Artaxerxes, applied himſelf to the ſtudy of the Perſian language, and ſoon learned to ſpeak it. In the mean time, the Perſian monarch was daily giving him ſtill greater and greater marks of favour, and on all occaſions teſtified a particular eſteem for him. He married him to a Perſian lady of the higheſt birth, made him his companion in all his pleaſures, and converſed with him with great familiarity. His credit was ſo high, that he was himſelf amazed at it. It is ſaid, that being one day at table with his children, and reflecting on the magnificence with which he was treated, he could not refrain from exclaiming, "We had periſhed, my children, if we had not periſhed." He fixed his reſidence at Magneſia, a city of Aſia Minor, and continued there for the remainder of his life. The revenues of three cities were aſſigned him as a fund of ſubſiſtence.

After Cimon had gained over the Perſians the victories already mentioned, he returned to Athens, and employed part of the ſpoils taken from the enemy in fortifying Pireus, and embelliſhing the city. Being choſen to conduct another expedition againſt the Perſians, he expelled them from the Thracian Cherſoneſe, and laid ſiege to Thaſus, whoſe inhabitants had revolted againſt the Athenians. This ſiege is remarkable for its having continued three years; and for the obſtinate reſiſtance of the beſieged, whereby they expoſed themſelves to the ſevereſt misfortunes of war. It was declared capital for any perſon to talk of ſurrendering; and the women ſeconded the efforts of the men, even cutting off their hair to make ropes. The city, accordingly, ſtood out till famine carried off moſt of its inhabitants. Cimon next ſubdued all the country oppoſite to Thrace, as far as Macedonia, of which kingdom, too, he was on the point of attempting the conqueſt. Under theſe favourable circumſtances, the number of inhabitants in Attica appears to have been greatly increaſed. For, notwithſtanding a great loſs of men in the courſe of the war, they ſent out large colonies, to Eion on the river Strymon, to Amphipolis in Macedonia, and to the iſland of Sciros.

Artaxerxes, hearing of theſe important ſucceſſes of Cimon, and of the increaſe thence derived to the Athenian power, propoſed to Themiſtocles to take the command of a powerful army, which he had reſolved to ſend againſt Attica. Such a propoſal threw that illuſtrious exile into the greateſt perplexity. Agitated on the one hand by the ſtrong affection ſtill retained by him for his native country, and the thoughts of the diſhonour he ſhould draw on himſelf by bearing arms againſt it; and, on the other hand, by the powerful ſentiments of gratitude towards a prince who had loaded him with the higheſt favours; he perceived that death alone could deliver him from his diſtreſsful ſituation. He reſolved therefore to ſacrifice his life to his duty to his country, and to his gratitude to Artaxerxes. Aſſembling his friends, he bade them a moving farewell; ſwallowed a draught of bull's blood, and died at the age of ſixty-five years. Artaxerxes was ſtruck with admiration at this inſtance of magnanimity, and highly regretted his dying ſo prematurely. But, according to Thucydides, he did not die by poiſon, but by a natural diſeaſe

About this time, the moſt violent earthquake ever felt before in Greece happened in Laconia. Not only were moſt of the houſes thrown down by it, but the earth opened and ſwallowed up ſeveral ſpots of ground in that neighbourhood. The Helots, taking advantage of this calamity, attempted to aſſert their liberty; and, joining the Meſſenians, made war on the neighbouring cities. The Lacedemonians were reduced to the neceſſity of begging aſſiſtance of the Athenians. Cimon, thinking it ungenerous to take advantage of the misfortunes of a rival city, perſuaded the Athenians to aſſiſt them; and, marching himſelf into Laconia at the head of 4000 men, he diſperſed the Helots.

At this time the celebrated Pericles began to acquire great influence in the adminiſtration. Animated with a more ardent deſire of glory than Cimon, he was become jealous of the reputation of that illuſtrious Athenian; who, by his ſervices to the ſtate, and his liberality to his fellow-citizens, had gained their higheſt eſteem. Pericles, therefore, reſolved to oppoſe him. Cimon was connected with the nobleſt families of Athens. Pericles, on the other hand, in imitation of the political conduct of Themiſtocles, embraced the party of the people; and omitted nothing to attract the attention and the favour of the crowd. It muſt be confeſſed, that his extraordinary abilities correſponded perfectly with his ſoaring ambition. He poſſeſſed uncommon elevation of ſentiment, and a ſtriking dignity of manner and deportment. He had received the moſt important part of his education under the celebrated philoſopher Anaxagoras; from whom, beſides natural philoſophy, he had learned a chaſte and lofty ſtyle. Pericles had likewiſe ſtudied with much care the art of government among his countrymen; and his ſingular penetration quickly enabled him to manage their paſſions and their prejudices to the beſt advantage. His quality of ſenator gave him an opportunity of diſplaying to the greateſt advantage his powers of oratory, which he poſſeſſed in a ſupreme degree. His natural elocution was enforced by all the graces of a fine voice, and very captivating exterior accompliſhments, inſomuch that he in a manner charmed the imaginations of his audience, and managed them as he pleaſed. The boldneſs, too, and the impetuoſity with which he ſpoke ſo aſtoniſhed his hearers, that they fancied a reſemblance between his declamation and the thunder of Jupiter. This procured him the appellation of *Olympian*. But finding it neceſſary, in order completely to gain over the multitude to his ſide, to rival Cimon in liberality, his firſt care was to inſinuate himſelf into that branch of the adminiſtration which regarded the management of the public funds. It is apparent, that in this employment he by no means propoſed to act on the rigid principles of Ariſtides. He firſt obtained the conquered territories to be divided among the citizens; and then he procured a certain proportion of the public money to be paid to each of them as a gratuity for their attending the popular aſſemblies; a policy that corrupted the Athenians, and accuſtomed that ſober frugal people to luxury and idleneſs. By laviſhing the public money in the moſt profuſe and oſtentatious manner, Pericles ſucceeded in ſeducing the people to his ſide. In the proſecution of this plan, he received no oppoſition from his rival Cimon. That great man being of a mild, candid, and peaceable, diſpoſition, and of ſentiments too elevated for little political intrigues, enjoyed in quiet the fruits of his former ſucceſs, and placed his chief pleaſure in ſharing his wealth with his fellow-citizens. Pericles therefore made haſty advances towards the object of his ambition.

The Helots, having formed a new confederacy, made themſelves maſters of Ithome. The Lacedemonians by a freſh embaſſy begged aſſiſtance of the Athenians; but, in conſequence of a ſudden change of opinion, they very abruptly diſmiſſed the Athenian troops that had been ſent to their aſſiſtance. This caprice greatly diſguſted the Athenians. Cimon having warmly ſupported the demand of the Lacedemonians, and diſplayed much zeal in their favour, Pericles and Ephiates availed themſelves of that circumſtance, privately to prepoſſeſs the people againſt him, and to render him ſuſpected. Cimon was deſtined, like moſt of the great men of this republic, to have his ſervices rewarded with the puniſhment of oſtraciſm. He was baniſhed for ten years. Pericles took advantage of the abſence of Cimon, and of his own credit with the people, to make innovations in the eſtabliſhed form of government. He deprived the Areopagus of the power of judging in the moſt important queſtions that had formerly belonged to their juriſdiction; he rendered the other courts of juſtice ſubſervient to his pleaſure; and he became ſo abſolute in Athens, that he poſſeſſed a power almoſt deſpotic.

The miſunderſtanding which at this time took place between the Spartans and Athenians, was the beginning of the mutual animoſity that conſtantly afterwards ſubſiſted between thoſe two ſtates, and brought to view the ſpirit of rivalſhip, with which they had long been ſecretly animated againſt one another. The ſpirit of diſcord broke out much about the ſame time among the other ſtates of Greece, and ſet them all in arms. As it is unneceſſary, and would be inconſiſtent with our plan, to take notice of the particulars of all the petty wars that were the conſequence of theſe diſputes, we ſhall content ourſelves with the moſt curſory mention of them. We do this the more willingly, becauſe a particular detail of the miſery and ſlaughter of which they were productive would ſhock the humanity of moſt readers, without conveying any preciſe or diſtinct ideas to thoſe who take pleaſure in the ſtudy of military operations.

The inhabitants of Megara had formed a ſpirited reſolution to render themſelves independent of the Argives; but, being totally defeated in an engagement by their oppreſſors, their city was beſieged, and, in ſpite of the moſt obſtinate reſiſtance, was taken and razed to the ground. The Helots, after defending themſelves in Ithome for ten years againſt the whole Spartan power, were at laſt obliged to ſurrender; and, being expelled the Peloponneſe, ſettled at Naupactus. The Megarians, by renouncing their connections with the Spartans, and ſiding with the Athenians, excited the jealouſy of the Corinthians, who on that account fought two battles with the Athenians, in which each party was conqueror in its turn. The inhabitants of Egina, actuated by the ſame motives of jealouſy, likewiſe declared war againſt the Athenians, but were defeated in a ſea-engagement by Leocrates, who blockaded their town. The Corinthians, having laid waſte the territory of Megara, were totally routed by the Athenians, who had come to the relief of that country. A war likewiſe breaking out between the Dorians and Phoceans, the former, ſupported by the Spartans, remained the conquerors.

About the ſame time a ſharp engagement happened between the Spartans and Athenians in the neighbourhood of Tangara in Bœotia. Cimon, who was then in baniſhment, came to the field of battle, and begged permiſſion of his countrymen to ſhare with them in the danger of the engagement. But this they refuſed him, on pretence of ſuſpecting his intentions. He exhorted, however, thoſe of his tribe who were preſent, and lay under the ſame ſuſpicion of favouring the enemy, to give proofs of their loyalty and fidelity. They obeyed his injunctions ſo effectually, that every one of them fell, fighting bravely, and the Athenians loſt the battle. Two months after, the Athenians had their revenge for this defeat. Under the command of Myronidas, one of the beſt generals of Greece, they totally vanquiſhed the Spartans, deſtroyed Tangara, and laid waſte Bœotia. Egina, having in the mean time capitulated, had its walls razed to the foundation. About the ſame time, the Athenian commander Tolmedes ſurpriſed Giltheum, a ſea-port town of Laconia, burnt the Lacedemonian fleet, and defeated the inhabitants of Sicyon in battle.

While the ſtates of Greece were in this manner employed in the mutual deſtruction of each other, the Athenians, by the inſtigation of Inarus king of Lybia, undertook an expedition into Egypt, which had lately revolted againſt the Perſian power. On their junction with the king of Lybia, they gave battle to the Perſians, put them to flight, and got poſſeſſion of a part of Memphis. Next year, however, the ſcene was greatly altered. For, after ſeveral fruitleſs aſſaults, they were at laſt obliged to raiſe the ſiege of that city on the approach of the enemy, and to retire to Biblis, an iſland in the Nile. In this place they withſtood an eight-months ſiege. But, their fleet happening to lie at anchor in the Nile, the Perſians, by changing the courſe of the river, rendered the ground round the ſhips dry, took every one of them, and put the greateſt part of their crews to the ſword. The army, being thus diſabled from oppoſing the enemy any longer, partly periſhed and partly diſperſed. Such was the event of this unfortunate enterprize, in which the Athenians conſumed ſix years. During the Egyptian expedition, Pericles, deſirous of diſtinguiſhing himſelf in the character of a ſoldier, as well as in that of a ſtateſman, ravaged the coaſts of Laconia, and beat the Sicyonians in two engagements.

The Athenians, becoming ſenſible at laſt of the injuſtice of their treatment of Cimon, recalled him after five years baniſhment. Soon after his return, that great man ſucceeded in bringing about a peace between his countrymen and the Lacedemonians; and, with a view of diverting the Athenians from making war on their neighbours, he reſolved to find occupation for their arms abroad. Departing, therefore, for Cyprus with a fleet of 140 veſſels under his command, and being joined by ſixty more from Egypt, he attacked Artabazus, the admiral of Artaxerxes; and took 100 of his ſhips. He next made a deſcent upon Cilicia; and totally defeated Megabazus, another officer of that prince. He then returned to Cyprus to form the ſiege of Citium. In the courſe of this ſiege, Cimon fell ſick. Perceiving his end approaching, he beſeeched his mean to keep his death a ſecret. They followed his advice; and, proceeding with their operations, obtained a ſignal victory, in which they took 100 of the enemy's ſhips, and then ſailed back in triumph to Attica.

Cimon's death was much regretted by the Athenians. Plutarch, among other lofty encomiums, deſcribes him as having been an affectionate ſon, a faithful friend, a zealous citizen, a moſt ſkilful commander, and ſo extremely liberal as never to be equalled in generoſity. We muſt add, that he had a ſhare in all the important exploits of his time, and that he very much increaſed the naval power of Athens. It appears to have been a principal object with Cimon to keep his countrymen in unremitting action, while at the ſame time he readily admitted the ſlighteſt pretences to excuſe their allies from perſonal ſervice. His motive for this is obvious. The Athenians daily became more warlike, while their allies grew effeminate and unacquainted with the uſe of arms. When young, he was a great favourite of Ariſtides, who reclaimed him from his extravagancies; and in the end Cimon imitated Ariſtides in diſintereſtedneſs and love of juſtice. A remarkable inſtance of Cimon's diſintereſtedneſs is recorded by Plutarch. A Perſian of diſtinction, having incurred the reſentment of his king, withdrew with great riches to Athens. Here, to procure Cimon's protection, having offered that illuſtrious Athenian a magnificent preſent, Cimon aſked him, "whether he deſired to have him for his friend or for his mercenary?" "For my friend unqueſtionably," anſwered the Perſian. "Then, (ſaid Cimon,) retain your preſent; for, if I be your friend, I may command your money whenever I want it."

The Spartans having forcibly deprived the Phoceans of the ſuperintendance of the temple of Delphos, the Athenians replaced them in it after beating the Bœotians. But in a ſubſequent engagement the Bœotians, with the aſſiſtance of their neighbours, cut the Athenian army in pieces, and killed their general Tolmedes. Megara revolted, and the Spartans made an irruption into Attica. Pericles, anxious to bring the war to a concluſion, privately corrupted Pliſtonax king of the Lacedemonians; and having by that means ſecured the ſafety of Attica, ſailed againſt Eubœa, and ſubdued it. The ſtates of Greece, weary of ſuch an exhauſting war, uſed their united endeavours to reſtore peace; which was at length concluded between the two republics of Athens and Lacedemon, and their reſpective allies, for the ſpace of thirty years.

We muſt now turn our eyes to the adminiſtration of Pericles. To counterbalance his exorbitant power in Athens, the better ſort ſet up in oppoſition to him Thucydides, the brother-in-law of Cimon, who exerted his utmoſt endeavours to curb Pericles, and to maintain the balance between the nobility and people. Pericles, on the other hand, to retain the affection of the populace, entertained them with ſhows and feaſts; took into his pay a great number of them to ſerve on-board of a fleet he was fitting out; and eſtabliſhed ſeveral colonies in the Cherſoneſe, both with a view to diſburden the city of a great number of ſuperfluous idle people, and likewiſe to hold the allies in awe. In all theſe undertakings he profeſſed to have no other aim than the public good. After the example of Themiſtocles, he annually augmented their navy with ſixty ſhips, a policy that, by diſplaying the power and ſtrength of the Athenians, rendered them formidable to their enemies, and reſpectable among ſtrangers. He divided the lands conquered by the republic among the old diſbanded ſoldiers.

Pericles, by a judicious diſtribution of proper rewards, excited a noble ſpirit of emulation among the profeſſors of the fine arts; and adorned Athens with the maſter-pieces of the moſt ſkilful artiſts. It muſt be acknowledged, to the honour of Pericles, that whatever works of Greece, either in architecture, ſculpture, or painting, have attracted the admiration of after-ages, were the fruits of his government, and of the attention beſtowed by him upon the moſt elegant ſubjects. For many of thoſe maſter-pieces we are indebted to Phidias the celebrated ſtatuary, of whom the famous ſtatue of Pallas, ſo highly valued by the beſt judges, was a capital work. Pericles repleniſhed the city of Athens with ornaments that attracted the admiration of ſtrangers, and inſpired them with an high idea of the Athenian genius and power. Athens aſſumed a new face. Pomp and magnificence ſupplied the place of its original ſimplicity. But the beſt and moſt ſenſible citizens diſcerned, in this ſuperb diſplay, the approach to its meridian ſplendour, and conſequent decay.

The allies in the mean time, and the enemies of Pericles, complained loudly of his wantonly laviſhing thoſe funds that ought to remain appropriated for the exigencies of the war. Pericles anſwered, that the Athenians were by no means accountable for their conduct in this reſpect to their allies, who ought to be ſatisfied with the protection afforded them againſt the irruptions of the barbarians. He added, that the works at which they were pleaſed to take umbrage, furniſhed employment and ſubſiſtence to a vaſt number of citizens. But this was not all; the orators of the oppoſite faction attacked him with great acrimony. Thucydides, in particular, whoſe invectives were ſharpened by perſonal animoſity, harangued againſt him with ſingular keenneſs and ability; and the conteſt between Pericles and him roſe to ſuch a height, that it became neceſſary that the one or the other ſhould be baniſhed the city. Pericles's addreſs prevailed, and brought about the baniſhment of his rival. Become now ſole maſter in Athens, he diſpoſed of the whole power of the republic at his pleaſure, and reigned abſolute in its moſt flouriſhing days.

Pericles now perceiving his authority to be firmly eſtabliſhed, and that the favour of the people was leſs neceſſary to him, gave another turn to the government, and inſenſibly circumſcribed the power of the democracy. In this undertaking he met with his uſual ſucceſs, by means of his admirable ſkill in managing the minds of the multitude, and bringing them to the temper he deſired, by the force of his eloquence; his conduct, too, was now perfectly irreproachable; and his only aim ſeemed to be the public advantage. He poſſeſſed indeed a noble diſintereſted ſoul: for, during the long ſpace that he enjoyed the entire diſpoſal of the public money, his private eſtate did not appear to have been at all increaſed; and excepting the largeſſes procured by him for the people, and his expences in embelliſhing the city, his management was guided by the moſt wiſe and prudent economy. The fixed object of Pericles's whole conduct was, to raiſe Attica to an unrivalled ſuperiority over the other ſtates of Greece. But, though of diſtinguiſhed perſonal bravery, he appears on the whole to have been rather averſe to war, from the moſt amiable of all motives, humanity: and when unavoidably engaged in it, he ſeems to have been careful, from the ſame motive, never to undertake doubtful or hazardous enterprizes, conducting his meaſures ſo prudently as hardly ever to venture an engagement without a certainty of ſucceſs. All his warlike operations were managed with conſummate ſkill; particularly his ſucceſsful expedition into the Cherſoneſe, during which he fortified the Greek cities in that country, and by building a ſtrong wall acroſs the Iſthmus, ſecured it againſt the inroads of the Thracians. He led an expedition as far as the kingdom of Pontus. He re-eſtabliſhed, and by force of arms, the Phocians in the management of the temple of Delphos, whereof they had been diſpoſſeſſed by the Lacedemonians. He entirely ſubdued Eubœa, and rendered the Athenian power every where reſpectable.

In the diſpute between the Samians and Mileſians, the Athenians ſided with the latter, by the perſuaſion of Pericles; who, ſetting ſail for Samos with a fleet of forty ſhips, there eſtabliſhed democracy, and left a garriſon in the town. After his departure, the citizens who had withdrawn themſelves on his approach, having received a reinforcement from the governor of Samos, entered the town by night, and put all the garriſon to the ſword. Pericles, getting intelligence of this, returned with a greater force than before, defeated the Samian fleet, and blockaded the town. In vain did the Phenicians come to its relief. Pericles, having received an additional reinforcement, battered the walls with ſuch vigour, that he obliged the Samians to capitulate, and to pay the expences of the war. This exploit added greatly to the reputation and glory of Pericles. The Corcyreans likewiſe, finding themſelves unable to make head againſt the Corinthians, who had attacked them, implored the aſſiſtance of the Athenians. The Corinthians too, on their part, ſent deputies to Athens, which for a conſiderable time kept the public reſolutions in ſuſpenſe. But the Corcyreans ſo far prevailed at laſt, as to procure themſelves to be received into alliance with the Athenians; who did not, however, chooſe openly to declare war againſt the Corinthians, being by no means diſpleaſed to ſee thoſe two powerful maritime ſtates weakening each other by their mutual quarrels.

The Athenians at laſt, grown inſolent from their ſucceſs, wantonly attacked every ſtate which they even ſuſpected to be an enemy. They commanded the inhabitants of Potidea not only to demoliſh the walls of their city on the Pallenus ſide, but likewiſe to diſmiſs the magiſtrates, whom, as a Corinthian colony, they had received from Corinth. The Corinthians, provoked at this inſtance of the Athenian injuſtice, declared war againſt them, and ſent an army into the territory of Potidea. An engagement enſued, in which victory declared for the Athenians. In this battle Alcibiades, as yet a very young man, and his maſter Socrates, chiefly diſtinguiſhed themſelves. That philoſopher was obſerved to ſupport the fatigues of war with an eaſe that muſt have been the conſequence of the hardy temperate life to which he had inured himſelf; and in the action he behaved with a courage that would have done honour to the braveſt veteran. On this occaſion he procured the prize of valour to be adjudged to his ſcholar Alcibiades, intending by that means to inſpire him with a love of glory. This advantage of the Athenians did not at all ſubdue the reſiſtance of the Potideans, who reſolved to complain to the Spartans. Theſe readily eſpouſed their quarrel, and ſecretly prevailed with Perdiccas king of Macedon to take arms in their behalf. A battle enſued, in which the Athenians having broken the main body of that prince's army, obtained the victory, and laid ſiege to Potidea. The Corinthians, having likewiſe complained at Sparta, obtained, like all thoſe who had been injured by the Athenians, a very favourable hearing from the Lacedemonians, who at laſt declared the peace to be infringed on the part of the Athenians, and proclaimed war againſt them.

It is certain, that the overgrown power of the Athenians; the preſumption inſpired by the victories over the Perſians, of which they attributed the whole honour to themſelves; their affectation of ſuperiority over the Spartans, and their overbearing behaviour to their allies, by aſſuming to themſelves an excluſive power of judging in every matter that concerned the whole confederacy; had at this time offended all their neighbours. The Lacedemonians, therefore, and the other ſtates of Greece, thought it now highly neceſſary to humble their pride; and for that purpoſe made uſe of every pretext to juſtify an open declaration of war. During their hoſtile preparations, the Lacedemonians endeavoured to cover their reſolutions with the appearance of equity. Among other old ſubjects of diſpute revived by them, they required the Athenians to reſtore liberty to the cities over which they had aſſumed an authority; and particularly to abrogate a law made by them againſt the inhabitants of Megara. Pericles anſwered their complaints with great ſtrength of argument. He demonſtrated, that theſe were by no means ſufficient grounds for a war; and at the ſame time convinced the Athenians, that they had no reaſon to be alarmed at the threats of the Lacedemonians, being in a much better ſituation to ſupport a war than they.

It was, however, the intereſt of Pericles to engage the Athenians in a war; for they had already paſſed a law obliging him to render an account of the public money. To avoid the ſtorm that threatened him, he indulged the Athenians in their inclination for war, which, by employing them about a buſineſs more urgent, and more directly intereſting, might not only divert them from prying minutely into his preceding management of the public funds, but might likewiſe give him additional importance in the ſtate, by obliging them, in the conduct of the war, to have frequent recourſe to his counſel and direction. The people, in the mean time, held an aſſembly to deliberate on the demands of the Lacedemonians. Pericles, on this occaſion, juſtified the meaſures of the Athenians with admirable eloquence. He demonſtrated the demands of the Lacedemonians to be no other than affected pretences, under which they hoped to conceal their jealouſy, the real motive of their conduct, as they could not behold, without an envious eye, the Athenians poſſeſſed of the ſuperiority in Greece; that it would be diſgraceful in the Athenians to have their meaſures controuled by ſuch enemies; and that the ſword was the ſhorteſt and the only method to ſettle the controverſy. Still farther to encourage the Athenians to undertake this war, he gave them a flattering deſcription of their army, their navy, and their funds. This deſcription made a ſtronger impreſſion, and animated them the more, becauſe they knew certainly that it was juſt. For there were at that time in the public treaſury 9600 talents; the contributions of their allies amounted to 460 more; and they had an army of 30,000 men, and a fleet of 300 galleys. Pericles, after giving his opinion for the war, proceeded next to deliver his ſentiments with reſpect to the conduct of it. He adviſed the Athenians never to hazard a general battle, eſpecially far from home; to make the defence of the city their principal object; and by all means to preſerve their ſuperiority at ſea.

The war that now enſued is known in hiſtory by the name of the *Peloponneſian war*. It was of twenty-ſeven years duration; and was attended with an immenſe expence, and an incredible effuſion of blood. In the courſe of it, each party experienced the moſt cruel reverſes of fortune; and diſplayed a courage that might have procured them, if united, the greateſt advantages over their common enemies. Thucydides writes the hiſtory of the firſt twenty-one years of the war, and Xenophon continues it. It has already been obſerved, that the jealouſy, conceived by the other ſtates of Greece, of the exorbitant power of the Athenians, was the more immediate occaſion of this war. All the ſtates within the Peloponneſe, except the Argives alone, joined the Lacedemonians, who were further ſupported by the Megarians, Locrians, Bœotians, and ſome others. The Athenians, on the other hand, were ſupported by the inhabitants of Chios and Leſbos, by the city of Platea, and all their tributary countries, ſuch as Ionia, the Helleſpont, the cities of Thrace, &c. Hoſtilities were begun by the Thebans in the year B. C. 431, who attacked Platea, a city of Bœotia, in alliance with Athens. All Greece was immediately in motion. The Lacedemonians marched towards the iſthmus of Corinth, a narrow neck of land, about ſix miles broad, which joins the Peloponneſe to the country properly called Greece. Archidamus, one of the Spartan kings, before advancing farther, diſpatched an ambaſſador to the Athenians, to require them to relinquiſh their pretenſions. But the Athenians commanded the meſſenger to retire, without deigning even to give him an audience. The Lacedemonians thereupon advanced towards Attica with an army of 60,000 men, while that of the Athenians amounted to no more than 18,000; but, to make up the odds, the latter had a fleet of 300 galleys. On the approach of the Lacedemonian army, the inhabitants of the country abandoned their habitations, and, carrying away every thing they could, took refuge in Athens.

The plan of operations purſued at this time by the Athenians, on the ſuggeſtion of Pericles, was, to weary out the enemy, by protracting the war. The Lacedemonians, entering Attica, laid ſiege to Enoe. But being obliged, after a few fruitleſs aſſaults, to relinquiſh that attempt, they advanced ſtill nearer to Athens, and encamped within half a league of the city. Pericles, unwilling, while ſo much inferior in point of numbers, to hazard the fate of the republic in a general battle, found it difficult to prevent the Athenians, exaſperated at the ſight of the ravages committed on their country, from ſallying forth upon the enemy. But, by means of his admirable art in managing the multitude, he kept both the ſenate and people from aſſembling to deliberate, though at the expence of numberleſs inſults from his enemies; in ſpite of which he perſiſted in his plan, unmoved either by threats or intreaties. In the mean time he diſpatched a fleet of 100 ſhips to ravage the coaſts of the Peloponneſe; which, being joined by that of the allies, made a deſcent upon Laconia, and laid waſte the territory of Sparta. The Lacedemonians, finding all their endeavours to draw the Athenians out of their city ineffectual, and receiving intelligence of the ravages committed in Laconia by the Athenian fleet, found themſelves under the neceſſity of withdrawing from Attica.

On the ſetting out of the expedition againſt the coaſt of Laconia, an extraordinary eclipſe of the ſun happened, juſt as Pericles was going on board his galley. Pericles perceiving the Athenians to be terrified at this phenomenon, which they conſidered as an unlucky preſage, threw his cloak over the face of the pilot, and aſked him if he ſaw? The pilot having anſwered in the negative, Pericles explained to the by-ſtanders, that the body of the moon, being in like manner interpoſed at that inſtant between their ſight and the ſun, prevented them from ſeeing his light. When the Lacedemonians retired out of Attica, the Athenians appropriated 100 talents of money, and 100 of their beſt ſhips, for the more immediate defence of their country in caſe of a freſh invaſion, prohibiting any perſon, under pain of death, from propoſing a different application of thoſe reſources. They then expelled from the iſland of Egina its inhabitants, whom they regarded as the principal cauſe of the war; and they divided that iſland by lot among the citizens of Athens. They made an alliance with the kings of Macedon and Thrace; ſubdued the iſland of Cephalonia; laid waſte the territory of Megara; and took the harbour of Niſeum. This concluded the firſt campaign.

The Athenians next celebrated funeral rites to the memory of thoſe who had fallen ſince the beginning of the war. For this purpoſe, a large tent was conſtructed, wherein they expoſed the bones of the ſlain, which were covered with flowers and perfumes thrown on them by thoſe that went to ſee them. Then the bones were carried with much pomp and ſolemnity to a ſuburb of the city called Ceramicus, where they were depoſited in a monument deſtined to be the tomb of thoſe who fell in war. And laſtly, one of the citizens pronounced a funeral oration in their praiſe; a charge which on this occaſion was undertaken by Pericles himſelf. Though always ſuperlatively eloquent, he at this time ſeemed to outdo himſelf; and in pronouncing the eulogium of thoſe who were no more, he omitted no argument that might inflame the courage of thoſe who remained. Thucydides has preſerved this famous oration, of which the beautiful expreſſions and lofty ſentiments are equally admired.

The army of the Lacedemonians, and their allies, returned into Attica, and laid every thing waſte with fire and ſword. But the plague which then raged among the Athenians, was ſtill more pernicious to them, depriving them of their beſt citizens and braveſt ſoldiers; and Athens exhibited nothing but a melancholy ſcene of ſickneſs and death. From remoteſt antiquity down to the preſent times, Egypt has been noted as the unlucky region where this fatal ſcourge of the human race has been generated: and the plague which now deſolated the city of Athens is particularly mentioned as having proceeded from the banks of the Nile. Thucydides, who was himſelf ſeized by this plague, has given a deſcription of it. Some authors write, that Hippocrates, the famous father of the healing art, who was a native of Cos, having been ſent for by the Athenians, employed every reſource of phyſic to ſtop the infection. As the ſame plague was then raging in Perſia, where Greek phyſicians were in high eſtimation, Artaxerxes hoped to prevail on Hippocrates, by the moſt ſplendid offers, to come to his court. But all his promiſes were ineffectual. For that celebrated phyſician, poſſeſſing a ſoul that looked on gold with contempt, anſwered the Perſian monarch, That his ſkill and care were devoted to the relief of his fellow-citizens, not of the enemies of Greece; and, without regarding the reſentment denounced againſt him and his country by that prince, continued in Athens till the plague had entirely ceaſed. The Athenians, as a reward for his uſeful care, preſented him with the freedom of their city, aſſigned him a handſome maintenance for life in the Prytaneum, and gave him a crown of gold, of the value of 200l. ſterling.

Pericles, in the mean time, ſent out a detachment of 4000 foot, and 300 horſe, on-board a fleet of 100 galleys, with orders to ravage the Peloponneſe. This diverſion obliged the Peloponneſians to return home to the defence of their own country. But the Athenians, diſtreſſed by the waſte committed on their territories by the enemy, murmured bitterly at the conduct of Pericles, and ſent propoſals of peace to Sparta. The Lacedemonians having refuſed to hearken to any accommodation, the complaints were renewed againſt Pericles, who at laſt aſſembled the people, and endeavoured to juſtify his meaſures. But their preſent ſufferings out-weighed his eloquence; and they not only deprived him of all power, but likewiſe impoſed on him a heavy fine. Nor were the diſtreſſes of that great man confined to his public ſtation alone. They were heightened by others of a domeſtic nature. His own ſon Xantippus, a young man of an expenſive turn, unable to bear the ſtrict economy of his father, was the firſt to complain of his conduct; as if it were not the duty of a ſon to ſubmit with patience to the meaſures of his father, even although he ſhould carry his frugality to an extreme. Pericles had the misfortune to loſe this ſon, with ſeveral others of his relations and friends, by the plague. But, amidſt all his afflictions, his fortitude never forſook him.

The Athenians beginning to be hardened by their ſufferings, repented of their ſevere treatment of Pericles; and finding by experience, that they had no other perſon capable of directing their affairs, they intreated him once more to ſtep forth and undertake the adminiſtration. Potidea, in the mean time, unable any longer to ſupport the miſeries of famine, which had produced the moſt dreadful calamities among its inhabitants, was obliged to ſurrender. Its few remaining citizens were forced to abandon it for ever; and the place was repeopled with Athenians. About this time the Athenians, to repair the devaſtations occaſioned by the plague, paſſed a law, allowing all the male citizens to marry each two wives. Socrates is ſaid to have been the firſt who took the benefit of this law.

The Peloponneſians, about this time, inveſted Platea, a city in alliance with Athens. This ſiege is not only remarkable for the obſtinate reſiſtance of the beſieged, but for being the firſt recorded in hiſtory which was conducted with any ſort of regularity. Both parties here made uſe of mounds of earth, the one to attack, the other to defend.

fend. The Peloponneſians burnt a part of the town, by means of bundles of ſticks, to which they ſet fire. On the other hand, the beſieged neglected no expedient to fruſtrate the various attempts of the enemy. But the moſt ſurpriſing circumſtance of all is, that ſo ſmall a place as Platea, which contained no more than 400 inhabitants, and eighty Athenians, was capable of making ſo vigorous a reſiſtance againſt a powerful army. The enemy at laſt changed the ſiege into a blockade, and ſurrounded the town with two ditches. The Bœotians were left to guard theſe entrenchments, and the bulk of the army marched away. About the ſame time the Athenians were beaten in an engagement by the Chalcidians, a people of Thrace, and purſued to the very gates of Athens. But their victory at Naupactus made amends for that diſaſter. Phormion attacked, near the place, a Peloponneſian fleet of forty-ſix veſſels, took twelve of them, and put the reſt to flight, and entered Athens in triumph. Braſidas and Cnemus, two Spartan officers, having ſailed againſt Salamis with a fleet of forty veſſels, made a deſcent upon that iſland, and laid it waſte.

In the year 429 B.C. died Pericles. Plutarch ſays he was taken off by the plague. Other authors write, that he was worn out by a languiſhing conſumption. It is reported of him, that a little while before his death, on hearing ſome of his friends extolling his victories, (for he had erected no fewer than nine trophies,) he told them, that they had overlooked a more glorious circumſtance ſtill, namely, that he had never, on any private perſonal account, given cauſe to a ſingle fellow-citizen to wear mourning. His death was univerſally regretted by the Athenians. He was unqueſtionably one of the greateſt men that Athens ever produced; having diſplayed on all occaſions uncommon magnanimity, and ſhewn himſelf perfectly qualified for every office that he undertook. The abſolute power that he enjoyed in this republic for the ſpace of forty years, was wholly attained by his admirable eloquence, which was ſo powerful, as to triumph even over the prejudices and paſſions of his oppoſers, and to bring them over to his views, the perfection of that admirable talent. Athens flouriſhed while Pericles held the helm of government.

Although no oration of his own compoſing has reached to our times, yet, from the effects of his eloquence, and what is reported of it by hiſtorians, he may be juſtly placed at the head of the Grecian orators. By Cicero's account, it was he that introduced into Athens a taſte for perfect eloquence. He had learned of Anaxagoras all the principles of perſuaſion; and his own genius directed him to employ thoſe principles to the greateſt advantage. On account of the force and vehemence of his declamation, he was ſaid to thunder and lighten; and to denote the beauty of his language, and his ſtrength of argument, the goddeſs of perſuaſion, with all her graces, was ſaid to dwell on his lips. It was this power of eloquence that enabled him boldly to oppoſe the unreaſonable deſires of the Athenians; preſerved to him, for the ſpace of forty years, an abſolute power among that moſt fickle and capricious people; and procured him ſuch vaſt influence over their minds, that he changed even their ſyſtem of government at his pleaſure, and erected Attica into a kind of monarchy, of which his own extraordinary merit rendered him, in effect, the king. But he uſed his extenſive authority with ſuch lenity and moderation, and conducted himſelf with ſuch extreme caution and reſerve, as to prevent his adminiſtration from wearing the appearance of tyranny. His talents for war were univerſally acknowledged. He depended more on ſtratagem than on deſperate courage. His application of the large revenues of the ſtate proves him to have been a man of the moſt refined taſte, a lover of real glory, and far above any ſordid views of ſelf-intereſt. He employed them in what he conceived to be the good of the commonwealth, in promoting the liberal arts, and in decorating and ornamenting the city. As a ſtateſman, his conduct affords a moſt inſtructive pattern to all who apply to public buſineſs. His life was totally exempted from the ſmalleſt tincture of diſſipation. He ſtudied with unremitting aſſiduity the affairs of the commonwealth, and underſtood every branch of them with the utmoſt preciſion. He managed the revenues with irreproachable diſintereſtedneſs ſo far as reſpected his private fortune: and his public expenditure, for which he has been ſo harſhly cenſured by ſome rigid hiſtorians, furniſhes incontrovertible proof of elevated ſentiments, and an elegant taſte. His decorations of the city diſplayed all that was beautiful and ſublime in ſculpture and in architecture; and, by the encouragement beſtowed on men of diſtinguiſhed genius, he rendered Athens the reſidence of all the fine arts.

Anaxagoras the philoſopher died the ſame year, and before his ſcholar, in extreme poverty. It is reported, that when Pericles was informed of his ſituation, and of the reſolution he had formed of ſtarving himſelf to death, he went to ſee him with an intention to diſſuade him from his deſign. But Anaxagoras anſwered him in theſe words: "Thoſe, who need the light of a lamp, take care to feed it with oil." Inſinuating, that, though Pericles had taken care of his fortune while he had occaſion for his inſtruction, yet, when that purpoſe was ſerved, he had ſuffered him to languiſh in poverty.

The Peloponneſians now ravaged Attica for the third time. All the inhabitants of Leſbos, thoſe of Methymne alone excepted, reſolved to break their alliance with Attica. The Athenians, ſenſible how great a loſs to their affairs the defection of this iſland would be, ſent out a fleet of forty gallies to attack that of the Mitylenians, who, on being repulſed, propoſed terms of accommodation which were liſtened to by the Athenians. A ſuſpenſion of hoſtilities being agreed on, the Mitylenians diſpatched ambaſſadors both to Athens and to Lacedemon at the ſame time. The ambaſſadors were told by the Lacedemonians, that they ſhould be fully heard at the approaching Olympic games, where the other allies would have an opportunity of aſſiſting at the conference. Thucydides has tranſmitted to us the import of what was urged by thoſe ambaſſadors; from which we learn, that they admitted the treaty anciently concluded between the Leſbians and Athenians, and aſſigned the ambition of the latter, not their preſent misfortunes, as the reaſon that induced them now to relinquiſh that treaty. The allies were ſatisfied with their reaſons, and admitted them into their confederacy. It was likewiſe reſolved in this aſſembly, to proſecute the war more vigorouſly than ever againſt the Athenians; who, receiving information of the great preparations making againſt them, fitted out a fleet of 100 ſail, appeared unexpectedly off the promontory of the iſthmus of Corinth, and made a deſcent upon the Peloponneſe, while another fleet protected the coaſts of Attica. Never had they raiſed ſo formidable an armament before; and it ſo overawed the Lacedemonians, that they hurried back to the defence of their own country. The Athenians, in the mean time, puſhed on the ſiege of Mitylene, whither they ſent a detachment of 1000 ſoldiers, and the town was blocked up both by ſea and land. The inhabitants receiving no aſſiſtance from the Lacedemonians, and being preſſed by famine, were obliged to ſurrender at diſcretion. The authors of the revolt, to the number of more than 1000, were conveyed to Athens and put to death. Orders were at the ſame time iſſued to maſſacre the reſt of the inhabitants, by way of example. But the people, ſhocked at ſuch horrible cruelty, cauſed the decree to be revoked, and diſpatched counter-orders; which luckily arrived at the inſtant they were proceeding to put the firſt in execution. Then the town was diſmantled, and the whole territory of the iſland, except Methymne alone, was divided by lot among the inhabitants of Athens.

Let us now look back to the ſiege of Platea. The beſieged, having loſt all hope of ſuccour, reſolved to attempt to make their eſcape out of the town; which about one half of them having effected by a very daring ſtratagem, ſuggeſted and executed by deſpair. The remaining half, diſmayed at the dangers attending the attempt, continued in the town. But, finding themſelves unable to defend it any longer, they were at laſt obliged to ſurrender at diſcretion. Eight Spartans were ſent to decide their fate. The miſerable Plateans pleaded in vain, that they had been forced, through neceſſity, to ſide with the Athenians, in order to obtain their protection againſt the Thebans, by whom they were grievouſly oppreſſed. They were all murdered in cold blood; their wives were carried into ſlavery; and their town was razed to the ground. Such was the melancholy fate of the Plateans, who, during the Perſian war, had rendered the moſt important ſervices to Greece.

About this time a diſſention between the magiſtrates and common people of Corcyra, produced a ſhocking maſſacre in that place. The people had requeſted aſſiſtance of the Athenians; and the magiſtrates deſired to retain them in the intereſts of Sparta. But the former, on ſeeing ſixty Athenian ſhips arrive to their ſupport, of inſolent became furious, and falling upon the magiſtrates and their adherents, nothing was to be ſeen but an univerſal ſlaughter; the inhabitants murdering one another even in the houſes and temples.

In the year 426 B.C. the plague broke out afreſh at Athens, and carried off multitudes. The Lacedemonians again invaded Attica, and the Athenians made a deſcent on the Peloponneſe. Each campaign was opened in this manner. The war now proceeded more vigorouſly than ever. Demoſthenes the Athenian general, being ſent with thirty ſhips to make a deſcent on Ætolia, was engaged by the Ætolians, and defeated. In returning home, however, he threw a reinforcement into Naupactus, and defeated the Ambraciotæ. Then, joining his fleet with that deſtined againſt the Peloponneſe, he took Pylus, a ſmall town of Meſſenia, and there fortified himſelf. The Lacedemonians, deſirous to recover this place, beſieged it by ſea and land, and it became the ſcene of extraordinary feats of bravery. But, the Lacedemonians having thrown a detachment of 400 of their beſt troops into the little iſland of Sphacteria, the Athenians ſurrounded the iſland, and cut off all ſupplies of proviſions. The Lacedemonians, anxious to ſave thoſe troops, were reduced to the neceſſity of ſending ambaſſadors to Athens with propoſals of peace. The ambaſſadors frankly owned the extreme neceſſity that had obliged the Lacedemonians to ſubmit to ſo humiliating a ſtep—put the Athenians in mind of the uncertain fate of arms, and exhorted them to embrace this opportunity of reſtoring tranquillity to Greece. But the Athenians grown preſumptuous by their good fortune, as well as by the flattering orations of their favourite demagogue Cleon, required, as a preliminary condition, that the troops confined in the iſland ſhould lay down their arms, and be conducted to Athens, upon the promiſe of the Athenians to ſet them at liberty as ſoon as the Lacedemonians had delivered up the places conquered by them from the Athenians. The Lacedemonians refuſing to comply with this condition, both parties prepared again for war.

The Athenians, in the mean time, were very vigilant to prevent any proviſions from paſſing into the iſland of Sphacteria. The Lacedemonians, on the other hand, engaged the whole country round to contribute their utmoſt efforts to relieve the beſieged troops, and promiſed to ſet free all the ſlaves who ſhould ſucceed in carrying them proviſions; which many did, at the extreme hazard of their lives. In the mean time, the Athenians in Pylus began, on their part, to be ſtraitened for proviſions. Cleon perſuaded the people, that the ſlowneſs of the ſiege was owing to the inactivity of their commanders; and maintained, that a little vigour muſt very ſoon reduce the iſland, which he offered to accompliſh himſelf. Having been accordingly ſent thither, and having joined Demoſthenes, they landed together in Sphacteria, and beat the enemy to the extremity of the iſland. The Lacedemonians, however, took poſſeſſion of a fortification, and defended, with the moſt deſperate courage, the only paſſage by which they could be attacked. But the general of the Meſſenians, having diſcovered a difficult paſs that led to the fortification, marched that way, and, appearing unexpectedly on the rear of the Lacedemonians, called aloud to them to lay down their arms. The Lacedemonians, exhauſted with heat and fatigue, obeyed the ſummons, by laying their ſhields on the ground; and, after a ſhort conference, they ſurrendered at diſcretion. The Athenians, after erecting a trophy, reimbarked on-board their fleet. This ſiege continued ſixty-two days. Cleon is ſaid to have cauſed 128 of thoſe unhappy Spartans to be murdered. The reſt were conveyed to Athens, and thrown into priſon till peace ſhould take place; the Athenians threatening, at the ſame time, to put them all to death, if the Lacedemonians made any more incurſions into their country.

Nicias, being choſen one of the Athenian commanders, reduced the iſlands of Cythera and Thyrea, and exterminated all the Eginetæ who had taken refuge there. Theſe Eginetæ were the profeſſed and inveterate enemies of the Athenians. The war of Sicily now begins. It was occaſioned by a diſpute between the cities of Syracuſe and Leontium; the latter of which, having procured the ſupport of the Athenians, prevailed with them to ſend out a fleet of twenty ſhips to their aſſiſtance. But, in the mean time, the Greeks of Sicily growing jealous of the Athenians, whom they ſuſpected of a deſign to make themſelves maſters of the iſland under the pretence of aſſiſting one of the parties, made peace with each other. The ſedition of Megara happened next. The inhabitants of that town, after expelling their magiſtrates, quarrelled among themſelves, one party being for recalling their magiſtrates, the other for delivering their town into the hands of the Athenians. Braſidas, in the mean time, the beſt officer the Lacedemonians then had, having come before Megara, its gates were immediately thrown open to him. The exiled magiſtrates returning ſoon after, and reſuming their authority, condemned to death 100 inhabitants of the oppoſite faction. Braſidas advanced into Thrace, ſubdued ſeveral cities, and laid ſiege to Amphipolis, a place of much importance to the Athenians, who thence got the greateſt part of their wood. They therefore diſpatched Thucydides, the famous hiſtorian, to its relief; but the place was taken before his arrival. His countrymen, however, imputed to him the loſs of the place, and baniſhed him at the inſtigation of Cleon. The Athenians having about the ſame time advanced into Bœotia, under the command of Demoſthenes and Hippocrates, were defeated near Delium by the Thebans; who, after their victory, beſieged and took the town.

No deciſive advantage had been hitherto obtained by either party. The Athenians and Lacedemonians, therefore, agreed on a truce for a year; which Braſidas, who had been ſucceſsful in all his enterprizes, bore with great impatience. Cleon, on the other hand, who had acquired much authority in Athens, by means of his bold and vehement eloquence, incited his countrymen to reſume the war. Being more preſumptuous than ſkilful in military operations, he reſolved to attempt the retaking of Amphipolis, hoping to be aſſiſted by a body of troops from Perdiccas king of Macedon. But Braſidas got the ſtart of him, and threw himſelf into the town. To increaſe the preſumption of Cleon, the Spartan general, who was well acquainted with his character, affected to be afraid to encounter him. But, after making the proper diſpoſitions, Braſidas ſallied forth unexpectedly, and attacked the left wing of the Athenians, which, being the flower of their army, made a vigorous reſiſtance. Braſidas, however, at laſt broke them, and killed 600 of them, with very little loſs on his own ſide. This attack diſconcerted and terrified Cleon, who was killed by a Spartan ſoldier as he was flying from the battle. Braſidas was of the number of the ſlain on the ſide of the Lacedemonians. He was an excellent officer, equally brave and prudent, and deſerves to be ranked among the Lacedemonian heroes. It was the mother of this general, who, on hearing the exploits of her ſon commended, anſwered, "It is true my ſon was a brave man; but I doubt not that Sparta has many citizens as brave as he." As for Cleon, he merited no regret, having been no more than an inſolent boaſter, of a cruel overbearing diſpoſition, and very avaricious.

The Lacedemonians, in the mean time, apprehenſive leſt the Helots ſhould take advantage of the preſent bad poſture of their affairs, and revolt, uſed them with the moſt barbarous perfidy. Having decoyed the braveſt of them to Sparta, under pretence of giving them their liberty, they are ſaid to have murdered no fewer than 2000 of them; a ſtriking inſtance, to what exceſs of barbarity a people, that is guided by no other motive than a blind hard-hearted policy will proceed!

The Athenians, after their late diſaſter, began to think ſeriouſly of peace; to which the Lacedemonians were likewiſe well diſpoſed, being deſirous to recover from captivity their brave citizens who had been taken at Sphacteria. After mutual conferences, a peace was agreed on, for the ſpace of fifty years, between the two republics and their reſpective allies. This was greatly forwarded by Nicias, who was as worthy a citizen as he was a ſkilful general. The war was concluded by this peace; but, before the expiration of the firſt year, diſcord ſprang up afreſh between the Athenians and Lacedemonians, both ſides breathing nothing but war. Alcibiades, who was now beginning to appear in the public aſſemblies of the Athenians, was principally active in oppoſing the means of reconciliation propoſed by Nicias.

Alcibiades had been educated by his uncle Pericles, who diſcovered in him, while very young, extraordinary natural parts, and a ſingular mixture of good and bad qualities. Socrates, too, entertained the moſt tender friendſhip for him, and took delight in inſtilling into his mind the moſt valuable branches of every kind of knowledge. That beſt of philoſophers laboured chiefly to inſpire his ſcholar with the pureſt maxims of morality, to fortify him againſt the power of the paſſions, and to preſerve him from the dangerous allurements to vice, to which his youth and wealth expoſed him. Alcibiades, ſenſible of the affection of Socrates, and charmed with the graces of his converſation, liſtened attentively to the leſſons of his maſter; though his natural inclination for pleaſure, and the ſeduction of his companions, made him frequently forget them. On his firſt appearance in public, Alcibiades diſplayed a daring factious genius capable of the boldeſt and moſt hazardous deſigns. Though addicted to pleaſure, even to debauchery, he was ſo perfectly maſter of his paſſions, that he could accommodate himſelf, with eaſe, to the humour and way of life of every perſon with whom he had occaſion to converſe, however different from his own. He was a rake in Ionia; temperate and auſtere in Sparta; and, in Perſia, he exceeded the natives in luxury and magnificence. Never did any man deſerve ſo well the name of *Proteus*. Ambition, however, was his ruling paſſion; and, in every diſpute, he aſpired at ſuperiority with the utmoſt eagerneſs. He was, indeed, in all reſpects, intitled to pre-eminence in Athens; for he poſſeſſed every quality requiſite in a leading man. His ability in buſineſs; his illuſtrious deſcent; the beauty of his perſon, which was calculated to procure him the love and admiration of all who ſaw him; his immenſe riches, which he ſpent with oſtentatious profuſion; the public feaſts furniſhed by him to the people; and the high magnificence in which he lived, dazzled the eyes, and attracted the reſpect and confidence, of his fellow-citizens. When, to all theſe advantages, are added his admirable eloquence, and his ſingular knowledge in the art of war, we clearly ſee, that he muſt eaſily become the idol of the people. His faults were overlooked; thoſe airs of ſuperiority, which, in this republic, would have been accounted criminal in any other perſon, were excuſed in him; and his wild exceſſes were called by the ſofter name of youthful frolics.

It has been already obſerved, that he exhibited the firſt proofs of his bravery at Potidea. Having been flattered, on that occaſion, with predictions of his ſoon eclipſing the ableſt generals of Greece, he conceived a deſire for war; and, becoming jealous of the high reputation of Nicias, he exerted his utmoſt efforts to prevent the peace concluded by that wiſe Athenian, between his countrymen and the Lacedemonians, from taking effect. He laboured underhand to detach the Argives from the Spartan intereſt, and to exaſperate the Athenians againſt the Spartans, on account of the latter having delivered up the fort of Panactus in a ruinous condition, and not fortified as it ought to have been in terms of the treaty. He endeavoured, at the ſame time, to render Nicias ſuſpected. While theſe intrigues were going on, ambaſſadors from Sparta arrived at Athens. Alcibiades, by ſtratagem, or rather by a piece of unjuſtifiable roguery, provoked the people to ſuch a degree againſt the ambaſſadors, that they diſmiſſed them in a very contumelious manner. The ambaſſadors returned to Sparta, full of indignation at the inſolent uſage they had received at Athens; and the war was immediately renewed. The Athenians now concluded an alliance with the Mantineans and Eleans, named Alcibiades their general, and ſent an army to ravage Laconia.

Nicias and Alcibiades enjoyed between them all authority in Athens. The former had diſguſted the people, by oppoſing their unreaſonable deſires; the latter had provoked them by his haughty behaviour and diſſolute life. Each of them, however, was ſupported by a faction, and they reciprocally ran the hazard of being baniſhed by oſtraciſm. For Hyperbolus, a man of a profligate character, who poſſeſſed ſome influence in the republic, uſed every art to irritate the people againſt them, flattering himſelf with the hope of ſucceeding to the place and power of him that ſhould be baniſhed. But Nicias and Alcibiades, uniting their intereſts, procured the baniſhment of Hyperbolus. As this puniſhment of oſtraciſm had never before been employed except againſt perſons of ſuperior merit and diſtinction, it fell into diſuſe ever after this time, on account of its having been exerciſed upon ſo unworthy a ſubject. Alcibiades, in the mean time, indulged himſelf without reſerve in his pleaſures. The luxury and voluptuouſneſs in which he lived, made every virtuous Athenian aſhamed. He was engaged in a continual round of feaſting and debauchery; and the wiſer ſort became apprehenſive, leſt by means of his extravagant profuſion to the people, and of the daily ſhows with which he entertained them, he ſhould arrive at laſt at ſupreme and abſolute power, and become their tyrant.

Since the death of Pericles, the Athenians had maintained a ſtrict alliance with the Leontines in Sicily, who, on being attacked by the Syracuſans, had ſent an embaſſy to Athens, at the head of which was the celebrated orator Gorgias, who pleaded the cauſe of the Leontines in an oration ſo elegant and pathetic, that the requeſt of the ambaſſadors was complied with; and the Athenians ſent a fleet to Rhegium to aſſiſt the Leontines. Next year they ſent thither a more numerous fleet ſtill, under pretence of aſſiſting the town oppreſſed by the Syracuſans, but, in fact, to open to themſelves a way to the conqueſt of Sicily. Alcibiades, by his harangues, inſtigated the Athenians ſtill more and more to this undertaking, and talked of nothing leſs than extending the conqueſts of Athens over Africa and Italy.

While the minds of the Athenians were full of theſe mighty projects, ambaſſadors arrived from the Egiſtians, to implore their aſſiſtance againſt the Selinontines, who were ſupported by the Syracuſans; offering, at the ſame time, to pay the troops that ſhould be ſent to their aſſiſtance. The Athenians, tempted by theſe promiſes, named Alcibiades, Nicias, and Lamachus, to command a fleet deſtined to ſuccour the Egiſtians. Nicias remonſtrated againſt this expedition in the ſtrongeſt terms, and painted out, in the moſt lively colours, what ruinous conſequences might thence reſult to the republic. He repreſented to the Athenians, that they had but too many enemies on their hands already, without going abroad to ſeek for more; and that, though they were hardly beginning to recover from the misfortunes occaſioned by the late war and plague, they were wantonly expoſing themſelves to a greater danger ſtill. Nicias, in this harangue, likewiſe reflected indirectly on the luxury of Alcibiades, who had now carried his extravagance to an incredible pitch. The expence of the furniture of his houſe, and of his retinue, was prodigious. His table was as ſumptuous as that of any prince; and he contended at the Olympic games with ſeven different ſets of horſes. To ſupport ſo expenſive a life, it was abſolutely neceſſary for him to poſſeſs vaſt funds; and Nicias no doubt meant to inſinuate, that Alcibiades expected to have an opportunity, by this expedition, to repair his private fortune, which muſt have been greatly diſſipated by ſuch enormous expences. Alcibiades anſwered the harangue of Nicias, by telling the audience, that his magnificence was intended to reflect honour on his country. He put them in mind of his ſervices to the commonwealth. He aſſured them that the cities of Sicily were ſo weary of the oppreſſion of their petty ſovereigns, that they would inſtantly open their gates to the firſt power which ſhould appear to deliver them from their preſent ſlavery; and he concluded with telling them, that to carry their arms abroad was the ſureſt way to damp the courage of their enemies, and that the Athenians muſt always continue maſters at ſea, in ſpite of the Lacedemonians. The Athenians, delighted with this flattering ſpeech of Alcibiades, entirely diſregarded that of Nicias, who was a man of a ſoft puſillanimous diſpoſition, and of an irreſolute temper. They therefore perſiſted in their reſolution to undertake this expedition, and began to make the neceſſary preparations for it with the utmoſt diſpatch.

Juſt as the Athenian fleet was on the point of ſetting ſail, ſeveral evil preſages fell out that extremely perplexed the minds of the people. Firſt, The feaſt of Adonis happened about this time, which was celebrated by the women, uttering piteous groans and lamentations; and it was cuſtomary for all the inhabitants on that occaſion to wear mourning. Secondly, The ſtatues of Mercury, one of which ſtood before the entry of every houſe, were all maimed in the ſame night, and the author of this piece of ſacrilege could not be diſcovered. The wild libertine character of Alcibiades expoſed him to ſuſpicions of having been concerned in this miſchief. But the affection entertained for him by the ſoldiers and ſailors, who declared, that they would not proceed on the expedition if the ſmalleſt violence were offered to his perſon, preſerved him at preſent from any trouble on that head.

Alcibiades demanded to be tried, that he might have an opportunity of juſtifying himſelf before his departure. But the people, impatient for the expedition proceeding, obliged him to ſet ſail. The view of the fleet under ſail attracted the admiration both of the citizens and of ſtrangers; for never had a ſingle city in the weſtern world diſplayed ſo grand and magnificent an armament. It conſiſted of 136 veſſels, carrying 6280 ſoldiers, of whom the greater part were heavy armed. Beſides theſe, there were thirty veſſels loaded with proviſions; and the whole was attended by 100 barks, without including merchant-ſhips, or the after-augmentations of the fleet. Beſides the ſea-forces, there was a body of troops for the land-ſervice, and among theſe a few cavalry. All the forces were equipped in the moſt complete manner: and, upon the whole, there could hardly be a grander or more beautiful exhibition.

When the troops were embarked, the whole fleet, on a ſignal given by a trumpet, weighed anchor, attended with a general ſhout of the ſpectators, pouring out their moſt earneſt vows for the ſucceſs of their fellow-citizens. The fleet directed its courſe towards Rhegium, whither they diſpatched ſome ſhips before the reſt, to ſee that the money promiſed by the Egiſtians was ready; of which, however, they found no more than thirty talents provided. Nicias availed himſelf of this circumſtance, to enforce the reaſons he had inſiſted on againſt the expedition, and adviſed to terminate the diſpute between the Egiſtians and Selinontines in an amicable manner; to oblige the former to fulfil their engagements; and then to return to Athens. Alcibiades, on the contrary, ſaid it would be diſgraceful to return without performing ſome ſignal exploit with ſo powerful an armament; that they ought to endeavour to detach the Greeks in Sicily from their connection with Syracuſe, to bring them over to their own party, and, after obtaining from them reinforcements both of troops and proviſions, to attack Syracuſe. Lamachus adviſed to march immediately againſt Syracuſe. But the opinion of Alcibiades prevailed. They therefore continued their courſe for Sicily, where Alcibiades reduced Catana.

Let us now look back to Athens. The enemies of Alcibiades, intent alone on gratifying their reſentment, without regarding the public intereſt, took advantage of his abſence to renew againſt him an accuſation of having in a debauch profaned the myſteries of Proſerpine and Ceres; and they proſecuted the accuſation with the moſt inveterate malice and animoſity. Many perſons were accuſed, and thrown into priſon, without being even permitted to be heard; and a veſſel was diſpatched to bring Alcibiades to ſtand trial before the people. To this he apparently conſented, and went on-board the galley; but on arriving at Thurium he diſappeared. Not having therefore obeyed the ſummons, within the limited time, he was condemned to death for contumacy, and his effects confiſcated. Nicias finding himſelf, by the abſence of Alcibiades, inveſted with the ſole command, managed matters in that ſlow irreſolute manner that was natural to him, waſting the ardour of the army in fatiguing inſignificant marches along the coaſts; and at laſt he retired to Catana, without performing any greater exploit than ruining a ſmall village.

Alcibiades, arriving at Argos, applied to the Spartans for permiſſion to live in their city, and under their protection; making them in return an offer of his beſt ſervices. The Spartans, overjoyed to have in their power ſo able a general of their enemy, received him with the higheſt marks of good-will and eſteem. Here, by the ſingular faculty he poſſeſſed of accommodating himſelf to the way of life of every country in which he had occaſion to live, he imitated, with the greateſt eaſe, the Spartan temperance and auſterity, and by that means quickly gained their affection. The Syracuſans, in the mean time, made vigorous preparations for an obſtinate defence, and began to upbraid the Athenians for remaining ſhut up in Catana. Nicias, ſtung with theſe reproaches, reſolved at laſt to attack Syracuſe by ſea and land.

As this ſiege of Syracuſe is one of the moſt remarkable recorded in hiſtory, it is proper, in a very few words, to give ſome idea of the ſituation of that city. It was originally founded by Archias the Corinthian, on the eaſtern coaſt of Sicily. It had a greater and leſſer harbour; the circumference of the greater being about ſix miles. The town itſelf was one of the moſt beautiful and powerful poſſeſſed by the Greeks; and conſiſted of three principal diviſions: 1ſt, The iſland, called *Ortygia*, which was ſeparated from the main land by a narrow arm of the ſea. This quarter was every where ſtrongly fortified in the faſhion of thoſe times, and might therefore be regarded as the citadel of Syracuſe. The ſecond diviſion, *Acradina*, ſtood on the main land neareſt to the little ſtrait that bounded Ortygia, with which it communicated by a bridge over that ſtrait. This formed the body of the city. *Tyche*, the third great diviſion, adjoined to Acradina on the land ſide; and a maſs of building or fortification, named *Hexapilus*, commanded the acceſs to Tyche. Beyond and contiguous to Hexapilus was the large ſuburb of *Epipolis*, ſituated for the moſt part on a ſteep eminence. The whole united formed perhaps one of the moſt extenſive cities at that time in the world. See SYRACUSE.

The firſt news of the arrival of the Athenian fleet in Sicily, which happened in 414 B. C. produced the greateſt conſternation among the Syracuſans, who immediately applied themſelves, with the utmoſt diligence, to make the neceſſary preparations for repelling the attack of the enemy. The backwardneſs of Nicias contributed not a little to revive the courage of the Syracuſans; a party of whoſe horſe approached to the very ſkirts of the Athenian camp. Nicias, not daring to diſembark his troops in the face of an enemy prepared to receive them, procured falſe intelligence to be conveyed to the Syracuſans, who in conſequence thereof, hoping to ſurpriſe his camp, marched all their forces towards Catana. But Nicias, in the mean time, reimbarked his men, and, ſailing towards the neighbourhood of Syracuſe, effected a landing at Olympia, and there pitched his camp.

The Syracuſan troops, finding themſelves deceived, returned to Syracuſe, and drew themſelves up in battle order before the walls of the city. Nicias did not decline the combat, which proved long and obſtinate. The Syracuſans, however, were at laſt obliged to give ground, and under cover of their cavalry to retreat into the city. The Athenians, being too weak to attack the city, ſailed back to Catana, where they took up their winter-quarters, intending to return to Syracuſe in the ſpring. But, being in want both of money and proviſions, they ſent to Athens for both. The Syracuſans, in the mean time, acquiring freſh courage, choſe for their general Hermocrates, a man of diſtinguiſhed bravery, and very ſkilful in the art of war. By his advice, they diſpatched ambaſſadors to Corinth and Sparta to renew their former alliances, and to beg aſſiſtance; which accordingly they obtained. Alcibiades, who was then at Sparta, meditating vengeance againſt his ungrateful countrymen, ſupported the requeſt of the Syracuſans, and perſuaded the Lacedemonians to ſend Gylippus as general into Sicily, and, at the ſame time, to make a diverſion to the Athenian arms, by attacking them in Attica. The Syracuſans, in the mean time, were diligently fortifying their city. They raiſed a wall along one ſide of the ſuburb of Epipolis, and, getting intelligence that the Athenians were at Naxus, ordered their army to march and burn the Athenian camp at Catana.

Nicias, having received 300 talents, and a reinforcement of ſome troops of horſe, advanced towards Syracuſe. Though this general was very ſlow in entering upon action, yet, when once in motion, he proceeded with much ſpirit and diligence. Sailing from Catana, he arrived within leſs than a mile of Epipolis; and, having there landed his forces, he retired with the fleet towards Thapſus, a part of Syracuſe that forms a peninſula, of which he ſhut up the entry. A body of Syracuſans, to the number of 700 men, having attacked the Athenians, were repulſed, after loſing 300 of their number on the ſpot. The victors erected a trophy, and formed the deſign of throwing up a fortification on the higheſt part of the Epipolis. Nicias, at the ſame time, received a reinforcement of 300 horſe from the Egiſtians, which, joined to 250 lately ſent him from Athens, and the few he had before, formed all together a body of 650 cavalry. Encouraged by this aſſiſtance, he raiſed a line of circumvallation on the Tyche ſide, to ſhut up the city all the way from Tyche to the ſea on the north. This work advanced very briſkly, in ſpite of the repeated attacks made by the Syracuſans, in one of which their cavalry was routed. The Syracuſans, on the other hand, began to erect a fortification that might prevent the Athenians from carrying on their line of circumvallation. But the Athenians attacked thoſe who guarded it, purſued them into the city, and then deſtroyed the fortification. Having completed the line along the north ſide, the Athenians proceeded to conſtruct another that might completely ſhut up the city. The Syracuſans, to prevent their extending this ſecond wall to the ſea-ſide, threw up a ditch acroſs a marſh, and lined it with palliſadoes; but the Athenians, deſcending ſuddenly from Epipolis, filled up the ditch. On this occaſion they had an engagement with the Syracuſans, in which they were at firſt ſucceſsful; but, in attempting to cut off the flight of the enemy, their right wing was charged by the Syracuſan cavalry, and thrown into diſorder; and Lamachus, advancing to its aſſiſtance with the Argive auxiliaries, was killed. The Syracuſans, animated by this advantage, determined to attack the Athenian fort on Epipolis. But Nicias, though then ſick, ſaved it by a ſtratagem; giving orders to ſet the wood between the entrenchments on fire; the flames of which deterred the Syracuſans from their enterpriſe.

In the mean time, the Athenian fleet, which lay at anchor at Thapſus, having received orders to come before the city, entered the large harbour, and obliged the Syracuſans to ſhut themſelves up within the walls. The Athenians, not ſatisfied with their fortifications on the top of Epipolis, threw up two walls at the bottom of it, one for a defence againſt the Syracuſans within the city, and the other againſt their army, which was encamped without the walls. When all theſe works were completed, Nicias entertained the moſt ſanguine hopes of taking Syracuſe; and his expectations were confirmed on his being joined by ſeveral of the ſtates of Sicily, and receiving a freſh ſupply of proviſions. The Syracuſans now looked upon themſelves as loſt; and a rumour prevailed, that the Athenians were become maſters of the whole iſland. But the arrival of Gylippus, with ſuccours from Lacedemon, gave a new turn to their affairs.

Nicias, from too great a confidence in his own ſtrength, was not at all alarmed at his arrival, nor took any trouble to oppoſe his landing. The event, however, was deciſive; for Syracuſe was capable of making no farther reſiſtance, and its citizens were conſulting about the articles of capitulation, when they received notice, that Gylippus was come to their aſſiſtance with ſeveral galleys. They immediately ſent out a body of troops to cover his landing; which was no ſooner effected, than they advanced in order of battle towards Epipolis. The Athenians, tho' taken unprepared, made diſpoſitions for fighting; but, in their confuſion, Gylippus attacked the fortification on the top of Epipolis, and carried it by aſſault. Nicias's whole hope being now confined to his naval force, he thought it neceſſary to fortify the promontory of Plemmyrus, which narrows the entrance into the great harbour, and for that purpoſe erected on it three different forts. But a large detachment of his ſoldiers and ſailors, having gone in queſt of wood and water, were intercepted by the enemy's horſe. Gylippus, on his part, completed the fortification which had been begun by the Syracuſans; and daily offered battle to the Athenians. He was beaten in the firſt engagement, chiefly on account of the narrowneſs of his ground. But, having next day drawn up his men on a more extenſive ſpot, he charged the left wing of the Athenian army, broke them, and purſued them to their camp. This ſucceſs raiſed the courage of the Syracuſans, whoſe horſe ſallied out upon the enemy, and took ſeveral priſoners. After this victory, they fitted out ſome galleys, and ſent to Lacedemon and Corinth to implore freſh ſuccours.

Nicias, finding his troops diminiſhing every day, wrote to Athens a very preſſing letter, in which he pathetically deſcribed the ruinous condition of his galleys, and the alarming decreaſe both of his ſailors and ſoldiers by mortality, and by the uſual operations of war; the latter chiefly occaſioned by the ſuperiority of the enemy's cavalry. He likewiſe informed his countrymen, that Gylippus was employing every artifice to unite againſt them all the ſtates of the iſland: and he concluded with intreating them either to recal him, or to ſend out another armament as powerful as the firſt, with money and proviſions in proportion; and, in any event, to look out for a ſucceſſor to him in the command, his infirmities incapacitating him to diſcharge that duty any longer. This letter ſpread an univerſal dejection over Athens. After ſeveral deliberations, they appointed two officers, Menander and Euthydemus, as aſſiſtants only to Nicias, not to ſuperſede him in the command; and other two, Eurymedon and Demoſthenes, to ſupply the place of Lamachus. Eurymedon ſet out before the reſt with ten galleys, and ſome money.

The Lacedemonians, in the mean time, under their king Agis, made a freſh incurſion into Attica, laid waſte the country, and fortified Decelia, an important poſt, within eighteen miles of Athens, whence they commanded the whole country, and prevented the Athenians from working their ſilver mines, or deriving any advantage from their lands, which they durſt not labour. To add ſtill farther to the diſtreſs of the Athenians, they were obliged to watch day and night, being kept in a continual alarm by the daily incurſions of the enemy. Beſides, as all proviſions, before arriving at the city, were brought a great way about, they became very dear; and many of their ſlaves deſerted to the enemy for want of food. Money, too, was very ſcarce, neither their mines nor lands yielding them any thing. On the whole, the Athenians found themſelves in a moſt diſtreſsful ſituation.

Gylippus, in the interim, having raiſed in Sicily a great number of recruits for their army, perſuaded the Syracuſans to exert all their reſources in the equipment of a powerful fleet, that they might be able to attack their enemies both by ſea and land. In a very little time eighty Syracuſan galleys appearing off Plemmyrus, the Athenians got on-board their fleet, and ſailed againſt the enemy. A very obſtinate engagement enſued, which however was not deciſive for either party. But Gylippus, in the mean time attacked the forts on Plemmyrus, and carried them by aſſault, after killing many Athenian ſoldiers, and taking ſeveral priſoners. In theſe forts Gylippus found a good deal of money and ammunition, with the furniture of a great number of galleys; and, by putting the Syracuſans in poſſeſſion of that important poſt, he rendered it difficult for Nicias to receive any convoys. The Athenians, therefore, were ſeized with great conſternation. But the Syracuſans received about this time a conſiderable check; for, their ſhips having fallen foul of one another at the entrance of the leſſer harbour, the Athenians attacked them, ſunk eleven of them, and diſperſed the reſt. In memory of this victory, the Athenians erected a trophy on a ſmall iſland.

Several other inſignificant engagements, which it would be tedious to recount, happened between the two parties. The Syracuſans, however, conſidering that it would be prudent for them to hazard another battle before the arrival of the reinforcements expected by the enemy from Athens, began to prepare themſelves for it with all poſſible diligence. Nicias, on the contrary, ſenſible how dangerous it was to venture another engagement, his men being ſo much diminiſhed in point of numbers, and exhauſted with fatigue, reſolved to decline fighting till the expected aſſiſtance ſhould arrive. But Menander and Euthydemus, actuated by jealouſy againſt Nicias, maintained, that the honour and reputation of Athens would ſuffer by their declining the combat; and they inſiſted with ſuch obſtinacy on his giving battle, that Nicias was forced to comply. The fleets at firſt only engaged in ſmall ſkirmiſhes. But, towards the end of the third day, the Syracuſans, after making a feint of retiring, as they had done the two preceding days, turned ſuddenly upon the Athenians, who being thus taken unawares, and not having time to form, were obliged to fly, after loſing ſeven galleys, and a great number of ſoldiers. The miſerable ſituation to which Nicias ſaw his affairs now reduced, by ſuffering himſelf to be over-ruled by his colleagues, threw him into deſpair.

The day after the battle, the expected Athenian fleet, conſiſting of ſeventy-three galleys, commanded by Demoſthenes, all richly ornamented, and carrying 8000 ſoldiers, came in ſight, and advanced with an air of triumph. The Syracuſans were confounded at their appearance, believing the reſources of the Athenians to be inexhauſtible, and that they were to be expoſed to greater calamities than ever. Demoſthenes reſolved to avail himſelf of the conſternation into which his arrival had thrown the Syracuſans, flattering himſelf with the perſuaſion of taking the city at once. But his deſign was raſh. Nicias repreſented to him in vain, that the Syracuſans, being reduced to the laſt extremity for want of money and proviſions, would very ſoon ſurrender; which he knew certainly by the information of ſome perſons within the town, who adviſed him to wait patiently a little longer. But, as he did not chooſe to mention thoſe from whom he received this intelligence, his remonſtrances were diſregarded; for not only Demoſthenes and the other commanders, but even the inferior officers, believed this opinion of Nicias to be entirely ſuggeſted by fear. Demoſthenes even proceeded to upbraid his backwardneſs; his reproaches were applauded by the reſt, and all diſcovered the utmoſt impatience for fighting.

Demoſthenes immediately reſolved to attack Epipolis. Having led thither all his forces at night, he himſelf began the attack of the entrenchments, killed thoſe who guarded them, and at the ſame time repulſed the troops that had ſallied out upon him from the city. The Athenians, animated by their ſucceſs, hurried forward in diſorder, and bore down every thing that oppoſed them. But the Bœotian troops unexpectedly ſtopped their career, and, attacking them with levelled ſpears, put them to flight, and made a great ſlaughter. The whole army was ſeized with a panic, which was increaſed by the darkneſs of the night. Some in their flight fell from the tops of the rocks, and were daſhed in pieces; others wandered into the country, and were either killed or taken by the Syracuſan horſe. Upon this occaſion the Athenians are ſaid to have loſt upwards of 2000 men. This grievous diſaſter entirely diſcouraged the Athenians; whoſe number, too, was continually diminiſhing by the diſeaſes that prevailed in the army, occaſioned by the unwholeſome vapours of a moraſs near to which the army was encamped. Demoſthenes therefore adviſed to raiſe the ſiege immediately. But Nicias, though of the ſame opinion, thought an abrupt departure would but expoſe their weakneſs too much; and that, at any rate, they ought to wait for orders from Athens. On this point Demoſthenes was obliged to ſubmit to his colleague. But Gylippus having, in the mean time, brought a freſh ſupply of troops to the aid of the Syracuſans, the apprehenſions of the Athenians were ſo much increaſed, that they reſolved to depart immediately. The Syracuſans, getting notice of this reſolution, prepared to attack them by ſea and land. They fell firſt upon their entrenchments, which they carried; and then their galleys ſailed againſt thoſe of the Athenians. Eurymedon having ſeparated himſelf from the reſt of the fleet, with an intention to ſurround the Syracuſans, was purſued by them to the bottom of the gulf, defeated, and killed, and the galleys under his command were driven on ſhore. But Gylippus, having attacked the Athenian ſoldiers as they were making their eſcape out of the galleys to the land, was repulſed with loſs. In the mean time, however, the Syracuſans took poſſeſſion of eighteen of thoſe galleys, after cutting off their crews.

This blow threw the Athenians into the deepeſt dejection. The Syracuſans, on the other hand, promiſed themſelves a complete conqueſt over their enemies; and began to deviſe new obſtacles to their departure; for which purpoſe they ſhut up the mouth of the great harbour with iron chains. The Athenians, finding themſelves thus hemmed in, and ſtraitened for proviſions, reſolved to hazard another ſea-fight. With this view Nicias embarked the flower of his foot-ſoldiers on-board 110 galleys, and drew up the reſt of his troops along the ſhore. The generals on both ſides, after uſing the moſt powerful arguments to encourage their men, led them on to the engagement, which proved extremely bloody. The Athenians advancing to the mouth of the harbour to break the chains, and the Syracuſans likewiſe hurrying thither to prevent them, the galleys were ſo crowded together, that they could neither move backwards nor forwards, nor fight in any ſort of order, and the battle grew extremely furious. Nothing was to be ſeen but the ruins of ſhips, and numbers of dead bodies. The uproar and confuſion was ſo great, that the orders of the commanders could no more be heard. The

Athenians ſtill endeavoured to break the chain, and their enemies to defend it. At laſt, however, after a very long and obſtinate conteſt, the Athenian fleet was driven onſhore by the enemy, and victory declared in favour of the Syracuſans. The unfortunate Athenians, not daring to attempt the paſſage a ſecond time, had now no other reſource left, than to retreat in the night by land, and to abandon their fleet to the enemy. Harmocrates gueſſed their deſign, and procured falſe intelligence to be conveyed to Nicias, of the enemy having ſeized the paſſes. The Athenians, therefore, inſtead of ſetting out in the night, delayed their march till the ſecond day after; ſo that in the interval the Syracuſans had time really to poſſeſs themſelves of the moſt difficult paſſes, to break down the bridges, and to poſt their cavalry along the plain.

The departure of the Athenians exhibited one of the moſt melancholy ſcenes that can well be imagined; being obliged to leave behind them their ſick and wounded, who conjured them by every tender name to carry them with them, and called on the gods to witneſs the cruelty of their fellow-ſoldiers. Terror appeared in every countenance. Nicias, though worn out with ſickneſs, and deprived of common neceſſaries, exerted his utmoſt efforts to keep up their drooping ſpirits; telling them that they were ſtill formidable by their numbers, and that fortune muſt at laſt ceaſe to perſecute them. The army was diſpoſed in two different columns; and the retreat was at firſt conducted with pretty good order. But, being able to diſcover no free paſſage, the troops were continually galled by the Syracuſan cavalry. Their proviſions failing in the mean time, they altered their plan, and reſolved to march in the night. This expedient proved fatal to them. For one half of the rear guard, with Demoſthenes at their head, having loſt their way in the dark, were next day overtaken by the Syracuſans, who ſurrounded and attacked them in a narrow defile. The Athenians, however, defended themſelves with the moſt deſperate bravery, till, exhauſted with hunger and fatigue, they were at length compelled to ſurrender at diſcretion, together with Demoſthenes their commander, though amounting ſtill to about 6000 men.

Nicias, after paſſing a river, and encamping on a riſing ground, was likewiſe overtaken by the enemy, who ordered him to lay down his arms. In this ſituation he offered to deliver them hoſtages, as a ſecurity for his repaying them all the expences they had incurred by the war, provided they would permit him and his men to depart from Sicily. The Syracuſans rejected his propoſals, and immediately attacked his troops, who ſtill defended themſelves with great bravery. Arriving at laſt at the river Aſſinarus, his ſoldiers, half dead with thirſt, greedily plunged into it to drink. But the Syracuſans, immediately renewing the attack, entered the river along with the Athenians, and cut them off while quenching their thirſt. Nicias, ſeeing this ſlaughter, agreed to ſurrender himſelf to Gylippus, if he would ſpare the reſt of his men. They were accordingly all taken priſoners, and conducted into the city in triumph. This happened in 413 B. C.

Next day the Syracuſans deliberated about the fate of the priſoners, and their two commanders. Diocles adviſed to confine the other priſoners in the public priſons, and to put the two generals to death. This laſt article ſhocked the wiſer part of the citizens extremely; and one of them, named *Nicholaus*, a venerable old man, mounting the ſpeaker's place, pronounced a moſt pathetic and ſenſible ſpeech, telling his countrymen, that ſuch a groſs act of inhumanity muſt make them abhorred and deteſted by all nations, more eſpecially as the gods had already ſufficiently puniſhed the Athenians. This ſpeech, which was enforced by many other powerful arguments, made a great impreſſion upon the citizens, who ſeemed to be mercifully diſpoſed, till ſome of them, who were more exaſperated than the reſt againſt the Athenians by the loſs of children and relations, ſtood up, and repreſented in the ſtrongeſt colours the numberleſs miſeries brought upon their country by the Athenians. The recital of thoſe miſeries ſo inflamed the reſentment of the people, that they inſtantly followed the advice of Diocles, and condemned to death the two Athenian commanders; who were executed accordingly. The tragical fate of thoſe two unhappy generals was commiſerated by every moderate perſon, particularly that of Nicias, who had always oppoſed this fatal expedition. The reſt of the priſoners were confined in the public priſons, where they underwent the cruelleſt hardſhips, receiving every day a very ſmall allowance of only meal and water for ſuſtenance. At the end of eight months, they were taken out of thoſe dungeons, and ſold for ſlaves.

We may eaſily conceive the conſternation of the Athenians, when they heard of the miſerable event of the Sicilian expedition, and the entire ruin both of their army and fleet. This unfortunate enterpriſe gave a fatal blow to their power. Never before had they been reduced to ſo diſtreſsful a ſituation, without money, without any army, without a fleet. However, after having vented their reſentment againſt thoſe who had been principally inſtrumental in engaging them in that expedition, they reſumed their courage, uſed every means to procure money, and applied themſelves with all poſſible diligence to equip a new fleet. But their difficulties and misfortunes continued to multiply upon them. Their Greek allies, particularly thoſe of Eubœa, Chios, and Leſbos, weary of furniſhing contributions to carry on the war, thought this diſaſter preſented them with a favourable opportunity for aſſerting their independency, and throwing off the Athenian yoke. They applied therefore to the Lacedemonians to take them under their protection. But this was not all. Tiſſaphernes, the Perſian governor of Lydia and Ionia, provoked at the oppoſition made by the Athenians to his levying the uſual contributions in his province, promiſed to furniſh the Lacedemonians with the neceſſary expences of their warlike preparations, to incite them to proceed againſt the Athenians with more diligence and alacrity; and Pharnabazus, the Perſian governor of the Helleſpont, made them a like offer. Alcibiades, however, perſuaded the Lacedemonians to reject the propoſals of Tiſſaphernes. That famous Athenian had been long uniformly employed in plotting miſchief againſt his countrymen, in revenge of their unjuſt treatment of him; and with that view he had made a journey to Chios, and had prevailed on ſeveral cities of Ionia to revolt. Nothing was done in Sparta but by the interpoſition of Alcibiades. But his exorbitant power in that city at laſt drew upon him the jealouſy of its king Agis, and the principal Spartans, who deviſed a plan for the deſtruction of ſo active an adverſary.

Alcibiades, informed of his danger, fled to Sardis, and put himſelf under the protection of Tiſſaphernes. His engaging manners, and the charms of his converſation, ſoon procured him the friendſhip of that ſatrap, who, tho' of a haughty diſpoſition, freely communicated all his ſecrets to Alcibiades. But of what value are wit, bravery, and the fineſt exterior accompliſhments, when they cover a bad heart? Alcibiades, on this occaſion, ſhewed himſelf to be a man of no principle, and void of all affection for his country. He adviſed Tiſſaphernes to keep up the animoſity between Athens and Sparta, and to aſſiſt them againſt each other, that they might exhauſt their reſources in their mutual deſtruction, and ſo become in the end an eaſy prey to the Perſian monarch. Tiſſaphernes adopted this plan; and, from that time forward, the Perſians, who durſt not now attack the Greeks with open force, employed their money and influence to foment quarrels among the different ſtates; ſending conſiderable ſums ſometimes to Athens, ſometimes to Sparta, as the neceſſities of each required, to keep the balance even between the two, and to enable them to ruin each other.

The Athenians, hearing of the great credit of Alcibiades at the court of Tiſſaphernes, repented heartily of their harſh uſage of him. For, though by means of their fleet they had lately been able to reduce the revolted iſlands to obedience, yet they entertained ſtrong apprehenſions of Tiſſaphernes, who was ſoon to receive 150 veſſels from
Phœnicia.

Phœnicia. Alcibiades, being no ſtranger to their ſentiments with reſpect to himſelf, had it privately hinted to them, that he was deſirous to return to Athens, and would procure them the friendſhip and aſſiſtance of Tiſſaphernes, provided they would aboliſh the popular form of government, and eſtabliſh ariſtocracy. This met with great oppoſition at firſt, particularly from the enemies of Alcibiades. But, as there appeared no other means of ſaving the republic from utter ruin, the people at laſt conſented, tho' much againſt their inclination. Piſander, accordingly, with ten other deputies, were appointed to treat with Alcibiades and Tiſſaphernes. But the latter, apprehenſive of rendering the Athenians too powerful, and chooſing rather to adhere to the plan laid down by Alcibiades of fomenting war between the two republics, inſiſted upon it as a preliminary condition, that the Athenians ſhould relinquiſh all their poſſeſſions in Ionia; and made other demands of ſuch an extravagant nature, that the deputies broke off the treaty in diſguſt, convinced that Alcibiades had only meant to make them ridiculous. Tiſſaphernes at the ſame time concluded an alliance with the Peloponneſians, by which he agreed, on their ceding all their provinces in Aſia in favour of his maſter the king of Perſia, to defray the expence of the Lacedemonian fleet, till the arrival of that of the Perſians. Theſe tranſactions happened in the eleventh year of the reign of Darius Nothus.

At Athens but too much deference was paid to the opinion of Alcibiades. In conſequence of his advice, the popular government was aboliſhed, and ariſtocracy ſet up in its place. The whole magiſtracy was thrown into the hands of four hundred perſons, who were inveſted with abſolute power. Theſe new rulers ſoon diſcovered their tyrannical diſpoſition. Entering the ſenate armed with poniards, and ſurrounded with guards, they diſſolved it, after paying the five hundred members of it the ſalaries due to them. Their adminiſtration was uſhered in with ſentences of baniſhment, proſcriptions, and poiſonings, of thoſe from whom they expected oppoſition. But this violent behaviour quickly exaſperated all the citizens againſt them; and the army, which was then lying at Samos, hearing of their proceedings, was ſo highly enraged, that they reduced ſuch of their officers as they ſuſpected to be connected with the ariſtocracy, appointed Thraſylus and Thraſybulus in their ſtead, and anxiouſly intreated Alcibiades to take the chief command. Alcibiades obeyed; and, putting himſelf at the head of the Athenian forces, proceeded to Miletus, to preſent himſelf in his new dignity before Tiſſaphernes, and to ſhew the ſatrap, that the power of his countrymen was ſtill formidable. Returning to Samos, he found there meſſengers from the four hundred waiting for him. But the ſoldiers would not even deign to hear them, inſiſting to be inſtantly led againſt the tyrants. Alcibiades, however, conſidering, that, by departing with the army from Samos, he ſhould leave Ionia expoſed in a defenceleſs ſituation to the attempts of the enemy, and fearing, beſides, leſt his appearance at Athens might be productive of a civil war, in which his countrymen would exhauſt their ſtrength againſt each other, refuſed to comply with the requeſt of the ſoldiers; but at the ſame time he declared it to be his opinion, that it was neceſſary to aboliſh ariſtocracy, and to reſtore the ſenate.

The fleet, which Tiſſaphernes had promiſed to ſend to the aſſiſtance of the Peloponneſians, arriving in the mean time at Aſpendos in Pamphylia, Alcibiades ſailed to oppoſe its proceeding any farther. But the Lacedemonians having defeated the fleet ſent by the four hundred to the relief of Eubœa, and having taken poſſeſſion of that iſland, the Athenians were thrown into the greateſt conſternation, as Eubœa furniſhed them with the greater part of their proviſions. Had the Lacedemonians profited, as they ought to have done, by the confuſion produced by this event at Athens, and advanced with their victorious fleet againſt that city, the fate of the Athenian republic might in all probability have been determined. But the ſlowneſs with which the Lacedemonians conducted all their enterpriſes gave time to the Athenians to put themſelves in a proper poſture of defence. They immediately recalled Alcibiades, deprived the four hundred of their authority, and fitted out another fleet, of which they gave the command to Thraſylus and Thraſybulus. Theſe commanders accordingly ſet ſail, and, falling in with the enemy's fleet on the coaſt of the Helleſpont, totally defeated it.

Alcibiades, naturally fond of glory, and deſirous of performing ſome exploit, before returning to Athens, that might render his arrival more welcome to his countrymen, cruiſed with his fleet about the iſlands of Cos and Cnidus; and, getting intelligence that the other Athenian fleet was on the point of coming to a ſecond engagement with that of the Peloponneſians near Abydos, he hurried to the aſſiſtance of the former, and arrived juſt as they were beginning the battle. He immediately fell upon the enemy with eighteen ſhips, took thirty of them, deſtroyed many of the remainder, and made a great ſlaughter of their ſoldiers while endeavouring to ſave themſelves by ſwimming; upon which he erected a trophy. Proud of his ſucceſs, he reſolved to appear once more before Tiſſaphernes in all the glory of a conqueror. But the ſatrap, apprehenſive leſt the Lacedemonians ſhould complain of his conduct to the Perſian monarch, ordered Alcibiades to be apprehended and conveyed to Sardis, informing him at the ſame time, that he had received orders from his maſter to make war on the Athenians. Alcibiades, however, found means to eſcape, and to get on-board the Athenian fleet, where he was quickly joined by Theramenes, with twenty ſhips; and ſoon after by Thraſybulus, with twenty more. Finding himſelf now at the head of a powerful fleet, of no fewer than eighty veſſels, he reſolved to proceed to Cizicus to attack Mindarus, commander of the Peloponneſian fleet, and Pharnabazus, who had joined him there. A heavy ſhower of rain, attended with thunder, concealed his approach from the enemy. As ſoon as it was fair, he ſuddenly advanced to the attack with forty ſhips. The enemy, deſpiſing the ſmall number of his veſſels, began the engagement with great bravery; but, on ſeeing the reſt of his fleet come up, they were ſeized with a panic, and fled. Alcibiades, availing himſelf of their confuſion, landed his troops, charged thoſe of Pharnabazus, put them to flight, and killed Mindarus with his own hand.

In Attica, Thraſylus fell upon the rear-guard of the Spartan army, which had been led up to the walls of Athens by their king Agis, and defeated them. Then he ſailed to Samos with fifty ſhips; and, having taken Colophon, advanced to Epheſus. But, being repulſed by Tiſſaphernes, he returned on-board his fleet, and intercepted four Syracuſan veſſels. About the ſame time a battle happened between Tiſſaphernes and Alcibiades, in which the former was defeated. By theſe exploits, Alcibiades rendered the Athenians maſters of the Helleſpont. The Lacedemonians, informed of this, ſent ambaſſadors to Athens with propoſals of peace. The wiſer part of the citizens adviſed their countrymen to embrace this opportunity of making peace; which, in the preſent poſture of their affairs would be greatly to their advantage. But this was keenly oppoſed by thoſe whoſe intereſt it was to continue the war.

In the next campaign, Alcibiades, whom ſucceſs conſtantly attended, reſolved to add Chalcedon to his conqueſts. He accordingly laid ſiege to that town, and obliged the Bythinians to deliver to him the proviſions they intended for the Chalcedonians. The inhabitants attempted a ſally, but were repulſed, and obliged, in ſpite of the approach of Pharnabazus to their relief, to ſurrender the town. The Athenians afterwards took ſeveral other places. After ſo many exploits, Alcibiades deſired to experience the gratitude of his country; and for that purpoſe ſet ſail for the port of Athens. The day of his arrival was the moſt glorious of his life. All the people of Athens went out to meet him, and conducted him in triumph to the city. His fleet was loaded and ornamented with the ſpoils of the enemy; was attended by a great number of the ſhips they had taken; and diſplayed, in triumph, the colours of thoſe they had ſunk and deſtroyed. He landed, in 407 B. C. amidſt the repeated ſhouts of his fellow citizens, who thronged about him to welcome him home, regarding him as a ſort of tutelar deity, who had brought them back victory in his train. They gazed upon him therefore with admiration, reflecting on the miſerable ſituation of the republic when he undertook its defence; and the many important ſervices performed by him, by which he had rendered her triumphant both at ſea and land. Then Alcibiades, aſſembling the people, proceeded to juſtify himſelf from the crime laid to his charge, and imputed all his misfortunes to his bad fortune. The Athenians, charmed with his eloquence, decreed him a crown of gold; and, by way of reparation of the ill uſage formerly received by him, they reſtored to him his eſtate, and named him chief commander by ſea and land. The populace, too, always prone to fall into extremes, began to talk of beſtowing on him ſovereign authority. But the principal citizens, to prevent the effects of their folly, cauſed a fleet to be equipped with all poſſible diligence, and urged his departure. Alcibiades, before ſetting out, reſolved to celebrate the Eleuſinian myſteries.

The Athenians had long been obliged to conduct this proceſſion by ſea, becauſe the Lacedemonians had poſſeſſion of the roads leading to Eleuſis. But Alcibiades reſolved to have it performed in the uſual manner; and for that purpoſe poſted troops along both ſides of the way, ready to repulſe any attack of the enemy. Thus protecting the prieſts and *initiated* with his ſoldiers, he conducted the proceſſion in great order and ſolemnity all the way to Eleuſis, and back again, without any accident. By this he intended to wipe out the ſuſpicions of irreligion formerly ſuggeſted againſt him. The affection entertained for him by the Athenians was ſo much increaſed by this action, that they would have cheerfully made him king. But the principal citizens, not chooſing to give Alcibiades time to explain himſelf on that head, haſtened his departure, granting him every thing he deſired. Accordingly, he at laſt ſet ſail towards Andros with a fleet of 100 ſhips.

The Lacedemonians, alarmed at the late ſucceſſes of the Athenians, thought it neceſſary to oppoſe one of their beſt generals to Alcibiades, and therefore elected Lyſander chief commander of their fleet. Lyſander, although of noble birth, being lineally deſcended from the Heraclidæ, was nevertheleſs educated with all the rigour of the Spartan diſcipline. He was brave, artful, and inſinuating; and, to his ruling paſſion, ambition, could ſacrifice every other pleaſure or conſideration whatever. About this time too, Darius, the Perſian monarch, had appointed the youngeſt of his ſons, Cyrus, to be governor of Sardis; and had adviſed him, on ſetting out for his government, to ſupport the Lacedemonians at all events, in oppoſition to the Athenians. This was very different from the policy of Tiſſaphernes, and the other Perſian governors; who, as we have ſeen before, made it an invariable rule, to hold the balance even between thoſe two ſtates, and, by aſſiſting them alternately, as their reſpective neceſſities required, to enable them to work out their mutual deſtruction.

Lyſander ſoon put to ſea, and directed his courſe to Sardis; where, by means of his ſupple inſinuating behaviour, he ſoon puſhed himſelf into favour with Cyrus, to whom he complained of the partiality of Tiſſaphernes to the Athenians. Cyrus told him, that he had orders from the king his father to aſſiſt the Lacedemonians; and, for that purpoſe, had received from him 500 talents of ſilver. Lyſander then perſuaded him to augment the pay of the ſailors to four oboli a-day, and to order all the arrears due to them to be immediately paid up. This augmentation of pay greatly contributed to weaken the Athenian fleet; for their ſailors, tempted by the high pay, deſerted to the Lacedemonians. After having obtained theſe advantages from Cyrus, and fixed him in the intereſts of his country, Lyſander returned to his fleet, in the neighbourhood of Epheſus. That city was at this time plunged in indolence and luxury; the Perſian ſatraps uſually making it their winter reſidence. Lyſander, therefore, laboured to revive induſtry among the inhabitants; and, by a ſkilful application of rewards, ſucceeded in making the arts to flouriſh among them, and eſtabliſhed in their city an arſenal for building galleys. This was one of the principal cauſes of the ſubſequent aggrandiſement of Epheſus.

Lyſander, however, awed by Alcibiades, declined coming to an engagement. But the Athenian general having departed into Ionia to raiſe money, and having committed the charge of his fleet to Antiochus, with poſitive orders to avoid a battle; his ſubſtitute, deſirous to diſplay his courage, ſailed with two galleys into the harbour of Epheſus to brave the enemy. Lyſander immediately went in purſuit of him; and the Athenians, at the ſame time, advancing to protect their commander, the fleets on both ſides fell in with each other inſenſibly, and came to a general action. Lyſander gained a complete victory, and took fifteen Athenian galleys. When Alcibiades heard of this diſaſter, he reſolved to repair it; and, aſſembling the remains of his fleet before Samos, offered battle to Lyſander; which the latter, ſatisfied with his late advantage, thought proper to decline. Thraſybulus, in the mean time, the declared enemy of Alcibiades, availed himſelf of the late misfortune to ruin his credit with the people, to whom he accuſed him of neglecting the public buſineſs, that he might have leiſure to indulge himſelf in his debaucheries. Obſerve the inconſtancy of this capricious people! Believing theſe inſinuations, they accounted the loſs of the battle under Antiochus criminal in Alcibiades, though fought in contradiction to his expreſs directions. Such indeed was the opinion entertained of him by the Athenians, that they imagined no enterpriſe in which he was any ways concerned could fail, unleſs by his own treachery. They therefore ſuſpected his fidelity; and Alcibiades, lately the idol of his countrymen, was obliged to ſecure himſelf from their reſentment by a voluntary baniſhment into a diſtrict of the Cherſoneſe!

Lyſander, in the mean time, was employed in eſtabliſhing ariſtocracy in all the towns he had ſubdued. With a view to the accompliſhment of the ambitious project he was now meditating, he ſingled out from the chief men of each city thoſe whom he diſcovered to be of the moſt daring and reſolute ſpirit, put the whole power into their hands, enriched them by preſents, and by theſe means rendered them entirely devoted to his intereſts. His command being expired, Callicratidas was appointed his ſucceſſor; and the Athenians choſe Conon to ſupply the place of Alcibiades.

Callicratidas equalled Lyſander in his military capacity, and was greatly his ſuperior in probity and magnanimity. He poſſeſſed all the ancient Spartan virtue without its extravagancies, and was a declared enemy of every ſpecies of low cunning or falſehood. Lyſander, unable to diſguiſe his jealouſy on ſeeing him arrive, behaved in the meaneſt manner imaginable, ſending back to Sardis all the money that remained for the pay of the troops, and telling Callicratidas, that he muſt apply for more to the great king. To Callicratidas, a man of a noble ſoul, and of the moſt elevated independent ſpirit, it was the greateſt hardſhip in the world to be obliged to fawn and cringe to the deputies of the Perſian monarch for a ſupply of money. Compelled, however, by neceſſity, he at laſt condeſcended to go all the way to Lydia, to apply to Cyrus. But, being conſtantly prevented under one pretence or another from obtaining an audience, he at laſt departed, full of indignation againſt thoſe who were at firſt mean-ſpirited enough to pay court to the barbarians; and vowing to uſe his utmoſt endeavours to effect a reconciliation among the Greeks, that ſo they might be no longer under the neceſſity of ſubmitting to ſuch baſeneſs.

It was now the twenty-ſixth year of the Peloponneſian war. Conon having been purſued into the harbour of Mytilene by Callicratidas, who there kept him blocked up, gave notice of his danger to the Athenians, who diſpatched ed to his aſſiſtance a fleet of 110 galleys, which was reinforced at Samos by forty more, furniſhed by their allies. Callicratidas, falling in with this fleet before Arginuſæ, off the promontory of Leſbos, made a vigorous attack upon them, notwithſtanding their ſuperior number, and ſunk ſeveral of their ſhips. But, being himſelf oppoſed by the galley of Pericles, ſon of the famous Athenian of the ſame name, which he had pierced with the beak of his, and being unable to diſengage himſelf from his antagoniſt, he was ſoon ſurrounded by ſeveral other Athenian galleys, and, in ſpite of the moſt heroic bravery with which he defended himſelf, fell at laſt, overpowered by numbers, though not without great ſlaughter of the enemy. The Lacedemonians, diſcouraged by the loſs of their commander, gave way on the right wing; and their left, after fighting ſome time longer with great valour, fled likewiſe. The Athenians, after their victory, retired into an iſland, and there erected a trophy. Their loſs, in this engagement, amounted to twenty-five galleys; but that of their enemies to no fewer than ſeventy.

Plutarch, after beſtowing the higheſt encomiums upon the virtue of Callicratidas, blames him for having ſo imprudently hazarded an engagement; and, on that occaſion, obſerves how highly dangerous it is for a general to give way to the impetuoſity of his courage, as he thereby not only endangers his own ſingle life, but likewiſe that of all under his command. The ſame ſentiment is adopted by Cicero, who, talking of thoſe that, from a falſe opinion of glory, choſe to hazard the fate of their country, rather than in any degree to ſully their own reputation, cites this very example of Callicratidas, who, when exhorted to decline the engagement in which he fell, anſwered, "That Sparta might get a new fleet in caſe this were deſtroyed, but that his flying would overwhelm him with everlaſting diſgrace." The Athenian generals, in the mean time, gave orders to Theramenes and Thraſybulus to carry home the ſlain in fifty galleys, that they might be buried with the accuſtomed ceremonies. But a violent tempeſt ſupervening, prevented them from executing their orders. The reſt of the fleet proceeded towards Mitylene, to diſengage Conon.

The Athenians, among whom the rites of burial were ſo ſtrictly obſerved, that they regarded the omiſſion of them as an inexpiable crime, grew furious, on hearing that the citizens who had fallen in the late action were deprived of that ſo neceſſary ſolemnity; and, though the omiſſion of it in the preſent caſe was unavoidable, they nevertheleſs treated it as a capital offence. Theramenes became the accuſer of the generals, though it is inconceivable how he could undertake that charge, and more eſpecially how he puſhed it with ſuch cruel obſtinacy. When the generals arrived at Athens, they related all the circumſtances of the caſe, and called upon every man who had been preſent to vouch the truth of what they aſſerted. But, the matter having been brought before the ſenate, it was there determined, that it ſhould be referred to the deciſion of the people, who were ordered to report the opinion of each tribe diſtinctly; and if, upon the whole, the generals were found guilty, they were to ſuffer death. The famous Socrates oppoſed this unjuſt ſentence with all his might. He himſelf undertook the defence of the accuſed, and maintained, with invincible force of argument, that, as by giving orders to carry off the dead bodies in order to burial, they had diſcharged the duty incumbent on them; and as the ſupervening tempeſt had rendered it impoſſible for thoſe who had received thoſe orders to put them in execution; neither party was guilty of any fault; and that, therefore, it would be the moſt groſs and cruel injuſtice to put to death men who had ſo glorioully and ſucceſsfully exerted themſelves in the defence of their country. The accuſers, however, had inflamed the reſentment of the people to ſuch a pitch, that, in ſpite of theſe remonſtrances, they condemned ſix of the ten generals to death; and they ſuffered accordingly. What an unreaſonable ungrateful people! And how ſurpriſing, that any man could be perſuaded to command their fleets and armies! Plato takes occaſion from this event to maintain, that the populace is an inconſtant, ungrateful, cruel, jealous, monſter, utterly incapable of being guided by reaſon, a ſentiment confirmed by the univerſal experience of all ages and nations.

The Peloponneſians, overwhelmed by their grievous loſs at Arginuſæ, ſent to Sparta, to require the chief command to be conferred on Lyſander; which was immediately granted. This choice gave great joy to thoſe who poſſeſſed the chief authority in the reſpective cities, who being, as before obſerved, the creatures of Lyſander, nothing could correſpond better with their ambitious views. It was about this time that the younger Cyrus (ſo called to diſtinguiſh him from Cyrus the Great, the founder of the Perſian empire), now grown preſumptuous and vain by his great power, and the mean adulation of his courtiers, wantonly put to death two noble Perſians, his own couſins-german, for no greater crime than their omitting to cover their hands in his preſence; an action calculated to give us but an unfavourable opinion of that prince's heart and underſtanding. But it ſhews us, at the ſame time, that proſperity can confound the judgment even of ſome of the wiſeſt of men, and render them capable of the moſt extravagant exceſſes. Darius, when informed of the tragical fate of his two nephews, was much grieved; and, conſidering this action of his ſon as an attack on his own authority, he ſent for him, under a pretence of a deſire to ſee him, as he was then ſick. Cyrus, before his departure, tranſmitted to Lyſander large ſums of money to maintain his fleet, and aſſured him, that, rather than let him want money, he would ſupply him out of his own pocket. He empowered him, at the ſame time, to levy the revenues of the towns under his government, and promiſed to bring a numerous naval reinforcement.

Lyſander was too wiſe not to avail himſelf fully of theſe favourable diſpoſitions of Cyrus, and, full of the moſt ſanguine expectations, ſet ſail towards the Helleſpont, in the year 403 B.C. and laid ſiege to Lampſacus, which he took by aſſault, and abandoned it to pillage. The Athenians, on hearing this, advanced with a fleet of 180 ſail, halting at a place called *Ægoſpotamos*, oppoſite to Lampſacus, where they made diſpoſitions for attacking the enemy next day. On this occaſion, Lyſander made uſe of ſtratagem, pretending to decline the engagement; and contenting himſelf with drawing up his galleys in battle array, in ſuch a ſituation that they could not be attacked, except at a diſadvantage. The Athenians, perſuaded that through fear he ſeriouſly avoided coming to action, careleſsly landed from their ſhips in the evening, and, embarking again in the morning, offered battle afreſh. In this manner they paſſed four days. On the fifth the Athenians were defeated with great ſlaughter, for the particulars of which ſee ÆGOSPOTAMOS. In fine, Lyſander took poſſeſſion of the greateſt part of the fleet, made 3000 priſoners, took three of their commanders, and plundered their camp. This terrible defeat reduced the Athenians to the moſt miſerable ſituation they had ever experienced, and determined the fate of the Peloponneſian war, after twenty-ſeven years continuance.

This had been a very bloody war from the beginning, and it continued ſo to the end. It was their ſuperiority at ſea that enabled the Athenians to ſupport it for ſo long a time, and conſtantly to recover from their loſſes at land; and the Lacedemonians prevailed at laſt, merely by means of the immenſe ſums furniſhed them by the Perſian monarch. The 3000 priſoners taken in the laſt battle, were, by the Peloponneſian council, condemned to death, and were accordingly all murdered in cold blood. Lyſander viſited the maritime towns, and changed their former government, from democracy to ariſtocracy, beſtowing the whole power in them on creatures of his own. Wherever he found any Athenians, he commanded them, under pain of death, to retire to Athens; his plan being to reduce that city by famine.

We may eaſily conceive the terror and conſternation occaſioned by the news of the laſt defeat at Athens, which now found itſelf without either army or fleet, on the brink of being expoſed to a ſiege, and of ſuffering all the miſeries of famine. The dread of theſe misfortunes overwhelmed them with deſpair. In the mean time, however, they made the beſt preparations in their power againſt the ſiege, of which they had ſo certain a proſpect In effect, they ſoon found themſelves inveſted both by ſea and land. The two kings of Sparta, Agis and Pauſanias, ſurrounded them with their army by land; and Lyſander blocked up the Pyreum with his fleet.

The Athenians, deprived of all farther reſource, and labouring under the miſeries of famine, ſent deputies to treat with Agis, requeſting only to be left in poſſeſſion of their city and harbour, and reſigning every thing elſe. Agis ſent the deputies to Sparta, where the ephori inſiſted on demoliſhing all the fortifications of their city. In this melancholy ſituation, Theramenes offered to employ his influence with Lyſander. Being ſent accordingly, he was induſtriouſly detained for the ſpace of three months by that crafty Spartan, who was determined on the fall of Attica. At laſt, Theramenes and the other ambaſſadors were again referred to the ephori by Lyſander, and made another journey to Sparta, where a council was called to deliberate on the fate of Athens. No leſs than the utter deſtruction of that city was then talked of. The Thebans particularly were of that opinion. But the wiſer part of the aſſembly declared, that they would not incur the infamy of extinguiſhing one of the eyes of Greece, by deſtroying a city which had rendered ſuch ſignal ſervices to their common cauſe. After deliberating for three months, it was at laſt reſolved to demoliſh the fortifications of the Pyreum, and the long walls that communicated between that harbour and the city; to leave the Athenians only twelve galleys; to deprive them of all the cities of which they had taken poſſeſſion; to oblige them to engage in an offenſive and defenſive alliance with the Lacedemonians; and to ſerve under them by ſea and land. On theſe terms peace was granted. The deputies having returned to Athens, and reported theſe reſolutions, the Athenians, of whom great numbers were daily periſhing by famine, found themſelves under the hard neceſſity of agreeing to them without heſitation. In conſequence of theſe conditions, Lyſander, entering Pyreum, ſaw the fortifications demoliſhed, amidſt the ſound of a variety of muſical inſtruments. The Athenians, by accepting the conditions dictated to them by the Lacedemonians, had in a manner reſigned themſelves to the diſcretion of their enemies. Of this they ſoon became very ſenſible. Lyſander entered their city, managed every thing according to his pleaſure, obliged the people to aboliſh democracy, and eſtabliſh thirty archons, who have been juſtly diſtinguiſhed in hiſtory by the name of the *Thirty Tyrants*.

From Athens Lyſander proceed to Samos, which he ſoon reduced: and the other cities, on being informed of the fate of Athens, voluntarily opened their gates to the victors. In each of theſe cities Lyſander put the government into the hands of a decemvirate, compoſed for the greater part of creatures of his own, entirely devoted to his intereſt; and by that means he acquired a ſort of ſovereignty in the cities. Reſolved at laſt to return to Sparta, there to enjoy the fruits of his ſucceſs, he diſpatched Gylippus before him, with all the money amaſſed in the courſe of his laſt command, which is ſaid to have amounted to 1500 talents. Of this money Gylippus is reported to have ſtolen about a fifth part, by opening in the night the bottom of the bags in which it was contained. But, his diſhoneſty being diſcovered, he fled to avoid his merited puniſhment, and became a voluntary exile from his native country. Lyſander, now in the zenith of his glory, eclipſed all mankind in the eyes of the Greeks, who carried their flattery ſo far as to erect altars to him: and, the man being naturally vain, ordered his own ſtatue to be caſt in braſs. Even the poets, encouraged by his bounty, employed their talents to celebrate his praiſe. Thus ended the Peloponneſian war, in the year 404 B. C.

The thirty archons, eſtabliſhed by Lyſander, quickly gave way to their tyrannical inclinations; and, to enforce their decrees, obtained an armed guard. This was the ſignal of their approaching tyranny. The richer citizens, and thoſe whoſe virtue and influence might be a bar to their violent proceedings, were the firſt victims of their cruelty. Still more to overawe the people, and to prevent a revolt, they armed 3000 of the citizens who were beſt affected to their party. Theſe availing themſelves of their power, to ruin and deſtroy their private enemies, Athens became one general ſcene of blood and rapine. None durſt oppoſe the pleaſure of thoſe wicked men. Critias, of all the thirty the moſt cruel and the moſt wicked, carried his oppreſſion and injuſtice to ſuch an extreme, that Theramenes, the only one of their number who was actuated with any regard for the welfare of his country, was provoked to oppoſe the deſpotiſm of him and his colleagues. This drew upon him the reſentment of the tyrants; and Critias accuſed him, before the ſenate, of diſturbing the public quiet. Theramenes managed his defence with ſuch force of argument, that Critias, ſuſpecting he might be acquitted, introduced into the ſenate ſome of his moſt devoted creatures, who from time to time induſtriouſly expoſed to the eyes of the judges the points of the daggers, wherewith they were privately armed. The judges, thus intimidated, condemned Theramenes to death. Socrates alone, whoſe ſcholar he had been, ventured to oppoſe this ſentence, and went ſo far as to attempt to hinder the guards from dragging Theramenes from the altar; but he was obliged to yield to ſuperior force. He then exhorted the ſenators and people to avenge themſelves on their preſumptuous oppreſſors. Nothing but the merit of Socrates could have ſcreened him from the reſentment of the tyrants, who diſcovered no higher marks of their diſpleaſure, than by prohibiting him from inſtructing the youth. The fate of Theramenes was bewailed by every honeſt man. Xenophon has immortaliſed the intrepidity with which that celebrated Athenian met death. He tells us, that, when he had received and drunk the poiſon with the moſt ſtriking calmneſs and fortitude, he poured out the remains of it on the ground, in the manner of the libations in ſacrifices, with theſe words, "This for the virtuous Critias." Theramenes was well acquainted with the ſcience of government. But his zeal in procuring the condemnation of the commanders who gained the battle of Arginuſæ, remains an indelible blot on his memory.

In the mean time the unhappy Athenians, overwhelmed by their miſeries, began to caſt their eyes upon Alcibiades for deliverance, and to concert meaſures for bringing him home. But the tyrants, getting notice of their intentions, and dreading the embarraſſment that might be thrown in the way of their projects by a man of ſuch diſtinguiſhed activity, ſignified to Lyſander, that it was neceſſary for the quiet and ſecurity of the government, ſo to diſpoſe of Alcibiades, that he might not have the power of creating them any diſturbance. In conſequence of their remonſtrances, Lyſander required the Perſian ſatrap Pharnabazus, in whoſe province Alcibiades then was, to deliver him up dead or alive. Pharnabazus was mean-ſpirited enough to gratify Lyſander, and gave the neceſſary orders for the apprehenſion of Alcibiades. The guards ſent to ſeize him ſtood in ſuch awe of him, that they had not courage to break into his houſe, to which therefore they ſet fire. Alcibiades, after endeavouring in vain to extinguiſh the flames, ruſhed through them ſword in hand. The barbarians, not daring even then to wait his approach, retired before him, but at the ſame time diſcharged at him a ſhower of darts, which killed him on the ſpot. Thus periſhed, at the age of forty years, this extraordinary man, at the very ſeaſon that his countrymen ſtood moſt in need of his aſſiſtance. His character exhibits a very ſingular aſſemblage of good and bad qualities. He was, by turns, the dread and the ſcourge of his own country, and of the other ſtates of Greece; and experinced, through the whole courſe of his life, the moſt extraordinary revolutions and caprices of fortune. It is, on the whole, difficult to determine whether his beſt apparent diſpoſitions deſerve the names of virtues. For his conduct diſcovers more art and addreſs than honour and integrity; more vanity and ambition than real patriotiſm; his conſtant aim being to live in a diſtinguiſhed ſphere. It was from private motives of ambition that he perſuaded his countrymen to engage in the Sicilian expedition, of which the miſerable concluſion is juſtly regarded as the commencement of their ruin.

The Athenian tyrants no longer kept any meaſures. Every day was marked with murders and impriſonments; and an univerſal dejection prevailed. The moſt conſiderable citizens of Athens, to avoid the cruelty and oppreſſion of thoſe wicked men, abandoned their native city, and ſettled in great numbers in different parts of Greece. It will hardly be believed, that the Lacedemonians, whoſe reſentment might have been fully gratified by the miſeries already brought upon the Athenians, prohibited, on this occaſion, the other Greek cities from giving refuge to thoſe unfortunate exiles. This mean, this cruel, jealouſy of the Lacedemonians ſhocks us; and, inſtead of diſcovering any trace of the ancient Spartan magnanimity, throws an indelible ſtain on the character of their nation. Such is the power of conqueſt and ambition, to corrupt the moſt virtuous hearts. Two cities only, Megara and Thebes, diſregarded this ungenerous and inhuman injunction, and granted an aſylum to ſuch of the Athenians as implored their protection.

We at preſent contemplate the Athenians almoſt overwhelmed by their numberleſs ſufferings; but we ſhall preſently ſee them riſing again above their misfortunes, and in a manner returning to new life. Thraſybulus will attract all the attention of the reader; being deſtined to reſtore Athens to her former ſplendour, and to diſplay in the ſight of Greece how much even one man of magnanimity is able to perform. In a meeting of many of his fellow-citizens, aſſembled by Thraſybulus at Thebes, it was unanimouſly reſolved, to make one great effort to aſſert the liberty of their native country. Lyſias, the celebrated orator, who had been baniſhed by the tyrants, levied 500 ſoldiers at his own expence. With this ſlender force Thraſybulus boldly marched into Attica, and ſeized Phile, a ſtrong fortreſs in the neighbourhood of Athens. The tyrants haſtened to oppoſe him at the head of 3000 men, and gave him battle; but their troops, unable to ſuſtain the impetuoſity of Thraſybulus's little army, were repulſed. Thraſybulus, having received a reinforcement of 700 men, fell upon the Spartan guard poſted before Phile by the tyrants, and cut off the greateſt part of them. The tyrants, alarmed, gave orders to maſſacre all the ſuſpected Athenians who were able to bear arms, and made propoſals of accommodation to Thraſybulus. Theſe he rejected; and, having at laſt muſtered up an army of about 1000 men, he advanced to Pyreus, engaged the tyrants who had marched againſt him, and obtained the victory. In this battle fell the wicked Critias. Thraſybulus called aloud to the vanquiſhed Athenians who were flying, that it was againſt the tyrants he was fighting, and not againſt his fellow-citizens; and mildly upbraided them for oppoſing thoſe who were come to reſtore them to their former liberty and independence. They were ſo much affected by this harangue, that, entering the city, they immediately depoſed the tyrants, and conferred the adminiſtration on ten of the principal citizens. But this decemvirate proved no better than their former maſters; and, conſidering themſelves as unſecure while Thraſybulus held poſſeſſion of the Pyreus, they ſent to Sparta to crave freſh aſſiſtance. Lyſander was diſpatched to their relief, who advanced towards the Pyreus with an army of Peloponneſians, and blocked up the harbour. Thraſybulus was ſoon reduced to great extremity for want of proviſions. But Pauſanias, enraged at the long proſperity of his rival Lyſander, arrived with a freſh body of troops, intending rather to favour the Athenians than to reinforce Lyſander.

The Athenians, on being again upbraided by Thraſybulus, once more re-eſtabliſhed the popular government. The remains of the faction of the tyrants then withdrew to Eleuſis; and attempted to renew the public diſturbance. The tyrants endeavoured in vain to recover their authority. Being decoyed to an interview, they were all ſacrificed to the public reſentment; and Athens began again to enjoy peace and tranquillity. But in this civil war, raiſed and fomented by the wicked policy of Lyſander, more Athenian citizens loſt their lives than in any ten years of the Peloponneſian war. The government of Athens, however, was reſtored to its former footing; the ordinary magiſtrates were created; and Thraſybulus, ſtill more effectually to eſtabliſh the quiet of his country, engaged the citizens ſolemnly to bind themſelves by oath to bury all paſt injuries in oblivion. This was an action of the higheſt prudence; for, as every citizen was entitled by law to proſecute thoſe who had occaſioned the ſlaughter of his relations in the late bloody diſſentions, the ſeeds of diſcord and hatred muſt have ſubſiſted without end. This mutual amneſty, therefore, brought about by Thraſybulus, was the beſt and readieſt method of eſtabliſhing the public tranquillity.

It happened about this time, 401 B. C. that the younger Cyrus proſecuted the enterpriſe he had formed of depriving his brother Artaxerxes, king of Perſia, of his crown and life. A remarkable example of the power of ambition over the human heart! This unnatural attempt had for a long while employed the eminent abilities received by Cyrus from nature. He gave a moſt welcome reception to all thoſe who came from his brother's court, and put in practice every art to detach them from his intereſt. But, his chief dependence being on the valour of the Greeks, with whom the maritime ſituation of his provinces rendered him more particularly connected, he ſpared no pains to gain their affection. He recruited his garriſons with the beſt ſoldiers of the Peloponneſe, and levied an army of no fewer than 10,300 Greeks. In this he was much aſſiſted by the celebrated Athenian Xenophon, and by Clearchus, an exiled Spartan, to whom he had granted an aſylum at his court.

Beſides the 10,300 Greeks, Cyrus had already levied among the barbarians an army of 100,000 men. Clearchus commanded the Grecian forces; and a fleet, conſiſting of ſixty veſſels, was ordered to ſail along the coaſt, and to attend the army. With theſe forces Cyrus quitted Sardis, and advanced by haſty marches towards the upper provinces of Aſia. Tiſſaphernes, acquainted with the real deſtination of Cyrus's expedition, poſted to the court of Artaxerxes, and informed him of the danger wherewith he was threatened. In conſequence of this intelligence, that monarch quickly aſſembled a numerous army. Cyrus, in the mean time, ran a great hazard of being ſtopped at the paſs of Cilicia; out of which, however, he was extricated by a ſingular piece of good fortune. The Greek troops, upon their arrival at Tarſus, not knowing for what purpoſe they had been aſſembled, and, beginning to ſuſpect that they were to be led againſt the Perſian monarch, refuſed to advance any farther; and it was with great difficulty, and by means of an augmentation of their pay, that Clearchus appeaſed them, and prevailed with them to proceed. Here likewiſe Cyrus explained to his other troops the real deſtination of his expedition. Cyrus, having entered the province of Babylon, aſſembled the Greek officers, and told them, that it was not want of other troops that had induced him to employ them, but a conſciouſneſs of their ſuperior merit, which rendered a ſmall number of them of much greater importance than a multitude of barbarians. He exhorted them therefore to approve themſelves worthy the high opinion entertained of their conduct and bravery.

Artaxerxes, in the mean time, advanced at the head of an immenſe army, amounting as is alleged to 1,200,000 men, commanded by Tiſſaphernes, Gobrias, and Arbaces. Beſides theſe, there were in the army of Artaxerxes 150 chariots; while Cyrus, on the other hand, had no more than twenty. The two armies met at Cunaxa. Cyrus himſelf drew up his army in battle array, and took his own poſt in the centre. On being intreated by Clearchus to avoid the dangerous part of the engagement; "What doſt thou adviſe? (replied the prince:) While I aim at a throne, wouldſt thou deſire me to ſhew myſelf unworthy of it?" A thick cloud of duſt, about three o'clock in the afternoon, announced the approach of the army of the king. His foot were diſpoſed in ſquare columns; and in the front were ranged the chariots, armed with ſcythes. The king himſelf was in the centre, ſurrounded by 6000 choſen horſe. Cyrus diſcovered the utmoſt eagerneſs and joy. He had ordered Clearchus with the Greek forces to advance to the centre. But, as ſoon as they perceived the army of the king marching on in good order, they ſtruck their javelins againſt their ſhields, and inſtantly ruſhed forward to charge the barbarians, who, unable to ſuſtain their attack, gave ground and fled.

While Cyrus beheld with pleaſure the troops of his brother flying before the Greeks, the perſon of the king ſtruck his view. Immediately, therefore, crying out in a tranſport, "I ſee him!" he obeys the dictates of his fury; gallops up to him, followed by no more than 600 horſe; kills with his own hand the commander of the king's guard; pierces through thoſe that were poſted before him; at laſt reaches his brother, wounds the horſe on which he rode with a dart, and throws him to the ground. Artaxerxes having mounted another horſe, Cyrus aimed a ſecond blow at him; but was in his turn ſtruck with a javelin diſcharged by the king, and, being at the ſame time overwhelmed by a ſhower of darts from the king's attendants, he was laid dead on the ſpot. Several of the principal noblemen who fought by his ſide were ſlain: and Mezabates, by the king's orders, cut off the head and right hand of Cyrus. A part of the prince's army, hearing of his death, betook themſelves to flight; and Tiſſaphernes led on the reſt of the king's army againſt that part of Cyrus's which ſtill kept its ground. The Greeks opened their ranks and let him paſs. Artaxerxes, hearing that the Greeks had defeated his left wing, rallied his troops, and advanced to attack them, who were as yet ignorant of Cyrus's death. The Greeks, apprehenſive of being ſurrounded, placed themſelves in ſuch a ſituation as to have their rear ſecured by a river; and, ſeeing the king approaching againſt them, boldly marched up to charge him. But the Perſians gave ground as before, and fled on all ſides.

Thus fell the younger Cyrus, a victim to his extravagant and criminal ambition. Xenophon has given a finiſhed picture of his prince. By his account, Cyrus ſurpaſſed all thoſe of his years in bodily exerciſes. He fulfilled his engagements with the utmoſt punctuality and honour. He rewarded good offices with uncommon generoſity and with ſingular prudence, always in proportion to real merit, never by the influence of favour: and he conferred an obligation with the beſt grace in the world. He appeared to be only ſo far delighted with ſovereignty as it enabled him to do good; and no other ways exerted his great power than to accompliſh that end. By this behaviour he gained the eſteem both of the Greeks and of the barbarians. But it is remarkable, that Xenophon takes notice only of the virtues of this prince, and is entirely ſilent with reſpect to his faults and vices; his unbounded ambition particularly, which prompted him to riſe in arms againſt his brother, whom, if the event had correſponded with his intentions, he would have deprived of his crown and of his life.

When the Greeks heard of the death of Cyrus, they were ſtruck with conſternation; and, inſtead of purſuing the enemy, turned all their thoughts to their own ſafety. But, Artaxerxes having ſummoned them to lay down their arms, he received for anſwer, "That they would ſooner die: that they were ready, however, to ſerve him as allies; but that they preferred liberty to life." In the mean time Arieus, general of the barbarians in Cyrus's army, to whom the Greeks had offered the crown of Perſia, ſent them word, that he was on the point of returning to Ionia; and that, if they had a mind to accompany him, they muſt join him that night. They accepted his invitation, and were all, except 300, conducted that night into his camp by Clearchus. At their firſt ſetting out they made forced marches; but could not by all their diligence avoid the purſuit of the king, who at laſt came up with them. The Greeks, as ſoon as they perceived him, formed themſelves in order for battle; and, by their excellent diſpoſition and intrepid appearance, ſo intimidated the king, that he diſpatched meſſengers to them with friendly profeſſions, and to acquaint them, that they had orders to conduct them to certain villages, where they would be ſupplied with plenty of proviſions. The Greeks accepted the offer, and paſſed three days in thoſe villages.

Tiſſaphernes now paid a viſit to the Greek commanders, by order of the king; and in a long harangue told them, that, pitying the hardſhips and dangers to which they were about to expoſe themſelves, he had obtained permiſſion from the Perſian monarch to conduct them back to their own country. Clearchus anſwered, That the Greeks had been led into Perſia by Cyrus, without being informed of his intentions: that by his death their engagements with him were at an end: that they had by no means undertaken this expedition with a view of making war on the Perſian monarch, or of creating him any diſturbance: and, that all they requeſted was a free paſſage to their native country. Tiſſaphernes, having departed to report their anſwer to the king, returned the ſecond day after, and told them, that the king did not intend to oppoſe their return; that he, Tiſſaphernes, would ſupply them with proviſions; and, as he was immediately to ſet out for his own province, would accompany them in their journey; and for that purpoſe would quickly join them. The Greeks, after waiting for him twenty days, were at length joined by him, and ſet out under his conduct. But after this Arieus and his forces pitched their camp at ſome diſtance from that of the Greeks. This produced ſome ſuſpicions in the latter, who nevertheleſs continued their march. After paſſing the Tigris, by a bridge of twenty-ſeven boats, they traverſed the deſerts of Media, leaving the Tigris on their left. But in the mean time the ſuſpicions of the Greeks were daily increaſing. Clearchus therefore having deſired a conference with Tiſſaphernes, in order to come to an explanation, took occaſion to remind him of the ſolemnity of the engagements he had come under to the Greeks. The ſatrap, by the ſtrongeſt profeſſions of ſincerity, and the warmeſt appearances of friendſhip, effaced all his ſuſpicions. But theſe profeſſions were intended to diſguiſe the moſt villanous perfidy.

As Clearchus no longer entertained any doubt of the ſatrap's integrity and honour, he was prevailed upon, together with the reſt of the chief officers of the Greeks, being four generals and twenty captains, to pay him a viſit. As ſoon as the four generals, Menon, Proxenes, Agias, and Socrates, had entered the tent of Tiſſaphernes, with Clearchus at their head, they were inſtantly ſeized; and at the ſame time the twenty captains, who had remained without, were attacked and cut to pieces by 200 Perſian ſoldiers, privately poſted there for that ſpecial purpoſe. The five commanders were carried before the king, and by his orders beheaded. A ſhocking inſtance of cruel perfidy! Xenophon has given us the characters of thoſe unfortunate commanders; of whom Clearchus and Proxenes were the moſt diſtinguiſhed. We may eaſily imagine the ſurpriſe of the Greeks at the long abſence of their commanders; and the conſternation occaſioned among them by the news of their fate. They no longer entertained any doubt that their total deſtruction was reſolved on. They found themſelves at the diſtance of 500 or 600 leagues from Greece; hemmed in by a royal army; ſurrounded by mountains and deſerts; and with no guide to lead them through the multitude of enemies that lay in their way.

In this general dejection, Xenophon, who had hitherto been only in the ſtation of a cadet, diſplayed an extraordinary firmneſs of ſoul. Aſſembling the remaining officers, he told them, that their courage was now their only reſource. He adviſed them to appoint new officers to ſupply the places of thoſe they had loſt; to burn their tents and baggage; to begin their retreat immediately; and to march in the form of a hollow ſquare, that ſo they might always be prepared to oppoſe the enemy from whatever quarter they were attacked: a ſurpriſing inſtance of what one man of genius and reſolution is capable of performing! The Greeks, when on the point of falling into the hands of their enemies, are ſaved by the wiſdom and activity of Xenophon. Perceiving that the expedient propoſed by him was the moſt eligible and ſafe they could follow, they immediately embraced it, and named new commanders. Next morning, by the dawn, the troops being aſſembled, Xenophon to confirm their courage made them an harangue, wherein he intreated them to recall to remembrance the famous days of Marathon, Thermopylæ, and Platea, when their anceſtors, with armies greatly more inferior to their enemies than they were to thoſe by whom they were at preſent oppoſed, had nevertheleſs remained victorious; and to reſt perſuaded, that the gods, the avengers of perfidy, would ſupport their defence. The words of Xenophon were applauded by the whole army, who unanimouſly approved of his advice, and inſtantly put it in execution. After continuing their journey for ſome days, conſtantly directing their march towards the heads of the great rivers till they found them fordable; they were at laſt overtaken and harraſſed by the army of Tiſſaphernes, who had purſued them with all his forces. But the Greeks, changing their order of march, repulſed his attacks with very little loſs on their own ſide; and it ſhould ſeem that Tiſſaphernes very ſoon grew weary of purſuing them, for after this time there is no farther mention made of him in the relation of Xenophon.

On their arrival at the river Tigris, finding it unfordable on account of its depth, they were obliged to traverſe the mountains of the Carducæ, and forced to diſpute their paſſage with the inhabitants of thoſe hills, who had poſted themſelves on the higher grounds. It coſt them ſeven days to make good their paſſage, which they at laſt effected with much labour and fatigue, after being obliged to abandon their beaſts of burden, and the priſoners they had taken in their march; and after ſuffering a great deal from the repeated attacks of the inhabitants of the country. After croſſing thoſe mountains, they were ſtopped by a very large river that ran along at the foot of them; but paſſed it at laſt with much difficulty. Then, entering the weſtern quarter of Armenia, they forded the Tigris at its ſource. Teribazus, the king of Perſia's governor in that province, permitted the Greeks to take what proviſions they thought proper; but at the ſame time privately reſolved to lay an ambuſcade for them in a narrow defile, between ſome mountains, through which their road lay. The Greeks, getting notice of his deſign, prevented him, by taking poſſeſſion of the paſs before him, and beat off the ſoldiers ſent againſt them. Having now croſſed the Euphrates, they were obliged to march through ſnow from five to ſix feet deep. This part of their journey was attended with great hardſhips, and many of the ſoldiers periſhed by the ſeverity of the cold and the great fatigue. After paſſing the ſnow, they came to certain villages, conſiſting of huts dug under ground, where they reſted ſeveral days. Recommencing their journey, they ſoon arrived at the river Araxes, or Phaſes. This river being here unfordable, they were obliged to march about through the mountains, where they were oppoſed by the Phaſians and Chalybes, whom they forced at laſt to retire.

After paſſing through the country of the Chalybes, they came to a very high mountain; whence, getting a ſight of the ſea, they were ſeized with an exceſs of joy. They had ſtill, however, the mountains of Colchis to traverſe, and to defend themſelves againſt the barbarous inhabitants. But, by the ſkilful diſpoſition of the army by Xenophon, they oppoſed and diſperſed thoſe barbarians. Then, falling down into the plain, they arrived at certain villages, where they found great plenty of proviſions, and reſted ſome days. In a few days more they reached Trebizond, a Greek colony, where they halted a month. Here they celebrated divers ſorts of games with much joy, and paid the vows they had made to the gods in caſe of their ſafe return. After deliberating whether they ſhould proceed from this place to Greece by ſea, they came to a reſolution to tranſport only their old and ſickly men in that way, becauſe they could not find ſhipping ſufficient to carry the whole army. The reſt continued their route over land. On arriving at Ceraſus they reviewed their forces, and found them to amount to 8,600 infantry, out of 10,000 that had undertaken the retreat; but of their horſe only forty remained. Coming to Cotyora, and being informed by the inhabitants, that, if they proceeded farther by land, they ſhould meet with many rivers and defiles very difficult to be paſſed, they accepted of the ſhips offered them by the Cotyoreans, which landed them next day at Sinope, a Mileſian colony in Paphlagonia.

The ſoldiers, ſeeing themſelves now ſo near their native country, and in the provinces of the Perſian king, became deſirous of obtaining ſome plunder before their arrival. With this view, they informed Xenophon of their intentions of creating a commander in chief; all their meaſures having been hitherto determined by the plurality of votes in a general council. At the ſame time, they intimated their intention of conferring that honour on him. On this occaſion, Xenophon, ſenſible of their intention, and deſirous to keep himſelf diſengaged from their ſcheme, repreſented to them that, if they were reſolved to create a commander in chief, it was highly proper that a Lacedemonian ſhould fill that ſtation, as that ſtate at preſent occupied the foremoſt rank in Greece. But perceiving them to be by no means ſatisfied with this reaſon, but, on the contrary, obſtinate in their choice of him, he was forced at laſt to tell them, that he had conſulted the gods on the ſubject, and found them averſe to his undertaking the command. This effectually freed him from farther ſolicitation for the preſent; and the choice of the Greeks next fell upon Chryſophorus, a Lacedemonian. The ſoldiers beginning to indulge their deſire of plunder, their new general interpoſed, and prohibited them from plundering the Greek colonies. This produced mutinies and diſcord in the army, and laid them under the neceſſity of dividing into three bodies; the firſt of which, conſiſting of the Peloponneſians, to the number of 4,400 men, was command-by Licon and Callimachus; the ſecond, conſiſting of 2,100 men, by Chryſophorus; and the third, of the ſame number, by Xenophon. Having procured ſhipping from the inhabitants of Heraclea, they embarked at different times, and landed at Chryſopolis. This being a very rich town, the ſoldiers reſolved to pillage it: but upon Xenophon's repreſenting to them, that by ſo doing they ſhould draw upon themſelves the reſentment of the Lacedemonians, many of whom were ſettled there, they relinquiſhed that deſign.

From Chryſopolis, therefore, they marched, under the conduct of Xenophon, to Salmydeſſa in Thrace, upon a preſſing invitation from Seuthes, the ſovereign of that country, who intreated their aſſiſtance to recover his dominions; and, the more effectually to prevail with them to comply with his deſire, promiſed them a great reward. But, after they had performed the ſervices for which he wanted them, he broke his word, and refuſed to give them any thing; and, though Xenophon complained grievouſly of his injuſtice, he obtained no redreſs. This Seuthes was an avaricious prince, entirely influenced by a miniſter void of all faith and honeſty; whoſe only aim was to increaſe his own private fortune. In the mean time, ambaſſadors from Sparta waited on Xenophon, to inform him, that, at the earneſt intreaty of the towns of Ionia, which had embraced the cauſe of the younger Cyrus, and on that account dreaded the reſentment of Tiſſaphernes, they had declared war againſt Tiſſaphernes and Pharnabazus, and had already diſpatched an army into Ionia, under the command of Thymbron, to protect that country from being ravaged by the enemy. The Greeks, under the command of Xenophon, hearing that the troops in that expedition received very large pay, engaged themſelves in the ſame ſervice, with the conſent of their commander, who conducted them to Lampſacus by ſea, their number then amounting all together to no more than 6000 men. From Lampſacus he proceeded to Pergamus, and from thence to Parthenia, which is accounted the period of this celebrated retreat. Thymbron, having there joined them with his troops, led all his army from that place againſt Tiſſaphernes.

Thus ended the famous expedition of the ten thouſand; who, in ſpite of the numberleſs difficulties they had to encounter at almoſt every ſtep, performed in the ſpace of little more than four months, counting from the period of the battle of Cunaxa to their arrival at Pergamus, a march of about 1900 miles. This retreat, the moſt extraordinary recorded in any hiſtory, is extremely admired by the maſters in the art of war, for the boldneſs of the undertaking, for the ſkill with which it was conducted, and for the ſucceſsful event. For, in ſpite of the difficulties of every kind that ſeemed to oppoſe their return, they were ſo lucky as to reach their native country victorious.

Two years after the expulſion of the tyrants from Athens, and juſt after the city had recovered its tranquillity, Melitus exhibited a formal accuſation againſt the famous Socrates, conſiſting of the following heads: 1ſt, That Socrates rejected the eſtabliſhed divinities of his country, and laboured to introduce new deities in their place. 2dly, That he corrupted the youth, teaching them to deſpiſe the ſettled laws and order of the commonwealth; to be diſobedient to their parents; and to cenſure the government. Such were the principal branches of the accuſation of Melitus; confeſſedly ſufficient, if proved, to infer a capital puniſhment; but it was eaſy for Socrates to refute them: for he had now employed himſelf, for the ſpace of forty years, in inſtructing the youth in the ſight of all his countrymen; during which time, no perſon had ever obſerved any circumſtance in his leſſons that could afford a handle to ſuch an accuſation. His friends, however, exerted themſelves in his favour. The orator Lyſias beſtowed great labour, and employed all his art, in compoſing a pleading for him. But Socrates, thinking it unſuitable to his character, declined to make uſe of it. Nor would his magnanimity permit him to deſcend to act the part of a ſuppliant, or to employ the means commonly practiſed in thoſe days, to incline the judges to pity; ſuch as parties coming before them with their wives and children. He appeared before his judges with the modeſt confidence inſpired by innocence, and behaved in every particular with the moſt ſtriking magnanimity. The judges, provoked at his indifference, condemned him to die by drinking the juice of the hemlock. This ſentence did not at all ſhake the fortitude of Socrates, firmly perſuaded that guilt is the only evil of which a wiſe man has reaſon to be afraid; and chooſing rather, ſays Quintillian, quietly to reſign the few years of life he had yet a probability of enjoying, than by a mean ſubmiſſion, or puſillanimous conduct, to throw a blemiſh on the glory of his paſt life. "I am going," ſaid he to the judges, "by your ſentence, to ſuffer death, a puniſhment denounced againſt me by nature at the inſtant of my coming into the world; but my accuſers are, by the ſentence of truth, condemned to the ſtings and remorſes of a guilty conſcience." Soon after his death, the Athenians were convinced of his innocence, and conſidered all the misfortunes that afterwards befel the republic as a puniſhment for the injuſtice of his condemnation. When the academy, and the other places of the city where he had uſually taught, preſented themſelves to the view of his countrymen, they could not refrain from reflecting on the ingratitude and cruelty of their treatment of the man who had done them ſuch important ſervices. They cancelled the decree that had condemned him; put Melitus to death; baniſhed his other accuſers; and erected to his memory a ſtatue of braſs, executed by the famous Lyſippus. See SOCRATES.

In the mean time Conon, who had lived a voluntary exile in the iſland of Cyprus, in the hopes of one day reſtoring the glory of his native country, and of checking the exorbitant power of the Lacedemonians, determined to apply to the Perſian power for that purpoſe, and accordingly imparted his deſign to king Artaxerxes by letter. That monarch, in conſequence of his reſentment againſt the Lacedemonians for aſſiſting his brother Cyrus in the late attempt to ſeize his kingdom, ordered 500 talents to be furniſhed to Conon for fitting out a fleet, of which he at the ſame time appointed him commander. Meanwhile Agis king of Sparta died, and Ageſilaus laid claim to the royal dignity, in preference to Leotychides, the ſon of Agis's queen, whom he affirmed not to have been begotten by Agis; and who, notwithſtanding the dying acknowledgment of him by that king, was generally reputed a baſtard. On this account, Ageſilaus, ſupported by Lyſander, and other principal Spartans, in the year 396 B. C. found little difficulty in cauſing himſelf to be declared king. Ageſilaus now prepared to eſtabliſh his authority by an active campaign; and, from his military character and fame, his army increaſed ſo faſt, that all Aſia ſeemed deſirous to put itſelf under his command. Ageſilaus, in the mean time, reſolved to attack the Perſian monarch in the heart of his dominions, that he might make him feel the Lacedemonian power even on his throne. Artaxerxes, alarmed at the progreſs of Ageſilaus, reſolved to create a diverſion to the Spartan arms, by promoting againſt them a confederacy among the other ſtates of Greece, whom he knew to be extremely uneaſy and impatient under their ſubjection. Timocrates was charged with the execution of this ſcheme. To accelerate its ſucceſs, fifty talents of money were delivered to him, with which he was to endeavour to bribe the leading men in each city, that they might inſtigate their countrymen to take up arms againſt the Lacedemonians; who indeed, by their overbearing behaviour, had but too well diſpoſed the other ſtates to embrace ſuch a meaſure. Timocrates, therefore, met with all the ſucceſs he could have deſired; and the Thebans were the firſt who reſolved to aſſert their independency. The Athenians very ſoon joined the Thebans. Over-looking all former ſubjects of diſpleaſure received by them from that ſtate, they embraced this opportunity of recovering from their long humiliation, and, by the perſuaſion of Thraſybulus, granted the aſſiſtance demanded. On the other hand, Conon, with the fleet he had obtained from Artaxerxes, was extremely active againſt Sparta. A diſpute having ariſen between the Phocians and Locrians, about the property of a ſmall piece of ground, the Spartans, already diſpleaſed with the Locrians, reſolved to ſupport the Phocians; and, for that purpoſe, ordered Pauſanias to march and join Lyſander, who was then in Bœotia with a few troops. But the Thebans, to prevent this junction, made a brave attack upon the troops under Lyſander, obtained a complete victory, and killed Lyſander himſelf in the battle.

Thus fell that renowned Greek, who raiſed his native city Sparta to a degree of power ſhe had never known before, and entirely ruined that of Athens. It was matter of general ſurpriſe, that he left no wealth behind him, conſidering the vaſt influence he had enjoyed, and the many opportunities of amaſſing riches that had been in his power. This contempt of wealth reflected honour on his memory, and plainly ſhewed, that ambition was his ſole motive of action. The exceſs of this paſſion, however, obſcured the ſplendour of his extraordinary abilities; for he muſt be allowed to have been an intrepid and ſkilful commander, a conſummate politician, and of a very artful

ful addreſs in managing the different tempers of men. He was the worſt enemy that ever Athens felt; and, by eſtabliſhing there the thirty tyrants, he was to her what Sylla afterwards was to Rome. His tyranny and oppreſſion rendered Sparta odious to her neighbours. In the mean time Conon obtained of the Perſian king fifty talents, to reſtore the Pyreum, or port of Athens, to its former ſituation. He was likewiſe continued in the command of the fleet; and, after ravaging the coaſts of Laconia, he returned to Athens, and was there received with the higheſt marks of joy. The conſciouſneſs of being the reſtorer of the power of his country, and of rebuilding the walls of his native city, muſt undoubtedly have afforded him the moſt ſincere pleaſure. It is remarkable, that the city of Athens ſhould be in a manner rebuilt at the expence of the ſame Perſians who had formerly reduced it to aſhes. The grief and rage of the Lacedemonians, at ſeeing their ancient rival raiſed, as it were, out of her ruins, and reſtored to a condition of being ſtill formidable to them, are inexpreſſible. They reſolved, however, ſtill to aſſert their ſuperiority, and gave the Athenians a very ſenſible proof of their domineering ſpirit, by commanding them to withdraw their protection from 400 Thebans, who, upon being baniſhed by a public decree of their native country, had taken refuge at Athens. The Athenians, however, had too much humanity to adopt ſo violent and ſevere a meaſure againſt ſo great a number of Theban citizens; more eſpecially as theſe very men had contributed the moſt to the reſtoration of the popular government, of which the Athenians were at that time enjoying the advantages. But the war which now took place between Thebes and Sparta, proving highly deſtructive to the latter, the Theban army having even reached the walls of Sparta, produced a moſt ſingular change in their diſpoſitions. The people began to murmur againſt the government; the city was diſtracted by factions; and nothing went on but plots and conſpiracies. Theſe inteſtine diſorders, heightened by the miſfortune of having the enemy at their gates, compelled the haughty Spartans to implore aſſiſtance of the very Athenians on whom they had ſo lately inflicted all the miſchiefs in their power, and whoſe utter ruin they would have joyfully accompliſhed. They now, however, in their turn, found themſelves under the neceſſity of ſending an embaſſy to Athens, to explain the extremity to which they were reduced, and to endeavour to convince the Athenians how much it was their intereſt to join with them, and to ſtop the career of the ambitious Thebans, who ſeemed deſirous of reducing all Greece under their ſubjection. This occaſion furniſhes us with a ſtriking inſtance of the generoſity of the Athenians, as well as of their juſt diſcernment of the general intereſts of Greece. For, though the misfortunes brought upon them by the Lacedemonians were freſh in their remembrance, they nevertheleſs reſolved at once to furniſh them with immediate aſſiſtance, and at the ſame time they brought about a confederacy with ſeveral other ſtates to oppoſe the Thebans.

From this time to the reign of Philip of Macedon, the Athenians continued moſtly in a proſperous ſituation, tho' they never performed any ſuch great exploits as formerly. By that monarch, and his ſon Alexander, all Greece was in effect ſubdued; and the hiſtory of all the Grecian ſtates during that conflict falls under MACEDON. But of the hiſtory of Athens from that time, the following elegant abridgement is given by Dr. Chandler. "On the death of Alexander, the Athenians revolted, but were defeated by Antipater, who garriſoned Munychia. They rebelled again, but the garriſon and oligarchy were reinſtated. Demetrius the Phalerean, who was made governor, beautified the city, and they erected to him 360 ſtatues, which on his expulſion they demoliſhed, except one in the Acropolis. Demetrius Poliorcetes withdrew the garriſon, and reſtored the democracy; when they deified him, and lodged him in the Opiſthodomos, or the back part of the Parthenon, as a gueſt to be entertained by their goddeſs Minerva. Afterwards they decreed, that the Piræus, with Munychia, ſhould be at his diſpoſal; and he took the Muſeum. They expelled his garriſon, and he was perſuaded by Craterus, a philoſopher, to leave them free. Antigonus Gonatus, the next king, maintained a garriſon in Athens: but, on the death of his ſon Demetrius, the people, with the aſſiſtance of Aratus, regained their liberty, and the Piræus, Munychia, Salamis, and Sunium, on paying a ſum of money.

"Philip, ſon of Demetrius, encamping near the city, deſtroying and burning the ſepulchres and temples in the villages, and laying their territory waſte, the Athenians were reduced to ſolicit protection from the Romans, and to receive a garriſon, which remained until the war with Mithridates king of Pontus, when the tyrant Ariſtion made them revolt. Archelaus, the Athenian general, unable to withſtand the Roman fury, relinquiſhed the long walls, and retreated into the Piræus and Munychia. Sylla laid ſiege to the Piræus and to the city, in which Ariſtion commanded. He was informed, that ſome perſons had been overheard talking in the Ceramicus, and blaming Ariſtion for his neglect of the avenues about the Heptachalcos, where the wall was acceſſible. Sylla reſolved to ſtorm there, and about midnight entered the town at the gate called Dypylon, or the Piræan, having levelled all obſtacles in the way between it and the gate of the Piræus. Ariſtion fled to the Acropolis, but was compelled to ſurrender by the want of water; when he was dragged from the temple of Minerva, and put to death. Sylla burned the Piræus and Munychia, and defaced the city and ſuburbs, not ſparing even the ſepulchres.

"The civil war between Cæſar and Pompey ſoon followed, and their natural love of liberty made them ſide with Pompey. Here again they were unfortunate, for Cæſar conquered: but Cæſar did not treat them like Sylla. With that clemency which made ſo amiable a part of his character, he diſmiſſed them with a fine alluſion to their illuſtrious anceſtors, ſaying, that he ſpared the living for the ſake of the dead. Another ſtorm ſoon followed after this; the wars of Brutus and Caſſius with Auguſtus and Antony. Their partiality for liberty did not here forſake them: they took part in the conteſt with the two patriot Romans, and erected their ſtatues near their own ancient deliverers, Harmodius and Ariſtogiton, who had ſlain Hipparchus: but they were ſtill unhappy, for their enemies triumphed. They next joined Antony, who gave them Ægina and Cea, with other iſlands. Auguſtus was unkind to them; and they revolted four years before he died. Under Tiberius the city was declining, but free, and regarded as an ally of the Romans. The high privilege of having a lictor to precede the magiſtrates, was conferred on it by Germanicus; but he was cenſured, as treating with too much condeſcenſion a mixture of nations, inſtead of genuine Athenians, which race was then conſidered as extinct.

"The emperor Veſpaſian reduced Achaia to a province paying tribute, and governed by a proconſul. Nerva was more propitious to the Athenians; and Pliny, under Trajan his ſucceſſor, exhorts Maximus to be mindful whither he was ſent, to rule genuine Greece, a ſtate compoſed of free cities. 'You will revere the gods and heroes their founders. You will reſpect their priſtine glory, and even their age. You will honour them for the famous deeds, which are truly, nay for thoſe which are fabulouſly, recorded of them. Remember, it is Athens you approach.' This city was now entirely dependent on Rome, and was reduced to ſell Delos, and the iſlands in its poſſeſſion.

"Adrian, who was at once emperor and an archon of Athens, gave the city laws, compiled from Draco, Solon, and the codes of other legiſlators; and diſplayed his affection for it by unbounded liberality. Athens reflouriſhed, and its beauty was renewed. Antoninus Pius, who ſucceeded, and Antoninus the philoſopher, were both benefactors. The barbarians in the north, in the reign of Valerian, beſieging Theſſalonica, all Greece was terrified, and the Athenians reſtored their city-wall, which had been diſmantled by Sylla, and afterwards neglected. Under the next emperor, who was the archon Gallienus, Athens was beſieged, the archontic office ceaſed; and the ſtrategus or general, who had before acted as overſeer of the agora or market, then became the chief magiſtrate. Under Claudius, his ſucceſſor, the city was taken, but ſoon recovered.

“ It is related, that Conſtantine, when emperor, gloried in the title of *general of Athens*; and rejoiced exceedingly on obtaining from the people the honour of a ſtatue with an inſcription, which he acknowledged by a yearly gratuity of many buſhels of grain. He conferred on the governor of Attica and Athens the title of *grand duke*, μεγας δουξ. That office was at firſt annual, but afterwards hereditary. His ſon Conſtans beſtowed ſeveral iſlands on the city, to ſupply it with corn. In the time of Theodoſius I. 380 years after Chriſt, the Goths laid waſte Theſſaly and Epirus; but Theodore, general of the Achæans, by his prudent conduct, preſerved the cities of Greece from pillage, and the inhabitants from being led into captivity. A ſtatue of marble was erected to him at Athens by order of the city; and afterwards one of braſs, by command of the emperor, as appears from an inſcription in a church dedicated to a ſaint of the ſame name, not far from the French convent. It is on a round pedeſtal, which ſupports a flat ſtone ſerving for the holy table. Eudocia, the wife of Theodoſius II. was an Athenian.

“ The fatal period now approached, and Athens was about to experience a conqueror more ſavage even than Sylla. This was Alaric king of the Goths; who, under the emperors Arcadius and Honorius, over-ran Greece and Italy, ſacking, pillaging, and deſtroying. Then the Peloponneſian towns were overturned, Arcadia and Lacedemon were laid waſte, the two ſeas by the Iſthmus were burniſhed with the flames of Corinth, and the Athenian matrons were dragged in chains by barbarians. The invaluable treaſures of antiquity were removed; the ſtately and magnificent ſtructures converted into piles of ruin; and Athens was ſtripped of every thing ſplendid or remarkable. After this event, Athens became an unimportant place, and as obſcure as it had once been famous. We read that the cities of Hellas were put into a ſtate of defence by Juſtinian, who repaired the walls, which at Corinth had been ſubverted by an earthquake, and at Athens and in Bœotia were impaired by age; and here we take a long farewel of this city. A chaſm of near 700 years enſues in its hiſtory; except that, about the year 1130, it furniſhed Roger the firſt king of Sicily with a number of artificers, whom he ſettled at Palermo, where they introduced the culture of ſilk, which then paſſed into Italy. The worms had been brought from India to Conſtantinople in the reign of Juſtinian.

“ Athens, as it were, re-emerges from oblivion in the 13th century, under Baldwin, but beſieged by a general of Theodorus Laſcaris, the Greek emperor. It was taken in 1427 by ſultan Morat. Boniface, marquis of Montſerrat, poſſeſſed it with a garriſon; after whom in was governed by Delves, of the houſe of Arragon. On his death it was ſeized, with Macedonia, Theſſaly, Bœotia, Phocis, and the Peloponneſus, by Bajazet; and then, with the iſland Zante, by the Spaniards of Catalonia, in the reign of the Greek emperor Andronicus Palæologus the elder. Theſe were diſpoſſeſſed by Reinerius Acciaioli, a Florentine; who, leaving no legitimate male iſſue, bequeathed it to the ſtate of Venice. His natural ſon, Antony, to whom he had given Thebes with Bœotia, expelled the Venetians. He was ſucceeded in the dukedom by his kinſman Nerius, who was diſplaced by his own brother, named Antony, but recovered the government when he died. Nerius, leaving only an infant ſon, was ſucceeded by his wife. She was ejected by Mahomet, on a complaint from Francus, ſon of the ſecond Antony, who confined her at Megara, and made away with her; but, her ſon accuſing him to Mahomet II. the Turkiſh army under Omar advanced, and he ſurrendered the citadel in 1455; the Latins refuſing to ſuccour him, unleſs the Athenians would embrace their religious tenets. Mahomet, it is related, when he had finiſhed the war with the deſpot of the Morea, four years after, ſurveyed the city and Acropolis with admiration. The janiſſaries informed him of a conſpiracy; and Francus Acciaioli, who remained lord of Bœotia, was put to death. In 1464 the Venetians landed at the Piræus, ſurpriſed the city, and carried off their plunder and captives to Eubœa.

“ It is remarkable, that after theſe events Athens was again in a manner forgotten. So lately as about the middle of the 16th century, the city was commonly believed to have been utterly deſtroyed, and not to exiſt, except a few huts of poor fiſhermen. Cruſius, a learned and inquiſitive German, procured more authentic information from his Greek correſpondents reſiding in Turkey, which he publiſhed in 1584, to awaken curioſity and to promote farther enquiries. One of theſe letters is from a native of Nauplia, a town near Argos, in the Morea. This writer ſays, that he had been often at Athens, and that it ſtill contained many things worthy to be ſeen, ſome of which he enumerates, and then ſubjoins: “ But why do I dwell on this place? It is as the ſkin of an animal which has been long dead.” For collateral parts of the hiſtory of this famous republic, ſee the articles GREECE, MACEDON, PERSIA, SPARTA, THEBES, ROME, &c.

It now remains to give ſome idea of the character, government, and religion, of this once famous people. The Athenians, ſays Plutarch, are very ſubject to violent anger; but they are ſoon pacified. They are likewiſe eaſily impreſſed with humanity and compaſſion. That this was their temper, is proved by many hiſtorical examples. We ſhall produce a few. The ſentence of death pronounced againſt the inhabitants of Mitylene, and revoked the next day: the condemnation of Socrates, and that of the ten chiefs, each followed by quick repentance and the moſt poignant grief. The minds of the ſame people, adds Plutarch, are not formed for laborious reſearches. They ſeize a ſubject, as it were, by intuition; they have not patience and phlegm enough to examine it gradually and minutely. This part of their character may ſeem ſurpriſing and incredible. Artiſans, and other people of their rank, are in general ſlow of comprehenſion. But the Athenians of every degree were endowed with an inconceivable vivacity, penetration, and delicacy of taſte. Even the Athenian ſoldiers could repeat the fine paſſages of the tragedies of Euripides. Thoſe artiſans and thoſe ſoldiers aſſiſted at public debates, were bred to political affairs, and were equally acute in apprehenſion and in judgment. We may infer the underſtanding of the hearers of Demoſthenes from the genius of his orations, which were laconic and poignant.

As their inclination, continues Plutarch, leads them to aſſiſt and ſupport people of low condition, they like diſcourſe ſeaſoned with pleaſantry, and productive of mirth. The Athenians patronize people of low degree; becauſe from them their liberty is in no danger, and becauſe ſuch patronage tends to ſupport a democratical conſtitution. They love pleaſantry; which turn of mind proves, that they are a humane ſocial people, who have a taſte for raillery and wit, and are not ſoured with that reſerve which marks the deſpot or the ſlave. They take pleaſure in hearing themſelves praiſed, but they can likewiſe patiently bear raillery and cenſure. We know with what art and ſucceſs Ariſtophanes and Demoſthenes applied their praiſe and their irony to the Athenian people. When the republic enjoyed peace, it encouraged the adulation of its orators: but, when it had important affairs to diſcuſs, when the ſtate was in danger, it became ſerious; and preferred to its eloquent ſycophants, the honeſt orators who oppoſed its follies and its vices; ſuch ingenious and bold patriots as a Pericles, a Phocion, and a Demoſthenes.

The Athenians, continues Plutarch, often make their governors tremble, and ſhew great humanity to their enemies. They were very attentive to the information and inſtruction of thoſe citizens who were moſt eminent for their policy and eloquence; but they were on their guard againſt the ſuperiority of their talents; they often checked their boldneſs, and repreſſed their exuberant reputation and glory. That this was their temper, we are convinced by the oſtraciſm; which was eſtabliſhed to reſtrain the ambition of thoſe who had great talents and influence, and which ſpared neither the greateſt nor the beſt men. The deteſtation of tyranny and of tyrants, which was inherent in the Athenians, rendered them extremely jealous of their privileges, made them zealous and active in defence of their liberty, whenever they thought it was violated by men in power. As to their enemies, they did not treat them with rigour: they did not abuſe victory by a brutal inhumanity to the vanquiſhed. The act of amneſty, which they paſſed after the uſurpation of the thirty tyrants, proves that they could eaſily forgive injuries. It was this mildneſs, this humanity of diſpoſition, which made the Athenians ſo attentive to the rules of politeneſs and decorum. In their war with Philip king of Macedon, having ſeized one of his couriers, they read all the letters he bore, except one from Olympias to her huſband, which they ſent back unopened. Such was their veneration of love and conjugal ſecrecy; thoſe ſacred rights, which no enmity, no hoſtility, warrants us to violate! The views of conqueſt cheriſhed by a ſmall republic were extenſive and aſtoniſhing; but this people, ſo great, ſo ambitious in their projects, were, in other reſpects, of a different character. In the expences of the table, in dreſs, in furniture, in houſes, in ſhort, in private life, they were frugal, ſimple, modeſt, poor; but ſumptuous and magnificent whenever the honour of the ſtate was concerned. Their conqueſts, their victories, their riches, their connections with the inhabitants of Aſia Minor, never reduced them to luxury, to riot, to pomp, to profuſion. Xenophon remarks, that a citizen was not diſtinguiſhed from a ſlave by his dreſs. The wealthieſt citizen, the moſt renowned general, was not aſhamed to go himſelf to market.

The taſte of the Athenians, for all the arts and ſciences, is well known. When they had delivered themſelves from the tyranny of Piſiſtratus, and after they had defeated the vaſt efforts of the Perſians, they may be conſidered as at the ſummit of their national glory. For more than half a century afterwards they maintained, without controul, the ſovereignty of Greece; and that aſcendant produced a ſecurity, which left their minds at eaſe, and gave them leiſure to cultivate every thing liberal or elegant. It was then that Pericles adorned the city with temples, theatres, and other beautiful public buildings. Phidias, the great ſculptor, was employed as his architect, who, when he had erected edifices, adorned them himſelf, and added ſtatues and baſſo-relievos, the admiration of every beholder. It was then that Polignotus and Myro painted; that Sophocles and Euripides wrote; and, not long after, that they ſaw the divine Socrates.

Human affairs are, by nature, prone to change; and ſtates, as well as individuals, are born to decay. Jealouſy and ambition inſenſibly fomented wars, and ſucceſs in theſe wars, as in others, was often various. The military ſtrength of the Athenians was firſt impaired by the Lacedemonians; after that, it was again humiliated, under Epaminondas, by the Thebans; and laſt of all it was wholly cruſhed by the Macedonian, Philip. Nor, when their political ſovereignty was loſt, did their love of literature and arts ſink along with it. Juſt at the cloſe of their golden days of empire flouriſhed Xenophon and Plato, the diſciples of Socrates, and from Plato deſcended that race of philoſophers called the *Old Academy*. Ariſtotle, who was Plato's diſciple, may be ſaid not to have invented a new philoſophy, but rather to have tempered the ſublime and rapturous myſteries of his maſter with method, order, and a ſtricter mode of reaſoning. Zeno, who was himſelf alſo educated in the principles of Platoniſm, only differed from Plato in the comparative eſtimate of things, allowing nothing to be intrinſically good but virtue, nothing intrinſically bad but vice, and conſidering all other things to be in themſelves indifferent. He too and Ariſtotle accurately cultivated logic, but in different ways; for Ariſtotle chiefly dwelt upon the ſimple ſyllogiſm; Zeno upon that which is derived out of it, the compound or hypothetic. Both too, as well as other philoſophers, cultivated rhetoric along with logic; holding a knowledge in both to be requiſite for thoſe who think of addreſſing mankind with all the efficacy of perſuaſion. Zeno elegantly illuſtrated the force of theſe two powers by a ſimile, taken from the hand: the cloſe power of logic he compared to the fiſt, or hand compreſſed; the diffuſe power of logic to the palm, or hand open.

The new academy was founded by Arceſilas, and ably maintained by Carneades. From a miſtaken imitation of the great parent of philoſophy, Socrates, (particularly as he appears in the dialogues of Plato,) becauſe Socrates doubted ſome things, therefore Arceſilas and Carneades doubted all. Epicurus drew from another ſource; Democritus had taught him atoms and a void: by the fortuitous concourſe of atoms he fancied he could form a world; while by a feigned veneration he complimented away his gods, and totally denied their providential care, leſt the trouble of it ſhould impair their uninterrupted ſtate of bliſs. Virtue he recommended, though not for the ſake of virtue, but pleaſure: pleaſure, according to him, being our chief and ſovereign good. See ARISTOTLE, EPICURUS, PLATO, SOCRATES, &c.

We have already mentioned the alliance between philoſophy and rhetoric. This cannot be thought wonderful, if rhetoric be the art by which men are perſuaded, and if men cannot be perſuaded without a knowledge of human nature: for what but philoſophy can procure us this knowledge? It was for this reaſon the ableſt Greek philoſophers not only taught, but wrote alſo treatiſes upon, rhetoric. They had a farther inducement, and that was the intrinſic beauty of their language, as it was then ſpoken among the learned and polite. They would have been aſhamed to have delivered philoſophy, as it has been too often delivered ſince, in compoſitions as clumſy as the common dialect of the vulgar. The ſame love of elegance, which made them attend to their ſtyle, made them attend even to the places where their philoſophy was taught. Plato delivered his lectures in a place ſhaded with groves, on the banks of the river Iliſſus; and which, as it once belonged to a perſon named *Academus*, was called after his name, the *Academy*. Ariſtotle choſe another ſpot of a ſimilar character, where there were trees and ſhade; a ſpot called the *Lyceum*. Zeno taught in a portico or colonnade, diſtinguiſhed from other buildings of that ſort (of which the Athenians had many) by the name of the *Variegated Portico*, the walls being decorated with various paintings of Polygnotus and Myro, two capital maſters of that tranſcendent period. Epicurus addreſſed his hearers in thoſe well-known gardens, called, after his own name, *The gardens of Epicurus*. Theſe places of public inſtitution were called among the Greeks by the name of *Gymnaſia*; in which, whatever that word might have originally meant, were taught all thoſe exerciſes, and all thoſe arts, which tended to cultivate not only the body but the mind. As man was a being conſiſting of both, the Greeks could not conſider that education as complete, in which both were not regarded, and both properly formed. Hence their *Gymnaſia*, with reference to this double end, were adorned with two ſtatues, thoſe of Mercury and of Hercules; the corporeal accompliſhments being patroniſed by the god of ſtrength, the mental accompliſhments by the god of ingenuity.

It was for the cultivation of every liberal accompliſhment that Athens was celebrated during many centuries, long after her political influence was loſt and at an end. She was the place of education, not only for Greeks but for Romans. It was hither that Horace was ſent by his father; it was here that Cicero put his ſon Marcus under Cratippus, one of the ableſt philoſophers then belonging to that city. The ſects of philoſophers which we have already deſcribed, were ſtill exiſting when St. Paul came thither. We cannot enough admire the ſuperior eloquence of that apoſtle, in his manner of addreſſing ſo intelligent an audience. We cannot enough admire the ſublimity of his exordium; the propriety of his mentioning an altar which he had found there; and his quotation from Aratus, one of their well-known poets. Nor was Athens only celebrated for the reſidence of philoſophers, and the inſtitution of youth: men of rank and fortune found pleaſure in a retreat, which contributed ſo much to their liberal enjoyment.

We ſhall finiſh this picture of the Athenians by the addition of one object more, to which every one will admit they have a right; an object which was prominent and ſtriking in all their actions and in all their enterprizes: we mean their ardent love of liberty. This was their predominant quality; the main ſpring of their government. From the beginning of the Perſian war, they ſacrificed every thing to the liberty of Greece. They left, without heſitation, their cities, their houſes, to fight at ſea the common enemy, from whom they were in danger of ſervitude. What a glorious day was it for Athens, when, all her allies growing flexible to the advantageous offers which were made to them by the king of Perſia, ſhe replied by Ariſtides, to the ambaſſadors of that monarch, "That it was impoſſible for all the gold in the world to tempt the republic of Athens: to prevail with her to ſell her liberty, and that of Greece!" It was by theſe generous ſentiments that the Athenians not only became the bulwark of Greece, but likewiſe guarded the reſt of Europe from a Perſian invaſion. Theſe great qualities, however, were blended with great failings, ſeemingly incompatible with patriotiſm. For the Athenians, notwithſtanding their tenacious jealouſy of the rights of their country, were a volatile, inconſtant, capricious, people.

There never was a people more attentive to the worſhip of the gods than the Athenians. The worſhip of their principal deities was diffuſed over all Greece, and even beyond its limits. Each temple had its particular religious rites: the pomp, the ceremonies, the duration, and the ſucceſſion, of the ſolemn feaſts, were all appointed by fixed rules. The worſhip paid to each divinity, whether public or private, was founded on traditions, or on laws conſtantly obeyed. The feaſt of Bacchus, the Panathenæa, the feaſt of the myſteries of Eleuſis, were celebrated according to eſtabliſhed rules, moſt of which were as ancient as the feaſts themſelves. The old cuſtoms, of which the prieſts were the guardians, were obſerved in the temples. It is probable, that the prieſts were conſulted on affairs in which the worſhip of a deity was intereſted, and that their anſwer was deciſive. We are certain that the Eumolpidæ had this authority. They were the interpreters of the ancient laws on which the worſhip of Ceres was founded, its magnificence, and its mode; laws which were not written, as Lyſias informs us, but were perpetuated by a conſtant obſervation. The abuſes which had gradually crept into the celebration of thoſe feaſts, had given riſe to ſeveral new regulations; to that of the orator Lycurgus, for example, and to the law of Solon, which enjoined the ſenate to repair to Eleuſis on the ſecond day of the feaſt: but neither theſe nor the other particular regulations which we find in Samuel Petit's collection of Attic laws, could make a religious code. There was no general ſyſtem which comprehended all the branches of their religion, which, by combining all its articles, might regulate their belief and conduct, and direct the judges in their deciſions.

Crimes againſt religion were only puniſhed as they affected the ſtate; and, conſequently, they were tried by the magiſtrate. Mere raillery, though ſomewhat profane, was thought productive of no worſe conſequence than offending the miniſters of the gods. The Athenians acknowledged no other religion than the hereditary public worſhip; no other gods than thoſe they had received from their anceſtors; no other ceremonies than thoſe which had been eſtabliſhed by the laws of the ſtate, and practiſed by their country from time immemorial. They were only ſolicitous to preſerve this worſhip, which was cloſely interwoven with their government, and made a part of its policy. They were likewiſe attentive to the ceremonial pomp; becauſe order, the regular vigour of legiſlation, depends greatly on the awe impreſſed by externals. But, as to the inconſiſtent and monſtrous romance of fables, foreign opinions, popular traditions, and poetical fictions, which formed a religion quite different from that of the ſtate; in it they were very little intereſted, and allowed every one to think of it as he pleaſed. This explanation will reconcile a ſeeming contradiction in the conduct of the Athenians, who gave great licence to their poets, and ſeverely puniſhed the citizens who were guilty of impiety. Ariſtophanes, who made as free with the gods as with the great, was applauded by the Athenians. They condemned Socrates to death, who revered the deity, but diſapproved the public manner of worſhipping him. The life of Æſchylus was in danger from a ſuſpicion that he had revealed ſome of the ſecrets of Eleuſis in one of his pieces. The wit of Ariſtophanes's drama was unpuniſhed. The prieſts were not confined to the care of the altars; they who were veſted with the ſacerdotal dignity, which was only incompatible with profeſſions merely uſeful and lucrative, might likewiſe hold the moſt important offices of the commonwealth. This we could prove by a great number of examples; we ſhall cite that of Xenophon, the illuſtrious hiſtorian and philoſopher: he was likewiſe a famous general, and he was a prieſt. He was performing the ſacerdotal function when he received the news of his ſon's death, who was killed at the battle of Mantinea. The ſacred miniſtry was not only compatible with civil offices, but likewiſe with the profeſſion of arms. The prieſt and the ſoldier were often blended. Callias, the prieſt of Ceres, fought at Platæa. This cuſtom was not peculiar to the Athenians. The Lacedemonians, after the battle which we have juſt mentioned, made three graves for their ſlain; one for the prieſts, one for the other Spartans, and one for the Helots.

As every mean employment was incompatible with the ſacerdotal dignity, the prieſts had a revenue fixed to their office. We know that a part of the victims was their right, and that apartments were aſſigned them near the temples. But, beſides theſe advantages, they had a ſalary proportioned to the dignity of their functions and to the rank of the deities whom they ſerved. Their ſalary was probably paid from the revenue of the temples. Thoſe revenues, which kept the temples in repair, and defrayed the ſacrificial expences, were very conſiderable. They were of many different kinds. A great part of the ſacred revenues aroſe from fines, which individuals were condemned to pay for various offences; fines, of which the tenth part was appropriated to Minerva Polias, and the fiftieth to the other gods and to the heroes whoſe names their tribes bore. Beſides, if the Prytanes did not hold the aſſemblies conformably with the laws, they were obliged to pay a fine of 1000 drachms to the goddeſs. If the proedri, i. e. the ſenators whoſe office it was to lay before the aſſembly the matters on which they were to deliberate, did not diſcharge that duty according to the rules preſcribed to them, they were likewiſe condemned to pay a fine, which, as the former, was applied to the uſe of Minerva. Beſides this revenue, which was the common property of the gods, and which varied according to the number and degrees of the miſdemeanors, the temples had their permanent revenues: we mean the produce of the lands which were conſecrated to the deities. We do not here allude to the lands conſecrated to the gods which were never to be cultivated; ſuch as the territory of Cirrha, proſcribed by a ſolemn decree of the Amphictyons; the land betwixt Megara and Attica, which was conſecrated to the goddeſſes of Eleuſis, and many others. We would ſpeak only of thoſe which were cultivated, the fruits of which enriched the temples. There were likewiſe lands belonging to the ſtate, the produce of which was deſtined to defray the expence of the ſacrifices which were offered in the name of the republic. There were likewiſe firſt-fruits, which the public officers levied on all lands, for the uſe of the gods. All theſe emoluments made a part of the revenues of the temples.

The gods, beſides the revenues immediately appertaining to their temples, had certain rights which were granted them by particular compact. The Lepreatæ, for inſtance, were obliged to pay every year a talent to Olympian Jupiter, on account of a treaty of alliance which they made with the Eleans in one of their wars. The inhabitants of Epidaurus, to obtain leave from the Athenians to cut down olive-trees for ſtatues, which the Pythian prieſteſs had commanded them to make, engaged to ſend deputies every year to Athens, to offer ſacrifices in their name to Minerva and to Neptune; but this prerogative was rather honorary than lucrative. The tenth part of the ſpoils taken in war was likewiſe the property of Minerva. Sacred veſſels were bought with the effects of the thirty tyrants: in ſhort, the gods were profited by almoſt every public accident. But what contributed moſt to enrich the famous temples of Greece, was the money which was conſtantly brought to them by individuals, in conſequence of vows they had made, or to pay for ſacrifices which were offered in their names. The credulity of the people was an inexhauſtible fund. That credulity enriched the temples of Deli and Eleuſis, and ſupported the magnificence of Delphi. And thoſe immenſe treaſures which were the fruit of ſuperſtition, were often a prey to avarice. Theſe revenues were not depoſited with the prieſts, nor did they expend them: a moderate ſalary was all their gain; and to offer ſacrifices to the deities whoſe miniſters they were, was all their employment. As to the ſolemn feaſts, which were incredibly magnificent, ſuch as the feaſt of Bacchus, and the Panathenæa, they were celebrated at the expence of the choregus; i. e. of the chief of the choir of each tribe: for each tribe had its poets and its muſicians, who ſung, emulating each other, hymns in honour of the deity. The richeſt citizens were appointed chiefs of the different choirs; and, as their office was very expenſive, to indemnify them in ſome degree, the choregus of the victorious tribe had the privilege of engraving his name on the tripod which that tribe ſuſpended to the roof of the temple. This office, though ruinous, was eagerly ſolicited; and naturally, in a republican ſtate. It led to honours, like the curule dignity at Rome; and it greatly tended to ingratiate its poſſeſſor with a people who were more affected with pleaſures than with eſſential ſervices, and who, conſequently, would more highly eſteem a profuſe choregus than a victorious general.

With regard to the fines, which were in the whole, or in part, the property of Minerva and of the other deities, there were at Athens public treaſurers appointed to receive them. They were ten in number, and they were nominated by lot. They were called *treaſurers of the goddeſs*, or *receivers of the ſacred money*. That money they received in the preſence of the ſenate; and they were empowered to diminiſh or to annihilate the fine, if they thought it unjuſt. The ſtatue of Minerva, that of the victories, and the other invaluable pledges of the duration of the ſtate, were depoſited with them. The treaſury in which the money conſecrated to the gods was kept, was in the citadel, behind the temple of Minerva; and from its ſituation was termed *Opiſtodomus*. It was ſurrounded with a double wall. It had but one door, the key of which was kept by the epiſtates, or chief of the Prytanes: his dignity was very conſiderable; but it laſted only one day. In this treaſury a regiſter was kept, in which were written the names of all thoſe who were indebted to the ſtate: he who owed the ſmalleſt fine was not omitted. If the debtors proved inſolvent, they were proſecuted with extreme rigour, and often puniſhed with a cruelty which religion could not excuſe; though the intereſt of the gods was the motive, or rather the pretext. The ſacred treaſurers held a conſiderable rank among the magiſtrates, who received the public finances. Of theſe magiſtrates there were many kinds, as there were many ſorts of revenues.

The Athenian prieſts did not compoſe an order diſtinct and ſeparate from the other orders of the ſtate. They did not form a body united by particular laws, under a chief, whoſe authority extended to all his inferiors. The dignity of ſovereign pontiff was unknown at Athens; and each of the prieſts ſerved his particular temple, unconnected with his brethren. The temples, indeed, of the principal deities, thoſe of Minerva, for inſtance, of Neptune, of Ceres, and of Proſerpine, had many miniſters; and in each of them a chief preſided, who had the title of *high prieſt*. The number of ſubaltern miniſters was in proportion to the rank of the deity; but the prieſts of one temple were altogether a ſeparate ſociety from thoſe of another. Thus at Athens there was a great number of high prieſts, becauſe many deities were worſhipped there, whoſe ſervice required many miniſters. The power of each prieſt was confined to his temple; and there was no ſovereign pontiff, the miniſter-general of the gods, and the preſident at all the feaſts. It naturally follows from this account, that the miniſters of the gods at Athens were not judges in matters of religion. They were neither authoriſed to take cognizance of crimes committed againſt the deity, nor to puniſh them. Their function was to offer ſacrifices to the gods, and to intreat their acceptance of the adorations of the people. But the puniſhment of impiety, of ſacrilege, of the profanation of myſteries, and of other irreligious crimes, was not entruſted to their zeal. The prieſts were not only incapable of avenging crimes againſt religion by a temporal proceſs; they even could not, without an expreſs order either from the ſenate or the people, exerciſe a right of devoting criminals to the infernal gods. It was in conſequence of a civil ſentence pronounced againſt Alcibiades, that the Eumolpidæ launched their anathema againſt him. It was in virtue of another decree that they revoked their imprecations, when his countrymen wanted his ſervice, and therefore reſtored him to their favour. In fact, the government, though often altered, continued pretty much on the plan eſtabliſhed by Solon.

The people of Athens were freemen, ſojourners, or ſlaves. The citizens, called in Greek *politai*, were very numerous; but what may ſeem ſtrange were as many in the time of Cecrops as in the moſt flouriſhing ſtate of the commonwealth, hardly ever exceeding 20,000. It was Solon who decreed that none ſhould be accounted free but ſuch as were Athenians both by father and mother. After his time it fell into diſuſe, till revived by Pericles, and again at his inſtance repealed. After the expulſion of the thirty tyrants, Solon's law was reſtored. A perſon born of a ſtranger was ſtyled *nothos*, a baſtard; whereas the ſon of a free woman was called *cneſios*, i. e. legitimate. There was in Cynoſarges a court of judicature, to which cauſes of illegitimacy properly belonged; and the utmoſt care was taken to prevent any from being inrolled Athenian citizens, who had not a clear title to that diſtinction. The citizens were divided by Cecrops into four tribes: the firſt called *Cecropes*, from Cecrops; the ſecond, *Autochthon*, from a king of that name; the third, *Actai*, from Acteus, another king of Athens, or rather from *Acte*, which ſignifies a *ſhore*; the fourth, *Puralia*: theſe names were altered by Cranaus, and again by Ericthonius. In the reign of Erictheus they were again changed; the ſoldiers were called *Oblitai*, the craftſmen *Ergatai*, the farmers *Georgoi*, the graziers and ſhepherds *Aigicorai*: in this ſtate they were when Solon ſettled the commonwealth, and appointed the ſenate to be compoſed of four hundred, one hundred out of each tribe. Clyſthenes increaſed the number of the tribes to ten: and made the ſenate conſiſt of five hundred, taking fifty out of each tribe. In ſucceeding times, two other tribes were added. Each tribe was ſubdivided into its *demoi* or wards; and with reſpect to theſe it was that Solon inſtituted the public feaſts before-mentioned, at which ſometimes the whole tribe aſſembled, ſometimes ſeveral wards, and ſometimes only the inhabitants of one ward.

The ſecond ſort of inhabitants were called *metoicoi*, i. e.

i. e. *ſojourners*; theſe were perſons who lived always at Athens, yet were not admitted free denizens; as for ſuch as did not conſtantly reſide at Athens, they were ſtyled *xenoi*, i. e. *ſtrangers*. The ſojourners were obliged to chooſe out of the citizens protectors, who were ſtyled *patrons*; they paid ſervices to the ſtate, and beſides theſe an annual tribute of twelve drachms for every man, and ſix for every woman; but ſuch as had ſons, and paid for them, were exempted. If people fell to poverty, and were not able to pay the tribute, they were ſeized by the tax-maſters, and actually ſold for ſlaves; which, as Diogenes Laertius tells us, was the fate of Xenocrates the philoſopher. The ſojourners in Attica were under the ſame law as thoſe in Athens. As to ſervants, they were freemen, who through indigency were driven to receive wages, and while they were in this ſtate had no vote in the aſſembly. As to ſlaves, they were abſolutely the property of their maſters, and as ſuch were uſed as they thought fit: they were forbidden to wear clothes, or to cut their hair like their maſters; and, which is indeed amazing, Solon prohibited them to love boys, as if that had been honourable; they were likewiſe debarred from anointing or perfuming themſelves, and from worſhipping certain deities: they were not allowed to be called by honourable names, and, in moſt other reſpects, were uſed like dogs. They ſtigmatized them at their pleaſure, that is, branded them with letters in the forehead and elſewhere. However, Theſeus's temple was allowed them as a ſanctuary, whither, if they were exceedingly ill uſed, they might fly, and thereby oblige their owners to let them be transferred to another maſter. In this, and many other reſpects, the Athenian ſlaves were in a much better condition than thoſe throughout the reſt of Greece: they were permitted to get eſtates for themſelves, giving a ſmall premium to their maſters, who were obliged to make them free if they could pay their ranſom; they likewiſe obtained the ſame favour from the kindneſs of their maſters, or for having rendered military ſervices to the ſtates. When they were made free, they were obliged to chooſe patrons; and had likewiſe the privilege of chooſing a curator, who, in caſe their patrons injured them, was bound to defend them.

The general aſſembly of the people, which Solon made the dernier reſort, was called the *eccleſia*, and conſiſted of all the freemen of Athens, excepting ſuch as were *atimoi*, or infamous. The meetings of theſe aſſemblies were either ordinary or extraordinary. The ordinary were ſuch as were appointed by law, the extraordinary ſuch as neceſſity required. Of the firſt there were four in thirty-five days. In the firſt aſſembly they approved or rejected magiſtrates, heard propoſals for the public good, and certain cauſes. In the ſecond they received petitions, and heard every man's judgment on the matters that were before them. In the third they gave audience to foreign ambaſſadors. The fourth was employed altogether on affairs relating to the gods and their worſhip. The extraordinary meetings were appointed by the magiſtrates when occaſion required, whereas to the ordinary aſſemblies the people came of their own accord. The firſt were held either in the market-place, in the pnyx, a place near the citadel, or in the theatre of Bacchus: as to the latter, the magiſtrates who appointed the extraordinary meetings appointed alſo the place where they ſhould be held. If any ſudden tempeſt roſe, or any earthquake happened, or any ſign notoriouſly inauſpicious appeared, the aſſembly was immediately adjourned, to prevent the people from apprehending unhappy conſequences from their deliberations. But, if the weather was fair and ſerene, and nothing happened out of the ordinary courſe of things, they proceeded to purify the place where the aſſembly was held, which was done by ſprinkling it round with the blood of young pigs; then the crier made a ſolemn prayer for the proſperity of the republic, and that heaven would beſtow a happy iſſue on their counſels and undertakings; he then pronounced a bitter execration againſt any who ſhould in that aſſembly propound what might be diſadvantageous to the ſtate. Theſe ceremonies being over, they proceeded to buſineſs. There were ſeveral magiſtrates who had the overſeeing and regulating theſe aſſemblies. Theſe were, firſt, the epiſtate, or preſident of the aſſembly, who was choſen by lot out of the proedri; his office was to give the ſignal for the people's voting. Next to him were the prytanes, i. e. a committee of the ſenate, who were of courſe preſent on this occaſion; by their order a programma, or ſcheme of the buſineſs to be propoſed at the aſſembly, was previouſly ſet up in ſome public place, that every man might know what buſineſs to apply his thoughts to. The proedri were nine in number, appointed by lots out of all the tribes to which the prytanes did not belong: they had the right of propoſing to the people what they were to deliberate upon, and their office ended with the aſſembly; there ſat with them aſſeſſors, who were to take care that nothing they propoſed was detrimental to the commonwealth. The firſt ſtep to buſineſs was the crier's reading the decree of the ſenate whereon the aſſembly was to deliberate; when he had finiſhed this, he made proclamation in theſe words: "Who of the men above fifty will make an oration?" When the old men had done ſpeaking, the crier made proclamation again that any Athenian might then offer his ſentiments, whom the law allowed ſo to do; that is, all ſuch as were above thirty years old, and were not infamous. If ſuch a one roſe up to ſpeak, the prytanes interpoſed, and bade him be ſilent; and, if he did not obey them, the lictors pulled him down by force. When the debates were over, the preſident permitted the people to vote; which they did by caſting firſt beans, but in aftertimes pebbles, into certain veſſels: theſe were counted, and then it was declared that the decree of the ſenate was either rejected or approved; after which, the prytanes diſmiſſed the aſſembly.

The ſenate was inſtituted by Solon, to prevent the dangerous conſequences of leaving the ſupreme power in the people. At the time of his inſtitution, it was to conſiſt of four hundred, as mentioned above, one hundred out of each tribe; it was increaſed to five hundred, when the tribes were augmented to ten; and, when they came to twelve, it was alſo ſwelled to ſix hundred. They were elected by lots after this manner: at a day appointed, towards the cloſe of the year, the preſident of each tribe gave in a liſt of ſuch perſons as were fit for and deſired to appear for this dignity: theſe names were engraven on tablets of braſs, and a number of beans equal to the number of the amount of them, among which were one hundred white ones, put into a veſſel; and then the names of the candidates and the beans were drawn one by one, and ſuch as were drawn by the white beans were received into the ſenate. After the ſenate was elected, they proceeded to appoint the officers who were to preſide in the ſenate; theſe were the prytanes before-mentioned, and they were elected thus: the names of the ten tribes were thrown into one veſſel, and nine black beans and a white one into another veſſel; then the names of the tribes were drawn with the beans. The tribe to which the white bean anſwered, preſided firſt; and the reſt according to the order in which they were drawn.

The prytanes, while the ſenate conſiſted of five hundred, were fifty in number. For the farther avoiding of confuſion, therefore, ten of theſe preſided a-week, during which ſpace they were called *proedri*; and out of theſe an epiſtate or preſident was choſen, whoſe office laſted but one day, and by law no man could hold it more than once: the reaſon of this was, that he had in his cuſtody the public ſeal, the keys of the citadel, and the charge of the exchequer. The reader muſt diſtinguiſh between the epiſtates and proedri laſt-mentioned, and thoſe ſpoken of in the former paragraph; becauſe, though their titles were the ſame, their offices were perfectly diſtinct. The ſenate aſſembled by direction of the prytanes once every day, excepting feſtivals, and ſometimes oftener, in the ſenate-houſe, which was thence called *prytaneum*.

When a member of the ſenate made a motion for a new law, it was immediately engraven on tablets, that the members when they came next might be prepared to ſpeak to it. At the ſubſequent aſſembly the epiſtates opened the matter, after which every ſenator that pleaſed delivered his ſentiments; then any of the prytaneans drew up the decree, and repeated it aloud: after which they proceeded to vote, and, if there was a majority of white beans, then it became *pſephiſma*, and was afterwards propounded to the people: if they approved it, it became a law; otherwiſe it was of no force longer than the ſenate who decreed it ſubſiſted. The power of the ſenate was very great: for they took the account of the magiſtrates at the expiration of their offices; they directed the proviſions made for poor citizens out of the public treaſure; they had the ſuperintendency of public priſons, and a power of puniſhing ſuch as committed acts morally evil, though not prohibited by any law; they had the care likewiſe of the fleet; and beſides all theſe they had many other branches of authority, which it is not neceſſary for us to mention. Before they took their ſeats, they were conſtrained to undergo a very ſtrict examination, wherein the whole courſe of their lives was inquired into; and, if the leaſt ſlur on their reputation appeared, they were ſet aſide. When this examination was over, they took an oath, whereby they bound themſelves to promote in all their counſels the public good, to adviſe nothing contrary to the laws, and to execute their functions exactly. The higheſt fine the ſenate could impoſe was 500 drachms; if they thought the offender deſerved a heavier mulct, they then tranſmitted the cauſe to the theſmothetæ, who puniſhed them as they thought fit. The ſenators, when their year was out, gave an account of their management to the people: but, that they might have the leſs to do, they always puniſhed ſuch of their number as they found had offended by expulſion; and in this they were mighty exact. Yet an expelled ſenator was notwithſtanding eligible to any other office, the moſt trivial omiſſion being ſufficient to occaſion a diſmiſſion from the ſenatorial dignity; and therefore, when the tribes choſe their ſenators, they alſo choſe a certain number of ſubſidiaries, out of which, when a ſenator was expelled, another was ſubſtituted in his place. Each ſenator was allowed a drachm every day; for it was a conſtant rule with the Athenians, that the public ought to pay for every man's time; and therefore ſuch of the poor Athenians as thought fit to demand it, had three oboli for going to the aſſembly. If during their adminiſtration any ſhips of war were built, the ſenators had crowns decreed them; but, if not, they were forbid to ſue for them. Next to the ſenate was the court of AREOPAGUS, for a deſcription of which ſee that article.

The chief magiſtrates of Athens were archons, and inferior to them there were many others; of whom it will be neceſſary to mention ſome. In the firſt place they had nomophylaces, who were alſo called *the eleven*, becauſe they were ſo many in number, one choſen out of each tribe, and a clerk or ſecretary who made up the eleventh. Their duty was to look to the execution of the laws: they had authority to ſeize robbers and other capital offenders; and, if they confeſſed, to put them to death. Dr. Potter thinks they reſembled our ſheriffs. The phylarchi were the preſidents of the Athenian tribes; but in time this became a military title. The philobaſelius was an officer in each tribe, who did the ſame things within his juriſdiction as the baſileus did with reſpect to the ſtate. The demarchi were the principal magiſtrates in wards. The lexarchi were ſix in number, and were bound to take care that the people came duly to the aſſemblies: in their cuſtody was the public regiſter of the citizens names. They had under them toxotæ, who were lictors or bailiffs; they were ſometimes 1000 in number; theſe men were neceſſary; but, like moſt of their ſort, were in a manner infamous, as may be gathered from the comedies of Ariſtophanes; they were generally Scythians, raw-boned brawny fellows, ready to execute whatever they were commanded. The nomothetæ were 1000 in number; their buſineſs was to watch over and inſpect into the laws. There were two ſorts of orators in the ſervice of the ſtate. Some were appointed to defend an old law, when a motion was made to repeal it; theſe had their fee from the ſtate, but the ſame man was incapable of being elected twice. Beſides theſe, there were ten ſettled orators called *rhetores*, elected by lot; their buſineſs was to plead public cauſes in the ſenate-houſe. For this they had their ſtated fees; and, with reſpect to their qualifications, the law ran thus: "Let no one be a public orator who hath ſtruck his parents, denied them maintainance, or ſhut them out of his doors; who hath refuſed to ſerve in the army; who hath thrown away his ſhield; who hath been addicted to lewd women, notoriouſly effeminate, or hath run out his patrimony. If any man who hath been guilty of theſe crimes dare to deliver an oration, let him be brought to trial on the ſpot. Let an orator have children lawfully begotten, and an eſtate within Attica; if in his oration he talks impertinently, makes idle repetitions, affects an unbecoming raillery, digreſſes from the point in queſtion, or, after the aſſembly is over, abuſes the preſident, let the proedri fine him fifty drachms; and, if that is not thought enough, let him be brought before the next aſſembly and fined again."

We ſhall conclude this draught of the Athenian government with an account of their courts of juſtice, which, excluſive of the areopagus, were ten in number; four had cogniſance of criminal and ſix of civil cauſes. Theſe ten courts were numbered with the ten firſt letters of the alphabet, and were thence ſtyed, *alpha*, *beta*, *gamma*, &c. When an Athenian was at leiſure to hear cauſes, he wrote his own name, that of his father, and the ward to which he belonged, upon a tablet; this he preſented to the theſmothetæ, who returned it again to him with another tablet, with the letter which fell to his lot; then he went to the crier of the court, who preſented him a ſceptre, and gave him admiſſion. When the cauſes were over, every judge went and delivered his ſceptre to the prytanes, and received a ſtated fee for every cauſe that was tried. But as this was intended only to compenſate their loſs of time, ſo that there might be no appearance of covetouſneſs, a man was forbid to ſit in two courts on the ſame day. The firſt criminal court after the areopagus was that of the *ephetæ*. It conſiſted of fifty-one members, all upwards of fifty-one years old. Draco gave it a very extenſive juriſdiction; but Solon took away from them the power of judging in any other cauſes than thoſe of manſlaughter, accidental killing, and lying in wait to deſtroy: the baſileus entered all cauſes in this court. The ſecond criminal court was called *delphinium*, becauſe it was held in the temple of Apollo Delphinius; it had cogniſance of ſuch murders as were confeſſed by the criminal, but at the ſame time juſtified under ſome pretence or other. The *prytaneum* was the third criminal court. It held plea of ſuch caſes where death enſued from inanimate things: cauſes were heard here with the ſame ſolemnity as in other courts; and, on judgment given, the thing, whatever it was, that had occaſioned the death of the man, was thrown out of the territory of Athens. The laſt criminal court was ſtyled *phreatum*. It ſat in a place not far from the ſea-ſhore; and ſuch perſons were brought before this court as had committed murders in their own country and fled to Attica: the proceedings of this court were ſo ſevere, that they did not permit the criminal to come on ſhore, but obliged him to plead his cauſe in his veſſel; and if he was found guilty, he was committed to the mercy of the winds and ſeas.

Of the judicatures for hearing civil cauſes, the firſt was the *parabaſton*, ſo called as ſome think, becauſe in it no matter could be heard if the cauſe of action was above one drachm. The *cænion*, or new court, was the ſecond tribunal. The third was ſtyled the *court of Lycus*, becauſe it aſſembled in a temple dedicated to that hero, whoſe ſtatue, repreſented with the face of a wolf, was ſet up in all courts of juſtice. The *trigonon* was ſo called, becauſe it was triangular in its form. The court *metidius* derived its appellation from the architect who built it. The ſixth and laſt court was called *heliæa*; it was by far the greateſt, and is generally conceived to have derived its name from the judges ſitting in the open air expoſed to the ſun. All the Athenians who were free citizens were allowed by law to ſit in theſe courts as judges; but before they took their ſeats were ſworn by Apollo Partius, Ceres, and Jupiter the king, that they would decide all things righteouſly and according to law, where there was any law to guide them; and by the rules of natural equity, where there was none. The helæaſtic court conſiſted at leaſt of fifty, but its uſual number was 500, judges; when cauſes of very great conſequence were to be tried, 1000 ſat therein; and now and then the judges were increaſed to 1500, and even to 2000. There were many inferior courts in Athens for the deciſion of trivial cauſes; but of theſe there is no neceſſity of ſpeaking, ſince we deſign no more than a ſuccinct view of the Athenian republic, as it was ſettled by and in conſequence of Solon's laws. For the preſent ſtate of the ancient and celebrated city of ATHENS, ſee that article; alſo Stuart's and Revett's Antiquities of Athens, 3 vols. folio.

ATTICUS (Titus Pomponius), one of the moſt honourable men of ancient Rome. He underſtood the art of managing himſelf with ſuch addreſs, that, without leaving his ſtate of neutrality, he preſerved the eſteem and affection of all parties. His ſtrict friendſhip with Cicero did not hinder him from having great intimacy with Hortenſius. The conteſts at Rome between Cinna's party and that of Marius induced him to go to Athens, where he continued for a long time. He was very fond of polite learning, and kept at his houſe ſeveral librarians and readers. He might have obtained the moſt conſiderable poſts in the government; but choſe rather not to meddle, becauſe in the corruption and faction which then prevailed he could not diſcharge them according to the laws. He wrote Annals. He married his daughter to Agrippa; and attained to the age of 77.

ATTIGNY, a town of France, and ſeat of a tribunal, in the department of Ardennes, two leagues north-weſt of Vouzieres, and ſix ſouth of Mezieres.

ATTILA, king of the Huns, ſurnamed *the ſcourge of God*, lived in the 5th century. He may be ranked among the greateſt conquerors, ſince there was ſcarcely any province in Europe which did not feel the weight of his victorious arms. He deduced his regal deſcent from the ancient Huns, who had formerly contended with the monarchs of China. His features, according to the obſervations of a Gothic hiſtorian, bore the ſtamp of his national origin; and the portrait of Attila exhibits the genuine deformity of a modern Calmuck; a large head, a ſwarthy complexion, ſmall deep-ſeated eyes, a flat noſe, a few hairs in the place of a beard, broad ſhoulders, and a ſhort ſquare body, of nervous ſtrength, though of a diſproportioned form. The haughty ſtep and demeanour of the king of the Huns expreſſed the conſciouſneſs of his ſuperiority above the reſt of mankind; and he had a cuſtom of fiercely rolling his eyes, as if he wiſhed to enjoy the terror which he inſpired. Yet this ſavage hero was not inacceſſible to pity; his ſuppliant enemies might confide in the aſſurance of peace or pardon; and Attila was conſidered by his ſubjects as a juſt and indulgent maſter. He delighted in war: but, after he had aſcended the throne in a mature age, his head, rather than his hand, atchieved the conqueſt of the north; and the fame of an adventurous ſoldier was uſefully exchanged for that of a prudent and ſucceſsful general. The effects of perſonal valour are ſo inconſiderable, except in poetry or romance, that victory, even among barbarians, muſt depend on the degree of ſkill with which the paſſions of the multitude are combined and guided for the ſervice of a ſingle man. The arts of Attila were ſkilfully adapted to the character of his age and country. It was natural enough, that the Scythians ſhould adore, with peculiar devotion, the god of war; but as they were incapable of forming either an abſtract idea, or a corporeal repreſentation, they worſhipped their tutelar deity under the ſymbol of an iron ſcimitar. One of the ſhepherds of the Huns perceived, that a heifer, who was grazing, had wounded herſelf in the foot; and curiouſly followed the track of the blood, till he diſcovered, among the long graſs, the point of an ancient ſword; which he dug out of the ground, and preſented to Attila. That artful prince accepted with pious gratitude this celeſtial favour; and, as the rightful poſſeſſor of the *ſword of Mars*, aſſerted his divine and indefeaſible claim to the dominion of the earth. If the rites of Scythia were practiſed on this ſolemn occaſion, a lofty altar, or rather pile of faggots, 300 yards in length and in breadth, was raiſed in a ſpacious plain; and the ſword of Mars was placed erect on the ſummit of this ruſtic altar, which was annually conſecrated by the blood of ſheep, horſes, and of the hundreth captive. Whether human ſacrifices formed any part of the worſhip of Attila, or whether he propitiated the god of war with the victims which he continually offered in the field of battle, the favourite of Mars ſoon acquired a ſacred character, which rendered his conqueſts more eaſy and more permanent; and the barbarian princes confeſſed, in the language of devotion or flattery, that they could not preſume to gaze with a ſteady eye on the divine majeſty of the king of the Huns. His brother Bleda, who reigned over a conſiderable part of the nation, was compelled to reſign his ſceptre and his life. Yet even this cruel act was attributed to a ſupernatural impulſe; and the vigour with which Attila wielded the ſword of Mars, convinced the world that it had been reſerved alone for his invincible arm. But the extent of his empire affords the only remaining evidence of the number and importance of his victories; and the Scythian monarch, however ignorant of the value of ſcience and philoſophy, might perhaps lament that his illiterate ſubjects were deſtitute of the art which could perpetuate the memory of his exploits.

If a line of ſeparation were drawn between the civilized and the ſavage climates of the globe; between the inhabitants of cities who cultivated the earth and the hunters and ſhepherds who dwelt in tents; Attila might aſpire to the title of ſupreme and ſole monarch of the barbarians. He alone, among the conquerors of ancient and modern times, united the two mighty kingdoms of Germany and Scythia; and thoſe vague appellations, when they are applied to his reign, may be underſtood with an extenſive latitude. Thuringia, which ſtretched byond its actual limits as far as the Danube, was in the number of his provinces: he interpoſed, with the weight of a powerful neighbour, in the domeſtic affairs of the Franks; and one of his lieutenants chaſtiſed, and almoſt exterminated, the Burgundians of the Rhine. He ſubdued the iſlands of the ocean, the kingdoms of Scandinavia, encompaſſed and divided by the waters of the Baltic; and the Huns might derive a tribute of furs from that northern region, which has been protected from all other conquerors by the ſeverity of the climate, and the courage of the natives. Towards the eaſt, it is difficult to circumſcribe the dominion of Attila over the Scythian deſerts; yet we may be aſſured, that he reigned on the banks of the Volga; that the king of the Huns was dreaded, not only as a warrior, but as a magician; that he inſulted and vanquiſhed the khan of the formidable Geougen; and that he ſent ambaſſadors to negociate an equal alliance with the empire of China. In the proud review of the nations who acknowledged the ſovereignty of Attila, and who never entertained during his lifetime the thought of a revolt; the Gepidæ and the Oſtrogoths were diſtinguiſhed by their numbers, their bravery, and the perſonal merit of their chiefs. The renowned Ardaric king of the Gepidæ was the faithful and ſagacious counſellor of the monarch; who eſteemed his intrepid genius, whilſt he loved the mild and diſcreet virtues of the noble Walimer king of the Oſtrogoths. The crowd of vulgar kings, the leaders of ſo many martial tribes, who ſerved under the ſtandard of Attila, were ranged in ſubmiſſive order of guards and domeſtics round the perſon of their maſter. They watched his nod; they trembled at his frown; and at the firſt ſignal of his will, they executed without murmur or heſitation his ſtern and abſolute commands. In time of peace, the dependent princes, with their national troops, attended the royal camp in regular ſucceſſion; but, when Attila collected his military force, he was able to bring into the field an army of ſeven hundred thouſand barbarians. For an account of his exploits and death, ſee the article Huns.

ATTI'LE, *ſ.* [*attilium, attilamentum.*] The rigging or furniture of a ſhip. *Fleta.* lib. i. c. 25.

To ATTIN'GE, *v. a.* [*attingo*, Lat.] To touch lightly or gently.

To ATTI'RE, *v. a.* [*attirer*, Fr.] To dreſs; to habit; to array.—With the linen mitre ſhall he be *attired. Lev.* xvi. 4.

Now the ſappy boughs
Attire themſelves with blooms. *Philips.*

Attire, *ſ.* Clothes; dreſs; habit.—It is no more diſgrace to Scripture to have left things free to be ordered by the church, than for nature to have left it to the wit of man to deviſe his own *attire. Hooker.*

Attire, In hunting, the horns of a buck or ſtag.—In botany, the flower of a plant is divided into three parts, the empalement, the foliation, and the *attire*, which is either florid or ſemiform. *Florid attire*, called thrums or ſuits, as in the flowers of marigold and tanſey, conſiſts ſometimes of two, but commonly of three, parts. The outer part is the floret, the body of which is divided at the top, like the cowſlip flower, into five diſtinct parts. *Semiform attire* conſiſts of two parts, the chives and apices; one upon each *attire.*

ATTI'RER, *ſ.* One that attires another; a dreſſer.

AT'TITUDE, *ſ.* [*attitude*, Fr. from *atto*, Ital.] The poſture or action in which a ſtatue or painted figure is placed.—They were famous originals that gave riſe to ſtatues, with the ſame air, poſture, and *attitudes. Addiſon.*

AT'TLEBOROUGH, a town of North America, in the ſtate of Maſſachuſetts, near which magnetic iron ore is found.

AT'TLEBURGH, an ancient town in the county of Norfolk, and, as hiſtory informs us, was originally a city, and the metropolis of the county. It lies on the great poſt road from London to Norwich, from which it is diſtant fifteen miles, and alſo fifteen from Thetford. It has a market weekly on Thurſdays: its fairs are the Thurſday before Eaſter, the Thurſday before Whitſunday, and the 15th of Aug. It is diſtant from London ninety-three miles.

ATT'NANG, a town of Germany, in the archduchy of Auſtria, one mile weſt-ſouth-weſt from Schwannaſtadt.

AT'TOCK, a city of Aſia, and capital of a province of the ſame name, at the conflux of a river of the ſame name with the Indus, there called the Nilab, 140 miles north-weſt of Lahore, and 158 north of Moultan. Lat. 32. 26. N. long. 70. 36. E. Greenwich.

Attock, a river of Aſia, which joins the Indus at the city of Attock.

ATTOL'LENS, *ſ.* In anatomy, an apellation given to ſeveral muſcles, otherwiſe called *levatores* and *elevatores.* See Anatomy.

ATTOL'LENT, *adj.* [*attollens*, Lat.] That which raiſes or lifts up.—I ſhall farther take notice of the exquiſite libration of the *attollent* and depriment muſcles. *Derham.*

ATTO'RE, a town of Hindoſtan, in the Myſore country, fifty-four miles north of Trichinopoly, and twenty-nine north-north-weſt of Rajanagur.

ATTORNA'RE Rem, *ſ.* In law to atturn or turn over money and goods, viz. to aſſign or appropriate them to ſome particular uſe and ſervice. *Kennet's Paroch. Antiq.* p. 283.

ATTORNA'TO Faciendo *vel* Recipiendo, a writ which a man who owes ſuit to a county, hundred, or other court, obtains to command the bailiff or ſheriff to admit him to appear in his behalf.

ATTOR'NEY, *ſ.* [*attornatus*, Lat. or of *ad* and *tour*, Fr. a turn, q. d. every man in his turn.] Is one that is appointed by another man to do any thing in his abſence. An attorney is either public, in the courts of record, the King's Bench and Common Pleas, &c. and made by warrant from his client; or private, upon occaſion for any particular buſineſs, who is commonly made by letter of attorney. In ancient times, thoſe of authority in courts had it in their power whether they would ſuffer men to appear or ſue by any other but themſelves: and the king's writs were to be obtained for the admiſſion of attornies: but ſince that, attornies have been allowed by ſeveral ſtatutes. Attornies may be made in ſuch pleas whereon appeal lieth not: in criminal caſes there will be no attornies admitted. See ſtat. Glouc. 6 Edw. I. ſtat. 1. c. 8. An infant ought not to appear by attorney, but by guardian, for he cannot make an attorney, but the court may aſſign him a guardian. 1 *Lill. Abr.* 138. Infants, after they come to full age, may ſue by attorney, though admitted before by guardian, &c. In action againſt baron and feme, the feme being within age, ſhe muſt appear by guardian; but, if they bring an action, the huſband ſhall make attorney for both. 1 *Danv. Abr.* 602. Where baron and feme are ſued, though the wife cannot make attorney, the huſband may do it for both of them. 2 *Sand.* 213. One *non compos mentis*, being within age, is to appear by guardian; but after he is of age he muſt do it by attorney. *Co. Lit.* 135. An ideot is not to appear by attorney, but in proper perſon. A corporation cannot appear otherwiſe than by attorney, who is made by deed under the ſeal of the corporation, *Plowd.* 91.

Attornies at law, are ſuch perſons as take upon them the buſineſs of other men, by whom they are retained. Before the ſtat. of Weſt. 2. c. 10. 13 Edw. I. A.D. 1285, all attornies were made by letters patent under the great ſeal, commanding the juſtices to admit the perſon to be his attorney. Theſe patents, where they were obtaind, ſeemed to have been inrolled by a proper officer, called the clerk of the warrants; and alſo the courts inrolled thoſe patents on which any proceedings were. If ſuch letters patent could not be obtained, the perſons were obliged to appear each day in court in their proper perſons. The ſaid ſtat. of Weſt. 2. c. 10, gives to all perſons a liberty of appearing, and appointing an attorney, as if they had letters patent; and therefore the clerk of the warrants received each perſon's warrant, and upon the warrant it equally appeared to the court, that he had appointed ſuch a one his attorney to the end of the cauſe, unleſs revoked; ſo that on each act there is no occaſion of the plaintiff's and defendant's preſence, as was uſed before that time. This authority continues till judgment, and for a year and a day, and afterwards to ſue out execution, and for a longer time, if they continue execution; but if not, the judgment is ſuppoſed to be ſatisfied; and to make it appear otherwiſe, the plantiff muſt again come into court, which he either does by a *ſcire fac'* or an action of debt on the judgment. *Gilb. H. C. P.* 33.

The attornies of *B. R.* are of record as well as the attornies of *C. B.* And it is now the common courſe for the plantiff and defendant to appear by attorney. But where the party ſtands in contempt, the court will not admit him by attorney, but oblige him to appear in perſon. Outlawry is excepted by ſtat. 4 and 5 Will. and Mary, c. 18, unleſs where the court orders ſpecial bail. By ſtat. 13 Will. III. c. 6, attornies are to take the oaths to government under penalties and diſability to practiſe. By ſtat. 1 Hen. V. c. 4, "no ſheriff, ſheriff's clerk, receiver, nor ſheriff's bailiff, ſhall be attorney in the king's courts during the time he is in office with any ſuch ſheriff." In Trinity Term 31 Geo. III. a rule of court was made to prevent the admiſſion of perſons under irregular articles of clerkſhip, &c. chiefly to prevent the clerks of attornies from acting as principals.

Parties to fines, as well demandant or plantiff as tenants or defendants, that will ackowledge their right of lands unto others in pleas of *warrantia chartæ, covenant, &c.* before the fines paſs, ſhall appear perſonally, ſo that their age, ideocy, or other default (if any be), may be diſcerned: provided that if any, by age, impotency, or caſualty, is not able to come into court, one of the juſtices ſhall go to

that

the party and receive his cognizance, and ſhall take with him a knight or man of good fame. Barons of the exchequer and juſtices ſhall not admit attornies, but in pleas that paſs before them, and where they be aſſigned. Reſerving to the chancellor his authority in admitting attornies, and to the chief juſtices. ſtat. 15 Edw. II. ſtat. 1.

In reſpect to the ſeveral courts, there are attornies at large, and attornies ſpecial belonging to this or that court only. An attorney may be ſolicitor in other courts, by a ſpecial retainer: one may be attorney on record, and another do the buſineſs; and there are attornies who manage buſineſs out of the courts, &c. Stat. 4. Hen. IV. c. 18, was enacted, that the juſtices ſhould examine attornies, and remove the unſkilful; and attornies ſhall ſwear to execute their offices truly, &c. and by ſtat. 33. Hen. VI. c. 7, the number of attornies in Norfolk and Suffolk were limited. By 3 Jac. I. c. 7, attornies, &c. ſhall not be allowed any fees laid out for counſel, or otherwiſe, unleſs they have tickets thereof ſigned by them that receive ſuch fees; and they ſhall give in true bills to their clients of all the charges of ſuits, under their hands, before the clients ſhall be charged with the payment thereof. If they delay their clients ſuit for gain, or demand more than their due fees and diſburſements, their clients ſhall recover coſts and treble damages; and they ſhall be for ever after diſabled to be attornies. None ſhall be admitted attornies in courts of record, but ſuch as have been brought up in the ſaid courts, or are well practiſed and ſkilled, and of an honeſt diſpoſition; and no attorney ſhall ſuffer any other to follow a ſuit in his name, on pain of forfeiting 20l. to be divided between the king and the party grieved. This ſtatute, as to fees to counſel, doth not extend to matters tranſacted in inferior courts, but only to ſuits in the courts of Weſtminſter Hall. *Carth.* 147. By the ſtat. 12 Geo. I. c. 29, if any who hath been convicted of forgery, perjury, ſubornation of perjury, or common barratry, ſhall practiſe as an attorney or ſolicitor in any ſuit or action in any court, the judge where ſuch action ſhall be brought hath power to tranſport the offender for ſeven years, by ſuch ways and under ſuch penalties as felons.

The act 2 Geo. II. c. 23, ordains, that all attornies ſhall be ſworn, admitted, and inrolled, before allowed to ſue out writs in the courts at Weſtminiſter; and after the firſt of December 1730, none ſhall be permitted to practiſe but ſuch as have ſerved a clerkſhip of five years to an attorney, and they ſhall be examined, ſworn, and admitted, in open court; and attornies ſhall have no more than two clerks at one time, &c. Every writ and copy of any proceſs ſerved on a defendant, and alſo every warrant made out thereon, ſhall be indorſed with the name of the attorney by whom ſued forth; and no attornies or ſolicitors ſhall commence any action for fees till a month after the delivery of their bills ſubſcribed with their hands; alſo the parties chargeable may in the mean time get ſuch bills taxed, and upon the taxation the ſum remaining due is to be paid in full of the ſaid bills, or in default the parties ſhall be liable to attachment, &c. And the attorney is to pay the coſts of taxation, if the bill be reduced a ſixth part. A penalty of 50l. inflicted, and diſability to practiſe, for acting contrary to this ſtatute.

By ſtat. 6 Geo. II. c. 27, attornies of the courts at Weſtminſter may practiſe in inferior courts. And by 12 Geo. II. c. 13, attornies, &c. that act in any county-court, without being admitted according to the ſtat. 2 Geo. II. c. 23, ſhall forfeit 20l. recoverable in the courts of record; and no attorney who is a priſoner in any priſon ſhall ſue out any writ, or proſecute ſuits; if he doth, the proceedings ſhall be void, and ſuch attorney is to be ſtruck off the roll. But ſuits commenced before by them may be carried on. A quaker ſerving a clerkſhip, and taking his ſolemn affirmation inſtead of an oath, ſhall be admitted an attorney. By ſtat. 22 Geo. II. c. 46, perſons bound clerks to attornies or ſolicitors are to cauſe affidavits to be made and filed of the execution of the articles, names and places of abode of attorney or ſolicitor, and clerk, and none to be admitted till the affidavits be produced and read in court; no attorney having diſcontinued buſineſs to take any clerk. Clerks are to ſerve actually during the whole time, and make affidavits thereof. Perſons admitted ſworn clerks in Chancery, or ſerving a clerkſhip to ſuch, may be admitted ſolicitors. By the ſtat. 23 Geo. II. c. 26, any perſon duly admitted a ſolicitor, may be admitted an attorney, without any fee for the oath, or any ſtamp to be impreſſed on the parchment, whereon his admiſſion ſhall be written, in the ſame manner as by ſtat. 2 Geo. II. c. 23. § 20, attornies may be admitted ſolicitors. By ſtat. 25 Geo. III. c. 80, every admitted attorney, ſolicitor, notary, proctor, agent, or procurator, ſhall annually take out a ſtamped certificate (with a 5l. ſtamp if within the bills of mortality, and 3l. if elſewhere), from the courts in which they practiſe, on penalty of 50l.

Attornies of courts, &c. ſhall not receive or procure any blank warrant for arreſts from any ſheriff, without writ firſt delivered, on pain of ſevere puniſhment, expulſion, &c. And no attorney ſhall make out a writ with a clauſe *ac etiam billæ*, &c. where ſpecial bail is not required by law. *Paſch.* 15 Car. II. Action upon the caſe lies for a client againſt his attorney, if he appear for him without a warrant; or if he plead a plea for him, for which he hath not his warrant. 1 *Lill. Abr.* 140. But if an attorney appear without a warrant, and judgment is had againſt his client, the judgment ſhall ſtand, if the attorney be reſponſible: *contra*, if the attorney be not reſponſible. 1 *Salk.* 88.

Action lies againſt an attorney for ſuffering judgment againſt his client by *nil dicit*, when he had given him a warrant to plead the general iſſue: this is underſtood where it is done by covin. 1 *Danv. Abr.* 185. If an attorney makes default in a plea of land, by which the party loſes his land, he many have a writ of deceipt againſt the the attorney and recover all in damages. An attorney owes to his client ſecrecy and diligence, as well as fidelity; and if he take reward on the other ſide, or cauſe an attorney to appear and confeſs the action, &c. he may be puniſhed. *Hob.* 9. But action lies not againſt an attorney retained in a ſuit, though he knows the plantiff hath no cauſe of action; he only acting as a ſervant in the way of his profeſſion. 4 *Inſt.* 117. 1 *Mod.* 209. Though, where an attorney or ſolicitor is found guilty of a groſs neglect, the court of Chancery has in ſome caſes ordered him to pay the coſts. 1 *P. Wms.* 593. He who is attorney at one time, is attorney at all times, pending the plea. 1 *Danv.* 609. And the plantiff or defendant may not change his attorney, while the ſuit is depending, without leave of the court, which would reflect on the credit of attornies; nor until his fees are paid. *Mich.* 14 *Car.* A cauſe is to proceed notwithſtanding the death of an attorney therein; and not be delayed on that account. For, if an attorney dieth, the plaintiff or defendant may be required to make a new attorney.

Attornies are liable to be puniſhed in a ſummary way, either by attachment, or having their names ſtruck out of the roll for ill practice, attended with fraud and corruption, and committed againſt the obvious rules of juſtice and common honeſty; but the court will not eaſily be prevailed on to proceed in this manner, if it appears, that the matter complained of was rather owing to neglect or accident than *deſign*; or if the party injured has other remedy by act of parliament, or action at law. 12 *Mod.* 251, 318, 440, 583, 657. If an attorney, defendant in action, does not appear in due time, plaintiff may ſign a *forejudger*, which enables him to ſtrike the defendant off the roll, and then he may be ſued as a common perſon, ſtat 2 Hen. IV. c. 8, and cannot be proceeded againſt by bill. On making ſatisfaction to the plantiff, an attorney ſo forejudged may be reſtored. See *Impey's Inſtructor Clericalis C. P.* 521. Sometimes attornies are ſtruck off the roll on their own application, for the purpoſe of being called to the bar, &c. and in this caſe they muſt be diſbarred by their inn, before they are re-admitted attornies. *Dougl.* 144.

An attorney convicted of felony is to be ſtruck off the roll. *Cowp.* 826. They are alſo liable to be puniſhed for baſe and unfair dealings towards their clients, in the way of buſineſs, as for protracting ſuits by little ſhifts and devices, and putting the parties to unneceſſary expence, in order to raiſe their bills; or demanding fees for buſineſs that was never done; or for refuſing to deliver up their client's writings with which they had been entruſted in the way of buſineſs; or money which has been recovered and received by them to their client's uſe, and for other ſuch like groſs and palpable abuſe. 2 *Hawk. P. C.* 144. 8 *Mod.* 306.

In a criminal caſe the attorney for defendant may be his bail. *Doug.* 467. Payment to the attorney, is payment to the principal. *Dougl.* 623. 1 *Black. R.* 8. An action lies againſt an attorney for neglecting to charge a perſon in execution at his client's ſuit, according to a rule of court; although it ſeems it was rather want of judgment than negligence, 3 *Wilſ.* 325. But the court will not proceed againſt him for it in a ſummary way. 4 *Burr.* 2060.

An attorney has a lien on the money recovered by his client, for his bill of coſts: if the money come to his hands, he may retain to the amount of his bill. He may ſtop it *in tranſitu* if he can lay hold of it; if he apply to the court, they will prevent its being paid over until his demand is ſatisfied. If the attorney give notice to the defendant not to pay till his bill be diſcharged, a payment by the defendant after ſuch notice, would be in his own wrong, and like paying a debt which has been aſſigned after notice. *Dougl.* 238.

The court, under circumſtances, will entertain a ſummary juriſdiction over an attorney, in obliging him to deliver up deeds, &c. on ſatisfaction of his lien, though they came into his hands as ſteward of a court and receiver of rents. See 1 *Salk.* 87. 1 *Lill.* 148. *Mod. Caſ. Law & Eq.* 306. the latter that an attorney cannot detain papers delivered to him on a ſpecal truſt for money due to him in that very buſineſs.

Attornies have the privilege to ſue and be ſued only in the courts at Weſtminſter where they practiſe: they are not obliged to put in ſpecial bail, when defendants; but when they are plantiffs, they may inſiſt upon ſpecial bail in all bailable caſes. 1 *Vent.* 299. *Wood's Inſt.* 450. But an attorney of one court may, in that court, hold an attorney of another court to bail. Attornies ſhall not be choſen into offices againſt their wills. See Privilege.

Attorney of the Duchy Court of Lancaster, is the ſecond officer in that court; and ſeems for his ſkill in law to be there placed as aſſeſſor to the chancellor, and choſen for ſome ſpecial truſt repoſed in him, to deal between the king and his tenants. *Cowel.*

Attorney-general, is a great officer under the king, made by letters patent. It is his place to exhibit informations, and proſecute for the crown, in matters criminal; and to file bills in the Exchequer, for any thing concerning the king's inheritance or revenue. The informations which he exhibits in matters criminal, are properly for ſuch enormous miſdemeanors as peculiarly tend to diſturb his majeſty's government, or to moleſt him in the regular diſcharge of his royal functions. For ſuch offenders, the law has given to the crown the power of an immediate proſecution, without waiting for any previous application to any other tribunal. 4 *Black.* 308. In caſe of miſapplication of charities, the attorney-general at the relation of ſome informant (who is uſually called the relator) files *ex officio* an information in the court of Chancery, to have the charity properly eſtabliſhed. 3 *Black.* 427. His proper place in court, upon any ſpecial matters of a criminal nature, wherein his attendance is required, is under the judges, on the left hand of the clerk of the crown: but this is only upon ſolemn and extraordinary occaſions; for uſually he does not ſit there, but within the bar in the face of the court.

To Attor'ney, *v. a.* To perform by proxy.—Their encounters, though not perſonal, have been royally *attornied* with interchange of gifts. *Shakeſpeare.*—To employ as a proxy.

As I was then
Advertiſing, and holy to your buſineſs
Nor changing heart with habit, I am ſtill
Attornied to your ſervice. *Shakeſpeare.*

ATTOR'NEYSHIP, *ſ.* The office of an attorney; proxy; vicarious agency.

But marriage is a matter of more worth,
Than to be dealt in by *attorneyſhip.* *Shakeſpeare.*

ATTORN'MENT, *ſ.* [*attornamentum*, Lat. from *tourner*, Fr. to turn from one to another.] Is the agreement of a tenant to the grant of a ſeigniory or a rent, or of the donee in tail or tenant for life or years, to the grant of a remainder or reverſion. 1 *Inſt.* 309. Attornment may be either by words, or writing: by words; as by ſaying, "I attorn to you by force of the ſaid grant," or, "I acknowledge myſelf your tenant." By writing; which may be indorſed on the deed, or ſet down in any other writing, which is the ſafeſt way. And in both caſes, the tenant may moreover deliver to the grantee a ſmall ſum of money by way of acknowlegement, that the witneſs may better remember it. The form of which ſaid attornment in writing may be this: "I A. B. do hereby agree to attorn and become tenant to C. D. of E. of and for the meſſuage and tenement now in my poſſeſſion, that is to ſay, lying and being in the pariſh of F. and county of G. and have given to the ſaid C. D. ſixpence in the name of attornment, and in part of rent. Witneſs my hand the — day of — in the year —."

The title of attornment was anciently a large and difficult title; but now attornments are not ſo much in uſe as formerly: for new expedients are found out by fines to uſes, by bargain and ſale, by leaſe and releaſe, and indented and inrolled. And by the 4 An. c. 16. all grants or conveyances, by fine or otherwiſe, of any manors or rents, or of the reverſion or remainder of any meſſuages or lands, ſhall be good and effectual without any attornment of the tenants; provided that no ſuch tenant ſhall be prejudiced by payment of rent to the grantor before notice given to him by the grantee. And by the 11 Geo. II. c. 29, attornment to ſtrangers claiming title to the land ſhall be void; and the poſſeſſion of the landlord ſhall not be altered thereby: provided, that this ſhall not affect any attornment made in purſuance of a judgment at law or decree in equity, or made with conſent of the landlord, or to any mortgagee after the mortgage is become forfeited. Till the paſſing of theſe ſtatutes, the doctrine of attornment was one of the moſt copious and abſtruſe points of the law. But, theſe acts having made attornment both unneceſſary and inoperative, the learning upon it may be ſaid to have become near entirely uſeleſs. See 1 *Inſt.* 309.

To ATTRACT', *v. a.* [*attraho, attractum*, Lat.] To draw to ſomething.

The ſingle atoms each to other tend,
Attract, attracted to, the next in place
Form'd and impell'd its neighbour to embrace. *Pope.*

To allure; to invite.

Deign to be lov'd, and ev'ry heart ſubdue!
What nymph could e'er *attract* ſuch crowds as you? *Pope.*

Attract, *ſ.* Attraction; the power of drawing: *not in uſe.*

Feel darts and charms, *attracts* and flames,
And woo and contract in their names. *Hudibras.*

ATTRACTI'CAL, *adj.* Having the power to draw to it.—Some ſtones are endued with an electrical or *attractical* virtue. *Ray.*

ATTRAC'TION, *ſ.* The power of drawing any thing; the power of alluring or enticing.—Setting the *attraction* of my good parts aſide, I have no other charms. *Shakeſp.*

Attraction, in natural philoſophy, is a general term uſed to denote the cauſe by which bodies mutually tend towards each other, and cohere till ſeparated by ſome other power. The laws, phenomenon, &c. of attraction, form the chief ſubject of Sir Iſaac Newton's philoſophy, being the principal agent of nature, in almoſt all her operations.

The principle of attraction, in the Newtonian ſenſe, was firſt ſurmiſed by Copernicus. "As for gravity, ſays he, I conſider it as nothing more than a certain natural appetence (*appetentia*) that the Creator has impreſſed upon all the parts of matter, in order to their uniting and coaleſcing into a globular form, for their better preſervation; and it is probable that the ſame power is alſo inherent in the ſun and moon, and planets, that thoſe bodies may conſtantly retain that round form in which we ſee them." *De Revol. Orb. Cœleſt.* lib. i. c. 9. Kepler calls gravity a corporeal and mutual affection between ſimilar bodies, in order to their union. *Aſt. Nov. in Introd.* And he pronounced more poſitively that no bodies whatever were abſolutely light, but only relatively ſo; and conſequently that all matter was ſubjected to the power and law of gravitation.

The firſt in this country who adopted the notion of attraction, was Dr. Gilbert in his book *De Magnete*; and the next was the celebrated lord Bacon, in his *Nov. Organ.* lib. ii. aphor. 36, 45, 48. *Silv.* cent. i. exp. 33; alſo in his treatiſe *De Motu*, particularly under the article of the 9th and 13th ſorts of Motion. In France it was received by Fermat and Soberval; and in Italy by Galileo and Borelli. But, till Newton appeared, this principle was very imperfectly defined and applied.

It muſt be obſerved, that though this great author makes uſe of the word *attraction*, in common with the ſchool philoſophers, yet he very ſtudiouſly diſtinguiſhes between the ideas. The ancient attraction was conceived to be a kind of quality inherent in certain bodies themſelves, and ariſing from their particular or ſpecific forms. But the Newtonian attraction is a more indefinite principle; denoting not any particular kind or mode of action; nor the phyſical cauſe of ſuch action; but only a general tendency, a *conatus accedendi*, to whatever cauſe, phyſical or metaphyſical, ſuch effect be owing; whether to a power inherent in the bodies themſelves, or to the impulſe of an external agent. Accordingly, that author remarks, in his *Philoſ. Nat. Prin. Math.* "that he uſes the words *attraction, impulſe*, and *propenſion*, to the centre, indifferently; and cautions the reader not to imagine that by attraction he expreſſes the modus of the action, or its efficient cauſe, as if there were any proper powers in the centres, which in reality are only mathematical points; or as if centres could attract." Lib. i. p. 5. So, he "conſiders centripetal powers as attractions, though, phyſically ſpeaking, it were perhaps more juſt to call them impulſes. Ib. p. 147. He adds, "that what he calls attraction may poſſibly be effected by impulſe, though not a common or corporeal impulſe, or after ſome other manner unknown to us."

Attraction, if conſidered as a quality ariſing from the ſpecific forms of bodies, ought, together with ſympathy, antipathy, and the whole tribe of occult qualities, to be exploded. But, when theſe are ſet aſide, there will remain innumerable phenomena of nature, and particularly the gravity or weight of bodies, or their tendency to a centre, that argue a principle of action ſeemingly diſtinct from impulſe; where, at leaſt, there is no ſenſible impulſion concerned. Nay, what is more, this action, in ſome reſpects, differs from all impulſion we know of; impulſe being always found to act in proportion to the ſurfaces of bodies; whereas gravity acts according to their ſolid content, and conſequently it muſt ariſe from ſome cauſe that penetrates or pervades the whole ſubſtance of it. This unknown principle, unknown we mean in reſpect of its cauſe, for its phenomena and effects are moſt obvious, with all its ſpecies and modifications, is called *attraction*; being a general name, under which may be ranged all mutual tendencies, where no phyſical impulſe appears, and which conſequently cannot be accounted for upon any known laws of nature. And hence ariſe divers particular kinds of attraction; as *gravity, magnetiſm, electricity, &c.* which are ſo many different principles, acting by different laws; and only agreeing in this, that we do not perceive any phyſical cauſes of them: but that, as to our ſenſes, they may really ariſe from ſome power or efficacy in ſuch bodies, by which they are enabled to act even upon diſtant bodies; though our reaſon abſolutely diſallows of any ſuch action.

Attraction may be divided, with reſpect to the law it obſerves, into two kinds. 1. That which extends to a ſenſible diſtance. As the attraction of gravity, which is found in all bodies; and the attraction of magnetiſm and electricity, found only in particular bodies. The ſeveral laws and phenomena of each, ſee under thoſe reſpective articles.

The attraction of gravity, called alſo among mathematicians the *centripetal force*, is one of the greateſt and moſt univerſal principles of all nature. We ſee and feel it operate on bodies near the earth, and find by obervation that the ſame power (i. e. a power which acts in the ſame manner, and by the ſame rules, viz. always proportionally to the quantities of matter, and inverſely as the ſquares of the diſtances) does alſo obtain in the moon, and the other planets, both primary and ſecondary, as well as in the comets; and even that this is the very power by which they are all retained in their orbits. And hence, as gravity is found in all the bodies which come under our obſervation, it is eaſily inferred, by one of the eſtabliſhed rules of philoſophizing, that it obtains in all others. And ſince it is found to be proportional to the quantity of matter in any body, it muſt in every particle of it: and hence it is proved that every particle in nature attracts every other particle. From this attraction ariſes all the motion, and conſequently all the mutation, in the great world. By this heavy bodies deſcend, and light ones aſcend: by this projectiles are directed, vapours and exhalations riſe, and rains fall: by this rivers glide, the ocean ſwells, the air preſſes, &c. In ſhort, the motions and forces ariſing from this principle, conſtitute the ſubject of that extenſive branch of mathematics, called *mechanics* or *ſtatics*, with the parts or appendages of it, as hydroſtatics, pneumatics, hydraulics, &c.

2. That which does not extend to ſenſible diſtances. Such is found to obtain in the minute particles of which bodies are compoſed, attracting each other at or extremely near the point of contact, with forces often much ſuperior to that of gravity, but which at any diſtance decreaſe much faſter than the power of gravity. This power a late ingenious author calls the *attraction of coheſion*, as being that by which the atoms or inſenſible particles of bodies are united into ſenſible maſſes. This kind of attraction owns Sir Iſaac Newton for its diſcoverer; as the former does for its improver. The laws of motion, percuſſion, &c. in ſenſible bodies, under various circumſtances, as falling, projected, &c. aſcertained by the later philoſophers, do not reach thoſe more recluſe inteſtine motions, in the component particles of the ſame bodies, on which depend the changes in the texture, colour, properties, &c. of bodies. So that our philoſophy, if it were only founded on the principle of gravitation, and even carried as far as this would lead us, would ſtill be very deficient. But, beſides the common laws of ſenſible maſſes, the minute parts they are compoſed of are found ſubject to ſome others, which have but lately been noticed, and are even yet imperfectly known. Newton himſelf, to whoſe happy penetration we owe the hint, limits himſelf with eſtabliſhing that there are ſuch motions in the *minima naturæ*, and that they flow from certain powers or forces, not reducible to any of thoſe in the great world. He ſhews that, by virtue of theſe powers, "the ſmall particles act on one another even at a diſtance; and that many of the phenomena of nature reſult from it. Senſible bodies, we have already obſerved, act on one another divers ways; and, as we thus perceive the tenor and courſe of nature, it appears highly probable that there may be other powers of the like kind; nature being very uniform

form and confiſtent with herſelf. Thoſe juſt mentioned, reach to ſenſible diſtances, and ſo have been obſerved by vulgar eyes; but there may be others which reach to ſuch ſmall diſtances as have hitherto eſcaped obſervation; and it is probable electricity may reach to ſuch diſtances, even without being excited by friction."

Sir Iſaac Newton proceeds to confirm the reality of theſe ſuſpicions from a great number of phenomena and experiments, which plainly argue ſuch powers and actions between the particles, for example, of ſalts and water, oil of vitriol and water, aquafortis and iron, ſpirit of vitriol and ſaltpetre. He alſo ſhews, that theſe powers are unequally ſtrong between different bodies; ſtronger, for inſtance, between the particles of ſalt of tartar and thoſe of aquafortis than thoſe of ſilver, between aquafortis and lapis calaminaris than iron, between iron than copper, and copper than ſilver or mercury. So ſpirit of vitriol acts on water, but more on iron or copper. And the other experiments are innumerable which countenance the exiſtence of ſuch principle of attraction in the particles of matter. Theſe actions, by virtue of which the particles of the bodies above-mentioned tend towards each other, are called by the general indefinite name, *attraction*; a name equally applicable to all actions by which bodies tend towards one another, whether by impulſe, or by any other more latent power: and from hence he accounts for an infinity of phenomena, otherwiſe inexplicable, to which the principle of gravity is inadequate. Thus, adds Sir Iſaac, "will nature be found very conformable to herſelf, and very ſimple; performing all the great motions of the heavenly bodies by the attraction of gravity, which intercedes thoſe bodies, and almoſt all the ſmall ones of their parts, by ſome other attractive power diffuſed through their particles. Without ſuch principles, there never would have been any motion in the world; and without the continuance of it, motion would ſoon periſh, there being otherwiſe a great decreaſe or diminution of it, which is only ſupplied by theſe active principles."

It need not be ſaid how unjuſt it is to declare againſt a principle which furniſhes ſo beautiful a view, for no other reaſon but becauſe we cannot conceive how one body ſhould act on another at a diſtance. It is indeed true, that philoſophy allows of no action but what is by immediate contact and impulſion; for how can a body exert any active power where it does not exiſt? yet we ſee effects, without perceiving any ſuch impulſe; and, where effects are obſerved, there muſt exiſt cauſes, whether we ſee them or not. But we may contemplate ſuch effects, without entering into the conſideration of the cauſes, as indeed it ſeems the buſineſs of a philoſopher to do: for to exclude a number of phenomena which we do ſee, would be to leave a great chaſm in the hiſtory of nature; and to argue about actions which we do not ſee, would be to raiſe caſtles in the air. It follows therefore, that the phenomena of attraction are matter of phyſical conſideration, and as ſuch intitled to a ſhare in the ſyſtem of phyſics; but that their cauſes will only become ſo when they become ſenſible, that is, when they appear to be the effect of ſome other higher cauſes; for a cauſe is no otherwiſe ſeen than as itſelf is an effect, ſo that the firſt cauſe muſt needs be always inviſible: we are therefore at liberty to ſuppoſe the cauſes of attractions what we pleaſe, without any injury to the effects. The illuſtrious author himſelf ſeems to be a little indetermined as to the cauſes; inclining ſometimes to attribute gravity to the action of an immaterial cauſe (Optics, p. 343, &c.) and ſometimes to that of a material one. Ib. p. 325.

In his philoſophy, the reſearch into cauſes is the laſt thing, and never comes under conſideration till the laws and phenomena of the effect be ſettled; it being to theſe phenomena that the cauſe is to be accommodated. The cauſe even of any, the groſſeſt and moſt ſenſible, action, is not adequately known. How impulſe or percuſſion itſelf produces its effects, that is how motion is communicated from body to body, confounds the deepeſt philoſophers; yet is impulſe received not only into philoſophy, but into mathematics: and accordingly the laws and phenomena of its effects make the chief part of common mechanics. The other ſpecies of attraction, therefore, in which no impulſe is obſervable, when their phenomena are ſufficiently aſcertained, have the ſame title to be promoted from phyſicial to mathematical conſideration; and this without any previous inquiry into their cauſes, to which our conceptions may not be proportionate.

This great philoſopher then, far from adulterating ſcience with any thing foreign or metaphyſical, as many have reproached him with doing, has the glory of having thrown every thing of this kind out of his ſyſtem, and of having opened a new ſource of ſublimer mechanics, which, duly cultivated, might be of far greater extent than all the mechanics yet known. Hence it is alone that we muſt expect to learn the manner of the changes, productions, generations, corruptions, &c. of natural things; with all that ſcene of wonders opened to us by the operations of chemiſtry. Some of our countrymen have proſecuted the diſcovery with laudable zeal. Dr. Keil particularly has endeavoured to deduce ſome of the laws of this new action, and applied them in reſolving ſeveral of the more general phenomena of matter, as coheſion, fluidity, elaſticity, ſoftneſs, fermentation, coagulation, &c. and Dr. Friend, ſeconding his endeavours, has made a farther application of the ſame principles, at once to account for almoſt all the phenomena that chemiſtry preſents. So that ſome philoſophers are inclined to think that the new mechanics ſhould ſeem already raiſed to a complete ſcience, and that nothing now can occur but what we have an immediate ſolution of, from the principles of attractive forces. But this ſeems a little too precipitate: a principle ſo fertile ſhould have been farther explained; its particular laws, limits, &c. more induſtriouſly detected and laid down, before we had proceeded to the application. Attraction in the groſs is ſo complex a thing, that it may ſolve a thouſand different phenomena alike. The notion is but one degree more ſimple and preciſe than action itſelf; and, till its properties are more fully aſcertained, it were better to apply it leſs, and ſtudy it more. It may be added, that ſome of Sir Iſaac Newton's followers have been charged with falling into that error which he induſtriouſly avoided, viz. of conſidering attraction as a cauſe or active property in bodies, not merely as a phenomenon or effect. For the laws, properties, &c. of the different ſorts of attraction, ſee CHEMISTRY, COHESION, GRAVITY, MAGNETISM, &c.

ATTRACTION (centre of). See CENTRE of ATTRACTION.

ATTRACTION of MOUNTAINS. See MOUNTAIN.

ATTRAC'TIVE, *adj.* Having power to draw any thing.

What if the ſun
Be centre to the world; and other ſtars,
By his *attractive* virtue, and their own,
Incited, dance about him various rounds? *Milton.*

Bodies act by the attractions of gravity, magnetiſm, and electricity; and theſe inſtances make it not improbable but there may be more *attractive* powers than theſe. *Newton.*—Inviting; alluring; enticing.

Happy is Hermia, whereſoe'er ſhe lies;
For ſhe hath bleſſed and *attractive* eyes. *Shakeſpeare.*

ATTRACTIVE, *ſ.* That which draws or incites; allurement: except that *attractive* is of a good or indifferent ſenſe, and *allurement* generally bad.—The condition of a ſervant ſtaves him off to a diſtance; but the goſpel ſpeaks nothing but *attractives* and invitation. *South.*

ATTRAC'TIVELY, *adv.* With the power of attracting or drawing.

ATTRAC'TIVENESS, *ſ.* Quality of being attractive.

ATTRAC'TOR, *ſ.* The agent that attracts; a drawer.—If the ſtraws be in oil, amber draweth them not; oil makes the ſtraws to adhere ſo, that they cannot riſe unto the *attractor*. *Brown.*

ATTRA'HENT, *ſ.* [*attrahens*, Fr.] That which draws. —Our eyes will inform us of the motion of the ſteel to its *attrahent. Glanville.*

ATTRECTA'TION, *ſ.* [*attrectatio*, Lat.] Frequent handling.

ATTRI'BUTABLE, *adj.* [*attribuo*, Lat.] That which may be aſcribed or attributed; aſcribable; imputable.—Much of the origination of the Americans ſeems to be *attributable* to the migrations of the Seres. *Hale.*

To ATTRI'BUTE, *v. a.* [*attribuo*, Lat.] To aſcribe; to give; to yield as due.—We *attribute* nothing to God that hath any repugnancy or contradiction in it. Power and wiſdom have no repugnancy in them. *Tillotſon.*—To impute, as to a cauſe.—The imperfection of teleſcopes is *attributed* to ſpherical glaſſes; and mathematicians have propounded to figure them by the conical ſections. *Newton.*

At'tribute, *ſ.* The thing attributed to another, as perfection to the Supreme Being.—Power, light, virtue, wiſdom, and goodneſs, being all but *attributes* of one ſimple eſſence, and of one God, we in all admire, and in part diſcern. *Raleigh.*—All the perfections of God are called his *attributes*; for he cannot be without them. *Watts.*—Quality; characteriſtic diſpoſition.—They muſt have theſe three *attributes*; they muſt be men of courage, fearing God, and hating covetouſneſs. *Bacon.*—A thing belonging to another; an appendant; adherent.—The ſculptor, to diſtinguiſh him, gave him what the medalliſts call his proper *attributes*, a ſpear and a ſhield. *Addiſon.*

His ſceptre ſhews the force of temporal pow'r,
The *attribute* to awe and majeſty:
But mercy is above this ſcepter'd ſway,
It is an attribute to God himſelf. *Shakeſpeare.*

ATTRI'BUTES, *ſ.* in logic, are the predicates of any ſubject, or what may be affirmed or denied of any thing.

Attributes, in painting and and ſculpture, are ſymbols added to ſeveral figures, to intimate their particular office and character. Thus the eagle is an attribute of Jupiter; a peacock, of Juno; a caduce, of Mercury; a club, of Hercules; and a palm, of Victory.

ATTRIBU'TION, *ſ.* Commendation; qualities aſcribed:

If ſpeaking truth,
In this fine age, were not thought flattery,
Such *attribution* ſhould the Douglas have,
As not a ſoldier of this ſeaſon's ſtamp
Should go ſo general current thro' the world. *Shakeſpeare.*

ATTRI'BUTIVES, *ſ.* in grammar, are words which are ſignificant of attributes; and thus include adjectives, verbs, and particles, which are attributes of ſubſtances; and adverbs, which denote the attributes only of attributes. Mr. Harris, who has introduced this diſtribution of words, denominates the former *attributives of the firſt order*, and the latter *attributives of the ſecond order.*

ATTRI'TE, *adj.* [*attritus*, Lat.] Ground; worn by rubbing:

Or, by colliſion of two bodies, grind
The air *attrite* to fire. *Milton*

ATTRI'TENESS, *ſ.* The being much worn.

ATTRI'TION, *ſ.* [*attritio*, Lat.] The act of wearing things, by rubbing one againſt another.—The change of the aliment is effected by *attrition* of the inward ſtomach, and diſſolvent liquor aſſiſted with heat. *Arbuthnot.*—The ſtate of being worn. With divines, it ſignifies grief for ſin, ariſing only from the fear of puniſhment; the loweſt degree of repentance.

ATTS'MANZDORF, a town of Germany, in the circle of the Lower Rhine, four miles eaſt of Erfurt.

To ATTU'NE, *v. a.* [from *tune.*] To make any thing muſical. To tune one thing to another; as, He *attunes* his voice to the harp.

ATTU'IE, a town of Arabia, ſeventy-ſix miles weſt-ſouth-weſt of Saade.

ATUED', or Atuet', a town of Sweden, in Eaſt Gothland, with ſome good mines in the neighbourhood: ſix leagues ſouth-eaſt of Lindkoping.

ATUM-XAU'XA, a town of South America, in the country of Peru, and the capital of a juriſdiction, to which it gives name. The land is fertile in grain and fruit, and watered by a river called Xauxa, on the banks of which are excellent paſtures and meadows, which nouriſh a great number of cattle. The commerce is conſiderable for its fertility, its ſilver-mines, the induſtry of its inhabitants, and its ſituation; lying in the road of communication between the maritime provinces with Cuſco, Paz, la Plata, &c. forty leagues eaſt of Lima.

ATUNCAGNAR', a village of South America, in Terra Firma, and juriſdiction of Cuença, famous for its fertility, and the treaſures ſuppoſed to be buried in the earth. One of the incas is ſaid to have built there a magnificent temple, whoſe walls were covered with gold, which was carried off and hidden; and we are told that remains of temples, a palace, and a fortreſs, are yet viſible.

ATU'RÆ, an ancient town in the diſtrict of Novempopulana in Aquitania, on the river Aturus; now *Aire* in Gaſcony, on the Adour.

ATU'RI, a town of European Turkey, in Beſſarabia, twenty-two miles ſouth of Bender.

ATWEE'N, *adv.* or *prep.* Betwixt; between; in the midſt of two things. *Obſolete:*

Her looſe long yellow locks, like golden wire,
Sprinkled with pearl, and perling flowers *atween*,
Do, like a golden mantle, her attire. *Spenſer.*

ATWIXT', *prep.* In the middle of two things. *Obſolete.*

A'TYPUS, *ſ.* [from α priv. and τυπος, form.] Irregular in its periods; deformed in its parts.

A'TYS, in fabulous antiquity, a young beautiful Phrygian, beloved by Cybele, who made him her prieſt, on condition that he ſhould live chaſte; but breaking his vow, by an amour with a nymph of the Sangaris, ſhe made him run mad and caſtrate himſelf. The goddeſs afterward changed him into a pine.

AU, a town of Germany, in the archduchy of Auſtria, ſix miles north of Gemunden.

Au, a town of Germany, in Lower Bavaria, twelve miles north-weſt of Moſburg.

A'VA, a river of Aſia, called alſo *Menaukiou*, which riſes in the mountains of Thibet, and runs into the gulf of Bengal by abundance of mouths or divided ſtreams, about lat. 16. 0. N.

Ava, a city of Aſia, and capital of Ava, or Burmah, on a river of the ſame name, 520 miles eaſt of Calcutta, and 276 eaſt-north-eaſt of Aracan. Lat. 21. 46. N. lon. 97. 45. E. Greenwich.

Ava, or Burmah, a country of Aſia, which lies between India and China: but little known. The air is ſaid to be healthy, the climate temperate, and the ſoil rich: there are mines of copper, lead, and ſilver: the articles of commerce are aloes, muſk, benzoin, ſpices, varniſh, canes, turquoiſes, emeralds, ſaphires, rubies, &c. The religion is Paganiſm; with a few Mahometans, and a few Chriſtians.

Ava, *ſ.* a drink, ſo called by the inhabitants of Otaheite, in the South Sea. It is drunk very freely by the chiefs and other conſiderable perſons, who vie with each other in taking the greateſt number of draughts, each draught being about a pint; but it is carefully kept from their women.

AVADOU'TAS, a ſect of Indian bramins, who in auſterity ſurpaſs all the reſt. The other ſects retain earthen veſſels for holding their proviſions, and a ſtick to lean on; but none of theſe are uſed by the Avadoutas. They only cover their nakedneſs with a piece of cloth; and ſome of them lay even that aſide, and go ſtark naked, beſmearing their bodies with cow-dung. When hungry, ſome go into houſes, and, without ſpeaking, hold out their hand; eating on the ſpot whatever is given them. Others retire to the ſides of holy rivers, and there expect the peaſants to bring them proviſions, which they generally do very liberally.

A'VAGE, or A'visage, *ſ.* A rent or payment by tenants of the manor of Writtle in Eſſex, upon St. Leonard's day, November 6, for the privilege of pannage in the lord's woods, viz. for every pig under a year old, an halfpenny; for every yearly pig, one penny; and for every hog above a year old, two-pence. *Blount.*

To AVAIL', *v. a.* [from *valoir*, Fr. *to avail* being nearly the ſame thing with *faire valoir*.] To profit; to turn to profit: with *of* before the thing uſed.—Both of them *avail* themſelves *of* thoſe licences, which Apollo has equally beſtowed on them. *Dryden.*—To promote; to proſper; to aſſiſt:

Mean time he voyag'd to explore the will
Of Jove, on high Dodona's holy hill,
What means might beſt his ſafe return *avail.* *Pope.*

To Avail, *v. n.* To be of uſe; to be of advantage.—When real merit is wanting, it *avails* nothing to have been encouraged by the great. *Pope.*

Avail, *ſ.* Profit; advantage; benefit.—Truth, light upon this way, is of no more *avail* to us than error. *Locke.*

AVAIL'ABLE, *adj.* Profitable; advantageous.—All things ſubject to action the will does ſo far incline unto, as reaſon judges them more *available* to our bliſs. *Hooker.*—Powerful; in force; valid.—Laws human are *available* by conſent. *Hooker.*

AVAIL'ABLENESS, *ſ.* Power of promoting the end for which it is uſed.—We differ from that ſuppoſition of the efficacy, or *availableneſs*, or ſuitableneſs, of theſe to the end. *Hale.*—Legal force; validity.

AVAIL'ABLY, *adv.* Powerfully; profitably; advantageouſly. Legally; validly.

AVAI'LLE, a town of France, in the department of the Vienne, and chief place of a canton, in the diſtrict of Civray: five leagues eaſt of Civray, and ſix and and a half ſouth-ſouth-weſt of Montmorillon.

AVAIL'MENT, *ſ.* Uſefulneſs; advantage; profit.

AVAL', an iſland in the gulf of Perſia, the largeſt among the cluſter called *Bahhrein*, famous for its pearl fiſhery. It contains, beſides the fortified town of Bahhrein, about ſixty poor villages.

AVALAN'CHES, *ſ.* a name given to prodigious ſnowballs that frequently roll down the mountains in Savoy, particularly mount Blanc, to the extreme danger of ſuch adventurous travellers as attempt to aſcend thoſe ſtupendous heights. Some of the avalanches are about 200 feet diameter; being fragments of the ice-rocks which break by their own weight from the tops of the precipices. See *Mount* Blanc.

A'VALAS, a town of Servia, twelve miles ſouth of Belgrade.

To AVA'LE, *v. a.* [*avaler*, Fr. to let ſink.] To let fall; to depreſs; to make abject; to ſink. *Not in uſe:*

By that th' exalted Phœbus 'gan *avale*
His weary wain, and now the froſty night
Her mantle black through heav'n 'gan overhale. *Spenſer.*

To Avale, *v. n.* To ſink:

But, when this latter ebb 'gins to *avale*,
Huge heaps of mud he leaves. *Spenſer.*

AVALLON', a town of France, in the department of the Yonne, and principal place of a diſtrict, ſituated on the river Couſin. It is a town of conſiderable trade in grain, wine, and cattle; with a cloth manufactory. The town is twenty-three miles ſouth-ſouth-weſt of Auxerre, and fifty ſouth of Troyes. Lat. 47. 29. N. lon. 21. 35. E.

AVANASHE'E, a well-built town of Hindoſtan, with a ſmall yet ſtately pagoda, about one hundred and fifty feet in height. A ſtaircaſe incapable of admitting two men abreaſt, or even one bulky perſon, winds to its top; and, as innumerable ſwarms of bats fly about in every direction, the aſcent is no leſs offenſive than dangerous to the ſight. A ſubſtantial wall, twelve feet high, ſurrounds the pagoda. Three well-built ſwamy-houſes, or temples, with arched roofs, and doors at one end, ſtand in the encloſure; and, at no conſiderable diſtance, ſeveral braſs and copper images. In the front of this building ſtands an obeliſk, forty-five feet high, on the top of which there is a lamp that is lighted on certain feſtivals. In the neareſt ſtreet ſtand two unweildy carriages; and each of them ſupports a huge and irregular frame of teakwood, on which are carved figures of the moſt diſguſting appearance. When the lamp is lighted, theſe carriages are put in motion by men and bullocks. Bramins and others, in the hopes of obtaining remiſſion of their ſins, aſſiſt by pulling at the traces; and many infatuated females, proſtrating themſelves before the wheels, meet a death alike certain and much more terrible than the funeral pile. A clear ſtream that empties itſelf into the Noel river ſeparates the town from the ſanctuary; but the communication is rendered eaſy by means of a ſtrong but inelegant ſtone bridge. From the top of the pagoda there is a view that can never fail to pleaſe: the mountains, forming an immenſe arch, which ſtretches from the ſouth towards the north, of a ſudden riſe in one grand and majeſtic wall, that ranges at the diſtance of from twenty to thirty miles; jungles eternally verdant completely overſpread the ſurface of theſe mountains from their baſe to their ſummits, and the plains around as far as the eye can reach are fertile in the extreme. Large clumps of trees, with extenſive ſheets of water, protect and enrich the country; villages defended by walls, hedges, and ditches, are to be ſeen in every direction; and, however bold the aſſertion, it is nevertheleſs true, that no part of Great Britain exhibits a higher ſtate of cultivation. This is one of the places that was taken by the marquis Cornwallis from Tippoo Saib, in the late Mahratta war.

AVA'NIA, *ſ.* in the Turkiſh legiſlature, a fine for crimes and on deaths, paid to the governor of the place. In the places wherein ſeveral nations live together under a Turkiſh governor, he takes this profitable method of puniſhing all crimes among the Chriſtians or Jews, unleſs it be the murder of a Turk.

AVANT', *ſ.* The front of an army. See Van.

Avant-foss, or Ditch of the Counterscarp, *ſ.* in fortification, is a wet ditch ſurrounding the counterſcarp, on the outer ſide, next to the country, at the foot of the glacis. It would not be proper to have ſuch a ditch if it could be laid dry, as it would then ſerve as a lodgment for the enemy.

Avant-guard, *ſ.* [*avantgarde*, Fr.] The van; the firſt body of an army.—The horſemen might iſſue forth without diſturbance of the foot, and the *avant-guard* without ſhuffling with the battail or arriere. *Haward.*

AUAN'TE, *ſ.* [from αυαινω, to dry.] A dry diſeaſe proceeding from a fermentation in the ſtomach, and deſcribed by Hippocrates, l. i. de Morbis, 64, 1.

AVARAY', a town of France, in the department of the Loir and Cher, and chief place of a canton, in the diſtrict of Mer: twelve miles north-eaſt of Blois.

A'VARICE, *ſ.* [*avarice*, Fr. *avaritia*, Lat.] Covetouſneſs; inſatiable deſire.—*Avarice* is inſatiable; and ſo he went ſtill puſhing on for more. *L'Eſtrange.*

There grows
In my moſt ill-compos'd affection, ſuch
A ſtanchleſs *avarice*, that, were I king,
I ſhould cut off the nobles for their lands. *Shakeſpeare.*

Avarice is repreſented by a hideous pale-faced old woman, with a diſcontented and dejected aſpect, and a ſwoln belly, upon which ſhe lays one of her hands as if in pain, and in the other ſhe gripes a purſe cloſe tied, on which her eyes are fixed; by her ſide ſtands a meager wolf, as an emblem of voracity. Her paleneſs proceeds from her envy, which torments her to ſee her neighbours richer than herſelf; her eyes are fixed on her purſe, it being her chief delight. The wolf denotes the voracious humour of the covetous, who would have other mens goods as well as their own.

AVARI'CIOUS, *adj.* [*avaricieux*, Fr.] Covetous; inſatiably deſirous.—This ſpeech has been condemned as *avaricious*;

ricious; and Euſtathius judges it to be ſpoken artfully. *Broome.*

AVARI'CIOUSLY, *adv.* Covetouſly.

AVARI'CIOUSNESS, *ſ.* The quality of being avaricious.

AVA'RICUM, an ancient town of the Bituriges in Gallia Celtica, ſituated on the rivulet Avara, in a very fertile ſoil: now *Bourges* in Berry. Lat. 47. 10. N. lon. 2. 30. E.

AVAST', *adv.* [from *baſta*, Ital. it is enough.] Enough; ceaſe. *A word uſed among ſeamen.*

AVAT'CHA, a town of Kamtſchatcha, forty-four miles eaſt-north-eaſt of Bolſchertzkoi.

AVAUN'CHERS, *ſ.* among hunters, the ſecond branches of a deer's horns.

AVAUNT', *interj.* [*avant*, Fr.] A word of abhorrence, by which any one is driven away:

O, he is bold, and bluſhes not at death;
Avaunt, thou hateful villain, get thee gone! *Shakeſpeare.*

AUB, a town of Germany, in the circle of Franconia, and biſhopric of Wurzburg, on the river Gollach: ſeventeen miles ſouth of Wurzburg, and twenty-eight north-weſt of Anſpach.

AUBA'GNE, a town of France, in the department of the Mouths of the Rhone, and chief place of a canton, in the diſtrict of Aix: three leagues eaſt of Marſeilles, and five ſouth-ſouth-eaſt of Aix.

AUBAI'NE, *ſ.* in the cuſtoms of France before the eſtabliſhment of the republic, a right veſted in the king of being heir to a foreigner that died within his dominions, notwithſtanding any teſtament the deceaſed might leave. Ambaſſadors were not ſubject to the right of aubaine; neither were the Swiſs, Savoyards, Scots, or Portugueſe, thoſe being deemed natives and regnicoles.

AUBAI'S, a town of France, in the department of the Gard, one league ſouth-eaſt of Somieres, and three and a half ſouth-weſt of Niſmes.

AUBE, a river of France, which riſes near Auberive, in the department of the Upper Marne, paſſes by Ferte-ſur-Aube, Bar-ſur-Aube, Dienville, Arcis, &c. and joins the Seine ſeven miles below Mery. It gives name to a department which it waters.

AUBENA'S, a town of France, in the department of the Ardeche, and chief place of a canton, in the diſtrict of Coiron: three leagues and a half ſouth-weſt of Privas. Lat. 44. 32. N. lon. 22. 3. E. Ferro.

AUBENTON', a town of France, in the department of the Aiſne, and chief place of a canton, in the diſtrict of Vervins: nine leagues north-eaſt of Laon, and three and three quarters eaſt of Vervins.

AU'BERG, a town of Germany, in the archduchy of Auſtria, on the north-ſide of the Danube, oppoſite Lintz.

AUBERI'VE, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Rheims, on the Suippe: fifteen miles north of Chalons.

AUBERIVE, a town of France, in the department of the Upper Marne, and chief place of a canton, in the diſtrict of Langres: twelve miles ſouth-weſt of Langres.

AUBERIVE, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Vienne: five miles ſouth of Vienne.

AUBETERR'E, a town of France, in the department of the Charente, and chief place of a canton, in the diſtrict of Barbeſieux: ſix leagues ſouth-eaſt of Barbeſieux, and ſeven and a half ſouth of Angouleſme.

AUBET'TE, a river of France, which runs into the Seine near Rouen.

AUBEVILLIE'RS, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Montdidier: thirteen miles ſouth-ſouth-eaſt of Amiens.

AUBVILLIERS (Les), a town of France, one league north-north-eaſt of Paris.

AUBIE'RES, a town of France, in the department of the Puy de Dome, and chief place of a canton, in the diſtrict of Clermont-Serand: one league S. E. of Clermont.

AUBIE'RS (Les), a town of France, in the department of the Two Sevres, and chief place of a canton, in the diſtrict of Chatillon-ſur-Sevre: two leagues and a quarter eaſt-north-eaſt of Chatillon.

AU'BIN, *ſ.* in horſemanſhip, a broken kind of gait, between an amble and a gallop, accounted a defect.

AUBIGNY' (Theodore Agrippa d'), a very illuſtrious Frenchman, and grandfather of the no leſs illuſtrious madame de Maintenon, was born about the year 1550. His parts were ſo uncommon, and his progreſs in letters ſo very rapid, that he is ſaid to have tranſlated the 'Crito' of Plato from the Greek into French when no more than eight years old. His principal work is, Hiſtoire Univerſelle, from 1550 to 1601; with a ſhort Account of the Death of Henry IV. in three volumes, folio. Aubigny died at Geneva in 1630.

AUBIGNY, a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of St. Pol: eight miles weſt-north-weſt of St. Pol.

AUBIGNY, a town of France, and principal place of a diſtrict, in the department of the Cher: ſix leagues north-weſt of Sancerre, and ſeven and three quarters north of Bourges. Lat. 47. 29. N. lon. 20. 6. E. Ferro.

AUBLE'TIA, *ſ.* [ſo named in honour of *M. Aublet*, author of the Hiſtory of Plants in Guiana, 1775.] In botany, a genus of the claſs polyandria, order monogynia. The generic characters are—Calyx: perianthium five-leaved, rigid, ſpreading, coloured within, pubeſcent without, deciduous, five-parted; parts linear-lanceolate, acute, with thick margins, which before flowering are contiguous. Corolla: petals five, roundiſh-oblong, ſmaller than the calyx, with very ſhort claws. Stamina: filaments very many, very ſhort; antheræ ovate-oblong, outwardly gibbous, gaping on the inner ſide, foliaceous at the tip, acute; the exterior ones ſterile, lanceolate, ending in a foliaceous point, ſhorter than the corolla. Piſtillum: germ roundiſh, depreſſed; ſtyle long, ſtriated, gradually thickening, ſlightly incurved; ſtigma ſpreading, perforated, ten-toothed. Pericarpium: capſule large, orbiculate, depreſſed, coriaceous, echinate, ten-celled, gaping at the baſe. Seeds: very many, ſmall, roundiſh, ſomewhat compreſſed. Receptacle of the ſeeds, fleſhy.—*Eſſential Character.* Calyx five-leaved; corolla five-petalled; capſule many-celled, echinate, with many ſeeds in each cell.

Species. 1. Aubletia tibourbou: leaves acutely ſerrate, hirſute. This is a middling-ſized tree, with a trunk ſeven or eight feet high, about a foot in diameter, and an irregular chopped ſoft thick bark, fibrous, and fit for making ropes. The wood is white and light. Branches ſpreading in all directions, and bent down; twigs villoſe. Leaves alternate, ovate-oblong, cordate at the baſe, green above and wrinkled, having ruſſet hairs underneath; they are ſet on ſhort petioles. Native of Braſil, Guiana, the iſlands of Cayenne, and Tobago. *Apeiba* is the Braſilian name, and it is called *tibourbou* by the Caribbees. Aublet found it in flower and fruit from Auguſt to October.

2. Aubletia petoumo: leaves elliptic, acute, ſerrulate, hoary beneath. This is a large tree, being often forty feet high, and a foot and a half or more in diameter, with a brown thick filamentoſe bark fit for making cordage: the wood is light, and of a white colour. The branches ariſe from the top of the trunk, and ſpread wide every way. Native of Guiana, in the vaſt foreſts of Sinemari; bearing flowers and fruit in October. It is called *petoumo* by the Caribbees.

3. Aubletia aſpera: leaves quite entire, pubeſcent beneath; fruit compreſſed. This is alſo a large tree, from thirty to forty feet in height, and a foot and a half or more in diameter, with a greyiſh irregular thick filamentoſe bark, proper for making cordage: the wood is light and white. The boughs are large, and divide into branches ſpreading in every direction. Native of Guiana, and the iſland of Cayenne, flowering and bearing fruit in the month of May. This is alſo called *petoumo* by the Caribbees.

4. Aubletia lævis: leaves quite entire, ſmooth on both ſides; fruit rough, depreſſed. This is a tree of a middling ſize, its trunk being from ten to twelve feet in height, and eight or ten inches in diameter, with a ſmooth, thin, greeniſh, bark: the wood is white, tender, and ſo light, that the trunk may eaſily be carried in one hand: the branches ſpring from the top; both they and the twigs are ſmooth, ſpreading every way, and pendulous. Leaves ovate, acuminate, green on both ſides, on ſhort petioles. Stipules in pairs, ſhort, deciduous. Flowers in racemes oppoſite to a leaf. Corolla greeniſh. Native of Guiana; flowering and bearing fruit in the month of May.

AUBONDAN'GE, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Chateau-Salins: two miles ſouth of Morhange, and ſix north-north-eaſt of Chateau-Salins.

AUBON'NE, a town of Switzerland, in the canton of Bern. It is ſituated near a river of the ſame name, ſeven miles north of the lake of Geneva, upon an eminence which has a gentle declivity, at the foot of which runs the river with an impetuous torrent. The town is built in the form of an amphitheatre; on the upper part of which ſtands a very handſome caſtle with a fine court, and a portico ſupported by pillars of a ſingle ſtone each; above there is a covered gallery that runs round the court; and, as the caſtle ſtands high, there is a moſt delightful proſpect, not only of the town and neighbouring fields, but of the whole lake of Geneva and the land that ſurrounds it. At Thonen, in Savoy, on the other ſide of the lake, is a town covered with tin, which makes a glittering appearance when the ſun is in a certain poſition; and the caſtle of Aubonne has likewiſe a tower of the ſame kind, which at certain hours makes a ſimilar appearance to the Savoyards. The balliage of Aubonne contains ſeveral villages, which are moſtly at the foot of the mountain Jura. In one part of this mountain there is a very deep cave, wherein thoſe that go down find a natural and perpetual ice-houſe. At the bottom is heard a great noiſe like that of a ſubterraneous river, which is ſuppoſed to be that of the river Aubonne, becauſe it firſt appears, with ſeveral ſources, about 100 paces from the foot of that mountain. Lat. 46. 31. N. lon. 24. 0. E. Ferro.

AU'BOURN is a ſmall town in the county of Wilts, on the borders of Berkſhire, diſtant from London eighty-one miles. It ſtands on a branch of the Kennet, in a rural and pleaſing ſituation. On the 12th of September, 1760, it ſuffered a moſt dreadful conflagration, having ſeventy-two houſes, and effects to the amount of 20,000l. deſtroyed by fire. A public ſubſcription was opened for the unfortunate ſufferers, which extended through a conſiderable part of the kingdom, and produced a very ſeaſonable relief. It was formerly a trading town of ſome note, and had a good market on Tueſdays; but, owing to the fire, and the ſubſequent decay of its trade, the markets have been diſcontinued for ſome time paſt; yet it carries on a conſiderable trade in the manufacture of fuſtians. Auborn is eight miles ſouth of Swindon, and ſeven eaſt of Marlborough.

AU'BREY (John), a famous Engliſh antiquary, deſcended from an ancient family in Wiltſhire, was born in 1626. He made the hiſtory and antiquities of England his peculiar ſtudy, and contributed conſiderable aſſiſtance to the famous Monaſticon Anglicanum. He ſucceeded to ſeveral good eſtates; but law-ſuits and other misfortunes conſumed them all, ſo that he was reduced to abſolute want. In this extremity he found a valuable benefactreſs in the lady Long, of Draycot in Wilts, who gave him an apartment in her houſe, and ſupported him to his death, which happened about the year 1700. He was a man of capacity, learning, and application; a good Latin poet; an excellent naturaliſt, but ſomewhat credulous, and tinctured with ſuperſtition. He left many works behind him. He wrote, 1. Miſcellanies. 2. A Perambulation of the County of Surrey, 5 vols. 8vo. 3. Life of Mr. Hobbes, of Malmſbury. 4. *Monumenta Britannica*; or Stonehenge, and Roll-Rich-ſtones in Oxfordſhire. 5. Architectonica Sacra; and ſeveral other works ſtill in manuſcript.

AU'BURG, a town of Germany, in the circle of Weſtphalia, and county of Diepholtz: ſix miles eaſt of Diepholtz.

AU'BURN, *adj.* [from *aubour*, Fr. bark.] Brown; of a tan colour.—Her hair is *auburn*, mine is perfect yellow. *Shakeſpeare.*

Lo, how the arable with barley grain
Stands thick, o'erſhadow'd; theſe, as modern uſe
Ordains, infus'd, an *auburn* drink compoſe,
Wholeſome, of deathleſs fame. *Phillips.*

AUBUS'SAN, a town of France, and chief place of a diſtrict, in the department of the Creuſe: fourteen leagues weſt of Clermont, and ſix ſouth-eaſt of Gueret. Lat. 45. 58. N. lon. 19. 52. E. Ferro.

AU'CA, a town of Aſia, in the kingdom of Candahar, forty-five leagues north-eaſt of Zareng.

AUCAGUERE'LE, a town of Africa, in the country of Adel.

AUCH, a city of France, and capital of the department of Gers. Before the revolution it was the capital of Armagnac, and ſee of an archbiſhop, who had the title of *primate of Aquitaine*, and was the metropolis of all Gaſcony, with a revenue of 125,000 livres. The cathedral was eſteemed one of the moſt beautiful in all France. It ſtands on a mountain near the Gers, eighty-nine poſts ſouth of Paris. Lat. 43. 38. N. lon. 18. 14. E. Ferro.

AU'CHEN, *ſ.* [from αυχεω, to be proud.] The neck, which in the poſture of pride is made ſtiff and erect.

AUCH'MUS, *ſ.* [from αυω, to be dry.] Squalor; heat from extreme dryneſs.

AUC'TION, *ſ.* [*auctio*, Lat.] A ſpecies of public ſale, very much in uſe for houſehold furniture, books, plate, &c. By this method of ſale the higheſt bidder is always the buyer. This was originally a kind of ſale among the ancient Romans, performed by the public crier, *ſub haſta*, i. e. under a ſpear ſtuck up on that occaſion, and by ſome magiſtrate, who made good the ſale by delivery of the goods.

To AUCTION, *v. a.* To ſell by auction.

AUC'TIONARY, *adj.* Belonging to an auction:

And much more honeſt to be hir'd, and ſtand
With *auctionary* hammer in thy hand,
Provoking to give more, and knocking thrice
For the old houſehold ſtuff, or picture's price. *Dryden.*

AUCTIONE'ER, *ſ.* The perſon that ſells by, or manages an, auction.

By the law, no perſon exerciſing the trade or buſineſs of an auctioneer or ſeller by commiſſion, at any ſale of any eſtate, goods, or effects, whatſoever, by outcry, knocking down of hammer, by candle, lot, parcel, or any other mode of ſale at auction, or whereby the higheſt bidder is deemed to be the purchaſer, or who ſhall act in ſuch capacity, ſhall preſume to deal in, vend, or ſell, any eſtate, goods, or effects, whatſoever, by public ſale, or otherwiſe, by way of auction, without taking out a licence; which, if it is within the bills of mortality, ſhall be granted by the commiſſioners of exciſe, or ſuch perſon as they ſhall appoint; and elſewhere by the collectors and ſupervíſors, within their ſeveral collections and diſtricts, under their hands and ſeals. 19 Geo. III. c. 56. § 3. In which licence ſhall be ſet forth the name and place of abode of the perſon taking out the ſame. And for the ſaid licence, if it is within the limits of the chief office of exciſe in London, whether the ſame be granted for ſelling by way of auction within the ſaid limits, or in any other parts of England and Wales, ſhall be paid the ſum of 20s. and elſewhere 5s. over and beſides any other duties or payments for trading in or vending any gold or ſilver plate, or otherwiſe. And, if any perſon ſhall act without ſuch licence, he ſhall forfeit 100l. if it is within the bills; and elſewhere, 50l. And the ſaid licence ſhall be renewed annually, ten days at leaſt before the expiration of the former. And, at the ſame time that the auctioneer takes out his licence, he ſhall give bond to the king, with two ſureties, in the ſum of 200l. if it is within the bills; and elſewhere, in 50l. that he will account and make payment as herein after directed.

For every 20s. of the purchaſe-money ariſing or payable by virtue of any ſale by auction, of any intereſt in poſſeſſion or reverſion, in any freehold, copyhold, or leaſehold, lands, tenements, houſes, or hereditaments, and of any annuities or money charged thereon; and of any utenſils in huſbandry and farming ſtock, ſhips, and veſſels; and of any reverſionary intereſt in the public funds; and of any plate or jewels; ſhall be paid by the auctioneer or agent 3½d. 27 Geo. III. c. 13. And, for every 20s. of the purchaſe-money ariſing or payable by virtue of any ſale by auction, of furniture, fixtures, pictures, books, horſes, and carriages, and all other goods and chattels whatſoever, ſhall be paid in like manner 7d. But, by ſtat. 29 Geo. III. c. 63, no duty ſhall be paid for piece-goods ſold by auction wove in this kingdom, which ſhall be ſold entire in the piece or quantity as taken from the loom, and in lots of the price of 20l. or upwards; and ſo as the ſame be ſold in no other than entered places, and openly ſhewn and expoſed at ſuch ſale. And the auctioneer ſhall, beſides the bond given on receiving his licence, give a further bond with two ſureties in 5000l. that he will, within fourteen days after every ſuch ſale, deliver an account thereof at the next exciſe-office, and will not ſell any goods contrary to the directions of this act.

And, by 30 Geo. III. c. 26, all goods imported by way of merchandiſe from Yucatan, [and by 32 Geo. III. c. 41, all whale-oil, whale-bone, ambergris, and head-matter, and all ſkins of ſeals, and other animals living in the ſea, and alſo elephants-teeth, palm-oil, dying-wood, drugs, and other articles for dyers uſe, and all mahogany and other unmanufactured wood for the uſe of cabinet-makers and other manufacturers, imported in Britiſh ſhips from Africa, or any Britiſh ſettlement abroad,] ſhall be free of the exciſe duty on the firſt ſale thereof at auction, by or for the account of the original importer to whom the ſame were conſigned, and by whom they were entered at the cuſtom-houſe, ſo as ſuch ſale be made within twelve months after ſuch goods are imported, and the ſame be ſold by a licenſed auctioneer.

Provided, that if the real owner ſhall become the purchaſer by his own bidding, or the bidding of any other on his behalf, without fraud or colluſion, the commiſſioners or other officers ſhall make to the owner an allowance of the ſaid duties: provided notice [in writing ſigned by the owner and intended bidder, 28 Geo. III. c. 37, § 20,] be given to the auctioneer before ſuch bidding, both by the owner and perſon intended to be the bidder, of ſuch perſon being appointed by the owner; and provided ſuch notice be verified by the oath of the auctioneer, as alſo the fairneſs of the tranſaction to the beſt of his knowledge and belief. And, if any diſpute ſhall ariſe concerning the fairneſs of the tranſaction, the proof thereof ſhall lie on the auctioneer; and, on failure therein, or in caſe of any unfair practice, no ſuch allowance ſhall be made. Stat. 19 Geo. III. c. 56, § 9.

Provided alſo, that nothing herein ſhall extend to any ſale by auction of eſtates or chattels made by order of the court of Chancery or Exchequer, or courts of Great Seſſions in Wales; or to any ſale made by the Eaſt-India or Hudſon's-Bay companies; or by order of the commiſſioners of cuſtoms or exciſe; or of the board of ordnance; or commiſſioners of the navy or victualling offices; or any ſuch ſales made by the ſheriff, for the benefit of creditors, in execution of judgments; or of goods diſtrained for rent; or for non-payment of tithes; or of effects of bankrupts ſold by aſſignees; nor to goods imported by way of merchandiſe from any Britiſh colony in America, the ſame being of the growth, produce, or manufacture, of ſuch colony; nor to any ſhips or their cargoes condemned as prize, and ſold for benefit of the captor; nor to any ſhips or goods wrecked or ſtranded, ſold for the benefit of the inſurers or proprietors; nor to the ſale of any goods damaged by fire, and ſold for the benefit of the inſurers; nor to any auction to be held on the account of the lord or lady of the manor for the granting any copyhold or cuſtomary meſſuages, lands, or tenements, for the term of a life or lives, or any number of years; nor to any auction to be held for the letting or demiſing any meſſuages, lands, or tenements, for the term of a life or lives, or any number of years, to be created by the perſon on whoſe account ſuch auction ſhall be held; nor to the ſale of any wood, coppice, produce of mines or quarries, or materials for working the ſame, (or to the ſale of any cattle, and live or dead ſtock, or unmanufactured produce of land,) ſo as ſuch ſale of woods, coppices, produce of mines or quarries, cattle, corn, ſtock, or produce of land, be made whilſt they continue on the lands producing the ſame, and by the owner of ſuch lands, or proprietor of, or adventurer in, ſuch mines or quarries, or by their ſteward or agent. 17 Geo. III. c. 50. § 11, 12, 13. 19 Geo. III. c. 56. § 13, 14, 15.

The auctioneer, if it is within the limits of the chief office of exciſe in London, ſhall give two days notice at the ſaid office, (elſewhere three days notice,) to the collector, or at the next exciſe office, in writing, ſigned by him, ſpecifying the particular day when ſuch ſale ſhall begin; and ſhall, at the ſame time, or within twenty-four hours after, deliver a written or printed catalogue, atteſted and ſigned by ſuch auctioneer or his known clerk; in which catalogue ſhall be particularly enumerated every article, lot, parcel, and thing, intended to be ſold at ſuch auction. And, if he ſhall preſume to make ſale without delivering ſuch notice and catalogue, or ſell any eſtate or goods not enumerated therein, he ſhall forfeit 20l. 19 Geo. III. c. 56, § 9. And every auctioneer who ſhall have delivered ſuch notice or catalogue as aforeſaid, ſhall within twenty eight days, if within the limits of the chief office of exciſe, (elſewhere within ſix weeks,) after the day ſpecified in ſuch notice for ſuch ſale, deliver at ſuch chief office, or to the collector of exciſe in whoſe collection ſuch ſale has been or was intended to be, a declaration in writing ſetting forth whether or not any ſuch ſale had been or was opened or begun under ſuch notice, or any article, lot, parcel, or thing, contained in ſuch catalogue, was bid for or ſold at ſuch auction; and ſuch auctioneer, or perſon acting as his clerk as aforeſaid, ſhall make oath to the truth of ſuch declaration before the ſaid commiſſioners or collector of exciſe, on pain of forfeiting 50l. for every neglect or refuſal of delivering ſuch declaration verified as aforeſaid. 32 Geo. III. c. 11, § 1.

The aforeſaid duties ſhall be a charge upon the auctioneer, immediately upon knocking down the hammer, or other cloſing of the bidding. And he ſhall (in purſuance of his bond entered into at the time of his licenſing) within twenty-eight days, if it is within the limits of the chief office of exciſe in London, (elſewhere within ſix weeks,) deliver in an account in writing of the total amount of the money bid at each ſale, and of the ſeveral articles, lots, or parcels, there ſold, and the price of each. And ſhall at the ſame time make payment of the duties; which he may retain out of the produce of the ſale, or depoſit made at ſuch ſale; or otherwiſe recover the ſame, by action of debt, or on the caſe, againſt the perſon who employed him, or on whoſe account the goods were ſold. And every perſon ſo acting as auctioneer, or the perſon who acted as his clerk at ſuch ſale, if any, ſhall make oath to the truth of the account. And if ſuch auctioneer ſhall neglect to deliver in his account, or to make payment, or if it ſhall appear that it was not a true and juſt account, the commiſſioners may put his bond in ſuit, unleſs they ſhall find ſufficient cauſe to forbear the ſame; and, in caſe of a verdict or judgment againſt him, the licence ſhall be void. But if ſuch auctioneer, not being within the limits of the chief office of exciſe in London, ſhall not be prepared to deliver in his account to the collector within whoſe collection the notice was delivered, and ſuch ſale by auction made; he may deliver in his ſaid account within ſix weeks after every ſuch ſale at the chief office of exciſe in London, and at the ſame time deliver a true copy of the notice and of the catalogue delivered by him before to the collector. And if he ſhall neglect to deliver ſuch copy of the ſaid notice, or of the ſaid catalogue, he ſhall forfeit 20l.

For the preventing of frauds, every auctioneer, who ſhall ſell any eſtate or goods that have been ſeized by the ſheriff for the benefit of creditors in execution of a judgment, ſhall ſpecify and enumerate in the catalogue, as well the particular eſtate and effects to be ſold, as the exact ſum to be levied under ſuch execution; and the ſheriff ſhall ſubſcribe and ſign ſuch catalogue, and certify at the foot thereof that all the ſaid eſtates and effects were really and truly the property of the perſon againſt whom ſuch judgment was had, and that the ſame were actually ſeized in execution of the ſame judgment. And every auctioneer, employed by the aſſignees under a commiſſion of bankruptcy, to ſell the effects of any bankrupt, ſhall likewiſe ſpecify and enumerate in the catalogue the particular goods and effects then to be ſold; and the aſſignees, or aſſignee if only one, ſhall ſubſcribe and ſign ſuch catalogue, and certify at the foot thereof, that all the eſtates and effects were really and truly the property of the ſaid bankrupt at the time of ſuing out the commiſſion. Which reſpective catalogue, ſo ſigned and certified, ſhall be produced by the auctioneer to the perſon to whom he is to deliver his account, before he ſhall be permitted to paſs his account, or to have the ſame allowed. And if ſuch ſheriff or aſſignee ſhall inſert, or ſuffer to be inſerted, in ſuch catalogue, any eſtate or effects, other than ſuch as were really and truly the property of the debtor or bankrupt, or ſhall not certify on the catalogue the true ſum to be levied, he ſhall forfeit 20l.

And every auctioneer employed to ſell any goods damaged by fire, for the benefit of the inſurers, ſhall ſpecify and enumerate in the catalogue, the particular goods then to be ſold; and the inſurers, or the inſurer if one, ſhall ſubſcribe and ſign ſuch catalogue, and certify at the foot thereof, that all the goods in ſuch catalogue were really and truly ſold for the benefit of the inſurers: which catalogue, ſo ſigned and certified, ſhall be produced by the auctioneer to the perſon to whom he is to deliver his account, before he ſhall be permitted to paſs his account, or to have the ſame allowed. And, if ſuch inſurer ſhall inſert, or ſuffer to be inſerted, in the catalogue, any goods other than ſuch as were really and truly to be ſold for the benefit of him or them as aforeſaid, or ſhall not certify on the catalogue the true particular of the goods to be ſold, he ſhall forfeit 20l.

If the ſale ſhall be rendered void, by reaſon that the perſon for whoſe benefit the eſtate or goods were ſold had no title or right to diſpoſe thereof, the auctioneer who paid the duty may complain to the commiſſioners of exciſe or juſtices of the peace within whoſe juriſdiction reſpectively the ſale was made, who may hear and determine all ſuch complaints, and relieve the party complaining of ſo much as ſhall appear to have been overpaid. But, by ſtatute 28 Geo. III. c. 37, all ſuch complaints ſhall be laid within twelve calendar months after ſuch ſale, if the ſame be rendered void as aforeſaid within that time; but, if otherwiſe, then within three calendar months after the diſcovery of ſuch defect of title, and not otherwiſe.

In the caſe of *Payne* againſt *Cave*, E. 29 Geo. III. it was determined, That a bidder at an auction under the uſual conditions, that the higheſt bidder ſhall be the purchaſer, may retract his bidding any time before the hammer is down. For the auctioneer is the agent only of the vender, and the aſſent of both parties is neceſſary to make the contract binding. Every bidding is nothing more than an offer on one ſide, which is not binding until aſſented to by the ſeller, which is ſignified on his part by knocking down the hammer. Caſe by Durnf. and Eaſt. 3 *V.* 148. And finally, all fines, penalties, and forfeitures, ſhall be ſued for, recovered, or mitigated, as by the laws of exciſe, or ſued for in the courts at Weſtminſter; and be diſtributed (all neceſſary charges firſt deducted), half to the king, and half to him that ſhall ſue. 19 Geo. III. c. 56, § 18.

AUC'TIVE, *adj.* [from *auctus*, Lat.] Of an increaſing quality.

AUCU'BA, *ſ.* in botany, a genus of the claſs monoecia, order tetrandria. The generic characters are—I. Male flowers. Calyx: perianthium one-leafed, truncate, obſcurely four-toothed, villoſe, very ſhort, permanent. Corolla: four-petalled; petals ovate, acute, ſpreading; underneath concave, hairy; above convex, decidus. Stamina: filaments four, inſerted into the receptacle among the petals, thick, erect, very ſhort; antheræ ovate, twin, with four furrows. Receptaculum: plano-convex, ſmooth, with a ſquare hole impreſſed upon the middle. II. Female flowers on the ſame tree. Calyx and corolla: as in the male. Piſtillum: germ inferior; ſtyle thick, ſhort; ſtigma ſimple, capitate. Pericarpium: nut ovate, one-celled.—*Eſſential Character.* Male. Calyx four-toothed; corolla four-petalled; berry one-ſeeded. Female. Nectary none; nut one-celled.

Only one ſpecies, known by the name of acuba Japonica. It is a large tree; branches and ſubdiviſions dichotomous, ſmooth, rather fleſhy, divaricate, erect, angular, ſcarred from the falling of the leaves. Leaves aggregate at the tops of the branches, petiolate, oppoſite, oblong ſharp, remotely ſerrate, ſmooth, pale underneath, a hand's breadth long, nerved. Flowers terminal, panicled; panicle trichotomous, ſuper-decompound. Peduncles and pedicels villoſe. Bractes lanceolate. It varies with brown-green, unſpotted, leaves; and bright-green leaves variegated with white. It is allied to the *ſerpicula*, but diſtinguiſhed from it by the recptacle of the male being ſmooth, not toruloſe, but perforated in the middle. Native of Japan; being introduced in 1783 by Mr. John Græfer.

AUCUPA'TION, *ſ.* [*aucupatio*, Lat.] Fowling; bird-catching.

AUDA'CIA, *ſ.* [from *audax*, Lat. bold.] That ſort of boldneſs which is obſerved in delirium or madneſs.

AUDA'CIOUS, *adj.* [*audacieux*, Fr. *audax*, Lat.] Bold; impudent; daring: *always in a bad ſenſe.*—Young ſtudents, by a conſtant habit of diſputing, grow impudent and *audacious*, proud and diſdainful. *Watts.*

Till Jove, no longer patient, took his time
T' avenge with thunder their *audacious* crime. *Dryden.*

AUDA'CIOUSLY, *adv.* Boldly; impudently:

An angel ſhalt thou ſee,
Yet fear not thou, but ſpeak *audaciouſly*. *Shakeſpeare.*

AUDA'CIOUSNESS, *ſ.* Impudence.

AUDA'CITY, *ſ.* [from *audax*, Lat.] Spirit; boldneſs; confidence.—Great effects come of induſtry and perſeverance; for *audacity* doth almoſt bind and mate the weaker ſort of minds. *Bacon.*

Lean, raw-bon'd, raſcals! Who would e'er ſuppoſe
They had ſuch courage and *audacity?* *Shakeſpeare.*

AU'DE, a river of France, which riſes in the Pyrenées, paſſes by Quilan, Alet, Limoux, Carcaſſonne, &c. and empties itſelf into the Mediterranean, about ten miles eaſt of Narbonne. It gives name to a department through which it flows.

AU'DEANISM, *ſ.* The ſame with anthropomorphiſm.

AUDE'US, the chief of the audeans, obtained the name of an heretic, and the puniſhment of baniſhment, for celebrating Eaſter in the manner of the Jews, and attributing an human form to the Deity. He died in the country of the Goths, in the year 370. See ANTHROPOMORPHITES.

AU'DIBLE, *adj.* [*audibilis*, Lat.] That which may be perceived by hearing.—Viſibles work upon a looking-glaſs, and *audibles* upon the places of echo, which reſemble in ſome ſort the cavern of the ear. *Bacon.*—Loud enough to be heard.—One leaning over a well twenty-five fathom deep, and ſpeaking ſoftly, the water returned an *audible* echo. *Bacon.*

AU'DIBLENESS, *ſ.* Capableneſs of being heard.

AU'DIBLY, *adv.* In ſuch a manner as to be heard:

And laſt, the ſum of all, my Father's voice,
Audibly heard from heav'n, pronounced me his. *Milton.*

AU'DIENCE, *ſ.* [*audience*, Fr.] The act of hearing or attending to any thing:

His look
Drew *audience*, and attention ſtill as night,
Or ſummer's noon-tide air. *Milton.*

The liberty of ſpeaking granted; a hearing.—Were it reaſon to give men *audience*, pleading for the overthrow of that which their own deed hath ratified? *Hooker.*—An auditory; perſons collected to hear.—The hall was filled with an *audience* of the greateſt eminence for quality and politeneſs. *Addiſon.*—The reception of any man who delivers a ſolemn meſſage.

AUDIENCE, given to ambaſſadors, is a ceremony obſerved in courts at the admiſſion of ambaſſadors or public miniſters to a hearing. In England, audience is given to ambaſſadors in the preſence-chamber; to envoys and reſidents, in a gallery, cloſet, or in any place where the king happens to be. Upon being admitted, as is the cuſtom of all courts, they make three bows; after which they cover and ſit down; but not before the king is covered and ſeated, and has given them the ſign to put on their hats. When the king does not care to have them covered and ſit, he himſelf ſtands uncovered; which is taken as a ſlight. At Conſtantinople, miniſters uſually have audience of the prime vizier.

AUDIENCE, is alſo the name of a court of juſtice eſtabliſhed in Spaniſh America. In this court the viceroy of the king of Spain preſides. His employment is the greateſt truſt and power which his Catholic majeſty has in his diſpoſal, and is, perhaps, the richeſt government entruſted to any ſubject in the world. The greatneſs of the viceroy's office is diminiſhed by the ſhortneſs of its duration. For, as jealouſy is the leading feature of Spaniſh politics, in whatever regards their acquiſitions in America, no officer is allowed to maintain his power for more than three years; which no doubt may have a good effect in ſecuring the authority of the crown of Spain, but is attended with unhappy conſequences to the miſerable inhabitants, who become a prey to every new governor.

AUDIENCE COURT, a court belonging to the archbiſhop of Canterbury, of equal authority with the arches court, though inferior both in dignity and antiquity. The original of this court was, becauſe the archbiſhop of Canterbury heard ſeveral cauſes extrajudicially at home in his own palace; which he uſually committed to be diſcuſſed by men learned in the civil and canon laws, whom he called his auditors: and ſo in time it became the power of the man, who is called *cauſarum negotiorumque audientia Cantuarienſis auditor, ſeu officialis.*

AUDIEN'DO & TERMINANDO, a writ or commiſſion, to certain perſons, when any inſurrection or riot is committed in any place, for the appeaſing and puniſhment thereof.

AUDIEN'TES, or AUDITO'RES, *ſ.* in church-hiſtory, an order of catechumens; conſiſting of thoſe newly inſtructed in the myſteries of the Chriſtian religion, and not yet admitted to baptiſm. See AUDITORES.

AUDIER'NE, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Pontcroix: five leagues and a half weſt of Quimper. Lat. 48. 2. N. lon. 13. 8. E. Ferro.

AU'DIT, *ſ.* [from *audit*, Lat. he hears.] A final account.—If they, which are accuſtomed to weigh all things, ſhall here ſit down to receive our *audit*, the ſum, which truth amounteth to, will appear to be but this. *Hooker.*

To AUDIT, *v. a.* To take an account finally.—Biſhops ordinaries, *auditing* all accounts, take twelve pence. *Ayliffe.*—I love exact dealing, and let Hocus *audit*; he knows how the money was diſburſed. *Arbuthnot.*

AUDI'TA QUERE'LA, *ſ.* A writ whereby a defendant, againſt whom judgment is recovered, and who is therefore in danger of execution, or perhaps actually in execution, (or on a ſtatute-merchant, ſtatute-ſtaple, or recognizance,) may be relieved upon good matter of diſcharge, which has happened ſince the judgment: as, if the plaintiff hath given him a general releaſe; or, if the defendant hath paid the debt to the plaintiff, without procuring ſatisfaction to be entered on the record. In theſe and the like caſes wherein the defendant hath good matter to plead, but hath had no opportunity of pleading it, (either at the beginning of the ſuit, or *puis darrein continuance*, which muſt always be before judgment,) an *audita querela* lies, in the nature of a bill in equity, to be relieved againſt the oppreſſion of the plaintiff. It is a writ directed to the court, ſtating, that the complaint of the defendant had been heard (*auditâ querelâ defendentis*), and then, ſetting out the matter of the complaint, it at length enjoins the court to call the party before them, and, having heard their allegations and proofs, to cauſe juſtice to be done between them. *Finch. L.* 488. *F. N. B.* 102. It alſo lies for *bail*, when judgment is obtained againſt them by *ſcire facias* to anſwer the debt of their principal, and it happens afterwards that the original judgment againſt their principal is reverſed: for here the bail, after judgment had againſt them, have no opportunity to plead this ſpecial matter, and therefore they ſhall have redreſs by *audita querela* (1 *Roli. Abr.* 308); which is a writ of a moſt remedial nature, and ſeems to have been invented, leſt in any caſe there ſhould be an oppreſſive defect of juſtice, where a party, who hath good defence, is too late to make it in the ordinary forms of law. But the indulgence now ſhewn by the courts in granting a ſummary relief upon motion, in caſes of ſuch evident oppreſſion (*Ld. Raym.* 439. 1 *Salk.* 93), has almoſt rendered uſeleſs the writ of *audita querela*, and driven it quite out of practice. 3 *Comm.* 406. The old law on this ſubject is here ſtated, to give the ſtudent a general idea of this circuitous proceeding. If neceſſary to enter more at large into this learning, let him look into *Viner's Abridgment*, and *Comyns's Digeſt.*

AUDI'TION, *ſ.* [*auditio*, Lat.] Hearing.

AU'DITOR, *ſ.* [*auditor*, Lat.] A hearer.—Dear couſin, you that were laſt day ſo high in the pulpit againſt lovers, are you now become ſo mean an *auditor*? *Sidney.*—A perſon employed to take an account ultimately:

If you ſuſpect my huſbandry,
Call me before th' exacteſt *auditors*,
And ſet me on the proof. *Shakeſpeare.*

AUDITOR, in the eye of the law, is an officer of the king, or of ſome other great perſon or corporation, who examines the accounts of all inferior officers, and makes up a general book, which ſhews the difference between their receipts and charge, and their ſeveral allowances, commonly called *allocations*; as the *auditors of the exchequer* take the accounts of the king's receivers, ſheriffs, eſcheators, collectors, and cuſtomers, and audit and perfect them. *Auditors of the impreſt* take the account of the mint, and of money diſpatched to any one for his majeſty's ſervice. *Auditor of the receipts* is an officer of the exchequer that files the tellers bills; and, having entered them, delivers to the commiſſioners a certificate of the money received the week before: he makes debentures to the tellers, before they pay any money: he alſo keeps the black book of receipts, and ſees every teller's money locked up and ſecured.

AUDITO'RES, *ſ.* A branch of the Manichean ſect, which was divided into *elect* and *auditors*; correſponding, according to ſome writers, to *clergy* and *laity*; and, according to others, to the *faithful* and *catechumens* among the Catholics. By the Manichean rule, a different courſe of life was preſcribed to the elect from that of the auditors. The latter might eat fleſh, drink wine, bathe, marry, traffic, poſſeſs eſtates, bear magiſtracy, and the like; all which things were forbidden to the elect. The auditors were obliged to maintain the elect, and kneeled down to aſk their bleſſing. Beauſobro obſerves, that the elect were eccleſiaſtics, and of ſuch as made profeſſion of obſerving certain counſels, called *evangelic*; ſuch as the clergy and monks: and they were called *the perfect* by Theodoret. The auditors were the laity, and ſo denominated, becauſe they heard in the church whilſt others taught and inſtructed.

AUDITO'RIUM, *ſ.* in the ancient churches, was that part of the church where the audientes ſtood to hear and be inſtructed. The auditorium was that part now called *navis eccleſiæ*, the nave. In the primitive times, the church was ſo ſtrict in keeping the people together in that place, that the perſon who went from thence in ſermon-time was ordered by the council of Carthage to be excommunicated.

AU'DITORY, *adj.* [*auditorius*, Lat.] That which has the power of hearing.—Is not hearing performed by the vibrations of ſome medium, excited in the *auditory* nerves by the tremors of the air, and propagated through the capillaments of thoſe nerves? *Newton.*

AUDITORY, *ſ.* [*auditorium*, Lat.] An audience; a collection of perſons aſſembled to hear.—Met in the church, I look upon you as an *auditory* fit to be waited on, as you are, by both univerſities. *South.*

AUDITORY NERVES. See ANATOMY, vol. i. p. 602 and 634.

AUDITORY PASSAGE, (*meatus auditorius,*) in anatomy, the entrance of the ear.

AU'DITRESS, *ſ.* The woman that hears; a ſhe-hearer:

Yet went ſhe not, as not with ſuch diſcourſe
Delighted, or not capable her ear
Of what was high: ſuch pleaſure ſhe reſerv'd,
Adam relating, ſhe ſole *auditreſs*. *Milton.*

AUD'LEY, [contracted of *Ethelreda*, of *æthel*, noble, and *dread*, fear, Sax.] An abbeſs of the royal Engliſh-Saxon blood, wife to Elgfrid, king of Northumberland, canonized after his death.

AUDLEY-END, a ſumptuous palace in the county of Eſſex, belonging to the dukes of Suffolk; built by Thomas Audley, lord high chancellor of England.

AUDRAN' (Claude), a French engraver, the firſt of the celebrated artiſts of that name, was the ſon of Lewis Audran, an officer belonging to the wolf-hunters, in the reign of Henry IV. of France, and was born at Paris, in 1592. He never made any great progreſs in the art; ſo that his prints are held but in little eſtimation. Yet, though he acquired no great reputation by his own works, it was no ſmall honour to him to be the father of three great artiſts, Germain, Claude, and Girard; the laſt of whom has immortalized the name of the family for ever. Claude Audran retired from Paris to Lyons, where he reſided, and died in 1677.

AUDRAN (Carl), a very eminent engraver, and brother to the preceding, was born at Paris in 1594. In his infancy he diſcovered much taſte, and a great diſpoſition for the arts; and, to perfect himſelf in engraving, he went to Rome, where he produced ſeveral prints that did him great honour. At his return, he ſettled at Paris, where he died in 1674, without having ever been married. The abbé Marolles, who always ſpeaks of this artiſt with great praiſe, attributes 130 prints to him: amongſt which, the Annunciation, from Annabale Carracci, and the Aſſumption, in a circle, from Domenichino, are the moſt eſteemed. In the early part of his life he marked his prints with C, or the name of Carl, till his brother Claude publiſhed ſome plates with the initial only of his baptiſmal name; when, for diſtinction ſake, he uſed the letter K, and wrote his name Karl.

AUDRAN (Germain), the eldeſt ſon of Claude, mentioned above, was born in 1631, at Lyons, where his parents then reſided. Not content with the inſtructions of his father, he went to Paris, and perfected himſelf under his uncle Carl. His merit was in ſuch eſtimation, that he was made a member of the academy, and choſen a profeſſor. He died at Lyons, in 1710, and left behind him four ſons, all artiſts; namely, Claude, Benoiſt, John, and Louis.

AUDRAN (Claude), the ſecond ſon of Claude abovementioned, was born at Lyons, in 1639, and went to Rome to ſtudy painting; where he ſucceeded ſo well, that at his return he was employed by Le Brun to aſſiſt him in the Battles of Alexander, which he was then painting for the king of France. He was received into the Royal Academy in the year 1675, and died unmarried at Paris, in 1684. His virtues (ſays abbé Fontenai) were as praiſeworthy as his talents were great. M. Heineken mentions this artiſt as an engraver, without ſpecifying any of his works in that line.

AUDRAN (Girard, or Gerard), the moſt celebrated of the family, was the third ſon of Claude Audran, and born at Lyons in 1640. He learned from his father the firſt principles of deſign and engraving; and, following the example of his brother, he left Lyons and went to Paris, where his genius ſoon began to manifeſt itſelf. Le Brun employed him to engrave the Battle of Conſtantine, and the Triumph of that emperor; and for theſe works he obtained apartments at the Gobelins. At Rome, whither he went for improvement, he is ſaid to have ſtudied under Carlo Maratti, in order to perfect himſelf in drawing; and in that city, where he reſided three years, he engraved ſeveral fine plates. M. Colbert, that great encourager of the arts, was ſo ſtruck with the beauty of Audran's works whilſt he reſided at Rome, that he perſuaded Louis XIV. to recal him. On his return, he was appointed engraver to the king, from whom he received great encouragement. In the year 1681 he was named counſellor of the Royal Academy; and died at Paris in 1703. He had been married, but left no male iſſue.

The great excellency of this artiſt above that of any other engraver was, that, though he drew admirably himſelf, yet he contracted no manner of his own; but tranſcribed on copper ſimply, with great truth and ſpirit, the ſtyle of the maſter whoſe pictures he copied. On viewing his prints you loſe ſight of the engraver, and naturally ſay, it is Le Brun, it is Pouſſin, it is Mignard, or it is Le Sueur, &c. as you turn to the prints which he engraved from thoſe maſters. Let any one examine the battles abovementioned from Le Brun; the Preſervation of young Pyrrhus, from Nicholas Pouſſin; the Peſt, from Mignard; and the Martyrdom of St. Lawrence, from Le Sueur; and then judge candidly of the truth of this obſervation. The following judicious remarks by the abbé Fontenai will fully illuſtrate the merits of Gerard Audran. "This ſublime artiſt, far from conceiving that a ſervile arrangement of ſtrokes, and the too frequently cold and affected clearneſs of the graver, were the great eſſentials of hiſtorical engraving, gave worth to his works by a bold mixture of free hatching and dots, placed together apparently without order, but with an inimitable degree of taſte; and has left to poſterity moſt admirable examples of the ſtyle in which grand compoſitions ought to be treated. His greateſt works, which have not a very flattering appearance to the ignorant eye, are the admiration of true connoiſſeurs and perſons of fine taſte. He acquired the moſt profound knowledge of the art by the conſtant attention and ſtudy which he beſtowed upon the ſcience of deſign, and the frequent uſe he made of painting from nature. This great man always knew how to penetrate into the genius of the painter he copied from; often improved upon, and ſometimes even ſurpaſſed, him. Without exception, he was the moſt celebrated engraver that ever exiſted in the hiſtorical line. We have ſeveral ſubjects which he engraved from his own deſigns, that manifeſted as much taſte as character and facility. But, in the Battles of Alexander, he ſurpaſſed even the expectations of Le Brun himſelf." Theſe conſiſt of three very large prints, lengthwiſe, each conſiſting of four plates, which join together, from Le Brun; namely, The paſſage of the Granicus; the Battle of Arbela; Porus brought to Alexander after his defeat. To this ſet are added two more large prints, lengthwiſe, on two plates each, alſo from Le Brun, as follow: Alexander entering the tent of Darius;

and The triumphal entry of Alexander into Babylon. The former was engraved by Girard Edelink, and the latter by Girard Andran. It is to be remarked of all theſe plates, that thoſe impreſſions are generally moſt eſteemed which have the name of Goyton, the printer, marked on them.

AUDRUICK', a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of Calais, three leagues and a half north-weſt of St. Omer.

AUDUN' LE ROMANT', a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Longwy, three leagues and a half weſt of Thionville.

AVE, a river of Portugal, which runs into the ſea, near Villa de Condé, in the province of Entre Duero e Minho.

AUE, a river of Germany, which runs into the Weſer, three miles ſouth of Nienburg, in the circle of Weſtphalia.

Aue, a town of Germany, in Upper Saxony, and circle of Erzgebirg, five miles north-weſt of Schwartzenberg.

Aue, a river of Germany, in Lower Saxony, which runs into the Fuhſe, two miles ſouth-ſouth-eaſt of Zell.

AVEHEN', a town of North America, in the country of Mexico, and diſtrict of Chiametlan.

AVEIN', a village of the Netherlands, in the duchy of Luxemburg, near which the army of France defeated the Spaniards, two leagues from Rochefort.

AVEI'RO, or Bragança Nova, a ſea-port town of Portugal, in the province of Beira, ſituated in a ſmall gulf at the mouth of the Vouga; the harbour is fit for veſſels of moderate ſize. The chief trade is ſalt, of which great quantities are made in its environs; it is eleven leagues ſouth of Oporto. Lat. 40. 40. N. lon. 10. 1. E. Ferro.

AVEIROU', a river of France, which runs into the Tarn, four leagues below Montauban.

To AVE'L, *v. a.* [*avello*, Lat.] To pull away.—The beaver in chace makes ſome divulſion of parts, yet are not theſe parts *avelled* to be termed teſticles. *Brown.*

AVEL'LA, a town of Italy, in the kingdom of Naples, and country of Lavora, four miles north-eaſt of Nola.

AVELLA'NA, *ſ.* in botany. See Corylus.

AVELLA'NE, *ſ.* in heraldry, a croſs, the quarters of which ſomewhat reſemble a filbert-nut. Sylvanus Morgan ſays, that it is the croſs which enſigns the mound of authority, or the ſovereign's globe.

AVELLI'NO, a city of Naples, in Italy, with a biſhop's ſee. It was almoſt ruined by an earthquake in 1694. It is, however, at preſent, a conſiderable place, having an extenſive manufacture of cloth of various qualities and colours, but chiefly blue. The ſecond article of trade is maccaroni and paſte of many kinds, which, being of an excellent quality, are in high repute. Avellino abounds with proviſions of every ſort; and each ſtreet is ſupplied with wholeſome water. The ſoil of this diſtrict, which conſiſts chiefly of volcanic ſubſtances, produces little corn, but fruit in abundance, of which the apple is deſervedly held in great eſteem. The moſt profitable, however, of all its fruit-trees, is the hazel. Nut-buſhes cover the face of the valley, and in good years bring in a profit of ſixty thouſand ducats, (11,250l.) The nuts are moſtly of the large round ſpecies of filbert, which we call *Spaniſh.* Theſe buſhes were originally imported into Italy from Pontus, and known among the Romans by the appellation of *Nux Pontica*, which in proceſs of time was changed into that of *Nux Avellana*, from the place where they had been propagated with the greateſt ſucceſs. The proprietors plant them in rows, and by dreſſing, form them into large buſhes of many ſtems. Every year they refreſh the roots with new earth, and prune off the ſtraggling ſhoots with great attention.

A'VE-MARI'A, the angel Gabriel's ſalutation of the Virgin Mary, when he brought her the tidings of the incarnation. It is become a prayer or form of devotion in the Romiſh church. The chaplets and roſaries are divided into ſo many ave-marias, and ſo many paternoſters, to which the members of the Romiſh church attribute great ſpiritual efficacy.

AVE'NA, *ſ.* [from *aveo*, Lat. to deſire or covet; cattle being fond of it.] Oat and Oat-grass. In botany, a genus of the claſs triandria, order digynia, natural order of gramina or graſſes. The generic characters are, Calyx: glume generally many-flowered, two-valved, looſely collecting the flowers; valves lanceolate, acute, ventricoſe, looſe, large, awnleſs. Corolla: two-valved: lower valve harder than the calyx, the ſize of the calyx, roundiſh, ventricoſe, acuminate at both ends, emitting from the back an awn ſpirally twiſted, reflex as at the knee-joint; nectary two-leaved; leaflets lanceolate, gibbous at the baſe. Stamina: filaments three, capillary. Anthers: oblong, forked. Piſtillum: germ obtuſe. Styles: two, reflex, hairy; ſtigmas ſimple. Perianthium: none. Corolla: moſt firmly cloſed, grows to the ſeed, and does not gape. Seed: one, ſlender-oblong, acuminate at both ends, marked with a longitudinal furrow.—*Eſſential Character.* Calyx: two-valved, many-flowered; awn from the back of the corolla, jointed, twiſted.

Species. 1. Avena Sibirica, or Siberian oat-graſs: panicled, calyxes one-flowered, ſeeds hirſute, awns thrice the length of the calyx. Culms from two to three feet in height, very ſlender. Leaves rolled up, ſo as to appear like ruſhes, from ſix inches to a foot in length. Panicle frequently directed entirely to one ſide, reſembling a ſpike, from three to nine inches long, green, purple, or variegated. Native of Siberia. Introduced in 1777, by Meſſ. Kennedy and Lee. It flowers in July and Auguſt.

2. Avena elatior, or tall oat-graſs: panicled; calyxes two-flowered; hermaphrodite floſcule almoſt awnleſs, male awned. Root perennial. Stems from two to three feet high or more, upright, round, ſmooth, having four or five purpliſh joints. Leaves ſix or ſeven inches, or even a foot, in length, from two to three lines in breadth, together with the ſheath ſtriated and ſmooth. Tall oat-graſs is common on banks, in hedges, on the borders of fields, and ſometimes of meadows, eſpecially wet ones; flowering in June and July. It is an early graſs, very productive, and yields a plentiful aftermath. The ſtem and leaves are by no means coarſe, but ſoft, tender, and of a pleaſant taſte; and it may be propagated with facility. Some foreign writers ſeem to have miſtaken this for our ray-graſs, from which it differs moſt widely. It is cultivated in ſome places abroad, and may perhaps be no bad ſubſtitute for meadow fox-tail graſs.

3. Avena ſtipiformis: panicled, calyxes two-flowered, awns twice the length of the ſeed, culms branching, a foot high, often reclining, ſmooth, with brown joints. Branches ſhort, from each axil. Native of the Cape of Good Hope.

4. Avena Pennſylvanica, or Pennſylvanian oat-graſs: panicle attenuated, calyxes two-flowered, ſeeds villoſe, awns twice the length of the calyx. Obſerved in Pennſylvania, by Kalm. Introduced here in 1785, by William Pitcairn, M. D.

5. Avena loeflingiana, or Spaniſh oat-graſs: panicle contracted, floſcules in pairs, hirſute; one peduncled, with two awns at the top, the middle awn longeſt. Root annual, capillary. Culms ſeveral, ſlender, from two to four inches high. It is found in a dry ſoil, near Madrid, and at the Cape of Good Hope. Introduced here in 1770, by Monſ. Richard.

6. Avena ſativa, or cultivated oat: panicled, calyxes two-ſeeded, ſeeds very ſmooth, one awned. The cultivated oat has an annual root. Culm, or ſtraw, two feet high and upwards. The two glumes or chaffs of the calyx are marked with lines, pointed at the end, longer than the flower, and unequal. There are uſually two flowers and ſeeds in each calyx: they are alternate, conical, the ſmaller one is awnleſs, the larger puts forth a ſtrong, two-coloured, bent, awn, from the middle of the back; both are cartilaginous and fertile. No botaniſt has been able to aſcertain ſatisfactorily the native place of growth of

this or any other ſort of grain now commonly cultivated in Europe. There are three ſorts of oats cultivated in England, viz. the white, the black, and the brown or red oat; to which we may add the blue, the Poland, the Friezland or Dutch, and the Siberian or Tartarian, oat. The white ſort is the moſt common about London, makes the whiteſt meal, and is chiefly cultivated where the inhabitants live much upon oat-cakes. The black is more cultivated in the northern parts of England, and is eſteemed a hearty food for horſes. The red oat is much cultivated in Derbyſhire, Staffordſhire, and Cheſhire, but is rarely ſeen in any of the counties near London; though, as it is a very hardy ſort, and gives a good increaſe, it would be well worth propagating, eſpecially in ſtrong land: the ſtraw is of a browniſh red colour, as is alſo the grain, which is very full and heavy, and eſteemed better food for horſes than either of the former ſorts. The blue oat is ſaid, in Merrett's Pinax, and Ray's Synopſis, to have been ſown about Kighley, in Yorkſhire. It is probably the ſame with what is cultivated in Lincolnſhire, &c. under the name of Scotch Greys. The Poland oat has a ſhort plump grain, but the thickneſs of the ſkin ſeems to have brought it into diſrepute among farmers. The grains are moſtly ſingle, it has no awn, and the ſtraw is ſhort. This was ſown by Mr. Liſle, in 1709. Friezland or Dutch oat affords more ſtraw, and is thinner ſkinned. The grains are moſtly double, the larger one ſometimes awned, with the awn placed high. Siberian or Tartarian oat, is, according to Mr. Marſhall, a diſtinct ſpecies, unnoticed by Linnæus. Each flower frequently contains three perfect florets, never leſs than two, with a pedicelled rudiment of a third. The panicle differs eſſentially from all the varieties of avena ſativa, the grains are thin and ſmall, the largeſt awned, the ſmall ones awnleſs; the ſtraw being tall and reedy. Avena arundinacea would be a proper name for it.

The oat is a very profitable grain, and eſteemed the moſt wholeſome food for horſes, being ſweet, and of an opening nature: other ſorts of grain are apt to bind, which is injurious to labouring horſes; but, if they be fed with this grain ſoon after it is houſed, before it has had a ſweat in the mow, or has been otherwiſe dried, it is as bad on the other hand, for it is then too laxative. This grain is a great improvement to many eſtates in the north of England, Scotland, and Wales; for it will thrive on cold barren ſoils, which will produce no other ſort of grain; it will alſo thrive on the hotteſt land: in ſhort, there is no ſoil too rich or too poor, too hot or too cold, for it; and in wet harveſts, when other grain is ſpoiled, this will receive little or no damage; the ſtraw and huſks being of ſo dry a nature, that, if they are houſed wet, they will not heat in the mow, or become mouldy, as other grain uſually do; it is therefore of great advantage in the northern parts of England, and in Scotland, where their harveſt is generally late, and the autumns wet. The meal of this grain makes tolerably good bread, and is the common food of the country people in the north. In the ſouth it is eſteemed for pottage, and other meſſes, and in ſome places they make beer with it.

7. Avena nuda, or naked oat, pilcorn, or pillis: panicled, calyxes three-flowered, receptacle exceeding the calyx, petals awned at the back, the third floſcule awnleſs. Naked oat, as Linnæus obſerves, is very nearly allied to the foregoing, differing in little elſe, except that the grains quit the huſks, and fall naked when they are ripe. Haller remarks, that, although the calyxes are ſaid to be three-flowered, yet there are ſometimes only two flowers in a calyx: he adds, that the awn is neither twiſted nor jointed. Ray ſays, that it has not a hard huſk, like the common oat, but ſeveral thin chaffy coats; that the grain alſo is ſmaller, but fuller bodied, inclining to tawney, like the red oat. Gerard relates (1597) that in Norfolk and Suffolk theſe are called unhulled or naked oats; it does not appear that they are now cultivated in thoſe counties. Worlidge (1687) affirms, that the naked oat has been yearly ſown about Durham above theſe thirty years. Dr. Plot (1686) reports, that it was ſown at Burton-upon-Trent; and Mr. Ray informs us, that in his time it was cultivated abundantly in the farther part of Cornwall, where it fetched no leſs a price than wheat. It is ſtill ſown there in the pooreſt croft-land that has been tilled two or three ſeaſons before with potatoes, and for the uſes of the poor anſwers all the purpoſes of oatmeal. It is a ſmall yellow grain, and for fattening calves accounted ſuperior to any other nouriſhment. Mr. Miller ſays, that the naked oat is leſs common than the others, eſpecially in the ſouthern parts of England; but in the north of England, Scotland, and Wales, it is cultivated in plenty. This ſort is eſteemed, becauſe the grain threſhes clean out of the huſk, and need not be carried to the mill to be made into oatmeal or griſt. An acre of ground doth not yield ſo many buſhels of theſe as of the common oats, by reaſon the grain is ſmall and naked, and goes near in meaſure; but what is wanted in the meaſure is ſupplied in value. [It muſt be obſerved, that the above paragraph is copied from Worlidge, and that the naked oat is not ſown now to the extent which he ſays it was in his time.] Naked oat is called *pillis*, or *pilez*, according to the orthography in Borlaſe, or *pill-corn*, from its quality of depoſiting the huſk or chaff. *Pill*, which we now write *peel*, being formerly put for the outer coat of any ſort of fruit.

8. Avena fatua, or bearded wild oat, or haver: panicled, calyxes three-flowered, all the floſcules awned and hairy at the baſe. Our bearded wild oat or haver has an annual root. It is a taller plant than the cultivated oat, the culm or ſtraw being commonly three, and frequently four, feet feet in height; it is erect, firm, leafy, ſmooth, with four joints or knots. Sheaths ſtreaked, ſmooth. Leaves ſmooth to appearance, but rough to the touch along the edge if ſtroked downwards. Valves of the calyx from nine to eleven lines long, with from nine to eleven ribs, whitiſh green, longer than the flowers; the outer valve generally a line ſhorter than the inner, containing two florets, both awned; the third is often wanting. The ſeed has a hairy covering. This is one of our moſt deſtructive annual weeds among corn, and is too frequently ſo prevalent among barley as almoſt to choke it. The ſeed ripens and falls before harveſt, thus filling the ground, in which it will lie ſeveral years without vegetating. It cannot eaſily be extirpated without repeated fallowing, or by laying down the land to graſs. The awns are ſometimes uſed for hygrometers, and the ſeeds inſtead of artificial flies in fiſhing for trout.

9. Avena ſeſquitertia: panicled, calyxes ſubtriflorous, all the floſcules awned, receptacles bearded; panicle oblong. The flowers appear to be hairy, but all the hairs ſit on pedicels or receptacles within the calyx, among the flowers. The third flower is imperfect, and does not get beyond a rudiment; it has however a ſmall awn. Native of Germany, Switzerland, Auſtria, and Piedmont.

10. Avena pubeſcens, or ſoft oat-graſs: ſubſpiked, calyxes ſubtriflorous, upper florets hairy at the baſe, leaves flat, pubeſcent. This is a perennial graſs; hardy, early, and productive. Native of Portugal, France, Germany, England, Siberia; with us it grows in dry and chalky ſoils.

11. Avena ſterilis, or great wild oat, or bearded oat-graſs: panicled, calyxes five-flowered, the outer floſcules and awns hairy at the baſe, the inner ones awnleſs. Root annual; culms three or four feet high, round, upright, ſmooth; leaves ſmooth, flat, ſharp, the longeſt a foot and a half in length; ſeeds whitiſh, ſilky, eſpecially towards the tip. Native of Barbary; alſo of Spain, according to Linnæus, and flowers in June there; with us in July.

12. Avena flaveſcens, or yellow oat-graſs: panicle looſe, calyxes three-flowered, ſhort; all the florets awned. Yellow oat-graſs has a perennial creeping root. Culm eighteen inches, or from one to two feet high, ſlender, upright, round, with three or four purpliſh joints, about which are numerous ſhort hairs; leaves flat, two lines in breadth, the upper ſurface hairy, the under ſmooth; ſheath ſtreak-

ed, hairy, eſpecially towards the baſe. This ſpecies is eaſily diſtinguiſhed from the others, from its being the leaſt of the genus commonly known; by having its panicle finely divided, and of a yellow hue; its ſpikelets ſmall, delicate, generally containing two perfect flowers ; and by having its leaves and ſtems conſtantly hairy. It becomes larger when cultivated, and the ſpikelets have then three or more flowers. This graſs is found in moſt paſtures, eſpecially high ones, in ſome meadows, and frequently on banks by road ſides. In many of our counties it forms a principal part of the fineſt paſture on the downs, and in ſome meadows contributes to the goodneſs as well as greatneſs of the crop. It is not ſo early as many of the poas, nor is it ſo late as ſome of the agroſtis genus: it is by no means unproductive, and bids fair to make a good ſheep paſture. This is one of the graſſes which Mr. Miller recommends for cultivation, next to the poas or meadow graſſes, which he prefers to all others. Dr. Withering affirms, that cattle are not fond of it, which muſt ſurely be a miſtake.

13. Avena hiſpida: panicled, calyxes three-flowered, hairy. 14. Avena capenſis: panicle contracted, calyxes three-flowered, ſubulate; corolla pubeſcent; middle awn twiſted, curved. Both theſe are natives of the Cape.

15. Avena purpurea: panicle contracted, calyxes two-flowered, ovate; corollas villoſe, outer glume bifid, awn terminal, bent in. 16. Avena lutea : panicle ſpreading, calyxes two-flowered, ſubulate; corollas naked, three-awned; middle awn flexuoſe. Both theſe are natives of Martinico.

17. Avena lupulina: panicle contracted, ovate; calyxes three-flowered, lanceolate; corollas villoſe, outer glume biſubulate, middle awn reflex. Native of the Cape of Good Hope, where it was obſerved by Thunberg.

18. Avena frigilis, or brittle oat-graſs: ſpiked, calyxes four-flowered, longer than the floret. Root annual; culms many, ſmooth, with three joints, ſix or ſeven inches high. Native of Spain and Portugal; introduced in 1770 by Monſ. Richard.

19. Avena pratenſis, or meadow oat-graſs: ſubſpiked, calyxes five-flowered, florets ſmooth, leaves channelled, ſmooth. Root perennial; culm a foot high, with about five knots. Native of Europe and Siberia, on dry paſtures and heaths. It flowers in July.

20. Avena ſpicata: ſpiked, calyxes ſix-flowered, longer than the outer petal, which is awned and forked at top. Native of Pennſylvania.

21. Avena bromoides: ſubſpiked, ſpicules binate, one peduncled; awns divaricate, calyxes eight-flowered. Height two feet. Native of Switzerland, and the neighbourhood of Montpellier.

22. Avena ſtrigoſa: panicled, calyxes two-flowered, corolla ſmooth at the baſe; outer valve ending in two awns ſhorter than the valve, and with a bent awn from the back. Native of Europe, among oats, barley, and ſometimes rye. Annual.

23. Avena aurata, or golden oat-graſs: calyxes two-flowered, panicle ſparſe, erect; corollas golden, villoſe at the baſe. This is a handſome graſs; culms nine inches high; leaves briſtle-ſhaped, very ſlender. Native of the alps of Switzerland and Piedmont.

24. Avena Scheuchzeri: locuſtas round, five-flowered, pubeſcent at the baſe; peduncles branching. Culm from ſix to twelve inches in height; leaves ſmooth. Native of the alps of Switzerland, Savoy, and Piedmont.

25. Avena filiformis: panicle erect, very ſlender; calyxes one-flowered; awns twice the length of the calyx. Native of New Zealand and Eaſter iſland.

Propagation and Culture. For the graſſes, ſee Graſs. The beſt time for ſowing oats is in February or March, according as the ſeaſon is early or late; and ſometimes, when ſown in April, upon cold land, they have been early ripe. The black and red oats may be ſown a month earlier than the white, becauſe they are hardier.

In the papers of the Bath agricultural ſociety, there is an experiment made in order to aſcertain the effect of early ſowing. Black oats were ſown on the 27th and 28th of February, which is a month ſooner than the common practice. The quantity ſown was four Wincheſter buſhels to the acre. The land was a mellow, deep, ſandy, loam, on which potatoes had grown. The produce was ninety-eight buſhels and a quarter to the acre. The ſucceſs, however, is not imputed wholly to early ſowing, but partly to good deep tillage. White oats, ſown the laſt week in May, have produced ſeven quarters to the acre. In Hertfordſhire they do not put them in till they have done ſowing barley; in Suffolk, on the contrary, they are ſown before barley. The former practice is ſeemingly the beſt, this oat being more tender. Mr. Marſhall gives the blowing of the fallow as a direction for the time of ſowing this grain.

Oats are often ſown on land which has the former year produced wheat, rye, or barley. The common method is to plough in the ſtubble about the beginning of February, and ſow the oats, and harrow them in; but they muſt be harrowed the ſame way as the furrows lie; for, if it be done croſſwiſe, the ſtubble will be raiſed on the ſurface: but this is not a good method of huſbandry; for, when there is time to plough the ſtubble in autumn, it will rot in winter, and then, giving the land another ploughing and a good harrowing juſt before the oats are ſown, it will make the ground finer and better to receive the grain. Oats are alſo ſown upon land when it is firſt broken up, before the ground is brought to a tilth for other grain; and are frequently put in upon the ſward with one ploughing; but it is much better to give the ſward time to rot before the ſeed is ſown, for the roots of the graſs will prevent thoſe of the corn from ſtriking downward.

Moſt people allow four buſhels of oats to an acre, but we are convinced that three buſhels are more than enough; the uſual produce is about twenty-five buſhels to an acre, though we have ſometimes known more than thirty buſhels. This is no very great crop, forty buſhels and upwards being no very unuſual produce; but not from ſowing thin. With reſpect to the proper quantity of ſeed to be ſown, practical men differ widely in opinion.

It appears from Mr. Young's Tour through the Southern Counties, that the quantity of oats ſown varies from five buſhels two pecks, to two buſhels and a half; and that the produce of the ſeveral quantities ſown is as follows:

	Q.	B.	P.
From 5 buſhels and upwards - - - -	4	6	0
4 buſhels - - - - - - - -	4	2	2
4 to 5 buſhels - - - - - -	3	6	0
3 buſhels and a half - - - - -	2	2	0
2 buſhels and a half - - - - -	2	0	0

Mr. Young ſays, that he ſhall not venture to decide the moſt beneficial quantities of ſeed from this table, but that he thinks we may fairly venture to reject the undiſtinguiſhing recommendations which have been given, by ſeveral authors, in favour of uſing very ſmall quantities of ſeed. Two buſhels, and even one, have been named as ſeed enough for an acre; but this table proves the direct contrary. Four buſhels are the moſt common quantity; if theſe gentlemen's opinions were founded on various practice, thoſe farmers who uſe more than that would reap much leſs crops than their neighbours, inſtead of which they reap much greater. It is well known, indeed, that very ſmall quantities of ſeed ſhould be ſown on land exceſſively rich. A gentleman farmer may make his field as rich as a garden, and then find that one or two buſhels of oats are ſufficient to be ſown on an acre; but he is not therefore to condemn his neighbours who ſow more; the quantity of ſeed ſhould be proportioned to the poverty of the ground; for in rich land corn tillers ſo much as apparently to cover the field, but in poor land it does not tiller at all, conſequently the grains ſhould be ſo much the nearer.

Mr. Young, in his Northern Tour, gives another table of the different quantities of ſeed ſown, with their reſpective average produce, as follows:

From

	Q.	B.	P.
From 7 buſhels ſown, average produce	6	0	3
6 buſhels	6	0	1
5 buſhels	4	4	2
4 buſhels and a half	4	5	1
4 buſhels	4	0	0
3 buſhels	4	1	0

Here he remarks, that although ſome circumſtances remain doubtful from the above ſcale, yet the ſuperiority of ſix or ſeven buſhels is ſo great, that there is abundant reaſon to think the other quantities are not equal to theſe in advantage; and that the modern ideas of ſowing ſmall quantities of ſeed, are not univerſally to be adopted. He recommends that experiments ſhould be tried on all ſorts of ſoils, and in every ſituation, on ſmall pieces of land, to decide this important point. Though Mr. Young is decidedly of opinion, that the quantity of the ſeed ſhould be proportioned to the poverty of the ground, yet there are not wanting others who ſay that poor ſoils ought not to be loaded with too much ſeed, and that ſix or ſeven buſhels an acre would utterly deſtroy cold clay lands. On a rich ſoil, oats, if ſown thin, are very apt to run to ſtraw; and one capital advantage is certainly gained by ſowing thick, which is, that the weeds are thereby effectually ſmothered. See AGROSTIS, AIRA, ANTHOXANTHUM, BROMUS, ELYMUS, and HOLCUS.

A'VENAGE, *ſ.* [from *avena*, Lat. oats.] A certain quantity of oats, paid by a tenant to his lord as a rent, or in lieu of ſome other duties. So *avenor* is an officer belonging to the king's ſtables, whoſe buſineſs is to provide the oats for his horſes.

AVENAY', a town of France, in the department of the Marne, ſituated on the river Marne, one league and a half north-eaſt of Epernay, and five weſt-north-weſt of Chalone ſur Marne.

AVEN'CHE, a town of Swiſſerland, in the canton of Berne, at one time the capital of Helvetia. It was taken and plundered by the Burgundians, and by Attila, who left it a heap of ſtones. It is now ſmall, and part of the ancient city is cultivated for grain and tobacco: it is ſituated at the ſouth end of the lake Morat, ſixteen miles ſouth-weſt of Berne.

To AVEN'GE, *v. a.* [*venger*, Fr.] To revenge.—I will *avenge* the blood of Jezreel upon the houſe of Jehu. *Hoſea.*—To puniſh:

Till Jove, no longer patient, took his time
T' *avenge* with thunder your audacious crime. *Dryden.*

AVEN'GEANCE, *ſ.* [from *avenge.*] Puniſhment:

This neglected, fear
Signal *avengeance*, ſuch as overtook
A miſer. *Philips.*

AVEN'GEMENT, *ſ.* Vengeance; revenge:

All thoſe great battles which thou boaſts to win
Through ſtrife and bloodſhed, and *avengement*
Now praiſed, hereafter thou ſhalt repent. *Spenſer.*

AVEN'GER, *ſ.* Puniſher.—That no man go beyond and defraud his brother, becauſe the Lord is the *avenger* of all ſuch. 1 *Theſſ.*—Revenger; taker of vengeance for:

But juſt diſeaſe to luxury ſucceeds,
And ev'ry death its own *avenger* breeds. *Pope.*

AVEN'GERESS, *ſ.* A female avenger. *Not in uſe.*

There that cruel queen *avengereſs*
Heap on her new waves of weary wretchedneſs. *Spenſer.*

AVE'NIO, an ancient town of the Cavares, and one of the moſt opulent in Gallia Narbonenſis; now Avignon.

A'VENOR. See AVENAGE.

A'VENTINE (John), author of the Annals of Bavaria, was born in the year 1466, at Abenſperg. He ſtudied firſt at Ingolſtadt, and afterwards in the univerſity of Paris. In 1503, he taught eloquence and poetry at Vienna; and, in 1507, he taught Greek at Cracow in Poland. In 1509, he read lectures on ſome of Cicero's pieces at Ingolſtadt; and, in 1512, was appointed preceptor to prince Louis and prince Erneſt, ſons of Albert the Wiſe, duke of Bavaria; and he travelled with the latter of thoſe two princes. After this, he undertook to write the Annals of Bavaria; being encouraged by the dukes of that name, who ſettled a penſion upon him. This work, which gained its author great reputation, was firſt publiſhed in 1554, by Jerome Zieglerus, profeſſor of poetry in the univerſity of Ingolſtadt; and afterwards at Baſil, in 1580, by Nicholas Ciſner. An affront, which Aventine received in the year 1529, ſtuck by him all the reſt of his life: he was forcibly taken out of his ſiſter's houſe at Abenſperg, and hurried to a jail; the true cauſe of which was never known. But it would probably have been carried to a much greater length, had not the duke of Bavaria interpoſed, and taken this learned man into his protection. Mr. Bayle remarks, that the incurable melancholy which from this time poſſeſſed Aventine, was ſo far from determining him to lead a life of celibacy, as he had done till he was ſixty-four, that it induced him perhaps to think of marrying. The violence of his new paſſion was not, however, ſo great, but that it ſuffered him to adviſe with two of his friends, and conſult certain paſſages of the bible relative to marriage. The reſult was, that it was thought beſt for him to marry; and, having already loſt too much time, conſidering his age, he took the firſt woman he met with, who happened to be his own maid, ill-tempered, ugly, and extremely poor. He died in 1534, aged ſixty-eight; leaving one daughter, who was then but two months old. He had a ſon, who died before.

AVENTI'NUS, the ſon of Hercules and the prieſteſs Rhea. This hero, being come from Italy to the banks of the river Tiber, fell in love with that prieſteſs, and took up his abode in a neighbouring mountain. From this amour Aventinus proceeded, who was brought up by his mother in the ſame place. From him came the name of mount Aventine, in Rome.

AVENTINUS MONS, one of the ſeven hills on which ancient Rome ſtood. This hill was alſo called *Murcius*, from Murcia the goddeſs of ſloth, who had a little chapel there; and *Collis Dianæ*, from the temple of Diana; likewiſe *Remonius*, from Remus, who was buried there. It was taken within the compaſs of the city by Ancus Marcius. To the eaſt it had the city walls; to the ſouth, the Campus Figulinus; to the weſt, the Tiber; and to the north, Mons Palatinus, in circuit two miles and a quarter.

AVEN'TURE, *ſ.* [properly *adventure.*] A miſchance cauſing the death of a man; as where a perſon is ſuddenly drowned, or killed by any accident, without felony. *Co. Lit.* 391.

A'VENUE, *ſ.* [*avenue*, Fr. it is ſometimes pronounced with the accent on the ſecond ſyllable, as Watts obſerves; but has it generally placed on the firſt.] A way by which any place may be entered.—Good guards were ſet up at all the *avenues* of the city, to keep all people from going out. *Clarendon.*—An alley, or walk of trees, before a houſe. Avenues were formerly much more in requeſt than at preſent, there being few old ſeats in the country but had one or more of them; and ſome had as many as there were views from the houſe; but of late theſe are, with good reaſon, diſuſed: for nothing can be more abſurd, than to have the ſight contracted by two or more lines of trees, which ſhut out the view of the adjacent grounds, whereby the verdure and natural beauties of the country are loſt; and, where the avenues are of a conſiderable length, (even where their breadth is proportionable,) they appear at each end to be only narrow cuts through a wood, which never can pleaſe any perſon of real taſte; and, when the road to the houſe is through the avenue, nothing can be more diſagreeable; for, in approaching to the houſe, it is like going through a narrow lane, where the objects on each ſide are ſhut out from the view; and, when it is viewed from the houſe, it at beſt has only the appearance of a road, which being extended to a length in a ſtraight line, is not ſo beautiful as a common road, which is loſt by the turnings, ſo as ſeldom to be ſeen to a great extent; but, as theſe avenues muſt be made exactly ſtraight, when the trees are grown to any ſize they entirely break the view, whatever way the ſight is directed through them; and, if this is in a park, the lawn of graſs through which the avenue is planted is thereby entirely deprived of the beauty which it naturally would afford, if left open and well kept: therefore, whenever the ſituation of a houſe will admit of a large open lawn in front, the road to the houſe ſhould be carried round at a proper diſtance; and, if it be carried ſometimes through trees, and ſerpented in an eaſy natural way, it will be much more beautiful than any ſtiff formal avenue, how large ſoever made.

But, as there may be ſome perſons ſo much wedded to the old way of laying out and planting grounds, as to prefer avenues to the moſt beautiful diſpoſition of lawns, woods, &c. we ſhall mention the uſual method of deſigning and planting them. The uſual width allowed to theſe avenues was generally as much as the whole breadth of the houſe and wings; but, if they are planted twelve or fourteen feet wider, they will be the better; becauſe, when the trees are grown to any conſiderable ſize, they will ſpread and overhang, ſo as to contract the view. And, as for ſuch avenues to woods or proſpects, they ought not to be leſs than ſixty feet in breadth; and, becauſe ſuch walks are a long time before they are ſhady, it will be convenient to plant another row on each ſide, rather than to loſe the ſtatelineſs that the main walk will afford in time by being broad, where any thing of a proſpect is to be gained. The trees ſhould not be planted nearer one another than thirty-five or forty feet, eſpecially if they are of a ſpreading kind; and the ſame diſtance, if they are for a regular grove.

As to the trees proper for planting avenues, they may be the Engliſh elm, the lime-tree, the horſe cheſnut, the common cheſnut, the beech, and the abele. The Engliſh elm is approved for all places where it will ſucceed, and that it will do in moſt places, except in very wet or cold ſhallow grounds: becauſe it will bear cutting, heading, lopping in any manner whatſoever, and probably with better ſucceſs than any other tree. The lime-tree is approved, becauſe it will do well in any tolerable ſoil, if the bottom be not hot and gravelly; and becauſe of the regular ſhape it has in growing, the agreeableneſs of its ſhade, and the beautiful colour of its leaves. The horſe cheſnut is alſo to be uſed in ſuch places as are very well defended from ſtrong winds; becauſe, wherever it grows freely, if it be not ſkilfully managed now and then by cutting, the branches are ſubject to ſplit down. This tree is valuable on account of its quick growth, the earlineſs of its coming out, the nobleneſs of its leaves, and the beauty of its flowers, being a fine plant both for ſhade and ornament. This delights in a ſtrong hearty ſoil, but will do well in any tolerable ground, if good care be taken in the planting of it; but, wherever theſe trees are planted in avenues, they ſhould be placed thirty feet aſunder, that their heads may have room to ſpread, otherwiſe they will not appear ſo beautiful. The common cheſnut will do well in a proper ſoil, and will riſe to a conſiderable height, if planted cloſe together; but, if it be planted ſingly, where the tree can take its own natural ſhape, it is rather inclined to ſpread and grow globous than tall. The beech is recommended by ſome; but this ſeldom ſucceeds well after tranſplanting, without extraordinary care; though it arrives to a very large tree in many places in England, where it grows naturally; and is the moſt tedious and troubleſome to raiſe, to any tolerable ſize, in a nurſery way. The abele grows more diſperſed and looſe in its head than any of the former, and, conſequently, is worſe for defence; but yet is not to be left out from the number of trees for avenues, becauſe it is the quickeſt in growth of all the foreſt trees, and will thrive tolerably well in almoſt any ſoil, and particularly in wet ground, where few of the above-mentioned trees will thrive, and this ſeldom fails in tranſplanting.

AVENZO'AR (Abu Merwan Abdalmalec Ebn Zohr), an eminent Arabian phyſician, flouriſhed about the end of the eleventh or the beginning of the twelfth century. He was of noble deſcent, born at Seville, the capital of Andaluſia, where he exerciſed his profeſſion with great reputation. His grandfather and father were both phyſicians. The large eſtate he inherited from his anceſtors, ſet him above the neceſſity of practiſing for gain: he therefore took no fees from the poor, or from artificers, though he refuſed not the preſents of princes and great men. His liberality was extended even to his enemies; for which reaſon he uſed to ſay, that they hated him not for any fault of his, but rather out of envy. Dr. Freind writes, that he lived to the age of 135; that he began to practiſe at forty, or (as others ſay) at twenty; and had the advantage of a longer experience than almoſt any one ever had, for he enjoyed perfect health to his laſt hour. He left a ſon, known alſo by the name of *Ebn Zohr*, who followed his father's profeſſion, was in great favour with Al Manzur emperor of Morocco, and wrote ſeveral treatiſes of phyſic.

Avenzoar was cotemporary with Averroes, who, according to Leo Africanus, heard the lectures of the former, and learned phyſic of him; this ſeems the more probable, becauſe Averroes more than once gives Avenzoar a very high and deſerved encomium, calling him “admirable, glorious, the treaſure of all knowledge, and the moſt ſupreme in phyſic from the time of Galen to his own.” Avenzoar, notwithſtanding, is by the generality of writers reckoned an empiric: but Dr. Freind obſerves, that this character ſuits him leſs than any of the reſt of the Arabians. “He was bred,” continues that author, “in a phyſical family, his father and grandfather being both practitioners, whom he always remembers with great gratitude and honour. We have his own teſtimony that he had a regular education; and that he not only learned what properly belongs to a phyſician, but, out of a great deſire of knowledge, every thing beſides which relates to pharmacy or ſurgery.” He wrote a book intitled *Tayaſſir fi'lmâdawât w'altadbir*, i. e. “The method of preparing medicines and diet; which is much eſteemed. This work was tranſlated into Hebrew, in 1280, and thence into Latin, by Paravicius, whoſe verſion has had ſeveral editions.

AU'ER, a river of Lithuanian Ruſſia, which runs into the Pregel; twelve miles weſt of Inſterburg.

To AVER', *v. a.* [*averer*, Fr. from *verum*, Lat. truth.] To declare poſitively, or peremptorily.—We may *aver*, though the power of God be infinite, the capacities of matter are within limits. *Bentley*.

A'VERA, *ſ.* [quaſi *overa*, from *ouvre*, and *ouvrage*, Fr. velut *operagium*.] Signifies a day's work of a ploughman, formerly valued at 8d. It is found in Domeſday.

A'VERAGE, *ſ.* [*averagium*, Lat.] A medium, a mean proportion. In law, it means that duty or ſervice which the tenant is to pay to the king, or other lord, by his beaſts and carriages. In navigation, it ſignifies the accidents and misfortunes which happen to ſhips and their cargoes, from the time of their loading and ſailing to their return and unloading; and is divided into three kinds. 1. The ſimple or particular average, which conſiſts in the extraordinary expences incurred for the ſhip alone, or for the merchandizes alone. Such is the loſs of anchors, maſts, and rigging, occaſioned by the common accidents at ſea; the damages which happen to merchants by ſtorm, prize, ſhipwreck, wet, or rotting; all which muſt be borne and paid by the thing which ſuffered the damage. 2. The large and common average, being thoſe expences incurred, and damages ſuſtained, for the common good and ſecurity both of the merchandizes and veſſels, conſequently to be borne by the ſhip and cargo, and to be regulated upon the whole. Of this number are the goods or money given for the ranſom of the ſhip and cargo, things thrown overboard for the ſafety of the ſhip, the expences of unloading for entering into a river or harbour, and the proviſions and hire of the ſailors when the ſhip is put under an embargo. 3. The ſmall averages, which are the expences for towing and piloting the ſhip out of or into harbours, creeks, or rivers, one third of which is charged to the ſhip, and two thirds to the cargo.

Average is more particularly uſed for a certain contribution that merchants make proportionably to their loſſes, who have had their goods caſt into the ſea in the time of a tempeſt. It alſo ſignifies a ſmall duty which thoſe merchants, who ſend goods in another man's ſhip, pay to the maſter for his care of them over and above the freight. Hence it is expreſſed in the bills of lading, paying ſo much freight for the ſaid goods, with primage and average accuſtomed. But if the maſter takes in more goods than he ought, without leave of the owners and freighters, and a ſtorm ariſes at ſea, and part of the freighter's goods are thrown overboard, the remaining goods are not ſubject to average; but the maſter ſhall make good the loſs out of his own eſtate: and, if in ſuch caſe the ſhip's tackle be loſt by ſtorm, the ſame is not within the average. If goods are caſt overboard before half the voyage is performed, they are to be eſtimated at the price they coſt: but if they be caſt out after, then at the price as the reſt are ſold at the port of arrival. *Leg. Oleron.*

Average of Corn-fields, the ſtubble or remainder of ſtraw and graſs left in corn-fields after the harveſt is carried away. In Kent it is called the *gratten*, and in other parts the *roughings*, *&c.*

AU'ERBACH, a town of Germany, in the circle of Upper Saxony, fourteen miles ſouth of Zwickau, and ſixty weſt-ſouth-weſt of Dreſden. Lat 50. 26. N. lon. 30. 12. E. Ferro.

A'ver-corn, is a reſerved rent in corn, paid by farmers and tenants to religious houſes; and ſignifies, by Somner, corn drawn to the lord's granary, by the working cattle of the tenant. It is ſuppoſed that this cuſtom was owing to the Saxon *cyriac ſceat*, a meaſure of corn brought to the prieſt annually on St. Martin's day, as an oblation for the firſt-fruits of the earth: under which title the religious had corn-rent paid yearly; as appears by an inquiſition of the eſtate of the abbey of Glaſtonbury, A. D. 1201.

Aver-land, ſeems to have been ſuch lands as the tenants did plough and manure, 'cum *averiis* ſuis,' for the proper uſe of a monaſtery, or the lords of the ſoil.

Aver-penny, or **Average-penny**, Money paid towards the king's averages or carriages, or to be freed thereof. *Raſtal.*

Aver-silver, A cuſtom or rent formerly ſo called.

AVERDUPOI'S. See Avoirdupois.

AVE'RIA, *ſ.* [Spelman deduces the word from *ouvrer*, Fr. to work, as if chiefly working-cattle; though it ſeems more proabably from *avoir*, to have or poſſeſs: the word ſometimes including all perſonal eſtate, as *catalla* did all goods and chattels.] Cattle. This word is uſed for oxen or horſes of the plough; and in a general ſenſe any cattle.

Averia Elongata. See Elongata.

AVE'RIIS capis in Withernam, a writ for the taking of cattle to his uſe, who hath cattle unlawfully diſtrained by another, and driven out of the county where they were taken, ſo that they cannot be replevied by the ſheriff. *Reg. Orig.* 82. See Distress.

AVER'MENT, *ſ.* Eſtabliſhment of any thing. In law, it is an offer of the defendant to make good or juſtify an exception pleaded by him in abatement or bar of the plaintiff's action? and it ſignifies the act, as well as the offer, of juſtifying the exception; and not only the form, but the matter thereof. *Co. Lit.* 362. Averment is either general, or particular; general, which concludes every plea, &c. containing matter affirmative, and ought to be with theſe words, 'and this he is ready to verify, &c.' Particular averment is when the life of tenant for life, or of tenant in tail, &c. is averred. With reſpect to particular averments, the following quotations may ſerve as examples.

He that claims eſtate from tenant for life, or in tail, or from parſon of a church, ought to aver his life. *Br. Eſtate*, pl. 18. Where one thing is to be done in conſideration of another, on contracts, &c. there muſt be an averment of performance; but, where there is promiſe againſt promiſe, there needs no averment; for each party hath his action, 1 *Lev.* 87. The uſe of averment being to aſcertain what is alleged doubtfully, deeds may ſometimes be made good by averment, where a perſon is not certainly named; but when the deed itſelf is void for uncertainty, it cannot be made good by averment. 5 *Rep.* 155. Averment cannot be made againſt a record, which imports in itſelf an uncontrovertible verity. *Co. Lit.* 26. *Jenk.* 232.

Averment lies not againſt the proceedings of a court of record. 2 *Hawk. P. C.* c. 1. § 14. Nor ſhall it be admitted againſt a will concerning lands. 5 *Rep.* 68. And an averment ſhall not be allowed where the intent of the teſtator cannot be collected out of the words of the will. 4 *Rep.* 44. One may not aver a thing contrary to the condition of an obligation, which is ſuppoſed to be made upon good deliberation, and before witneſſes, and therefore not to be contradicted by a bare averment. 1 *Lill. Abr.* 156.

An averment of a wicked and unlawful conſideration of giving a bond, may well be pleaded, though it doth not appear on the face of the deed: and any thing which ſhews an oligation to be void may well be averred, altho' it doth not appear on the face of the bond. Adjudged on demurrer, after two arguments in the caſe of Collins and Blantern, *C. B. Eaſter*, 7 Geo. III. 2 *Wilſon*, 347.

If an heir is ſued on the bond of his anceſtor, it muſt be averred that the heirs of the obligor were expreſsly bound. 2 *Saund.* 136. In declaring, you ſhew that the obligor bound his heirs. Another conſideration than that mentioned in a deed, may be averred, where it is not repugnant or contrary to the deed. *Dyer* 146. But a conſideration may not be averred, that is againſt a particular expreſs conſideration; nor may averment be againſt a conſideration mentioned in the deed, that there was no conſideration given. 1 *Rep.* 176. 8 *Rep.* 155. If an eſtate is made to a woman that hath a huſband, by fine or deed, for her life; in this caſe it may be averred to be made to her for her jointure, although there be another uſe or conderation expreſſed. 4 *Rep.* 4. Averment may be of uſe upon any fine, or common recovery; though not of any other uſe than what is expreſſed in it: it may be received to reconcile a fine, and the indenture to lead the uſes. *Dyer* 311. 2 *Bulſt.* 235. 1 *And.* 312.

If one has two manors known by the name of W. and levies a fine or grants an annuity out of his manor of W. he ſhall by averment aſcertain which of them it was; *per cur.* 6 *Mod.* 235. *Cha. Rep.* 138. If a piece of ground was anciently called by one name, and of late is called by another, and is granted to me by this new name; an averment may be taken that it is all one thing, and it will make it good. *Dyer* 37, 44. No averment lies againſt any returns of writs, that are definitive to the trial of the thing returned: as the return of a ſheriff upon his writs, &c. But it may be where ſuch are not definitive; and againſt certificates upon commiſſions out of any court: alſo againſt the returns of bailiffs of franchiſes, ſo that the lords be not prejudiced by it. *Dyer* 348. 8 *Rep.* 121. 2 *Cro.* 13.

A ſpecial averment muſt be made upon the pleading of a general pardon, for the party to bring himſelf within the pardon. *Hob.* 67. A perſon may aver he is not the ſame perſon on appeal of death in favour of life. 1 *Nelſ. Abr.* 305. Where a man is to take a benefit by an act of parliament, there in pleading he muſt aver, that he is not a perſon excepted; but where he claims no benefit by it, but only to keep that which he had before, in ſuch caſe it is not neceſſary to make ſuch averment. *Plow. Com.* 87, 488.

Pleas merely in the negative, ſhall not be averred, becauſe they cannot be proved: nor ſhall what is againſt preſumption of law, or any thing apparent to the court. *Co. Lit.* 362, 373. By ſtat. 4 and 5 Ann. c. 16. no exception or advantage ſhall be taken upon a demurrer, for want of averment of *hoc paratus eſt*, *&c.* except the ſame be ſpecially ſet down for cauſe of demurrer.

AVER'NUS, a lake of Campania in Italy, near Baiæ, famous among the ancients for its poiſonous qualities. It is deſcribed by Strabo as lying within the Lucrine bay, deep and darkſome, ſurrounded with ſteep banks that hang threatening over it, and only acceſſible by the narrow paſſage through which you ſail in. Black aged groves ſtretched their boughs over the watery abyſs, and with impenetrable foliage excluded almoſt every ray of wholeſome light; mephitic vapours aſcending from the hot bowels of the earth, being denied free paſſage to the upper atmoſphere, floated along the ſurface in poiſonous miſts. Theſe circumſtances produced horrors fit for ſuch gloomy deities; a colony of Cimmerians, as well ſuited to the rites as the place itſelf, cut dwellings in the boſom of the ſurrounding hills, and officiated as prieſts of Tartarus. Superſtition, always delighting in dark ideas, early and eagerly ſeized upon this ſpot, and hither ſhe led her trembling votaries to celebrate her diſmal orgies; here ſhe envoked the manes of departed heroes: here ſhe offered ſacrifices to the gods of hell, and attempted to dive into the ſecrets of futurity. Poets enlarged upon the popular theme, and painted its awful ſcenery with the ſtrongeſt colours of their art. Homer brings Ulyſſes to Avernus, as to the mouth of the infernal abodes; and in imitation of the Grecian bard, Virgil conducts his hero to the ſame ground. Whoever ſailed thither, firſt did ſacrifice; and endeavoured to propitiate the infernal powers, with the aſſiſtance of ſome prieſts, who attended upon the place, and directed the myſtic performance. Within, a fountain of pure water broke out juſt over the ſea, which was fancied to be a vein of the river Styx; near this fountain was the oracle; and the hot waters frequent in thoſe parts were ſuppoſed to be branches of the burning Phlegethon. The poiſonous effluvia from this lake were ſaid to be ſo ſtrong, that they proved fatal to birds endeavouring to fly over it. Virgil aſcribes the exhalation not to the lake itſelf, but to the cavern near it, which was called *Avernus* or 'Cave of the Sybil,' and through which the poets feigned a deſcent to hell. Hence the proper name of the lake is *Lacus Averni*, the 'lake near the cavern,' as it is called by ſome ancient authors.

The ſanctity of theſe ſhades remained unimpeached for many ages: Hannibal marched his army to offer incenſe at this altar; but it may be ſuſpected he was led to this act of devotion rather by the hopes of ſurpriſing the garriſon of Puteoli, than by his piety. After a long reign of undiſturbed gloom and celebrity, a ſudden glare of light was let in upon Avernus; the horrors were diſpelled, and with them vaniſhed the prieſts of the lake: the axe of Agrippa brought its foreſt to the ground, diſturbed its ſleepy waters with ſhips, and gave room for all its malignant effluvia to eſcape. The virulence of theſe exhalations, as deſcribed by ancient authors, has appeared ſo very extraordinary, that modern writers, who know the place in a cleared ſtate only, charge theſe accounts with exaggeration: but Mr. Swinburne thinks them entitled to more reſpect; for even now, he obſerves the air is feveriſh and dangerous, as the jaundiced faces of the vinedreſſers, who have ſucceeded the Sybils and the Cimmerians in the poſſeſſion of the temple, moſt ruefully teſtify. Boccaccio relates, that, during his reſidence at the Neapolitan court, the ſurface of this lake was ſuddenly covered with dead fiſh, black and ſinged, as if killed by ſome ſubaqueous eruption of fire. At preſent the lake abounds with tench; the Lucrine with eels. The change of fortune in theſe lakes is ſingular. In the ſplendid days of imperial Rome, the Lucrine was the choſen ſpot for the brilliant parties of pleaſure of a voluptuous court: now, a ſlimy bed of ruſhes covers the ſcattered pools of this once beautiful ſheet of water; while the once duſky Avernus is clear and ſerene, offering a moſt alluring ſurface and charming ſcene for ſimilar amuſements. Oppoſite to the temple is a cave uſually ſtyled the Sybil's grotto; but apparently more likely to have been the mouth of a communication between Cuma and Avernus, than the abode of a propheteſs; eſpecially as the Sybil is poſitively ſaid to have dwelt in a cavern under the Cumean citadel.

A'VERON, an iſland in the North Sea, near the coaſt of Norway. Lat. 63. 6. N. lon. 25. 30. E. Ferro.

AVERRO'A, *ſ.* [So named in honour of Ebu Elvelid Ebu Ruſhad, commonly called *Averroes*, of Corduba in Spain, a famous commentator on Ariſtotle and Avicenna. He alſo publiſhed *Colliget*, or the plants uſed in food, &c. He died at the beginning of 13th century.] In botany, a genus of the claſs decandria, order pentagynia, natural order gruinales. The generic characters are—Calyx: perianthium five-leaved, erect, ſmall; leaflets lanceolate, permanent. Corolla: petals five, lanceolate, the lower part erect, the upper ſpreading. Stamina: filaments ten, ſetaceous; alternately the length of the corolla, and ſhorter; antheræ roundiſh. Piſtillum: germ oblong, obſcurely five-cornered; ſtyles five, ſetaceous, erect; ſtigmas ſimple. Pericarpium: pome turbinate, five-cornered, five-celled. Seeds angular, ſeparated by membranes.—*Eſſential Character.* Calyx five-leaved; petals five, expanding above; pome five-cornered, five-celled.

Species. 1. Averroa bilimbi: trunk naked, fruit-bearing, pomes oblong, obtuſe-angled. This is only about eight feet in height, with few reclining branches. The leaves have ten pairs of leaflets and more. The flowers are red purple, on oblong ſmall racemes adhering to the trunk. The fruit is an oblong pome, the thickneſs of a finger, ſmooth on the outſide. Native of Goa, and many parts of India, both within and without the Ganges. Burman deſcribes it as a beautiful tree, with green fleſhy fruit filled with a grateful acid juice; the ſubſtance and ſeeds not unlike thoſe of cucumber; it grows from top to bottom, at all the knots and branches. They make a ſyrup of the juice, and a conſerve of the flowers, which are eſteemed excellent in fevers and bilious diſorders.

2. Averroa carambola: axillas of the leaves fruit-bearing; pomes oblong, acute-angled. This is a tree above the middle ſize, with ſpreading branches, and a very cloſe head. The leaves have only about four pairs of leaflets, which are ovate, acuminate, quite entire, ſmooth, petioled, oppoſite, the upper ones largeſt. Flowers lateral, ſcattered, on ſhort racemes, uſually from the ſmaller branches, ſometimes from the larger ones, or the trunk itſelf. According to the obſervation of Dr. Bruce, the petals are connected by the lower part of the lamina, and in this way they fall off whilſt the claws are quite diſtinct. This author gives a curious detailed account of the ſenſitive quality of the petioles and even branches of this tree. Rheede relates, that the carambola is twelve or fourteen feet in height, ſcarcely a foot in girth, with a rough brown bark: that it bears fruit three times a year, from the age of three to fifty: that the root, leaves, and fruits, are uſed medicinally, either alone or with betel leaves; that the latter, when ripe, are eſteemed delicious; unripe, are pickled; and that they are alſo uſed in dying and for other economical purpoſes. Burman ſays, that the acid juice of this is not ſo pleaſant as that of the foregoing; that the fruit is rather larger, and is uſed for the ſame purpoſes; and that it is a very beautiful tree. In Bengal they call it *camruc* or *camrunga*; in Malabar, *tamara-tonga*: the Bramins and Portugueſe call it *carambola*; and the Dutch, *vyfhoeken*. Both the ſpecies are now introduced into the royal botanic garden at Kew.

AVERROA ACIDA. See CICCA.

AVER'ROES, or ABEN-ROES, a very ſubtile Arabian philoſopher, who flouriſhed about the end of the 11th century, when the Moors had poſſeſſion of part of Spain. He was the ſon of the high prieſt and chief judge of Corduba or Cordova in Spain: but he was educated in the univerſity of Morocco, where he was profeſſor, and where he died in 1206, having there ſtudied natural philoſophy, medicine, mathematics, law, and divinity. He was exceſſively fat, though he ate but once a day, and ſpent moſt part of the night in the ſtudy of philoſophy, when he was fatigued amuſing himſelf with reading poetry or hiſtory. He was never ſeen to play at any game, or to partake in any diverſion. He was extremely fond of Ariſtotle's works, and wrote commentaries upon them; whence he was ſtyled *the Commentator*, by way of eminence. He wrote many other pieces; among them a work on the Whole Art of Phyſic; an Epitome of Ptolemy's Almageſt, which Voſſius dates about the year 1149; alſo a Treatiſe of Aſtrology, which was tranſlated into Hebrew by R. Jacob Ben Samſon, and ſaid to be extant in the French king's library. He wrote alſo ſeveral poems, and many amorous verſes, but theſe laſt he threw into the fire when he grew old. His other poems are loſt, except a ſmall piece, in which he ſays, "that, when he was young, he acted againſt his reaſon; but that, when he was in years, he followed its dictates;" upon which he utters his wiſh, "Would to God I had been born old, and that in my youth I had been in a ſtate of perfection!" As to religion, his opinions were, that Chriſtianity is abſurd; Judaiſm, the religion of children; Mahometaniſm, the religion of ſwine.

AVER'ROISTS, a ſect of peripatetic philoſophers, who appeared in Italy ſome time before the reſtoration of learning, and attacked the immortality of the ſoul. They took their denomination from Averroes, the celebrated interpreter of Ariſtotle, from whom they borrowed their diſtinguiſhing doctrine. The Averroiſts, who held the ſoul was mortal, according to reaſon or philoſophy, yet pretended to ſubmit to the Chriſtian theology, which declares it immortal. But the diſtinction was held ſuſpicious; and this divorce of faith from reaſon was rejected by the doctors of that time, and condemned by the laſt council of the Lateran under Leo X.

To AVERRUN'CATE, *v. a.* [*averrunco*, Lat.] To root up; to tear up by the roots.

AVERRUNCA'TION, *ſ.* Act of rooting up any thing.

AVERRUN'CI (DEI), certain gods, whoſe buſineſs it was, according to the pagan theology, to avert misfortunes. Apollo and Hercules were of the number of theſe gods among the Greeks; and Caſtor and Pollux among the Romans.

AVERSA'TION, *ſ.* [from *averſor*, Lat.] Hatred; abhorrence; turning away with deteſtation.—Hatred is the paſſion of defiance, and there is a kind of *averſation* and hoſtility included in its eſſence. *South.*—It is moſt properly uſed with *from* before the object of hate.—There was a ſtiff *averſation* in my lord of Eſſex *from* applying himſelf to the earl of Leiceſter. *Wotton.*—Sometimes with *to*; leſs properly.—There is ſuch a general *averſation* in human nature *to* contempt, that there is ſcarce any thing more exaſperating. I will not deny, but the exceſs of the *averſation* may be levelled againſt pride. *Government of the Tongue.*—Sometimes, very improperly, with *towards.*—A natural and ſecret hatred and *averſation towards* ſociety, in any man, hath ſomewhat of the ſavage beaſt. *Bacon.*

AVER'SE, *adj.* [*averſus*, Lat.] Malign; not favourable; having ſuch a hatred as to turn away.

Their courage languiſh'd as their hopes decay'd,
And Pallas, now *averſe*, refus'd her aid. *Dryden.*

Not pleaſed with; unwilling to.

Has thy uncertain boſom ever ſtrove
With the firſt tumults of a real love?
Haſt thou now dreaded and now bleſs'd his ſway,
By turns *averſe* and joyful to obey? *Prior.*

It has moſt properly *from* before the object of averſion.—Laws politic are never framed as they ſhould be, unleſs preſuming the will of man to be inwardly obſtinate, rebellious, and *averſe from* all obedience unto the ſacred laws of his nature. *Hooker.*

Theſe cares alone her virgin breaſt employ,
Averſe from Venus and the nuptial joy. *Pope.*

Very frequently, but improperly *to*.—He had, from the beginning of the war, been very *averſe to* any advice of the privy council. *Clarendon.*

AVERSE'LY, *adv.* Unwillingly; backwardly.—Not only they want thoſe parts of ſecretion, but it is emitted *averſely*, or backward, by both ſexes. *Brown.*

AVERSE'NESS, *ſ.* Unwillingneſs; backwardneſs.—The corruption of man is in nothing more manifeſt, than in his *averſeneſs* to entertain any friendſhip or familiarity with God. *Atterbury.*

AVER'SION, *ſ.* [*averſion*, Fr. *averſo*, Lat.] Hatred; diſlike; deteſtation; ſuch as turns away from the object. It is uſed moſt properly with *from* before the object of hate.—They had an inward *averſion from* it, and were reſolved to prevent it by all poſſible means. *Clarendon.*—Sometimes, leſs properly, with *to.*—A freeholder is bred with an *averſion to* ſubjection. *Addiſon.*—Sometimes with *for.*—This *averſion* of the people *for* the late proceedings of the commons, might be improved to good uſes. *Swift.*—Sometimes, very improperly, with *towards.*—His *averſion towards* the houſe of York was ſo predominant, as it found place not only in his councils but in his bed. *Bacon.*—The cauſe of averſion.

AVER'SO, a town of Italy, in the kingdom of Naples, and country of Lavona, built by the Normans, the ſee of a biſhop, ſuffragan of the archbiſhop of Naples, ten miles north of Naples.

A'VERSPERG, a town of Germany, in Carniola, eleven miles north-eaſt of Cirknitz.

To AVERT', *v. a.* [*averto*, Lat.] To turn aſide; to turn off; to cauſe to diſlike.—When people began to eſpy the falſehood of oracles, whereupon all gentility was built, their hearts were utterly *averted* from it. *Hooker.*—To put by, as a calamity.—Theſe affections earneſtly fix our minds on God, and forcibly *avert* from us thoſe things which are diſpleaſing to him, and contrary to religion. *Spratt.*

Through threaten'd lands they wild deſtruction throw,
Till ardent prayer *averts* the public woe. *Prior.*

AVERTI', *adj.* In horſemanſhip, is applied to a regular ſtep or motion enjoined in the leſſons. In this ſenſe, they ſay *pas averte*, ſometimes *pas ecouté*, and *pas d'ecole*, which all denote the ſame. The word is mere French, and ſignifies adviſed.

AVER'TO, a ſmall iſland in the Gulf of Venice, near the coaſt of Friuli. Lat. 45. 46. N. lon. 31. 18. E. Ferro.

A'VES, one of the Carribbee iſlands, 451 miles ſouth of Porto Rico, with a good harbour for careening of ſhips. It is ſo called from the great number of birds that frequent it. There is another of the ſame name lying to the northward of this, in lat. 15. 0. N. and a third near the eaſtern coaſt of Newfoundland, in lat. 50. 5. N.

AVES, *Birds*, the name of Linnæus's ſecond claſs of animals. See ZOOLOGY, and ORNITHOLOGY.

AVE'SA, a river of Italy, which runs into the Adriatic, near Rimini.

A'VESBURY (Robert), an Engliſh hiſtorian, of whom little more is known than that he was keeper of the regiſtry of the court of Canterbury in the reign of Edward III. and conſequently that he lived in the 14th century. He wrote *Memorabilia geſta magnifici regis Angliæ domini Edwardi III.* This hiſtory ends with the battle of Poictiers, about the year 1356. It continued in manuſcript till the year 1720, when it was printed by the induſtrious Thomas Hearne at Oxford, from a manuſcript belonging to Sir Thomas Seabright. It is now become very ſcarce.

AVE'SNE, a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of St. Pol, three leagues weſt of Arras.

AVE'SNES, a ſtrong town of France, in the department of the north, and principal place of a diſtrict. It is ſituated in Hainault, on the ſmall river Heſpre, and was ceded to France by the Spaniards, in 1659. The fortifications were repaired by Vauban: two poſts ſouth of Maubeuge, ſeven eaſt of Cambray, and twenty-four and a half north-north-eaſt of Paris. Lat. 50. 7. N. lon. 21. 34. E. Ferro.

AVEZZA'NO, a town of Naples, in Italy, in the farther Abruzzo. It is built in an almoſt imperceptible declivity, one mile from the lake of Celano, to which an avenue of poplars leads from the baronial caſtle. This edifice ſtands at a little diſtance from the town, is ſquare, and flanked with towers; it was erected by Virgino Orſini, to which family this and many other great lordſhips belonged, before they were wreſted from them in the civil war, and transferred to the Colonnas.

AUF, *ſ.* [of *alf*, Dut.] A fool, or ſilly fellow.

AUFE'DO, a town of Italy, in the kingdom of Naples, and province of Abruzzo Ultra, twenty-one miles weſt-ſouth-weſt of Aquila.

AUFFAY', a town of France in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Dieppe, ſix leagues north of Rouen.

AUFNAY', an iſland of Swiſſerland, in the lake of Zurich; it is ſmall, but contains two churches.

AU'GA, daughter of Aleus king of Tegea, who, having cohabited with Hercules, went into the wood to be delivered of Telephus. This prince, being grown up, was preferred in the court of Teutoras, king of Myſia, where Auga had taken refuge to avoid her father's anger. Telephus obtained his mother of the king, with a deſign to marry her, not knowing who ſhe was; but, on their going to be united, the ſudden appearance of an enormous ſerpent ſeparated the two lovers. Auga, imploring the aſſiſtance of Hercules, was ſoon informed that Telephus was her own ſon.

AU'GEAS, in fabulous hiſtory, was king of Elis, and particularly famed for his ſtable, which contained 3000 oxen, and had not been cleaned for thirty years. Hercules was deſired to clear away the filth from this ſtable in one day; and Augeas promiſed, if he performed it, to give him a tenth part of the cattle. This taſk Hercules is ſaid to have executed by turning the courſe of the river Alpheus through the ſtable; when, Augeus refuſing to ſtand by his engagement, Hercules ſlew him with his arrows, and gave his kingdom to Phyleus his ſon, who had ſhewn an abhorrence to his father's inſincerity.

AU'GER, or AUGRE, *ſ.* [*egger*, Dut.] A carpenter's tool to bore holes with.

AU'GER-HOLE, *ſ.* A hole made by boring with an auger; proverbially a narrow ſpace.

> What ſhould be ſpoken here,
> Where our fate, hid within an *auger-hole*,
> May ruſh and ſeize us. *Shakeſpeare.*

AUGHT, *pr.* [*auhe*, *awhe*, Sax.] It is ſometimes, improperly, written *ought.*] Any thing.

> But go, my ſon, and ſee if *aught* be wanting
> Among my father's friends. *Addiſon.*

AU'GICOURT, a town of France, in the department of the Upper Saone, and chief place of a canton, in the diſtrict of Juſſay, four leagues and a half north-weſt of Veſoul.

AU'GITES, *ſ.* [from αυω, to ſhine.] A precious ſtone of a pale green colour, and exceedingly reſplendent.

To AUGMENT', *v. a.* [*augmenter*, Fr.] To increaſe; to make bigger, or more.—Rivers have ſtreams added to them in their paſſage, which enlarge and *augment* them. *Hale.*

To AUGMENT, *v. n.* To increaſe; to grow bigger.

> The winds redouble, and the rains *augment*,
> The waves on heaps are daſh'd. *Dryden.*

AUG'MENT, *ſ.* [*augmentum*, Lat.] Increaſe; quantity gained.—You ſhall find this *augment* of the tree to be without the diminution of one drachm of the earth. *Walton.*—State of increaſe.—Diſcutients are improper in the beginning of inflammations; but proper, when mixed with repellents, in the *augment.* *Wiſeman.*

AUGMENTA'TION, *ſ.* The act of increaſing or making bigger.—Thoſe who would be zealous againſt the regular troops after a peace, will promote an *augmentation* of thoſe on foot. *Addiſon.*—The ſtate of being made bigger.—What modifications of matter can make one embryo capable of ſo prodigiouſly vaſt *augmentation*, while another is confined to the minuteneſs of an inſect? *Bentley.*—The thing added, by which another is made bigger.—By being glorified, it does not mean that he doth receive any *augmentation* of glory at our hands; but his name we glorify, when we teſtify our acknowledgement of his glory. *Hooker.*

AUGMENTATION, *ſ.* In heraldry, are additional charges to a coat-armour, frequently given as particular marks of honour, and generally borne either in the eſcutcheon or a conton; as have all the baronets of England, who have borne the arms of the province of Ulſter in Ireland.

AUGMENTATION-COURT, was the name of a court erected by Hen. VIII. for determining ſuits and controverſies relating to monaſteries and abbey-lands. The intent of which court was, that the king might be juſtly dealt with touching the profits of ſuch religious houſes as were given to him by act of parliament. It took its name from the augmentation of the revenues of the crown, by the ſuppreſſion of religious houſes. And the office of augmentation, which hath many curious records, remains to this day, though the court hath long ſince been diſſolved.

AUGMEN'TUM, *ſ.* In grammar, an addition made in certain tenſes of Greek verſes, by increaſing the number of ſyllables.

AUGOX'AS, a ſmall iſland of Africa, on the coaſt of Mozambique.

AUGS'BURG, or AUSBURG, an imperial city of Germany, ſituated in a fertile and delightful plain, between the rivers Lech and Wertach, which unite not far from it; it is ſurrounded with ramparts, walls, and ditches. It is the ſee of a biſhop, ſuffragan of the archbiſhop of Mentz. Beſides the cathedral, it has ſix Roman Catholic pariſh churches, and as many Lutheran. There are ſeveral hoſpitals, and other charitable foundations: the burghers are computed to be ſix thouſand. The magiſtracy conſiſts of forty-five, of whom thirty-one are patricians, four related to patricians by marriage, five merchants, and five tradeſmen; the council is formed of an equal number of Lutherans and Roman Catholics. The trade of Augſburg was once very great, and is now conſiderable. In the diet of the empire, it poſſeſſes the ſecond place of the imperial cities of Swabia, and is aſſeſſed in the matricula at 507 rixdollars, twenty kruitzers and a half. In the year 1703 and 1704, it ſuffered much by the Bavarians and the French. The biſhop is a prince of the empire, and ſits and votes in the college of princes, betwixt the biſhops of Conſtance and Hildeſheim; his revenue is eſtimated at 100,000 rix-dollars. The territory belonging to the biſhopric lies ſcattered between the rivers Lech, Iler, and Danube. The biſhop holds his court at Augſburg, but his principal reſidence is at Dillingen. Many of the churches of Augſburg are ſtately, and adorned with curious workmanſhip and paintings. Its magnificent town-houſe is little inferior to that of Amſterdam, being a vaſt ſquare ſtone building, with a marble portico; the great portal is alſo of a very beautiful red marble, over which is a balcony of the ſame colour, ſupported by two pillars of white marble. In the ſquare, near the town-houſe, is the fountain of Auguſtus, which is a marble baſon, ſurrounded with iron balluſtrades finely wrought: at the corners are four braſs ſtatues as large as life; in the middle of the baſon is a pedeſtal, at the foot of which are four large ſphinxes ſquirting water out of their breaſts; a little above theſe are four infants holding four dolphins in their arms which pour water out of their mouths; and over theſe infants are feſtoons and pine-apples, all of braſs; upon the pedeſtal is the ſtatue of Auguſtus Cæſar, as large as life. The fountain of Hercules is a hexagon baſon, with ſeveral braſs figures, particularly Hercules engaging the hydra. Another curioſity is the ſecret gate, which was contrived to let perſons in and out in time of war: it has ſo many engines and diviſions with gates and keys, and apartments for guards at ſome diſtance from each other, where paſſengers are examined, that it is impoſſible for the town to be ſurpriſed this way; the gates are bolted and unbolted, opened and ſhut, by unſeen operators, inſomuch that it looks like enchantment. The water-towers are alſo very curious, of which there are three ſeated on a branch of the river Lech, which runs through the city in ſuch a torrent as to drive many mills, which work a number of pumps that raiſe the water in large leaden pipes to the tops of the towers; one of theſe ſends water to the public fountains, and the reſt to near 1000 houſes in the city.

The Lutherans have a college here, which is a vaſt ſquare building, with rooms for ſeven different claſſes, a hall for public diſputations, and a theatre for dramatic repreſentations. The inhabitants conſider Auguſtus Cæſar as the founder of the place; it is true, that emperor ſent a colony there; but the town was already founded, though he gave it the name of *Auguſta Vindelicorum*. Augſburgh, indeed, is one of the oldeſt towns in Germany, and remarkable for the many important diets of the empire held here. In 952, its council confirmed the order for the celibacy of prieſts; in 1530, the confeſſion of faith of the Proteſtants was laid before the emperor and other eſtates of Germany at this place; and here, in 1555, was ſigned the famous treaty of peace, by which religious liberty was ſecured to Germany.

This city, which is nine miles and a half in circumference, contains, according to Mr. Rieſbeck, 30,000 inhabitants: but Mr. Nicolai makes them about 35,000, and ſays there are 28,000 houſes. Augſburg is thirty-five miles north-weſt of Munich. Lat. 48. 21. N. lon. 28. 31. E. Ferro.

Augsburg Confession, a celebrated confeſſion of faith drawn up by Luther and Melancthon, on behalf of themſelves and other ancient reformers, and preſented in 1530 to the emperor Charles V. at the diet of Augſburg, in the name of the evangelic body. This confeſſion contains twenty-eight chapters; of which the greateſt part is employed in repreſenting, with perſpicuity and truth, the religious opinions of the Proteſtants, and the reſt in pointing out the errors and abuſes that occaſioned their ſeparation from the church of Rome.

AUGST, a village of Swiſſerland, near the Rhine, once a celebrated city, called *Auguſta Rauracorum:* two leagues below Baſle.

AU'GUR, *ſ.* [*augur*, Lat.] One who pretends to predict by omens, as by the flight of birds, &c.

At Rome there was a college or community of augurs, conſiſting originally of three members with reſpect to the three Luceres, Rhamnenſes, and Tatienſes: afterwards the number was increaſed to nine, four of whom were patricians and five plebeians. They bore an augural ſtaff or wand, as the enſign of their authority; and their dignity was ſo much reſpected, that they were never depoſed, nor any ſubſtituted in their place, though they ſhould be convicted of the moſt enormous crimes.

To Augur, *v. n.* To gueſs; to conjecture by ſigns:

The people love me, and the ſea is mine,
My powr's a creſcent, and my *aug'ring* hope
Says it will come to the full. *Shakeſpeare.*

My *aug'ring* mind aſſures the ſame ſucceſs. *Dryden.*

AU'GURAL, *adj.* Something relating to the augurs. The augural inſtruments are repreſented on ſeveral ancient medals. The *augural ſupper* was that given by a prieſt on his firſt admiſſion into the order, called alſo by Varro *adjicialis. Augural books*, were thoſe wherein the diſcipline and rules of augury were laid down.

AUGURA'LE, *ſ.* The place in a camp where the general took auſpicia. This anſwered to the *auguratorium* in the city.

Augurale is alſo uſed in Seneca for the enſign or badge of an augur, as the *lituus.*

To AU'GURATE, *v. n.* [*auguror*, Lat.] To judge by augury.

AUGURA'TION, *ſ.* The practice of augury, or of foretelling by events and prodigies.

AUGURATO'RIUM, *ſ.* A building on the Palatine mount, where public auguries were taken.

AU'GURER, *ſ.* The ſame with Augur.

AUGU'RIAL, *adj.* Relating to augury.—On this foundation were built the concluſions of ſoothſayers, in their *augurial* and tripudiary divinations. *Brown.*

To AU'GURISE, *v. n.* To practiſe divination by augury.

AUGURIS'TA, *ſ.* [from *auguro*, Lat. to foretel.] A perſon who who by ſuperſtitious ſigns foretels the event of diſeaſes.

AU'GUROUS, *adj.* Predicting; preſcient; foreboding.

AU'GURY, *ſ.* [*augurium*, Lat.] The act of prognoſticating by omens or prodigies:

Thy face and thy behaviour,
Which, if my *augury* deceive me not,
Witneſs good breeding. *Shakeſpeare.*

An omen or prediction:

The pow'rs we both invoke
To you, and yours, and mine, propitious be,
And firm our purpoſe with an *augury.* *Dryden.*

AUGUST', *adj.* [*auguſtus*, Lat.] Great; grand; royal; magnificent; awful.—There is nothing ſo contemptible, but antiquity can render it *auguſt* and excellent. *Glanville.*

Au'gust, *ſ.* The eighth month of the year, containing thirty-one days. In the ancient Roman calendar this was called *ſextilis*, as being the ſixth month from March, with which their year began; but changed to its preſent name by the emperor Auguſtus, calling it after his own name on account of his having obtained many victories and honours in that month.

August is painted like a young man, with a fierce countenance, dreſſed in a flame-coloured robe, having his head adorned with a garland of wheat, and having a baſket of ſummer fruit on his arm, a ſickle at his belt, and bearing a victim.

AUGUS'TA, the capital town, and preſent ſeat of government, of the ſtate of Georgia, in North America. It ſtands on the ſouth-weſt bank of the Savannah river, which is here about five hundred yards wide, about 144 miles from the ſea, and 127 north-weſt from Savannah. The town, which ſo recently as 1782 contained but three or four houſes, is now a very populous place. It is ſituated in a large plain, at the foot of the firſt falls in the river, which in a dry ſeaſon are four or five feet in height; and, as it enjoys the beſt ſoil, and a central ſituation, it advances rapidly in its trade and commerce.

Augusta, a county of Virginia, in North America, which ſent 1375 men to the national militia in 1781.

Augusta, or Austa, an iſland in the Adriatic ſea on the coaſt of Dalmatia, near Raguſa. Lat. 42. 35. N. lon. 17. 50. E.

Augusta Auscio'rum, a town of Aquitania, ſo named in compliment to Auguſtus, being originally called *Climberrum*, which name it afterwards reſumed. In the middle age, it took the name of the people, *Auſci*; and is now called *Auch.*

Augusta Emeri'ta, a town of Luſitania, on the river Anas, the capital of the province; a colony of the Emeriti, or ſuch ſoldiers as had ſerved out their legal time, were men of experience, or had received marks of favour. The colony was founded by Auguſtus; and is now called *Merida*, a city of Spain, in Eſtremadura, on the river Guadiana.

Augusta Præto'ria, a town and colony of Gallia Ciſalpina, and capital of the Salaſſi; ſeated at the foot of the Alps Graiæ on the Duria. Now *Aouſte* in Piedmont.

Augusta Rauraco'rum, a town of Gallia Belgica; now a ſmall village called *Augſt.*

Augusta Suesso'num, a town of Gallia Belgica, on the Axona; ſo called from Auguſtus, and with great probability ſuppoſed to be the Noviodunum Sueſſonum of Cæſar. Now *Soiſſons*, on the river Aiſne, in France.

Augusta Taurino'rum, a town of the Taurini at the foot of the Alps where the Duria Minor falls into the Po; now *Turin*, the capital of Piedmont.

Augusta Tre'ba, a town of the Æqui, near the ſprings of the river Anio in Italy; now *Trevi*, in Umbria, or in the eaſt of the Campagna di Roma.

Augusta Treviro'rum, a town of the Treviri, a people inhabiting between the Rhine and the Meuſe, but eſpecially about the Moſelle; now *Triers*, or *Treves*, in the circle of the Lower Rhine on the Moſelle.

Augusta Vendelico'rum, a town of the Licates on the Licus; called by Tacitus a noble colony of *Rhætia*; now *Augsburgh*, capital of Suabia.

Augusta Histo'ria, is the hiſtory of the Roman emperors from the time of Adrian to Carinus, that is, from the year of our Lord 157 to 285, compoſed by ſix Latin writers, Æl. Spartianus, Julius Capitolinus, Æl. Lampridius, Vulcatius Gallicanus, Trebellius Pollio, and Flavius Vopiſcus.

AUGUSTA'LES, *ſ.* in Roman antiquity, an epithet given to the flamens or prieſts appointed to ſacrifice to Auguſtus after his deification; and alſo to the ludi or games celebrated in honour of the ſame prince on the fourth of the ides of October.

AUGUSTA'LIA, *ſ.* a feſtival inſtituted by the Romans in honour of Auguſtus Cæſar, on his return to Rome, after having ſettled peace in Sicily, Greece, Syria, Aſia, and Parthia; on which occaſion they likewiſe built an altar to him, inſcribed *Fortunæ reduci.*

AUGUSTA'LIS PRÆFEC'TUS, a title peculiar to a Roman magiſtrate who governed Egypt, with a power much like that of a proconſul in other provinces.

AUGUS'TENBERG, a town of Germany, in the circle of Upper Saxony, and county of Swartzburg: three miles eaſt of Arnſtadt.

Augustenberg, a town of Denmark, in the duchy of Sleſwick, ſix miles eaſt of Sonderborg.

AUGUS'TIN, [*auguſtinus*, Lat. majeſtical, royal.] A proper name of men.

Augustin, or Austin, (St.) the firſt archbiſhop of Canterbury, was originally a monk in the convent of St. Andrew at Rome, and educated under St. Gregory, afterwards pope Gregory I. by whom he was diſpatched into Britain, with forty other monks, about the year 596, to convert the Engliſh-Saxons to Chriſtianity. They landed in the iſle of Thanet; and, having ſent ſome French interpreters to king Ethelbert with an account of their errand, the king gave them leave to convert his ſubjects, and aſſigned their place of reſidence at *Dorovernum*, ſince called Canterbury; to which place they were confined till the king himſelf was converted, whoſe example had a powerful influence in promoting the converſion of his ſubjects. He diſpatched a prieſt and a monk to Rome, to acquaint the pope with the ſucceſs of his miſſion, and to deſire his reſolution of certain queſtions. Theſe men brought back with them a pall, and ſeveral books, veſtments, utenſils, and ornaments, for the churches. His holineſs, by the ſame meſſengers, gave Auguſtin directions concerning the ſettling of epiſcopal ſees in Britain; and ordered him not to pull down the idol-temples, but to convert them into Chriſtian churches; only deſtroying the idols, and ſprinkling the place with holy-water, that the natives, by frequenting the temples they had always been accuſtomed to, might have the leſs objection to the Chriſtian faith. Auguſtin reſided principally at Canterbury, which thus became the metropolitan church of England; and, having eſtabliſhed biſhops in ſeveral cities, he died on the 26th of May, 607. The feſtival of St. Auguſtin was firſt injoined in a ſynod held under Cuthbert archbiſhop of Canterbury, and afterwards by the pope's bull in the reign of Edw. III.

AUGUS'TINE (St.) an illuſtrious father of the church, was born at Thagaſte, a city of Numidia, on the 13th of November 354. His father, a burgeſs of that city, was called *Patricius*; and his mother, *Monica*, who was a woman of great virtue, inſtructed him in the principles of the Chriſtian religion. In his early youth he was in the rank of the catechumens; and, falling dangerouſly ill, earneſtly deſired to be baptized; but, the violence of his diſtemper ceaſing, his baptiſm was delayed. His father, who was not yet baptized, made him ſtudy at Thagaſte, Madaura, and Carthage. Auguſtine, having read Cicero's philoſophy, began to entertain a love for wiſdom, and applied himſelf to the ſtudy of the Scriptures; nevertheleſs, he ſuffered himſelf to be ſeduced by the Manicheans. At the age of nineteen, he returned to Thagaſte, taught grammar, and frequented the bar: and he afterwards taught rhetoric at Carthage. The inſolence of the ſcholars at Carthage made him reſolve to go to Rome, though againſt his mother's will. Here alſo he had many ſcholars; but, diſliking them, he quitted Rome, and ſettled at Milan, and was choſen public profeſſor of rhetoric in that city. Here he frequently attended the ſermons of St. Ambroſe, which determined him to retract his errors, and quit the ſect of the Manicheans; this was in the thirty-ſecond year of his age. In the vacation of the year 386 he retired to the houſe of a friend named *Verecundus*, where he ſeriouſly applied himſelf to the ſtudy of the Chriſtian religion, in order to prepare himſelf for baptiſm, which he received at Eaſter in the year 387. Soon after this, his mother came to ſee him at Milan, and invited him back to Carthage; but, at Oſtia, where he went to embark, ſhe died. He arrived in Africa about the end of the year 388; and, having obtained a garden-plot without the walls of the city of Hippo, he aſſociated with eleven other perſons of eminent ſanctity, who diſtinguiſhed themſelves by wearing leathern girdles, and by leading a monaſtic life, for the ſpace of three years, exerciſing themſelves in faſting, prayer, ſtudy, and meditation. From hence ſprung up the Auguſtine friars, or eremites of St. Auguſtine, being the firſt order of mendicants; thoſe of St. Jerome, the Carmelites, and others, being but branches of that of St. Auguſtine. About this time, Valerius biſhop of Hippo ordained him prieſt: nevertheleſs, he continued to reſide in his little monaſtery, with his brethren, who, renouncing all property, poſſeſſed their goods in common. Two years after, Valerius, fearing he might be preferred to be biſhop of another church, appointed him his coajutor or colleague, and cauſed him to be ordained biſhop of Hippo. St. Auguſtine died the 28th of Auguſt, 430, aged ſeventy-ſix, having had the misfortune to ſee his country invaded by the Vandals, and the city where he was biſhop beſieged for ſeven months. The works of St. Auguſtine make ten volumes: the beſt edition is that of Maurin, printed at Antwerp in 1700. They are but little read at this time, except by the clergy of the Greek church, and in the Spaniſh univerſities.

Augustine (St.) a fort and town of North America, on the eaſt coaſt of Cape Florida, ſituated in lat. 30. 0. N. lon. 81. 10. W. This colony was ſettled by the Spaniards; who were ſcarcely eſtabliſhed when they were attacked by Sir Francis Drake, in 1586, who reduced and pillaged the fort and town adjacent. In 1665, it met a ſimilar fate, being attacked by captain Davis at the head of a conſiderable company of buccaneers. In 1702 an attempt was made by colonel More to annex St. Auguſtine to the Britiſh dominions. He inveſted it with 500 Engliſh and 700 Indians; which ſmall force would have been ſufficient to reduce the place, had not ſuccours arrived when it was on the point of ſurrendering. Even then, it is thought that he might have defeated the reinforcement; but he choſe to raiſe the ſiege, and retire with precipitation. In 1740, another unſucceſsful attempt was made on this fort by general Oglethorpe: it was, however, together with the whole country of Florida, ceded to Great Britain by the treaty of Paris in 1763; but has ſince been reſtored to Spain by the treaty of 1783. The town of St. Auguſtine runs along the ſhore, and is of an oblong form, divided by four regular ſtreets, croſſing each other at right angles. At the entrance into the harbour are the north and ſouth breakers, forming two channels, whoſe bars, at low tides, have eight feet water.

Augustine, a cape of South America. Lat. 8. 30. S. lon. 35. 4. W.

AUGUS'TINS, or Auguſti'nians, an order of religious; thus called from St. Auguſtin, whoſe rule they obſerve. The Auguſtins, popularly alſo called Auſtin friars, were originally hermits, whom pope Alexander IV. firſt congregated into one body, under their general Lanfranc, in 1256. Soon after their inſtitution, this order was brought into England, where they had about thirty-two houſes at the time of their ſuppreſſion. The Auguſtins are clothed in black, and make one of the four orders of mendicants. From theſe aroſe a reform, under the denomination of *bare-foot Auguſtins*, or *minorets*, or *friars minor*. There are alſo canons regular of St. Auguſtin, who are clothed in white, excepting their cope, which is black. Before the French revolution, they were known at Paris under the denomination of *religious of* Genevieve; that abbey being the chief of the order. There are alſo nuns and canoneſſes, who obſerve the rules of St. Auguſtin.

AUGUSTI'NIANS, are thoſe divines who maintain, on the authority of St. Auguſtin, that grace is effectual from its nature, abſolutely and morally, and not relatively and gradually. They are divided into rigid and relaxed, and hold that the gates of heaven are ſhut till the day of judgment or general reſurrection.

AUGUST'NESS, *ſ.* Elevation of look; dignity; loftineſs of mien or aſpect.

AUGUSTOBO'NA, a city of the Tricaſſers in ancient Gaul, from whom it was afterwards called *Tricaſſes*, and *Trecaſſæ*; and ſtill farther corrupted to *Thracæ*, or *Treci*; whence the name *Troyes*, in Champaigne, on the Seine.

AUGUSTODU'NUM, the capital of the Ædui, where there was a famous academy or ſchool for the education of youth; now *Autun*, in Burgundy.

AUGUSTO'MAGUS, an ancient town of Gallia Belgica; now *Sentis*, in the Iſle of France.

AUGUSTORI'TUM, according to ſome authors, the capital of the Pictones, afterwards called Pictavi; now *Poictiers*. But by Antonine's Itinerary from Burdigala to Argantomagus (or Argenton as it is interpreted by many), it can be no other than the capital of the Lemovices, now *Limoges*, ſituate between Veſunna of the Petrocorii, or Perigueux, and Argantomagus.

AUGUSTOW', a town of Poland, in the palatinate of Bielſk, fifty-ſix miles north-north-weſt of Bielſk.

AUGUSTURSHUNN', a town of Germany, in the circle of Upper Saxony, and marquiſate of Meiſſen, near Radeberg.

AUGUS'TUS, the appellation conferred upon Cæſar Octavianus, the firſt Roman emperor. The obſcure name of Octavianus, Mr. Gibbon obſerves, he derived from a mean family, in the little town of Aricia. It was ſtained with the blood of the proſcription; and he was deſirous, had it been poſſible, to eraſe all memory of his former life. The illuſtrious ſurname of *Cæſar* he had aſſumed, as the adopted ſon of the dictator; but he had too much good ſenſe either to hope to be confounded or to wiſh to be compared with that extraordinary man. It was propoſed in the ſenate, to dignify their miniſter with a new appellation; and, after a very ſerious diſcuſſion, that of *Auguſtus* was choſen among ſeveral others, as being the moſt expreſſive of the character of peace and ſanctity, which he uniformly affected. Auguſtus was therefore a perſonal, Cæſar a family, diſtinction. The former ſhould naturally have expired with the prince on whom it was beſtowed; and, however the latter was diffuſed by adoption and female alliance, Nero was the laſt prince who could allege any hereditary claim to the honours of the Julian line. But, at the time of his death, the practice of a century had inſeparably connected thoſe appellations with the imperial dignity, and they have been preſerved by a long ſucceſſion of emperors, Romans, Greeks, Franks, and Germans, from the fall of the republic to the preſent time. A diſtinction was, however, ſoon introduced. The ſacred title of Auguſtus was always reſerved for the monarch; the name of Cæſar was more freely communicated to his relations; and, from the reign of Adrian at leaſt, was appropriated to the ſecond perſon in the ſtate, who was conſidered as the preſumptive heir of the empire.

AU'HAFF, a town of Germany, in the archduchy of Auſtria, ſix miles ſouth-ſouth-weſt of Ips.

AVIA'NO, a town of Italy, in the province of Friuli, twenty-eight miles weſt of Udina, and fifteen eaſt-ſouth-eaſt of Belluno.

A'VIARY, *ſ.* [from *avis*, Lat. a bird.] A place incloſed to keep birds in.—In *aviaries* of wire, to keep birds of all ſorts, the Italians beſtow vaſt expence; including great ſcope of ground, variety of buſhes, trees of good height, running waters, and ſometimes a ſtove annexed, to contemper the air in the winter. *Wotton.*

AVICE'NA, Avicen'ne, or Avice'nes, called the prince of Arabian philoſophers and phyſicians, was born at Aſſena, near Bokhara, in 978; and died at Hamadan in 1036, being fifty-eight years of age. The firſt years of his life were employed on the ſtudy of the Belles Lettres, and the Koran, and at ten years of age he was perfect maſter of the hidden ſenſes of that book. Then, applying to the ſtudy of logic, philoſophy, and mathematics, he quickly made a rapid progreſs. After ſtudying under a maſter the firſt principles of logic, and the firſt five or ſix propoſitions of Euclid's elements, he became diſguſted with the ſlow manner of the ſchools, applied himſelf alone, and ſoon accompliſhed all the reſt by the help of the commentators only. Poſſeſſed with an extreme avidity to be acquainted with all the ſciences, he ſtudied medicine alſo. Perſuaded that this art conſiſts as much in practice as in theory, he ſought all opportunities of ſeeing the ſick; and afterwards confeſſed, that he had learned more from ſuch experience than from all the books he had read. Being now in his 16th year, and already celebrated for being the light of his age, he determined to reſume his ſtudies in philoſophy, which medicine, &c. had made him for ſome time neglect: and he ſpent a year and a half in this painful labour, without ever ſleeping all this time a whole night together. At the age of twenty-one, he conceived the bold deſign of incorporating, in one work, all the objects of human knowledge; and he carried it into execution in an Encyclopædia of twenty volumes, to which he gave the title of the 'Utility of Utilities.'

Many wonderful ſtories are related of his ſkill in medicine, and the cures which he performed. Several princes had been taken dangerouſly ill, and Avicenes was the only one that could know their ailments, and cure them. His reputation increaſed daily, and all the princes of the eaſt deſired to retain him in their families, and in fact he paſſed through ſeveral of them. But the irregularities of his conduct ſometimes loſt him their favour, and threw him into great diſtreſſes. His exceſſes in pleaſures, and his infirmities, made a poet ſay, who wrote his epitaph, that the profound ſtudy of philoſophy had not taught him good morals, nor that of medicine the art of preſerving his own health. After his death, however, he enjoyed ſo great a reputation, that till the 12th century he was preferred for the ſtudy of philoſophy and medicine to all his predeceſſors. Even in Europe his works were the only writings in vogue in the ſchools. They were very numerous, and various, the titles of which are as follow: 1. Of the Utility and Advantage of the Sciences, in twenty books. 2. Of Innocence and Criminality. 3. Of Health and Remedies, eighteen books. 4. On the Means of preſerving Health. 5. Canons of Phyſic, fourteen books. 6. On Aſtronomical Obſervations. 7. On Mathematical Sciences. 8. Of Theorems, or Mathematical and Theological Demonſtrations. 9. On the Arabic Language, and its Properties, ten books. 10. On the Laſt Judgment. 11. On the Origin of the Soul, and the Reſurrection of Bodies. 12. On the End we ſhould propoſe to ourſelves in Harangues and Philoſophical Argumentations. 18. Demonſtration of the Collateral Lines in the Sphere. 14. Abridgment of Euclid. 15. On Finity and Infinity. 16. On Phyſics and Metaphyſics. 17. On Animals and Vegetables, &c. 18. Encyclopædia, twenty volumes.

AVICEN'NIA, *ſ.* [In honour of the famous oriental phyſician *Abdallah Ebn Sina*, commonly called *Avicena.*] In botany, a genus of the claſs didynamia, order angioſpermia, natural order of perſonatæ. The generic characters are—Calyx: perianthium five-parted, permanent; leaflets ſubovate, obtuſe, concave, erect, increaſed by three ſcales. Corolla: monopetalous; tube bell-ſhaped, ſhort; border bilabiate; upper lip ſquare, emarginate, flat; lower trifid; diviſions ovate, equal, flat. Stamina: filaments four, ſubulate, erect, the two front ones rather ſhorter, bent back to the upper lip; antheræ roundiſh, twin. Piſtillum: germ ovate; ſtyle ſubulate, erect, the length of the ſtamens; ſtigma bifid, acute, the lower diviſion bent down. Pericarpium: capſule coriaceous, rhomboidal, compreſſed, one-celled, two-valved. Seed: one, large, the form of the capſule, conſtructed of four fleſhy folds; germinating.—*Eſſential Character.* Calyx five-parted; corolla bilabiate, upper lip ſquare; capſule coriaceous, rhomboidal, one-ſeeded.

Species. 1. Avicennia tomentoſa: leaves cordate-ovate, tomentoſe underneath. This tree agrees moſtly with the mangrove, riſing not above fifteen or ſixteen feet high; its trunk is not ſo large, having a ſmooth whitiſh-green bark; and from the ſtem are twigs propagating the tree, like that: the branches at top are jointed towards their ends here and there; where the leaves come out, oppoſite, on very ſmall petioles, two inches and a half long, one inch broad in the middle, ſmooth, ſoft, having one large rib of a dark-green colour: the flowers are many, at the top of the branches, white, and tetrapetalous. According to Jacquin, it grows to the height of twenty feet or more. It varies with acuminate leaves, more or leſs hoary underneath. Native of the Eaſt and Weſt Indies. Dr. Patrick Browne ſays, that it is frequent near the ſea, both on the north and ſouth ſide of Jamaica, growing in low moiſt ground.

2. Avicennia nitida: leaves lanceolate, ſhining on both ſides. Height forty feet. Leaves ſharp, entire, oppoſite, three inches long, on ſharp petioles. The capſule opens as ſoon as it has fallen, but not on the tree. The creeping roots throw up abundance of ſuckers. Native of Martinico.

3. Avicennia reſinifera: leaves ovate-lanceolate, tomentoſe underneath. The leaves of this tree are oppoſite, petioled, coriaceous, entire, ſharp, ſhining above, hoary, with a very ſhort yellowiſh nap beneath, two inches long: petioles very ſhort, ſemicylindric, wrinkled on the outſide, from erect ſpreading. Peduncles terminating, ſubtrifid, loaded with a head of flowers. Native of New Zealand. The green-coloured gum, ſo much eſteemed by the natives of New Zealand, and which is very hot in the mouth, is ſuppoſed to be the produce of this tree.

AVI'DITY, *ſ.* [*avidité*, Fr. *aviditas*, Lat.] Greedineſs; eagerneſs; appetite; inſatiable deſire.

AU'JEST, a town of Bohemia, in the circle of Chrudim, five miles north of Politza.

AUJESTIZ', a town of Bohemia, in the circle of Chrudim, five miles weſt of Leutmiſchel.

AVIGA'TO PEAR. See LAURUS.

AVIGLIA'NO, a town of Italy, in the kingdom of Naples, and province of Otranto, ſeven miles E. of Otranto.

AVIGLIANO, a town of Italy, in the principality of Piedmont, and marquiſate of Suſa, ſituated on a hill, near the Cottian Alps, in an open and expoſed ſituation; the air is wholeſome, and the land about it fertile; the town is fortified, and defended with a caſtle. It contains three pariſh churches, and ſeveral religious houſes: eleven miles weſt of Turin, and twelve eaſt-ſouth-eaſt of Suſa.

AVIGNON', a city of France, ſituated on the eaſt ſide of the Rhone. Before the revolution, it was the capital of a ſovereignty, and belonged to the pope, whoſe legate reſided there, and the ſee of an archbiſhop, erected in the year 1475. Avignon was the reſidence of ſeveral popes ſucceſſively, from 1307 to 1377. The city is about three miles and two furlongs in circumference, and is in general ill built, irregular, and devoid of beauty. But it is ſurrounded by walls and turrets, not unlike thoſe of Rome; and its public edifices are large, ſolid, and grand as the taſte of the fourteenth century could make them. Several popes and anti-popes, who during their lives ſhook the Romiſh church with violence and mutual altercation, repoſe quietly near each other in the various monaſteries of the place. The church of the Cordeliers contains, in an obſcure corner, the almoſt-defaced tomb of Petrarch's Laura and her huſband Hugh de Sade; and nearly oppoſite is the tomb of the brave Gullon, ſo well known for his invincible courage as well as for his inviolable attachment to his ſovereign Henry IV. Many productions of Reré of Anjou are to be ſeen in the city, whoſe inhabitants amount to about 30,000. The curious that travel this way go to ſee the fountain of Vaucluſe, where the river Sorgues, which paſſes through this city, has its ſource; and whither Petrarch ſo often retired to indulge his grief and hopeleſs love. It is ſituated in a valley five miles diſtant from the city. The ſides of the river are ſkirted by meadows of the moſt lively green; above which riſe abrupt and lofty rocks, that ſeem deſigned to ſeclude it from human view. The valley becomes gradually narrower toward the extremity, and winding continually deſcribes the figure of a horſe-ſhoe. The view is at length terminated by an enormous maſs of rock, forming a barrier acroſs it, of a prodigious height, and abſolutely perpendicular. Through its vaſt receſſes run the ſtreams which ſupply the fountain of Vaucluſe, and at its foot appears a baſon of water, ſeveral hundred feet in circumference, ſtretched like an expanſe, ſilent and quiet. The ſides are very ſteep, and it is ſaid that in the middle no bottom can be diſcovered, though attempts have been often made for that purpoſe; a circumſtance probably reſulting from the violence with which the ſprings bubble up, which prevents any weight from deſcending beyond a certain depth. Though the fountain is clearer in itſelf than cryſtal, yet the incumbent rock caſts a continual ſhade, approaching to black, over its ſurface. The water, eſcaping from this ſtate of inaction by a narrow paſſage, is immediately precipitated in a caſcade down a rocky channel, where it foams over a number of vaſt detached ſtones, which intercept and impede its progreſs. They are covered with a deep green moſs of many ages, and have probably tumbled from the mountains that overhang the torrent. The rocks themſelves, which ſurround and inveſt this romantic ſpot, are worn by time and the inclemency of the weather into a thouſand extraordinary and fantaſtic forms, to which imagination gives ſhape and figure. Avignon was at the revolution declared a part of France; being thirty poſts ſouth of Lyons, thirty-four weſt-north-weſt of Nice, and eighty-ſix ſouth of Paris. Lat. 43. 57. N. lon. 22. 29. E. Ferro.

AVIGNON-BERRY, *ſ.* the fruit of a ſpecies of lycium; growing plentifully near Avignon, and in other parts of France. The berry is ſomewhat leſs than a pea; its colour is green, approaching towards a yellow; and it is of an aſtringent and bitter taſte. It is much uſed by dyers, who ſtain a yellow colour with it; and by the painters, who alſo make a fine golden yellow of it.

AVIGNONET', a town of France, in the department of the Upper Garrone, and chief place of a canton, in the diſtrict of Villefranche: twenty miles ſouth-eaſt of Toulouſe, and four ſouth-eaſt of Villefranche.

A'VILA, a city of Old Caſtile, in Spain, ſeated on the banks of the river Adaja, and in ſight of the mountains of Pico. It is fortified both by nature and art, having a wall 9075 feet in circumference, adorned with twenty-ſix lofty towers, and ten handſome gates. There are ſeventeen principal ſtreets, the houſes in which are generally good, and ſome of them ſtately. It hath nine ſquares, 2000 houſes, nine pariſhes, as many monaſteries, ſeven nunneries, two colleges, nine hoſpitals, eighteen chapels, and an allowance of 10,000 ducats yearly for the maintenance of orphans and other poor people. It has an univerſity, and a conſiderable biſhopric; beſides a noble cathedral, which has eight dignitaries, twenty canons, and the ſame number of minor canons. It ſtands in the middle of a large plain, ſurrounded with mountains, and covered with fruit-trees and vineyards. There is likewiſe a manufacture of cloth. Lat. 40. 35. N. lon. 4. 13. W.

Avila, a town of South America, in the country of Terra Firma, and government of Quixos.

Avila, or Aviles, a town of Spain, in Aſturia, near the bay of Biſcay, nine leagues from Oviedo.

AVILU', *ſ.* [Ind.] An Indian apple.

AVI'NO, a town of North America, in the province of New Gallicia, where the Spaniards have a ſilver mine, between Durango and Ellerena.

AVIO'TH, a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of Stenay: three miles north of Montmedy.

AVIO'RA, a town of Aſiatic Turkey, in Caramania, ſixty miles north-eaſt of Tocat.

A'VIS, a ſmall town of Alentejo in Portugal, ſeated on an eminence, with a caſtle near the river Avis. Hence the military order of the knights of Avis have their name. Lat. 38. 40. N. lon. 7. 0. W.

Avis *(Knights d'Avis)*, an order of knighthood in Portugal eſtabliſhed about the year 1162. When the city of Evora was taken from the Moors, in the reign of the firſt king of Portugal, it was garriſoned by ſeveral perſons who aſſumed the title of knights of St. Mary of Evora, which was ſoon after changed for that of knights d'Avis, which the king gave them, and whither they removed from Evora. The badge of the order is a green croſs flory, and they obſerve the rule of St. Benedict.

A'VISE, a town of Piedmont, in the duchy of Aoſta, on the Grand Doria, eight miles weſt of Aoſta.

AVI'SO, a town of Italy, in the kingdom of Naples, and country of Lavora, ſix miles eaſt of Sora.

A'VISON (Charles), organiſt of Newcaſtle, and a diſciple of Geminiani, was the author of an Eſſay on Muſical Expreſſion, publiſhed in 1752, in which are ſome judicious reflections on muſic in general, but his diviſion of the modern authors into claſſes is rather fanciful than juſt. Throughout his book he celebrates Marcello and Geminiani; the latter frequently in prejudice to Mr. Handel. In 1753, came out Remarks on Mr. Aviſon's Eſſay on Muſical Expreſſion, the author whereof firſt points out ſundry errors againſt the rules of compoſition in the works of Aviſon. In the ſame year Aviſon republiſhed his eſſay, with a reply to the author of the remarks; and a letter, containing a number of looſe particulars relating to muſic, collected in a courſe of various reading, unqueſtionably written by Dr. Jortin. Aviſon promoted and aſſiſted in the publication of Marcello's muſic to the Pſalms adapted to Engliſh words. Of his own compoſition there are extant five collections of concertos for violins, forty-four in number; and two ſets of ſonatas for the harpſichord and two violins, a ſpecies of compoſition little known in England till his time. The muſic of Aviſon is light and elegant, but it wants originality; a neceſſary conſequence of his too cloſe attachment to the ſtyle of Geminiani, which in a few particulars only he was able to imitate. He died in 1770.

A'VITOUS, *adj.* [*avitus*, Lat.] Left by a man's anceſtors; ancient.

To AVI'ZE, *v. a.* [*aviſer*, Fr.] To counſel. *Out of uſe:*

With that, the huſbandman 'gan him *avize*,
That it for him was fitteſt exerciſe. *Spenſer.*

To conſider; to examine:

No power he had to ſtir, nor will to riſe;
That, when the careful knight 'gan well *avize*,
He lightly left the foe. *Fairy Queen.*

Avize, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Epernay: ſix leagues ſouth of Rheims.

AUK, *ſ.* in ornithology. See Alca.

AUK'LAND, or Biſhop's Aukland, a neat clean market-town, ſituate in a pleaſant part of the county of Durham, at the diſtance of ten miles from the city of Durham, ten from Sedgfield, twelve from Darlington, fifteen from Barnard caſtle, and 251 from London. The town is ſurrounded with ſeveral parks, and gentlemen's ſeats, and numberleſs beautiful hills, dales, villages, woods, rivers, rivulets, &c. and is remarkable, as well for its dry, healthy, and airy, ſituation, as for its great cheapneſs and goodneſs of all kinds of proviſions. Coals here, and all the neighbourhood round, are wrought in great abundance. The river Wear waſhes it on the north, and the river Gaunleſs on the eaſt, and has its influx into the Wear, at a place called *Jocks Row.* Its market-day is on Thurſday. The fairs for cattle, ſheep, ſwine, &c. are on Holy Thurſday, Corpus Chriſti, and Thurſday before Old Michaelmas-day; hirings for ſervants are Thurſday before Old May-day and Thurſday before Old Martinmas-day. The market-place is a very large open ſpacious ſquare, and near to the centre is an old decayed covered croſs. There is an endowed free grammar-ſchool, which was re-built in the year 1783, and over it was erected a ſmall elegant chapel, at the expence of the inhabitants, by ſubſcription, and dedicated to St. Ann. What is moſt remarkable here, is the ancient fair-built palace, belonging to the biſhops of this rich ſee, with turrets, magnificently repaired by Anthony Bec: after which, a great part of it was pulled down in the grand rebellion, by Sir Arthur Haſlerig, who built himſelf a houſe out of the materials. At the reſtoration, biſhop Coſins pulled down the new houſe, and built a large apartment to what remained of the old one, joining the whole to a magnificent chapel of his own erecting, in which he lies buried. What remained unfiniſhed hath been carried on, after his laudable example, by ſome of his ſucceſſors, as well for the ornament as convenience of the fabric. Here are alſo ſpacious gardens, with an extenſive park, through which the river Gaunleſs has its courſe. The pariſh church is ſituate in a ſmall village, about a mile to the ſouth, called St. Andrew Aukland, or South Church, and was formerly a collegiate church; but, in the firſt year of the reign of king Edward VI. it was diſſolved, and the deanery and prebends, and the revenues thereof, veſted in the crown, and is now a perpetual curacy, in the donation of the biſhop of Durham for the time being. Contiguous to the weſt end of Biſhop's Aukland is Weſt Mill Batts, whereon has lately been erected an entire new manufactory for printing all kinds of callicos, muſlins, cottons, &c. To the north-weſt is a noble bridge, over the Wear, called Newton-bridge, with two large arches, built by biſhop Skirlaw, about 1403.

AUK'WARD. See Awkward.

AU'LA, or Avo'la, a town of Sicily, in the valley of Noto, three miles north-eaſt of Noto.

Aula Re'gis, was a court eſtabliſhed by William the Conqueror in his own hall. It was compoſed of the king's great officers of ſtate reſident in his palace, who uſually attended on his perſon, and followed him in all his progreſſes and expeditions. Which being found inconvenient and burthenſome, it was enacted by the great charter, c. 11, that common pleas ſhall no longer follow the king's court, but ſhall be holden in ſome certain place, which certain place was eſtabliſhed in Weſtminſter-hall, the place where the *aula regis* originally ſat when the king reſided in that city; and there it hath ever ſince continued. 3 *Blackſt.* 37. *Aula eccleſiæ*, was the nave or body of the church, where the temporal courts were frequently holden of ancient time.

AU'LAS, a town of France, in the department of the Gard, and chief place of a canton, in the diſtrict of le Vigan, near le Vigan.

AU'LAX, *ſ.* in botany. See Protea.

AUL'CESTER. See Alcester.

AU'LENDORF, a town of Germany, in the circle of Suabia, and barony belonging to a branch of the houſe of Konigſegg, ſituated on the Schus: eight miles north of Ravenſpurg. Lat. 47. 56. N. lon. 27. 16. E. Ferro.

AULE'TES, *ſ.* in antiquity, denotes a flute-player. One of the Ptolemies, kings of Egypt, father of Cleopatra, bore the ſurname or denomination of *Auletes*.

AULET'TA, a town of Italy, in the kingdom of Naples, and province of Principato Citra, four miles weſt-ſouth-weſt of Cangiano.

AULD, *adj.* [*ald*, Sax.] Old. A word now obſolete; but ſtill uſed in the Scotch dialect:

'Tis pride that pulls the country down;
Then take thine *auld* cloak about thee. *Shakeſpeare.*

AULE'TIC, *adj.* [αυλος, Gr.] Belonging to pipes.

AU'LIC, *ſ.* [*aulicus*, Lat. of *aule*, a court.] An epithet given to certain officers of the German empire, who compoſe a court which decides, without appeal, in all proceſſes entered in it. Thus we ſay, *aulic council*, *aulic chamber*, *aulic counſellor*. The aulic council is compoſed of a preſident, who is a catholic; of a vice-chancellor, preſented by the archbiſhop of Mentz; and of eighteen counſellors, nine of whom are Proteſtants, and nine Catholics. They are divided into a bench of lawyers, and always follow the emperor's court; for which reaſon they are called *juſtitium imperatoris*, the emperor's juſtice, and aulic council. The aulic court ceaſes at the death of the emperor; whereas the imperial chamber of Spire is perpetual, repreſenting not only the deceaſed emperor, but the whole Germanic body, which is reputed never to die.

AULIC, in the Sorbonne and foreign univerſities, is an act which a young divine maintains upon being admitted a doctor in divinity. It begins by an harangue of the chancellor, addreſſed to the young doctor, after which he receives the cap, and preſides at the aulic, or diſputation.

AU'LICK, a town of Germany, in the circle of Upper Saxony, and biſhopric of Naumberg, ſix miles N. of Zeitz.

AU'LIS, anciently a town of Bœotia, over againſt Chalcis of Eubœa, on the Euripus, where that ſtrait is narroweſt; and which were ſometimes joined together by a mole or cauſeway. *Homer.* A village of the Tanagraei, diſtant from Chalcis three miles. *Strabo.* A harbour famous for the rendezvous of a thouſand ſhips under Agamemnon, previous to the Trojan expedition; now entirely deſtroyed. *Livy.*

AULLE'NE, a town in the iſland of Corſica, four miles north of Tallano.

AULN, *ſ.* [*aulne*, Fr.] A French meaſure of length; an ell.

AULNAY', a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Vire, four leagues and a half ſouth-weſt of Caen.

AUL'NEGER. See ALNAGER.

AU'LON, anciently a town and dock or ſtation for ſhips in Illyricum, on the Adriatic; now *Valona*, or *Volana*, a port-town in the late duchy of Ferara on one of the mouths of the Po, on the gulf of Venice.

AULON, or AULONA, anciently a town of Elis, in Peloponneſus, on the confines of Meſſenia. Here ſtood a temple of Æſculapius; hence the epithet *Aulonius*, given to that divinity. *Pauſanias.*

AU'LOS, *ſ.* a Grecian long meaſure, ſame as ſtadium.

AULPS, or AUPS, a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Barjols: eight leagues and a half weſt-north-weſt of Frejus, and three and a half north-eaſt of Barjols.

AULT, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Abbeville, five leagues weſt of Abbeville.

AU'LUS GEL'LIUS. See GELLIUS.

AU'MA, a town of Germany, in Upper Saxony, and circle of Neuſtadt, forty-four miles ſouth-ſouth-weſt of Leipſic, and ſix eaſt-ſouth-eaſt of Neuſtadt.

AUMA WENIGEN, a town of Germany, in Upper Saxony, two miles ſouth-eaſt of Auma.

To AUMAIL', *v. a.* [from *maille*, Fr. the meſh of a net; whence a coat of *aumail*, a coat with net-work of iron.] To variegate; to figure. Upton explains it, to enamel:

In golden buſkins of coſtly cordwaine,
All hard with golden bends, which were entail'd
With curious antics, and full fair *aumail'd*. *Fairy Queen.*

AUMA'LE, a town of France, in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Neufchatel: nine leagues ſouth-eaſt of Dieppe, and eleven north-eaſt of Rouen. Lat. 49. 46. N. lon. 19. 24. E. Ferro.

AUM'BRY. See AMBRY.

AUME, *ſ.* a Dutch meaſure for Rheniſh wine, containing forty Engliſh gallons.

AUMO'NE, *ſ.* [*aumoſne*, Fr. alms.] Tenure in *aumone* is where lands are given in alms to ſome church, or religious houſe, upon condition that a ſervice or prayers ſhall be offered at certain times for the repoſe of the donor's ſoul. *Brit.* 164.

AUMO'NT, a town of France, in the department of the Lozerre, and chief place of a canton, in the diſtrict of St. Chely: five leagues north-weſt of Mende.

AUN, a town of Perſia, in the province of Segeſtan, forty-two leagues ſouth-ſouth-eaſt of Zareng.

AUNAY', a town of France, in the department of the Nyevre, and chief place of a canton, in the diſtrict of Chateauchinon: nine miles north of Moulins.

AUNAY, a town of France, in the department of the Lower Charente, and chief place of a canton, in the diſtrict of St. Jean d'Angely: eight miles north-eaſt of St. Jean d'Angely.

AUN'CEL-WEIGHT, *ſ.* an ancient kind of balance now out of uſe, being prohibited by ſeveral ſtatutes, on account of the many deceits practiſed by it. It conſiſted of ſcales hanging on hooks, faſtened at each end of a beam, which a man lifted up on his hand. In many parts of England, auncel-weight ſignifies meat ſold by the hand, without ſcales.

AUNE, a river of England, which runs into the ſea near Plymouth.

AUNEAU', a town of France, in the department of the Eure and Loire, and chief place of a canton, in the diſtrict of Chartres: four leagues eaſt of Chartres.

AUNEUIL', a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Beauvais: five miles ſouth-ſouth-weſt of Beauvais.

AUN'GERVYLE (Richard), commonly known by the name of *Richard de Bury*, was born in 1281 at St. Edmund's Bury in Suffolk, and educated at the univerſity of Oxford: after which he entered into the order of Benedictine monks, and became tutor to Edward prince of Wales, afterwards Edward III. Upon the acceſſion of his royal pupil to the throne, he was firſt appointed cofferer, then treaſurer, to the wardrobe; archdeacon of Northampton; prebendary of Lincoln, Sarum, and Litchfield; keeper of the privy ſeal; dean of Wells; and laſt of all was promoted to the biſhopric of Durham. He likewiſe enjoyed the offices of lord high chancellor, and treaſurer of England; and diſcharged two important embaſſies at the court of France. Learned himſelf, and a patron of the learned, he maintained a correſpondence with ſome of the greateſt geniuſes of the age, particularly with the celebrated Italian poet Petrarch. He was alſo of a humane and benevolent temper, and performed many ſignal acts of charity. Every week he made eight quarters of wheat into bread, and gave it to the poor. Whenever he travelled between Durham and Newcaſtle, he diſtributed 8l. ſterling in alms; between Durham and Stockton, 5l. between Durham and Aukland, five marks; and between Durham and Middleham, 5l. He founded a library at Oxford, for the uſe of the ſtudents, which he furniſhed with the beſt collection of books then in England; and appointed five keepers, to whom he granted yearly ſalaries. At the diſſolution of religious houſes in the reign of Henry VIII. Durham-college, where he fixed the library, being diſſolved, ſome of the books were removed to the public library, and ſome to Baliol college. Biſhop Aungervyle died at his manor of Aukland, April 24, 1345, and was buried in the croſs aiſle of the cathedral of Durham, to which he had been a benefactor. He wrote, 1. Philobiblos; containing directions for the management of his library at Oxford. 2. Epiſtolæ Familiarum; ſome of which are written to the famous Petrarch. 3. Orationes ad Principes; mentioned by Bale and Pitts.

AUNI'S, a province of France, before the late diviſion into departments, bounded on the eaſt and ſouth by Saintonge, of which it was formerly a part, on the weſt by the ſea, and on the north by Poitou, and comprehends the iſles of Rhé and Oleron; the land is fertile, and produces great quantities of corn and wine; it is well watered by the rivers Sevre and Charente, by the means of which, and its ſea-port, it carries on a conſiderable commerce, eſpecially in ſalt, which is ſuppoſed to be the beſt in France.

AUNT, *ſ.* [*tante*, Fr. *amita*, Lat.] A father or mother's ſiſter; correlative to nephew or niece:

Who meets us here? my niece Plantagenet,
Led in the hand of her kind *aunt* of Glo'ſter. *Shakeſpeare.*

AVOCA'DO, or Aviga'to, Pear. See Laurus.

To A'VOCATE, *v. a.* [*avoco*, Lat.] To call off from buſineſs; to call away.—Their diveſture of mortality diſpenſes them from thoſe laborious and *avocating* duties to diſtreſſed Chriſtians, and their ſecular relations, which are here requiſite. *Boyle.*

AVOCA'TION, *ſ.* The act of calling aſide.—The buſtle of buſineſs, the *avocations* of our ſenſes, and the din of a clamorous world, are impediments. *Glanville.*—God does frequently inject into the ſoul bleſſed impulſes to duty, and powerful *avocations* from ſin. *South.*—The buſineſs that calls; or the call that ſummons away.—By the ſecular cares and *avocations* which accompany marriage, the clergy have been furniſhed with ſkill in common life. *Atterbury.*

AVOCATO'RIA, *ſ.* a mandate of the emperor of Germany, addreſſed to ſome prince, in order to ſtop his unlawful proceedings in any cauſe appealed to him.

AVO'GLI, a town of Perſia, in the province of Adirbeitzan, eighteen leagues ſouth-eaſt of Tauris.

To AVOID', *v. a.* [*vuider*, Fr.] To ſhun; to decline.—The wiſdom of pleaſing God, by doing what he commands, and *avoiding* what he forbids. *Tillotſon.*—To eſcape; as, He *avoided* the blow by turning aſide. To endeavour to ſhun. To evacuate; to quit. To emit; to throw out.—A toad contains not thoſe urinary parts which are found in other animals to *avoid* that ſerous excretion. *Brown.*—To oppoſe; to hinder effect. To vacate; to annul.

To Avoid, *v. n.* To retire.—And Saul caſt the javelin; for he ſaid, I will ſmite David even to the wall with it: and David *avoided* out of his preſence twice. 1 *Sam.*—To become void or vacant.—Biſhoprics are not included under benefices: ſo that, if a perſon takes a biſhopric, it does not *avoid* by force of that law of pluralities, but by the ancient common law. *Ayliffe.*

AVOID'ABLE, *adj.* That which may be avoided, ſhunned, or eſcaped.—To take ſeveral things for granted, is hardly *avoidable* to any one, whoſe taſk it is to ſhew the falſehood or improbability of any truth. *Locke.*—Liable to be vacated or annulled.—The charters were not *avoidable* for the king's nonage; and, if there could have been any ſuch pretence, that alone would not avoid them. *Hale.*

AVOID'ANCE, *ſ.* The act of avoiding.—It is appointed to give us vigour in the purſuit of what is good, or in the *avoidance* of what is hurtful. *Watts.*—The courſe by which any thing is carried off.—For *avoidances* and drainings of water, where there is too much, we ſhall ſpeak of. *Bacon.*—The act or ſtate of becoming vacant. The act of annulling.

Avoidance, in the canon law, is of an eccleſiaſtical benefice, as oppoſed to *plenarty*, where there is a want of a lawful incumbent. And this happens ſeveral ways: 1. The moſt uſual and known means, by which any ſpiritual promotion doth become void is, by the act of God, namely, by the *death* of the incumbent thereof. Of this the patron is obliged to take notice at his peril, in order to prevent a lapſe, and not to expect an intimation from the ordinary. *Watſ.* c. 1. 2. By *reſignation*, which is the act of the incumbent. And this being neceſſarily made into the hands of the ordinary, and not valid but as admitted by him, the voidance conſequent upon it is to be notified by the ordinary to the patron. *Gibſ.* 792. 3. By *ceſſion*, or the acceptance of a benefice incompatible, which alſo is the act of the incumbent In which caſe, the benefice, if of 8l. a year or upwards in the king's books, is void by act of parliament; and no notice is needful. *Watſ.* c. 2. 4. By *deprivation*, which is the act of the ordinary: which voidance, being created by ſentence in the eccleſiaſtical court, muſt be notified to the patron. *Gibſ.* 792. 5. By *act of the law*: as, in caſe of ſimony; not ſubſcribing the articles or declaration; or not reading the articles or the common prayer: all which being voidances by act of parliament, are to be underſtood (with regard to the times of commencement of ſuch voidances, and the notice of them) according to the directions of the reſpective acts.

AVOID'ER, *ſ.* The perſon that avoids or ſhuns any thing. The perſon that carries any thing away. The veſſel in which things are carried away.

AVOID'LESS, *adj.* Inevitable; that which cannot be avoided.—That *avoidleſs* ruin in which the whole empire would be involved. *Dennis.*

AVOIRDUPO'IS, *ſ.* [*avoir du poids*, Fr. to have weight.] By the law of England there is only one weight and one meaſure for all the realm: that weight is the troy weight; but cuſtom has eſtabliſhed, and ſubſequent laws confirmed, the uſe of that called the avoirdupois, for the purpoſe (as it ſhould ſeem from the name) of aſſuring full weight of all the coarſer commodities, and ſuch as are particularly liable to waſte, &c. Bakers in corporation-towns uſe the troy-weight, but all others uſe the avoirdupois. Its origin does not appear to be very accurately traced, and the proportion it bears to the troy not very exactly aſcertained: by ſome the pound is ſtated to be equal to 14oz. 11 dwts. 20grs. or 7004grs. troy; by others, to be nearly 14oz. 12dwts. or 7008 grs. troy. But, by a very nice experiment made by Mr. Ward, in the beginning of this century, it was found to be 14oz. 11dwt. 15½ gr. or 6999½ gr. troy. This difference may be accounted for, in ſome degree, when it is conſidered how long the preſent ſtandards have been in conſtant uſe, and that ſome of them have in fact become ſo inaccurate, that, if the proper number of the ſmaller weights be put againſt the larger ones, they will not be found to correſpond. Perhaps, however, the pound avoirdupois may not be improperly ſtated at 14oz. 11dwts. 16grs. or 7000grs. troy: its proportion to the pound troy will then be as 175 to 144; and the ounce avoirdupois will be to the ounce troy as 175 to 192.

AVOI'SE, a town of France, in the department of the Sarte, four leagues from La Fleche.

AVOLA'TION, *ſ.* [from *avolo*, Lat. to fly away.] The act of flying away; flight; eſcape.—Strangers, or the fungous parcels about candles, only ſignify a pluvious air, hindering the *avolation* of the favillous particles. *Brown.*

A'VON, a river of England, which paſſes through Saliſbury, and runs into the ſea a little below Chriſtchurch in Hampſhire.

Avon, a river of England, which paſſes by Bath and Briſtol, and runs into the Severn at Kingroad.

Avon, a river of England, which riſes in Northamptonſhire, and paſſes through Staffordſhire and Worceſterſhire, and joins the Severn at Tewkeſbury in Glouceſterſh.

Avon, a river of Scotland, which runs into the Dee, near Banchoryteinan in Kincardinſhire.

Avon, a river of Wales, which runs into the Briſtol Channel, ſix miles ſouth of Neath, in Glamorganſhire.

AVONVA'NE, a river of North Wales, which runs into the Iriſh Sea, ſix miles weſt of Dolgelly, in the county of Merioneth.

AVOSET'TA, in ornithology. See Recurviroſtra.

AVOSTO'LA, a river of Piedmont, which runs into the Cervo, two miles and a half weſt of Buronza, in the Vercellois.

To AVOU'CH, *v. a.* [*avouer*, Fr. for this word we now generally ſay *vouch.*] To affirm; to maintain; to declare peremptorily.—They boldly *avouched* that themſelves only had the truth, which they would at all times defend. *Hooker.*—To produce in favour of another.—Such antiquities could have been *avouched* for the Iriſh. *Spenſer.*—To vindicate; to juſtify.—You will think you made no offence, if the duke *avouch* the juſtice of your dealing. *Shakeſpeare.*

Avouch, *ſ.* Declaration; evidence; teſtimony:

I might not this believe,
Without the ſenſible and try'd *avouch*
Of mine own eyes. *Shakeſpeare.*

AVOU'CHABLE, *adj.* That may be avouched.

AVOU'CHER, *ſ.* He that avouches.

To AVOW', *v. a.* [*avouer*, Fr.] To declare with confidence; to juſtify; not to diſſemble.—He that delivers them mentions his doing it upon his own particular knowledge, or the relation of ſome credible perſon, *avowing* it upon his own experience. *Boyle.*

Left to myſelf, I muſt *avow*, I ſtrove
From public ſhame to ſcreen my ſecret love. *Dryden.*

AVO'WABLE, *adj.* That which may be openly declared; that which may be declared without ſhame.

AVO'WAL, *ſ.* Juſtificatory declaration; open declaration.

AVO'WEDLY, *adv.* In an open manner.

AVOWEE', *ſ.* [*avoué*, Fr.] One who has a right to preſent to a benefice. He is thus called in contradiſtinction to thoſe who only have the lands to which the advowſon belongs for a term of years, or by virtue of intruſion or diſſeiſin.

AVOW'ER, *ſ.* He that avows or juſtifies.—Virgil makes Æneas a bold *avower* of his own virtues. *Dryden.*

AVO'WRY, *ſ.* in law, is where a man takes a diſtreſs for rent or other thing, and the party on whom taken ſues forth a replevin, then the taker ſhall juſtify his plea for what cauſe he took it; and, if in his own right, he muſt ſhew the ſame, and avow the taking: but, if he took it in right of another, he muſt make cogniſance of the taking, as bailiff or ſervant to the perſon in whoſe right he took the ſame. *Terms de Leys*, 70. 2 *Lill.* 454. The avowry muſt contain ſufficient matter for judgment to have return; but ſo much certainty is not required in an avowry as in a declaration; and the avowant is not obliged to allege ſeiſin within the ſtatute of limitations. Nor ſhall a lord be required to avow on any perſon in certain; but he muſt allege ſeiſin by the hands of ſome tenant within forty years. Stat. 21 Hen. VIII. c. 19. 1 *Inſt.* 268. In avowry ſeiſin in law is ſufficient, ſo that, where a tenant hath done homage or fealty, it is a good ſeiſin of all other ſervices to make an avowry, though the lord, &c. had not ſeiſin of them within ſixty years. See ſtat. 32 Hen. VIII. c. 2. 4 *Rep.* 9. A man may diſtrain and avow for rent due from a copyholder to a lord of a manor; and alſo for heriots, homage, fealty, amercements, &c. 1 *Nelſ. Abr.* 315.

If a perſon makes an avowry for two cauſes, and can maintain his avowry but for one of them, it is a good avowry; and if an avowry be made for rent, and it appears that part of it is not due, yet the avowry is good for the reſt; ſuppoſing ſufficient rent due to juſtify a diſtreſs. An avowry may be made upon two ſeveral titles of land, though it be but for one rent; for one rent may depend upon ſeveral titles. 1 *Lill. Abr.* 157. *Saund.* 285. If a man takes a diſtreſs for rent reſerved upon a leaſe for years, and afterwards accepts a ſurrender of the lands, he may nevertheleſs avow, becauſe he is to have the rent due, notwithſtanding the ſurrender. 1 *Danv. Abr.* 652. Where tenant in tail aliens in fee, the donor may avow upon him, the reverſion being in the donor, whereunto the rent is incident. *Ibid.* 650. If there be tenant for life, remainder in fee, the tenant for life may compel the lord to avow upon him; but where there is tenant in tail, with ſuch remainder, and the tenant in tail makes a feoffment, the feoffee may not compel the lord to avow upon him. 1 *Danv. Abr.* 648. *Co. Lit.* 268. If the tenant enfeoffs another, the lord ought to avow upon the feoffor for the arrearages before the feoffment, and not upon the feoffee. 1 *Danv.* 650. The lord may avow upon a diſſeiſor. 20 Hen. VI. And if a man's tenant is diſſeiſed, he may be compelled to avow, by ſuch tenant or his heir. A defendant in replevin may avow or juſtify; but if he juſtifies he cannot have a return. 3 *Lev.* 204. The defendant need not aver his avowry with an *hoc paratus eſt*, &c. By ſtat. 21 Hen. VIII. c. 19, it is enacted, That if in any replegiare for rents, &c. the avowry, cogniſance, or juſtification, be found for the defendant, or the plaintiff be nonſuit, &c. the defendant ſhall recover ſuch damages and coſts as the plaintiff ſhould have had, if he had recovered. See *Bull. N. P.* 57, that this ſtatute does not extend to an avowry for a *nomine pœnæ* or eſtray. And by ſtat. 17 Car. II. c. 7, When a plaintiff ſhall be nonſuit before iſſue in any ſuit of replevin, &c. removed or depending in any of the courts at Weſtminſter, the defendant making ſuggeſtion in the nature of an avowry for rent, the court on prayer ſhall award a writ to inquire of the ſum in arrear, and the value of the diſtreſs, &c. upon return whereof the defendant ſhall recover the arrears, if the diſtreſs amounts to that value, or elſe the value of the diſtreſs with coſts; and where the diſtreſs is not found to the value of the arrears, the party may diſtrain for the reſidue.

AVOW'SAL, *ſ.* [from *avow.*] A confeſſion.

AVOW'TRY, *ſ.* Adultery.

AU'RA, *ſ.* [from *αω*, to breathe; or *αηϱ*, Gr. air; rather from אור Heb.] The air, exhalation; vapour, wind.

AURACH', a river of Germany, in Franconia, which runs into the Rednitz, three miles ſouth of Erlang.

Aurach, a town of Germany, in the circle of Suabia, and county of Waldberg, nine miles E. N. E. of Wurzach.

AU'RÆ, in mythology, a name given by the Romans to the nymphs of the air. They are moſtly to be found in the ancient paintings of ceilings; where they are repreſented light and airy, generally with long robes and flying veils of lively colours, fluttering about in the pleaſing element aſſigned to them. They are characteriſed as ſportive and happy in themſelves, and well-wiſhers to mankind.

AVRAINVI'LLE, a town of France, in the department of the Meurt, and chief place of a canton, in the diſtrict of Toul; two leagues north of Toul.

AURAN', a town of Arabia, ſixty miles S. of Damaſcus.

AVRAN'CHES, a city of France, and principal town of a diſtrict, in the department of the Channel, ſituated on a mountain, near the river Sée; before the revolution, it was the ſee of a biſhop, ſuffragan of Rouen; beſides the cathedral, it had three pariſhes, a convent, a public ſchool, a college, and an hoſpital. Avranches is a very ancient town, and was, before the county of Bretagne was united to the crown of France, called the *Boulevard of France*, yet the Bretans made themſelves maſters of it, and deſtroyed the fortifications in the year 1203. The fortifications were rebuilt in the reign of St. Louis. The cathedral ſtands on a hill, which terminates abruptly; the front of the church extending to the extreme verge of it, and overhanging the precipice. Here, we are told, the Engliſh Henry II. received abſolution from the papal nuncio for the murder of St. Thomas-a-Becket, in 1172; and the ſtone on which he knelt during the performance of that ceremony is ſhewn to ſtrangers. Its length is about thirty inches, and the breadth twelve. It ſtands before the north portal of the cathedral, and on it is engraved a chalice in commemoration of the event. The ruins of the caſtle of Avranches are very extenſive; and beneath lies a rich extent of country, abounding in grain and covered with orchards, from the fruit of which is made the beſt cider in Normandy. It is nineteen poſts ſouth of Cherburg, ſix ſouth of Coutances, twenty-five ſouth-weſt of

Rouen, and thirty-ſeven and a half weſt of Paris. Lat. 48. 41. N. lon. 16. 18. E. Ferro.

AURAN'TIUM, *ſ.* in botany. See Citrus.

AURAS', a town of Sileſia, in the principality of Breſlau, ſituated near the Oder; twelve miles north-weſt of Breſlau.

AURAY', a ſea-port town of France, in the department and on the gulf of Morbihan, and principal place of a diſtrict, at the mouth of a river of the ſame name. Lat. 47. 40. N. lon. 14. 37. E. Ferro.

AUR'BACH, a town of Germany, in the circle of Bavaria, and Upper Palatinate; thirty miles north-eaſt of Nuremberg.

AUR'BURG, a town and caſtle of Germany, in Upper Bavaria; four miles north of Kufſtein.

AURE, a river of France, which runs into the Eure, near Anet.

AUREC', a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Moniſtrol; three leagues ſouth-weſt of St. Etienne, and one and a half north of Moniſtrol.

AURE'LIA, *ſ.* [*ab aureo colore*, Lat. from its ſhining yellow colour.] In natural hiſtory, the ſame with what is called *chryſalis*, and ſometimes *nymph*. See Chrysalis.

AURELIA'NA, *ſ.* in botany. See Panax.

AURELIA'NUS (Lucius Domitius), emperor of Rome, was one of the greateſt generals of antiquity, and commanded the armies of the emperor Claudius with ſuch glory, that after the death of that emperor all the legions agreed to place him on the throne: this happened in the year 270. He carried the war from the eaſt to the weſt, with as much facility, ſays a modern writer, as a body of troops marches from Alſace into Flanders. He defeated the Goths, Sarmatians, Marcomanni, the Perſians, Egyptians, and Vandals; conquered Zenobia queen of the Palmyreans, and Tetricus general of the Gauls; both of whom were made to grace his triumph, in the year 274. He was killed by one of his own generals, in Thrace, in the year 275, when he was preparing to enter Perſia with a great army. See Rome.

AURE'LIUS VIC'TOR. See Victor.

AURENGABAD', a city in the Eaſt Indies, capital of the province of Balagate, in the dominions of the Great Mogul. It is furniſhed with handſome moſques and caravanſeras. The buildings are chiefly of free-ſtone, and pretty high, and the ſtreets planted on each ſide with trees. They have large gardens well ſtocked with fruit-trees and vines. The ſoil about it is alſo very fertile, and the ſheep fed in its neighbourhood are remarkably large and ſtrong. Lat. 19. 10. N. lon. 75. 30. E.

AURENGZE'BE, the Great Mogul, a famous conqueror, but deteſtable parricide, who poiſoned his father, and maſſacred all his brethren, to make his way to the throne of Indoſtan; yet he may be conſidered as the real founder and legiſlator of the empire. He was a great and politic prince, and the firſt who extended his dominion over the peninſula within the Ganges, which is at preſent ſo well known to the Engliſh. He lived ſo late as the year 1707, and it is ſaid that ſome of his great officers of ſtate were alive in the year 1750. Aurengzebe ſeems to have left too much power to the governors of his diſtant provinces, and to have been too inattentive to prevent the effects of that dreadful deſpotiſm, which, while in his hands, preſerved the tranquillity of his empire; but, when it deſcended to his weak indolent ſucceſſors, occaſioned its overthrow. He lived to the age of near one hundred. See Hindostan.

AUREO'LA, *ſ.* in its original ſignification, ſignifies a jewel, which is propoſed as a reward of victory in ſome public diſpute. Hence the Roman ſchoolmen applied it to denote the reward beſtowed on martyrs, virgins, and doctors, on account of their works of ſupererogation; and painters uſe it to ſignify the crown of glory with which they adorn the heads of ſaints, confeſſors, &c.

AU'RES, *ſ.* an ancient puniſhment among the Saxons, of cutting off the ears of church-robbers, and other felons.

AURET'TE, a river of France, which runs into the Eure, near Bourges.

AU'REUS, *ſ.* a Roman gold coin, equal in value to twenty-five denarii. According to Ainſworth, the aureus of the higher empire weighed near five pennyweights; and, in the lower empire, little more than half that weight. We learn from Suetonius, that it was cuſtomary to give aurei to the victors in the chariot-races.

Aureus Mons, a mountain in the north-weſt of Corſica, whoſe ridge runs out to the north-eaſt and ſouth-eaſt, forming an elbow. Another mountain of Moeſia Superior, or Servia, to the ſouth of the Danube, with a cognominal town at its foot on the ſame river. The emperor Probus planted this mountain with vines. *Eutropius.*

AU'RICH, a town of Germany, in the circle of Weſtphalia, and county of Eaſt Frieſland, ten miles north-eaſt of Embden.

AURI'CULA, *ſ.* [dim. of *auris*, Lat. the ear.] The external part of the ear; the lug. Alſo the ſpecific name of ſome herbs, from their ſuppoſed reſemblance to an ear; as, *auricula muris*, mouſe ear; *auricula urſi*, bear's ear, &c. The two muſcular bags, likewiſe, at the baſis of the heart are called its *auricles*, or ears, from their likeneſs.

Auricula Leporis, *ſ.* in botany. See Buphthalmum and Bupleurum.

Auricula Muris, *ſ.* in botany. See Arenaria, Cerastium, Hieracium, Myosotis, and Silene.

Auricula Ursi, *ſ.* in botany. See Aretia, Primula, Dodecatheon, and Verbascum.

AURI'CULAR, *adj.* [*auricula*, Lat. the ear.] Within the ſenſe or reach of hearing.—You ſhall hear us confer, and by an *auricular* aſſurance have your ſatisfaction. *Shakeſpeare.*—Secret; told in the ear; as, *auricular* confeſſion. Traditional; known by report.—The alchymiſts call in many varieties out of aſtrology, *auricular* traditions, and feigned teſtimonies. *Bacon.*

AURICULA'RIA, *ſ.* in botany. See Hedyotis.

AURICULA'RIS, *ſ.* [*auricula*, Lat. the ear.] The little finger, and an extenſor muſcle of the ſame, have this name, becauſe with this finger we uſually pick the ear.

AURI'CULARLY, *adv.* in a ſecret manner.—Theſe will ſoon confeſs, and that not *auricularly*, but in a loud and audible voice. *Decay of Piety.*

AURI'FEROUS, *adj.* [*aurifer*, Lat.] That which produces gold:

Rocks rich in gems, and mountains big with mines,
Whence many a burſting ſtream *auriferous* plays. *Thomſon.*

AURIFLAM'MA, *ſ.* in the French hiſtory, properly denotes a flag or ſtandard belonging to the abbey of St. Dennis, ſuſpended over the tomb of that ſaint, which the religious, on occaſion of any war in defence of their lands or rights, took down, with great ceremony, and gave it to their protector or advocate, to be borne at the head of their forces. Auriflamma is hence uſed to denote the chief flag or ſtandard in an army.

AURI'GA, *ſ.* the Waggoner, a conſtellation in the northern hemiſphere, conſiſting of fourteen ſtars in Ptolemy's catalogue; but in Tycho's, twenty-ſeven; in Hevelius's, forty; and, in the Britannic catalogue, ſixty-ſix. This is one of the forty-eight old aſteriſms, mentioned by all the moſt ancient aſtronomers. It is repreſented by the figure of an old man, in a poſture ſomewhat like ſitting, with a goat and her kids in his left hand, and a bridle in his right. Although the whole conſtellation of Auriga is not mentioned among thoſe from which the ancient formed preſages of the ſucceeding weather, the two ſtars in his arm were of the foremoſt in that rank. It is theſe they called by the name Hœdi, and dreaded ſo extremely on account of the ſtorms and tempeſts that ſucceeded their riſing, that it is ſaid they ſhut up the navigation of the ſea for their ſeaſon. And the day of their influence being over, we find, was celebrated as a feſtival with ſports and games, under the name of Natalis Navigationis. Germanicus calls them unfriendly ſtars to mariners; and Virgil couples them with Arcturus, mentioning their ſetting and riſing as things of the moſt important preſage. Horace alſo puts them together as the moſt formidable of all the ſtars to thoſe who follow the traffic of the ſea. And to the ſame purpoſe ſpeak all the ancient writers, thus making a part of the conſtellation Auriga, if not the whole conſtellation, a thing to be obſerved with the utmoſt attention, and to be feared as much as the blazing Arcturus.

AURIGA'TION, *ſ.* [*auriga*, Lat.] The act or practice of driving carriages.

AURIGNAC', a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of St. Gaudens; thirty-three miles ſouth-weſt of Thouloufe, and ten north-eaſt of St. Gaudens.

AURI'GRAPHY, *ſ.* [of *aurum*, Lat. and *γϱαφω*, Gr. to write.] Writing with gold.

AURILLAC', a town of France, and principal place of a diſtrict, in the department of Cantel; before the revolution, the capital of Lower Auvergne. It is ſituated in a fertile valley, on the Jordane; ſixty-five poſts ſouth of Paris. Lat. 44. 45. N. lon. 20. 6. E. Ferro.

AVRIL'LE, a town of France, in the department of Mayne and Loire, and chief place of a canton, in the diſtrict of Angers, one league north of Angers.

AURIOL', a town of France, in the department of the Mouths of the Rhone, and chief place of a canton, in the diſtrict of Aix; four leagues ſouth-eaſt of Aix, and four north-north-eaſt of Marſeilles.

AURIPIGMEN'TUM, *ſ.* [from *aurum*, gold, and *pigmentum*, Lat. paint.] Orpiment, arſenic; ſo called from its colour, and its uſe to painters.

AURISCAL'PIUM, *ſ.* [from *auris*, the ear, and *ſcalpo*, Lat. to ſcrape.] An inſtrument for cleanſing the ear.

AROBZMUNS'TER, a town of Germany, in the circle of Bavaria, ſixteen miles ſouth of Paſſau.

AUROIR', a town of France, in the department of the Cher, two leagues and a half north-weſt of Sancoins.

AURON', a river of France, which runs into the Eure near Bourges.

AURON'ZA, a town of Italy, in the Cadorin, ſeven miles north of Pieve di Cadora.

AURO'RA, *ſ.* [*Aurora*, Lat. q. d. *aurea hora.*] The morning twilight, or that faint light which appears in the morning when the ſun is within eighteen degrees of the horizon:

Aurora ſheds
On Indus' ſmiling banks the roſy ſhow'r. *Thomſon.*

Aurora was feigned by the ancients the daughter of the ſun and the moon, and was painted a virgin of a ruddy complexion, having wings, and with a yellow garment: in one hand holding a torch, and with the other ſtrewing flowers, generally ſitting in a chariot of maſſive ſilver.

Aurora, in fabulous hiſtory, the daughter of Titan and Terra; others make her the daughter of Hyperion and Thia; and ſome ſay that Pallas, ſon of Crius, was her father, whence her ſurname of Pallantias. She is repreſented as covered with a veil, ſitting in a gilt chariot drawn by white horſes, and opening with her roſy fingers the gates of the eaſt, pouring the dew upon the earth, and making the flowers grow. It was under her name that the ancients deified the light which foreruns the riſing of the ſun above our hemiſphere. She married Aſtræus, by whom ſhe had the winds, the ſtars, &c. She had an amour with Tithonus, a young prince celebrated for his beauty, whom ſhe carried away; but, when he was advanced in years, ſhe left him, and changed him into a graſshopper. After this ſhe fell in love with Cephalus, whom ſhe took away from his wife Procris, cauſing them to quarrel; but, he refuſing her addreſſes, ſhe ſent him back to his wife, and they were reconciled. She had alſo an intrigue with Orion, whom ſhe carried to the iſland of Delos, where he was killed by Diana's arrows.

Aurora, one of the New Hebrides iſlands in the South Sea, in which Mr. Forſter ſuppoſes the *Peak d'Etoile*, mentioned by M. Bongainville, to be ſituated. The iſland is inhabited; but none of its inhabitants came off to viſit captain Cook. The country is woody, and the vegetation ſeemed to be exceſſively luxuriant. It is about twelve leagues long, but not above five miles broad in any part, lying nearly north and ſouth. Lat. 15. 8. S. lon. 168. 12. E. Greenwich.

Aurora Borealis, *Northern Lights*, or *Streamers*; a kind of meteor appearing in the northern part of the heavens, moſtly in the winter-time, and in froſty weather. It is uſually of a reddiſh colour, inclining to yellow, and ſends out frequent coruſcations of pale light, which ſeem to riſe from the horizon in a pyramidal undulating form, and ſhooting with great velocity up to the zenith. It appears often in form of an arch, which is partly bright, and partly dark, but generally tranſparent. And the matter of it is not found to have any effect on the rays of light, which paſs freely through it. Dr. Hamilton obſerves, that he could plainly diſcern the ſmalleſt ſpeck in the Pleiades through the denſity of thoſe clouds which formed part of the aurora borealis in 1763, without the leaſt diminution of its ſplendour, or increaſe of twinkling. This kind of meteor never appears near the equator; but it is in the arctic regions that it appears in perfection, particularly during the ſolſtice. In the Schetland iſlands, the *merry dancers*, as they are there called, are the conſtant attendants of clear evenings, and prove great reliefs amidſt the gloom of the long winter-nights. They commonly appear at twilight near the horizon, of a dun colour, approaching to yellow; ſometimes continuing in that ſtate for ſeveral hours without any ſenſible motion; after which they break out into ſtreams of ſtronger light, ſpreading into columns, and altering ſlowly into ten thouſand different ſhapes, varying their colours from all the tints of yellow to the obſcureſt ruſſet. They often cover the whole hemiſphere, and then make the moſt brilliant appearance. Their motions at theſe times are moſt amazingly quick; and they aſtoniſh the ſpectator with the rapid change of their form. They break out in places where none were ſeen before, ſkimming briſkly along the heavens; are ſuddenly extinguiſhed, and leave behind an uniform duſky track. This again is brilliantly illuminated in the ſame manner, and as ſuddenly left a dull blank. In certain nights they aſſume the appearance of vaſt columns, on one ſide of the deepeſt yellow, on the other declining away till it becomes undiſtinguiſhed from the ſky. They have generally a ſtrong tremulous motion from end to end, which continues till the whole vaniſhes. In a word, we, who only ſee the extremities of theſe northern phenomena, but have a faint idea of their ſplendour and magnificence. According to the ſtate of the atmoſphere, they differ in colours. They often put on the colour of blood, and make a moſt dreadful appearance. The ruſtic ſages then become prophetic, and terrify the gazing ſpectators with the dread of war, peſtilence, and famine. This ſuperſtition was not peculiar to the northern iſlands; nor are theſe appearances of recent date. The ancients called them *Chaſmata*, and *Trabes*, and *Bolides*, according to their forms or colours. In old times they were extremely rare, and on that account were the more taken notice of. From the days of Plutarch to thoſe of our hiſtorian Sir Richard Baker, they were ſuppoſed to have been portentous of great events, and timid imagination ſhaped them into aerial conflicts:

Fierce fiery warriors fight upon the clouds
In ranks and ſquadrons and right form of war.

The only thing that reſembles a diſtinct hiſtory of this phenomenon, is what we have from the learned Dr. Halley, Phil. Tranſ. No. 347. The firſt account he gives, is of the appearance of what is called by the author *burning ſpears*, and was ſeen at London January 30th, 1560. The next appearance, on the teſtimony of Stow, was on October 7th, 1564. In 1574 alſo, according to Camden, and

Stow above-mentioned, an aurora borealis was obſerved two nights ſucceſſively, viz. on the 14th and 15th of November, with much the ſame appearances as deſcribed by Dr. Halley in 1716, and which we now ſo frequently obſerve. Again, the ſame was twice ſeen in Brabant, in the year 1575; viz. on the 13th of February and 28th of September. Its appearances at both theſe times were deſcribed by Cornelius Gemma, profeſſor of medicine in the univerſity of Lovain, who compares them to ſpears, fortified cities, and armies fighting in the air. After this, Michael Mæſtlin, tutor to the great Kepler, aſſures us, that at Baknang, in the county of Wurtemberg, in Germany, theſe phenomena, which he ſtiles *chaſmata*, were ſeen by himſelf no leſs than ſeven times in 1580. In 1581, they again appeared in an extraordinary manner in April and September, and in a leſs degree at ſome other times of the ſame year. In 1621, September 2d, this phenomenon was obſerved all over France, and deſcribed by Gaſſendus, who gave it the name of *aurora borealis*; yet neither this, nor any ſimilar appearances poſterior to 1574, are deſcribed by Engliſh writers till the year 1707; which, as Dr. Halley obſerves, ſhews the prodigious neglect of curious matters which at that time prevailed. From 1621 to 1707, indeed, there is no mention made of an aurora borealis being ſeen by any body; and, conſidering the number of aſtronomers who during that period were in a manner continually watching the heavens, we may very reaſonably conclude that no ſuch thing did make its appearance till after an interval of eighty-ſix years. In 1707, a ſmall one was ſeen in November; and, during that year and the next, the ſame appearances were repeated five times. The next on record is that mentioned by Dr. Halley, in March 1715–16, the brilliancy of which attracted univerſal attention, and by the vulgar was conſidered as marking the introduction of a foreign race of princes. Since that time thoſe meteors have been ſo common, that no accounts have been kept of them.

It was for a long time matter of doubt whether this meteor made its appearance only in the northern hemiſphere, or whether it was alſo to be obſerved near the ſouth pole. This is now aſcertained by Mr. Forſter, who, in his voyage round the world with captain Cook, aſſures us, that he obſerved them in the higheſt ſouthern latitudes, though with phenomena ſomewhat different from thoſe which are ſeen here. On February 17th, 1773, as they were in latitude fifty-eight degrees ſouth, "A beautiful phenomenon was obſerved during the preceding night, which appeared again for ſeveral ſucceſſive nights. It conſiſted of long columns of a clear white light, ſhooting up from the horizon to the eaſtward, almoſt to the zenith, and gradually ſpreading on the whole ſouthern part of the ſky. Theſe columns were ſometimes bent ſidewiſe at their upper extremities; and, though in moſt reſpects ſimilar to the northern lights of our hemiſphere, yet differed from them in being always of a whitiſh colour, whereas ours aſſume various tints, eſpecially thoſe of a fiery and purple hue. The ſky was generally clear when they appeared, and the air ſharp and cold, the thermometer ſtanding at the freezing-point."

Dr. Halley obſerved, that the aurora borealis deſcribed by him aroſe to a prodigious height, it being ſeen from the weſt of Ireland to the confines of Ruſſia and Poland on the eaſt; nor did he know how much further it might have been viſible: ſo that it extended at leaſt thirty degrees in longitude, and from latitude fifty degrees north it was ſeen over all the northern part of Europe; and, what was very ſurpriſing, in all thoſe places where it was viſible, the ſame appearances were exhibited which Dr. Halley obſerved at London. He obſerves, with ſeeming regret, that he could by no means determine its height, for want of obſervations made at different places. Father Boſcovich has, however, determined the height of an aurora borealis, which was obſerved by the marquis of Polini the 16th of December, 1737, and found it was 825 miles high; and Mr. Bergman, from a mean of thirty computations, makes the average height of the aurora borealis amount to 70 Swediſh, or 469 Engliſh, miles. But Euler ſuppoſes the height to be ſeveral thouſands of miles; and Mairan alſo aſſigns to them a very elevated region.

Many attempts have been made to determine the cauſe of this phenomenon. Dr. Halley imagines that the watery vapours, or effluvia, exceedingly rarefied by ſubterraneous fire, and tinged with ſulphureous ſtreams, which many naturaliſts have ſuppoſed to be the cauſe of earthquakes, may alſo be the cauſe of this appearance; or that it is produced by a kind of ſubtile matter, freely pervading the pores of the earth, and which, entering into it nearer the ſouthern pole, paſſes out again with ſome force into the æther, at ſome diſtance from the northern. This ſubtile matter, by becoming more denſe, or having its velocity increaſed, may perhaps be capable of producing a ſmall degree of light, after the manner of effluvia from electric bodies, which, by a ſtrong and quick friction, emit light in the dark; to which ſort of light this ſeems to have a great affinity. Phil. Tranſ. No. 347. See alſo Mr. Cotes's deſcription of this phenomenon, and his method of explaining it, by ſtreams emitted from the heterogeneous and fermenting vapours of the atmoſphere, in Smith's Optics, p. 69; or Phil. Tranſ. abr. vol. vi. part 2.

The celebrated M. de Mairan, in an expreſs treatiſe on the aurora borealis, publiſhed in 1731, ſuppoſes its cauſe to be the zodiacal light, which, according to him, is no other than the ſun's atmoſphere; this light happening, on ſome occaſions, to meet the upper parts of our atmoſphere about the limits where univerſal gravity begins to act more forcibly towards the earth than towards the ſun, falls into our air to a greater or leſs depth, as its ſpecific gravity is greater or leſs, compared with the air through which it paſſes. However, M. Euler thinks the cauſe of the aurora borealis not owing to the zodiacal light, as M. de Mairan ſuppoſes; but to particles of our atmoſphere, driven beyond its limits by the impulſe of the ſolar light. And on this ſuppoſition he endeavours to account for the phenomena obſerved concerning this light. He ſuppoſes the zodiacal light, and the tails of comets, to be owing to a ſimilar cauſe.

But ever ſince the identity of lightning and the electric matter has been determined, philoſophers have been naturally led to ſeek for the explication of aerial meteors in the principles of electricity; and there is now no doubt but moſt of them, and eſpecially the aurora borealis, are electrical phenomena. Beſides the more obvious and known appearances which conſtitute a reſemblance between this meteor and the electric matter by which lightning is produced, it has been obſerved, that the aurora occaſions a very ſenſible fluctuation in the magnetic needle; and that, whenever it has extended lower than uſual in the atmoſphere, the flaſhes have been attended with various ſounds of rumbling and hiſſing, eſpecially in Ruſſia and the other more northern parts of Europe; as noticed by Sig. Beccaria and M. Meſſier. Mr. Canton, ſoon after he had obtained electricity from the clouds, offered a conjecture, that the aurora is occaſioned by the daſhing of electric fire poſitive towards negative clouds at a great diſtance, through the upper part of the atmoſphere, where the reſiſtance is leaſt: and he ſuppoſes that the aurora, which happens at the time when the magnetic needle is diſturbed by the heat of the earth, is the electricity of the heated air above it; and this appears chiefly in the northern regions, as the alteration in the heat of the air in thoſe parts is the greateſt. Nor is this hypotheſis improbable, when it is conſidered, that electricity is the cauſe of thunder and lightning; that it has been extracted from the air at the time of the aurora borealis; that the inhabitants of the northern countries obſerve it remarkably ſtrong when a ſudden thaw ſucceeds very cold ſevere weather; and that the tourmalin is known to emit and abſorb the electric fluid only by the increaſe or diminution of its heat. Poſitive and negative electricity in the air, with a proper quantity of moiſture to ſerve as a conductor, will account for this and other meteors, ſometimes ſeen in a ſerene ſky. Mr. Canton has ſince contrived to exhibit this meteor by means of the Torricellian vacuum, in a glaſs tube about three feet long, and ſealed hermetically. When one end of the tube is held in the hand, and the other applied to the conductor, the whole tube will be illuminated from end to end, and will continue luminous without interruption for a conſiderable time after it has been removed from the conductor. If, after this, it be drawn through the hand either way, the light will be remarkably intenſe through the whole length of the tube. And, though a great part of the electricity be diſcharged by this operation, it will ſtill flaſh at intervals, when held only at one extremity, and kept quite ſtill; but if, at the ſame time, it be graſped by the other hand in a different place, ſtrong flaſhes of light will dart from one end to the other; and theſe will continue twenty-four hours or more, without a freſh excitation. Sig. Beccaria conjectures, that there is a conſtant and regular circulation of the electric fluid from north to ſouth; and he thinks that the aurora borealis may be this electric matter performing its circulation in ſuch a ſtate of the atmoſphere as renders it viſible, or approaching nearer than uſual to the earth. Though probably this is not the mode of its operation, as the meteor is obſerved in the ſouthern hemiſphere with the ſame appearances as in the northern. Dr. Franklin ſuppoſes, that the electric fire diſcharged into the polar regions, from many leagues of vaporiſed air raiſed from the ocean between the tropics, accounts for the aurora borealis; and that it appears firſt where it is firſt in motion, namely, in the moſt northern part; and the appearance proceeds ſouthward, though the fire really moves northward. Mr. Kirwan, in the Tranſactions of the Royal Iriſh Academy, anno 1788, has ſome ingenious remarks on the *auroræ borealis & auſtralis*. He gives his reaſons for ſuppoſing the rarefaction of the atmoſphere in the polar regions to proceed from them, and theſe from a combuſtion of inflammable air cauſed by electricity. He obſerves, that after an aurora borealis the barometer commonly falls, and high winds from the ſouth generally follow.

Mr. John Dalton, profeſſor of natural philoſophy in the new college, Mancheſter, has lately publiſhed a treatiſe on the aurora borealis, the phenomena of which he has claſſed and characterized thus: "The appearances of the aurora come under four different deſcriptions. Firſt, a horizontal light, like the morning aurora, or break of day. Second, fine, ſlender, luminous, beams, well defined, and of denſe light; theſe continue a quarter, half, or one whole, minute, ſometimes at reſt apparently, but oftener with a quick lateral motion. Third, flaſhes pointing upward, or in the ſame direction as the beams, which they always ſucceed; theſe are only momentary, and have no lateral motion, but they are generally repeated many times in a minute; they appear much broader, more diffuſe, and of a weaker light, than the beams; they grow gradually fainter till they diſappear: theſe ſometimes continue for hours, flaſhing at intervals. Fourth, arches, nearly in the form of rainbows; theſe, when complete, go quite acroſs the heavens, from one point of the horizon to the oppoſite point. When an aurora takes place, thoſe appearances ſeem to ſucceed each other in the following order: firſt, the faint rainbow-like arches; ſecond, the beams; and, third, the flaſhes: as for the northern horizontal light, it will appear to conſiſt of an abundance of flaſhes, or beams, blended together, owing to the ſituation of the obſerver relative to them.

"The luminous beams of the aurora borealis, are cylindrical, and parallel to each other, at leaſt over a moderate extent of country. The cylindrical beams of the aurora are all magnetic, and parallel to the dipping-needle at the places over which they appear. And, as the beams are ſwimming in a fluid of equal denſity with themſelves, they are in the ſame predicament as a magnetic bar, or needle, ſwimming in a fluid of the ſame ſpecific gravity with itſelf; but this laſt will only reſt in equilibrio when in the direction of the dipping-needle, owing to what is called the earth's magnetiſm; and, as the former alſo reſts in that poſition only, the effects being ſimilar, we muſt, by the rules of philoſophizing, aſcribe them to the ſame cauſe. Hence, then, it follows, that the aurora borealis is a magnetic phenomenon, and its beams are governed by the earth's magnetiſm. The height of the rainbow-like arches of the aurora, above the earth's ſurface, is about 150 Engliſh miles. The beams of the aurora are ſimilar and equal in their real dimenſions to one another. The diſtance of the beams of the aurora from the earth's ſurface, is equal to the length of the beams, nearly. That appearance which we have called the horizontal light, and which is always ſituate near the horizon, is nothing but the blended lights of a group of beams, or flaſhes, which makes the appearance of a large luminous zone.

"We are under the neceſſity of conſidering the beams of the aurora borealis of a ferruginous nature, becauſe nothing elſe is known to be magnetic, and conſequently, that there exiſts in the higher regions of the atmoſphere an elaſtic fluid partaking of the properties of iron, or rather of magnetic ſteel, and that this fluid, doubtleſs from its magnetic property, aſſumes the form of cylindric beams. It ſhould ſeem too, that the rainbow-like arches are a ſort of rings of the ſame fluid, which encompaſs the earth's northern magnetic pole, like as the parallels of latitude do the other poles; and that the beams are arranged in equidiſtant rows round the ſame pole. At firſt view, indeed, it ſeems incompatible with the known laws of magnetiſm, that a quantity of magnetic matter ſhould aſſume the form of ſuch rings, by virtue of its magnetiſm; but it may take place in one caſe at leaſt, if we ſuppoſe the rings ſituate in the middle, between two rows of beams, ſo that the attraction on each ſide may be equal. As for the beams, in their natural ſtate, they muſt all be guided by the earth's magnetiſm, (I mean the cauſe that guides the needle, whether it is in the earth or air I know not,) and conſequently all have their north poles downward; but whether any two neighbouring beams have the poles of the ſame denomination, or of different denominations, acting upon each other, ſtill the effect will be the ſame, and their mutual action upon each other not diſturb their paralleliſm, nor the poſition of the rings; becauſe, whether the poles mutually attract or repel each other is of no moment in this caſe, and the attraction of each pole is alike upon the rings. Things being thus ſtated, I moreover ſuppoſe, that this elaſtic fluid of magnetic matter is, like vaporized air, an imperfect conductor of electricity; and that, when the equilibrium of electricity in the higher regions of the atmoſphere is diſturbed, I conceive that it takes theſe beams and rings as conductors, and runs along from one quarter of the heavens to another, exhibiting all the phenomena of the aurora borealis. The reaſon why the diffuſe flaſhes ſucceed the more intenſe light of the beams is, I conceive, becauſe the electricity diſperſes the beams in ſome degree, which collect again after the electric circulation ceaſes."

We muſt leave to the future obſervers on the heavens the taſk of ſcrutinizing the ſeveral parts of this theory: but, meanwhile, we muſt do Mr. Dalton the juſtice to obſerve, that he has rendered the mechaniſm which he deſcribes, or the exiſtence of parallel beams, far from improbable. From the compariſon of his obſervations, profeſſor Dalton finds the aurora to be a ſign of fair weather; a fact which, if confirmed, militates againſt the ſuppoſition that this meteor ariſes from the combuſtion of hydrogene air.

AUROS', a town of France, in the department of the Gironde, and chief place of a canton, in the diſtrict of Bazas, five miles north-eaſt of Bazas.

AUROUX', a town of France, in the department of the Lozerre, and chief place of a canton, in the diſtrict of Langogne, ſeventeen miles north of Mende.

AU'RUM, *ſ.* [*αυρος*, Gr. *aur*, Welch; Hypſicrates ſays, from *Aurus* its inventor: probably from אור Heb. reſplendency.]

reſplendency.] Gold. This metal was introduced into medicine by the Arabians, who eſteemed it one of the greateſt cordials and comforters of the nerves, under a liquid form, called *aurum potabile*, or drinkable gold ; which was a kind of ſolution of it in ſpirits of wine and other liquors : from them Europe received it without any diminution of its character ; but, as it is found inſoluble by any of the animal fluids, its medicinal power can only conſiſt in its being an external antidote or amulet againſt poverty. See the articles CHEMISTRY, and GOLD.

AURUM FULMINANS, *fulminating or thundering gold*, or ammoniacal oxyd of gold ; a powder made of gold diſſolved in nitro-muriatic acid ; and is ſo called, becauſe it explodes like gunpowder. It is made in the following manner : Put a dram of the filings of gold with half an ounce of the new-made acid into a matraſs placed in ſand; when the menſtruum ceaſes to act, pour off the ſolution, and, if any of the gold is left, add as much more nitro-muriatic acid as will be neceſſary to diſſolve it ; dilute the ſolution with ten times its quantity of warm water, then drop in the lixivium of tartar (acidulous tartrit of potaſh) till the efferveſcence and precipitation ceaſe ; let the whole ſettle, pour off the clear liquor, and waſh the precipitated matter with water till it becomes inſipid, and then dry it. In drying it the utmoſt care is required, ſince in a ſmall heat it explodes with violence. The more it is waſhed, the leſs violently it fulminates when heated. It is ten times ſtronger than the common gunpowder as to its exploſive power. See CHEMISTRY, vol. iv. p. 316.

AURUM MOSAICUM, or MUSIVUM, *Moſaic gold*; a compoſition made uſe of by ſtatuaries and painters, to lay on a colour like braſs or copper.

AURUM REGINÆ, *the queen's gold*; an ancient perquiſite belonging to every queen conſort during her marriage with the king, and due from every perſon who made a voluntary offering or fine to the king, amounting to ten marks or upwards, for and in conſideration of any privilege, grant, licence, pardon, or other matter of royal favour, conferred upon him by the king ; and it is due in the proportion of one-tenth part more, over and above the entire ſum paid to the king. As if 100 marks in ſilver be given to the king to have a fair, market, park, chaſe, or free-warren, there, the queen is intitled to ten marks in ſilver, or (what was formerly an equivalent denomination) to one mark in gold, by the name of queen-gold, or *aurum reginæ*. 1 *Black*. 219.

AURUN'CI, anciently a people of Latium, towards Campania ; the ſame with the Auſones, at leaſt ſo intermixed as not to be eaſily diſtinguiſhable.

AURUNGABAD'. See AURENGABAD.

AURUS'PI, in ancient geography, a people of Africa, in Ethiopia, whoſe capital, according to Pliny, was not far from the Nile.

AURUSULIA'NA, an epiſcopal city of Africa, in Numidia.

AU'SA, anciently a town of Tarraconenſis, in the middle age called Auſona ; now *Vich de Oſona*, a town of Catalonia in Spain.

AUSCHE, a town of Bohemia, in the circle of Leitmeritz, eight miles eaſt-north-eaſt of Leitmeritz.

AUSCULTA'TION, *ſ.* [from *auſculto*, Lat.] A hearkening or liſtening to.

AUSA'NA, a town of Belgic Gaul, where the twelfth legion had its winter-quarters.—Alſo, an epiſcopal ſee of Africa, in the proconſular province.

AUSANCA'LI, a town of Italy, in Liburnia. *Ptolemy.*

AUSA'RA, a town of Arabia Felix, in the country of the Sachalites, near the ſea.—Alſo a town in the interior part of Arabia Felix. *Ptolemy.*

AUSCHI'SÆ, in ancient geography, a people of Africa, in Libya, to the weſt of the Aſbyſtæ, and eaſt of the Naſamons. *Herodotus.*

AU'SCII, a people of Europe, in that part of Gaul called Aquitania. Their capital was Climberris, which afterwards aſſumed the name of the people. They occupied the country correſponding to the territory of Auch, weſt of the Toloſates.

AU'SER, or AUSAR; in ancient geography, a river of Italy, in Etruria, which diſcharges itſelf into the ſea, about ſix miles north of the Arnus ; now the Serchio.

AU'SI, a people of Africa, on the ſea-coaſt of Libya, encompaſſing the lake of Tritonis, and ſeparated by the river Triton from the Machlyes.

AUSIG'DA, a town of Africa, in the Pentapolis, watered by the river Cinnydhius.—An iſland of the ſame name is mentioned by Stephanus.

AUSILIN'DUM, a place of Africa, in the province of Trippoli, on the road from Tacape to the greater Leptis.

AU'SIMUM, or AUXIMUM, an ancient Roman colony, in the Picenum ; now *Oſmo*, or OSIMO.

AUSIN'ZA, a town of Aſia, in Perſia Propria. *Ptolemy.*

AU'SITÆ, or ÆSITÆ, a tribe of ancient Arabs, ſuppoſed by Bochart to have inhabited the land of Uz mentioned in Scripture.

AUSKUTS, in the Courland mythology, the god of health and ſickneſs. Sobarri were the offerings, which during the times of epidemic diſeaſes, were dedicated to Auſkuts.

AU'SON, a ſon of Ulyſſes and Calypſo, who ſettled in Italy, and gave his name to that country, it being anciently called Auſonia, and the inhabitants Auſonians.

AUSO'NA, anciently a town of the Auſones, a people who formerly occupied all the Lower Italy, from the Promontorium Circæum down to the ſtraits of Sicily. *Livy.*

AUSO'NIA, the ancient name of Italy, from its moſt ancient inhabitants the Auſones. *Virgil.*

AUSONE'UM MA'RE, a part of the Ionian Sea, extending ſouthwards from the promontory Japygium to Sicily, which it waſhes on the eaſt, as it does the Brutii and Magna Græcia on the ſouth and eaſt. It is ſeparated from the Tuſcan Sea by the Strait of Meſſina.

AUSO'NIUS (Decimus Magnus), one of the beſt poets of the fourth century, was the ſon of an eminent phyſician, born at Bourdeaux. He made an uncommon progreſs in claſſical learning, and was choſen to teach grammar at Bourdeaux. He was promoted ſoon after to be profeſſor of rhetoric ; in which office he acquired ſo great a reputation, that he was ſent for to be preceptor to Gratian, the emperor Valentinian's ſon. The rewards and honours conferred on him for the faithful diſcharge of his office prove the truth of Juvenal's maxim, that, "When Fortune pleaſes, ſhe can raiſe a man from a rhetorician to the dignity of a conſul." He was actually appointed conſul by the emperor Gratian, in 379. The time of his death is uncertain ; but he lived to a great age. The beſt edition of his poems is that of Amſterdam in 1671.

AUS'PEX, *ſ.* A name originally given to thoſe who were afterwards denominated *augurs*. In which ſenſe the word is ſuppoſed to be formed from *avis*, 'bird,' and *inſpicere*, 'to inſpect;' *auſpices*, q. d. *aviſpices*. Some will therefore have auſpices properly to denote thoſe who foretold future events from the ſight of birds.

To AU'SPICATE, *v. a.* [from *auſpice*.] To give an auſpicious turn to.—They *auſpicate* all their proceedings by ſtating, &c. &c. *Burke.*

AUS'PICE, *ſ.* [*auſpicium*, Lat.] The omens of any future undertaking drawn from birds ; protection, favour ſhown ; influence ; good derived to others from the piety of their patron. A prieſt.—*Auſpices* were thoſe, that handfaſted the married couple. *Ben Jonſon.*

AUSPI'CIAL, *adj.* Relating to prognoſtics.

AUSPICI'OUS, *adj.* Having omens of ſucceſs.—You are now, with happy and *auſpicious* beginnings, forming a model of a Chriſtian charity. *Spratt.*—Proſperous ; fortunate ; applied to perſons.

Auſpicious chief ! thy race, in times to come,
Shall ſpread the conqueſt of imperial Rome. *Dryden.*

Favourable; kind; propitious: applied to perſons or actions. Lucky; happy: applied to things:

A pure, an active, an *auſpicious*, flame,
And bright as heav'n, from whence the bleſſing came.
Roſcommon.

AUSPI'CIOUSLY, *adv.* Happily; proſperouſly; with proſperous omens.—If I *auſpiciouſly* divine. *B. Jonſon.*

AUSPI'CIOUSNESS, *ſ.* Proſperity; promiſe of happineſs.

AUSPI'CIUM, or AU'SPICY, *ſ.* The ſame with AUGURY.

AUS'PITZ, a town of Moravia, forty-two miles ſouth-ſouth-weſt of Olmutz, and 114 ſouth-eaſt of Prague.

AUSSEE' (New), a town of Germany in Stiria, forty-eight miles weſt-north-weſt of Judenberg.

AUS'SIG, or AUSTI, a town of Bohemia, on the Elbe, ten miles north-weſt of Leitmeritz.

AUST, or AUST-PASSAGE, a village in Glouceſterſhire, twelve miles north from Briſtol, and ſix miles ſouth from Chepſtow. Here is eſtabliſhed a paſſage-boat to croſs the Severn, which in this place is about two miles over at high-water. It was formerly called Auſt Clieve, from the high cliff that reaches upwards of a mile along the ſhore. It is now generally called the Old Paſſage, to diſtinguiſh it from another called the New Paſſage, about three miles lower down the river.

AUS'TER, [from αυω, to burn.] One of the South Winds. In mythology, Auſter is ſaid to be the ſon of Aſtræus and Aurora; and his breath ſo hot, as to be pernicious to flowers and fruit. He is called the diſpenſer of rain, and generally repreſented as an old man with a gloomy countenance, a head covered with clouds, a ſable veſture, and duſky wings.

AUSTE'RE, *adj.* [*auſterus*, Lat.] Severe; harſh; rigid.—When men repreſent the Divine nature as an *auſtere* and rigorous maſter, always lifting up his hand to take vengeance, ſuch conceptions muſt unavoidably raiſe terror. *Rogers.*—Sour of taſte; harſh.—*Auſtere* wines, diluted with water, cool more than water alone, and at the ſame time do not relax. *Arbuthnot.*

AUSTE'RELY, *adv.* Severely; rigidly:

Hypocrites *auſterely* talk
Of purity, and place, and innocence. *Milton.*

AUSTE'RENESS, *ſ.* Severity; ſtrictneſs; rigour; roughneſs in taſte.

AUSTER'ITY, *ſ.* Severity; mortified life: ſtrictneſs. Cruelty; harſh diſcipline:

Let not *auſterity* breed ſervile fear;
No wanton ſound offend her virgin ear. *Roſcommon.*

AUS'TERLITZ, or SLOWKOW, a town of Moravia, almoſt deſtroyed by the Swedes in the ſeventeenth century: twelve miles eaſt-ſouth-eaſt of Brunn, and 112 eaſt-ſouth-eaſt of Prague. For an account of the deciſive battle fought near this place, December 2, 1805, ſee the article FRANCE, vol. vii. p. 882.

AUSTE'RULOUS, *adj.* Harſh; tending to harſhneſs. *Not much uſed.*

AUS'TIN, a contraction from *Auguſtin*; a man's name.

AU'STRAL, AUSTRA'LIS, *adj.* the ſame with ſouthern. The word is derived from *auſter*, 'ſouth wind.' Thus auſtral ſigns are the ſix laſt ſigns of the zodiac; ſo called becauſe they are on the ſouth ſide of the equinoctial.

AUSTRALA'SIA, a name recently given to thoſe countries that lie on the ſouth of Aſia, namely, New Holland, New Guinea, New Britain, New Ireland, New Caledonia, New Zealand, the Friendly iſles, Society iſlands, the Marqueſas, and the Sandwich iſlands. The length of Auſtralaſia may be computed from 95° of E. longitude to 185°, that is 90° in lat. 30°, or nearly 5000 geographical miles; while the breadth, N. lat. 3° to S. lat. 50°, will be 3180 geographical miles. The weſtern boundary of Auſtralaſia may be taken in the meridian from the ſouth of Sumatra, or extended to 100°, or even 90°, eaſt from Greenwich; but as few or no iſles of conſequence have yet been diſcovered in that direction, the ſtrict demarcation may be diſcovered by future circumſtances. A like obſervation may be applied to the ſouthern boundary of Auſtralaſia, which, as including New Zealand, and ſome iſles not far diſtant, muſt be extended to the ſouthern latitude of 50°, or even of 60°, where the iſlands of ice begin to appear. The moſt difficult boundaries are thoſe on the north and eaſt. A wide and vacant channel ſeems to divide the north-weſt part of Notaſia, or New Holland, from the iſles of Sunda, or Sumatran chain. From the north cape of Van Diemen, E. lon. 131° from Greenwich, a line aſcends to the north between the Indian and Pacific oceans, leaving in the former the iſles of Banda, Ceram, Myſol, and Gilolo; while in the Pacific, and belonging to Auſtralaſia, are Timorlaut, Waijoo, and other iſles immediately connected with Papua. This line being extended in the ſame direction about two degrees to the north of the equator, turns eaſt into a wide channel of ſeparation between the Carolines, &c. and New Ireland, and other iſles belonging to Auſtralaſia. Bending ſouth-eaſt, Sir Joſeph Banks's Iſles and the New Hebrides are left in Auſtralaſia, while a conſiderable interval leaves the Feejee iſlands in Polyneſia. Thence a wide and open ſea gives the line of demarcation an ample ſweep, about ſix or ſeven degrees, to the eaſt of New Zealand, when bending ſouth-weſt it joins the ſouthern boundary.

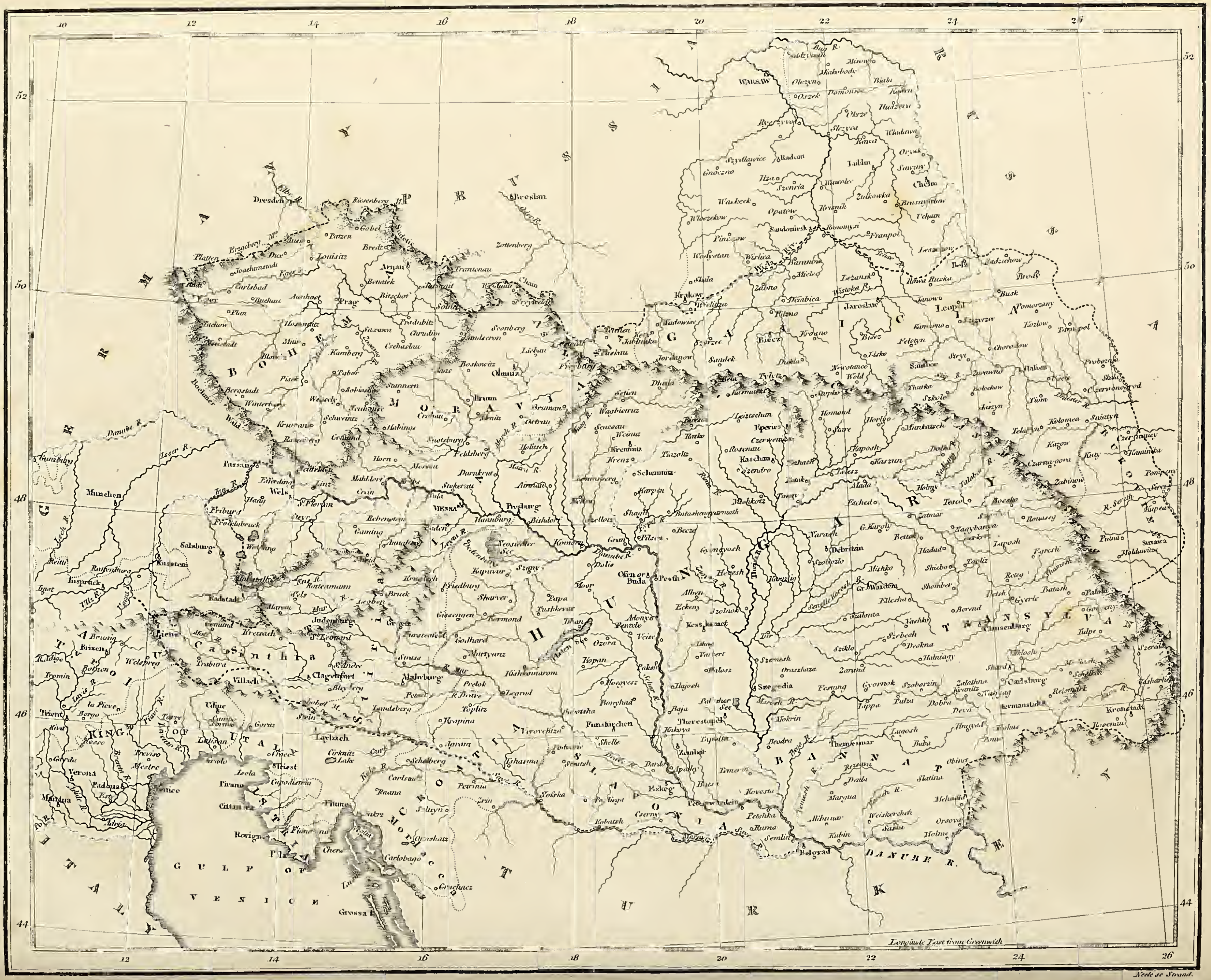
From theſe indications it will be perceived, that Auſtralaſia contains the following countries: 1. The central and chief land of Notaſia, or New Holland, with any iſles which may be diſcovered in the adjacent Indian ocean, twenty degrees to the weſt and between twenty and thirty degrees to the eaſt, including particularly all the large iſlands that follow. 2. Papua, or New Guinea. 3. New Britain, and New Ireland, with the Solomon iſles. 4. New Caledonia, and the New Hebrides. 5. New Zealand. 6. The large iſland called Van Diemen's land, recently diſcovered to be ſeparated from New Holland by a ſtrait, or rather channel, called Baſs's ſtrait. See the article GEOGRAPHY, vol. viii. p. 407.

AUSTRA'LIS PIS'CIS, the *Southern Fiſh*, a conſtellation of the ſouthern hemiſphere, not viſible in our latitude; whoſe ſtars in Ptolomy's catalogue are eighteen, and in the Britannic catalogue twenty-four.

To AUS'TRALIZE, *v.n.* To tend towards the ſouth. —Steel and good iron diſcover a verticity, or polar faculty; whereby they do ſeptentriate at one extreme, and *auſtralize* at another. *Brown.*

AU'STRIA (Archduchy of), a country of Germany, bounded on the north by Bohemia and Moravia, on the eaſt by Hungary, on the ſouth by Stiria, and on the weſt by Bavaria. It is divided by the river Ens into Upper and Lower Auſtria; the capital of the latter is Vienna, beſides which it contains thirty-five other cities, and 256 market towns; and that of the former is Lintz, beſides which it has thirteen other cities, and eighty-eight market towns. The population of this archduchy has been uſually computed at 1,685,000 perſons, and more lately at 1,820,000.

Auſtria derives its name from its ſituation towards the eaſt: *Ooſt-ryak*, or *Oeſterreich*, ſignifying in German the Eaſtern Kingdom. This name was ſoftened into *Auſtria* by the Italian and French enunciation; and this diviſion, which may be conſidered as partly belonging to ancient Pannonia, aroſe after Charlemagne had eſtabliſhed the weſtern empire; being a remnant of the ſovereignty of what was called Eaſtern France, eſtabliſhed by that conqueror. It was alſo ſtyled *Marchia Orientalis*, the Eaſtern March, or Boundary, and in the ninth and tenth centuries was the frontier of the empire againſt the barbarians. In 928, the emperor Henry the Fowler, perceiving that it was of great importance to ſettle ſome perſon in Auſtria who might oppoſe theſe incurſions, in-



Neele sc. Strand.

AUSTRIA.

veſted Leopold, ſurnamed the *Illuſtrious*, with that country. Otho I. erected Auſtria into a marquiſate in favour of his brother-in-law Leopold, whoſe deſcendant Henry II. was created duke of Auſtria by the emperor Frederic Barbaroſſa. His poſterity becoming extinct in 1240, the ſtates of the country, in order to defend themſelves from the incurſions of the Bavarians and Hungarians, reſolved to put themſelves under the protection of Henry marquis of Miſnia; but Othogar II. king of Bohemia, being likewiſe invited by a party of the nobles, took poſſeſſion of it, alleging not only the invitation of the ſtates, but alſo the right of his wife, heireſs of Frederic the laſt duke. The emperor Rodolphus I. pretending a right to Auſtria, refuſed to give Othogar the inveſtiture of it; and afterwards, killing him in a battle, procured the right of it to his own family. From this Rodolphus the preſent houſe of Auſtria is deſcended, which for ſeveral centuries paſt has rendered itſelf ſo famous and ſo powerful, having given fifteen emperors to Germany, and ſix kings to Spain.

In 1477, Auſtria was erected into an archduchy by the emperor Frederic the Pacific, for his ſon Maximilian; under which denomination it continued till the year 1804, when the emperor of Germany, Francis II. aſſumed the title of *Emperor of Auſtria*, thus converting it into an hereditary empire; and in 1806, he relinquiſhed the title of Emperor of Germany.—See the article GERMANY, vol. viii. p. 524.

AUSTRIA (Empire of). The Auſtrian dominions, or hereditary ſtates of the houſe of Auſtria, comprehended, before the late war, beſides the archduchy of Lower Auſtria, containing the country on this ſide the river Ens, ſometimes called Lower Auſtria, and the country beyond the Ens, denominated Upper Auſtria; and alſo the country called the Inn-Viertel, or the part taken from Bavaria, of which the capital is Branau, the following territories; viz. Interior Auſtria, including the duchies of Stiria, Carinthia, Carniola, Auſtrian Friuli, and Trieſte; Upper Auſtria, or the Tyroleſe; Anterior Auſtria, compriſing the Briſgaw, Auſtrian territories in Swabia, Hohenembs, Falkenſtein, Langenargen, and Tetnang; the kingdom of Bohemia; the margraviate of Moravia; Auſtrian Sileſia; Auſtrian Netherlands, now in poſſeſſion of the French; Lombardy, including the duchies of Milan and of Mantua, now in poſſeſſion of the French; the kingdom of Hungary, and bannate of Temeſwar; Illyricum, including Dalmatia, Croatia, and Sclavonia; Tranſylvania; the province of Buckovina, annexed to the Auſtrian territory in 1777; and the provinces of Gallicia and Lodomiria, being that part of Poland acquired by Auſtria in the partition of 1772. From the frontiers of Swiſſerland to the utmoſt limits of Tranſylvania, the length of the Auſtrian empire may be reckoned at about 760 Britiſh miles, and the breadth about 520, from the river Bug, which forms a boundary between Auſtria and Pruſſian Poland, to the Save, which divides the Auſtrian from the Turkiſh ſovereignty. The contents may be about 184,000 ſquare miles; and Bötticher eſtimates the inhabitants at 108 to a ſquare mile. Since he wrote, the populous region of the Netherlands has been withdrawn. Towards the eaſt, the Auſtrian dominions border on thoſe of Ruſſia and Turkey; to the north, on thoſe of Pruſſia, Upper Saxony, Bavaria, from which it is ſeparated by the river Inn, and Swabia; and on the utmoſt weſt are Swiſſerland and the Italian ſtates.

The original population of theſe extenſive regions is various; but chiefly Gothic and Slavonic. The native ancient Germans, a Gothic race, form the ruling, moſt induſtrious, and moſt important, part of the inhabitants. The preſent population of the Auſtrian dominions is computed at more than 20,000,000; that of Hungary, Tranſylvania, and the Buckovina, being eſtimated at 4½ millions. Some authors, however, have computed the population of Hungary alone, at 7,000,000; and a late author (Mr. Townſon) has conſequently ſwelled the general population of the Auſtrian dominions to 25,000,000; and Pinkerton thinks it reaſonable to allow 23,000,000 as a medial computation of the numbers ſubject to the Auſtrian ſceptre. Of the other chief provinces, Bohemia is ſuppoſed to hold 2½ millions; Moravia 1½ million; the acquiſitions in Poland, more than 3 millions; and the archduchy of Auſtria, as we have already ſtated, 1,685,000. The army is computed by Boetticher at 365,455 men, in 136 regiments, of which 46 are German, and only 11 Hungarian. But in the ſanguinary conteſt with France, this army has been greatly diminiſhed; and, at preſent, it is ſuppoſed not to be equal to that of Pruſſia, eſtimated at about 200,000; and far leſs than that of Ruſſia, which is ſuppoſed to double this number. The whole revenue is computed at more than ten millions ſterling; to which Auſtria contributes about three millions; and Hungary a little more than a million and a half. The revenue uſed to exceed the expences; but the public debt is now ſuppoſed to ſurpaſs 40,000,000l. ſterling, and the recent wars have occaſioned great defalcations.

The prevailing religion of the Auſtrian dominions is the Roman catholic. However, proteſtants of various ſects are found in Bohemia and Moravia; nor are Lutherans unknown at Vienna, though they chiefly abound in Tranſylvania; and in Hungary the proteſtants are ſuppoſed to be equal in number to the catholics. The form of government is an hereditary monarchy, approaching to abſolute power. Hungary, indeed, retains its ancient ſtates, or rather an ariſtocratical ſenate; but as the military force is lodged wholly with the ſovereign, no diſtinct kingdom or ſtate can withſtand his will. Auſtria alſo has its ſtates, conſiſting of four orders, clergy, peers, knights, and burgeſſes: the aſſembly for Lower Auſtria being held at Vienna, and that of the Upper at Lintz. But theſe local conſtitutions can little avail againſt the will of a powerful monarch, ſupported by a numerous army. The laws vary according to the different provinces; and almoſt every ſtate has its peculiar code. (See HUNGARY.) Upon the whole, the laws may be regarded as mild and ſalutary; and the Auſtrians in particular are a well-regulated and contented people; while the Hungarians are often diſſatisfied, and retain much of their ancient animoſity againſt the Germans.

AUS'TRIAN, *adj.* & *ſ.* Belonging to Auſtria.

AUS'TRINE, *adj.* [from *auſtrinus*, Lat.] Southern; ſoutherly.

AUS'TROMANCY, *ſ.* [*auſtromantia*, Lat.] Properly denotes ſoothſaying, or a vain method of predicting futurity, from obſervations of the winds.

AUSTRU'MA SEMME, in the Courland mythology, the land where the ſun riſes, which, with reſpect to Courland, was Ruſſia; from whence their idolatrous prieſts firſt came; they were called *Krikwe*, or *Kriwe*.

AUSTUR'CUS, or OSTURCHUS, *ſ.* A goſhawk; whence we uſually call a falconer, who keeps that kind of hawks, an *oſtringer*. In ancient deeds there has been reſerved, as a rent to the lord, *unus auſturcus*.

AUTA'LES, *ſ.* [a corruption of οδȣταλης from οδȣς, a tooth.] A ſhell which reſembles a tooth.

AUTAN'GELIST, *ſ.* [of αυτος, himſelf, and αγγελος, Gr. a meſſenger.] One who is his own meſſenger.

AUTAR'CIA, *ſ.* [from αυτος, himſelf, and αρκεω, to ſatisfy.] Contentment; eaſe of mind.

AU'TEFAGE, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Villeneuve d'Agen, nine miles north-north-eaſt of Agen.

AUTENIQUA', an extenſive country of Africa, lying to the eaſt of the Cape of Good Hope. M. Vaillant, who viſited this country in 1782, calls it the moſt delightful region in the univerſe. It lies between 33° 30' and 34° 50' S. lat. and between 20° and 23° 40' E. lon.

AU'TENOW, a town of Poland, in the palatinate of Kiov, eighteen miles weſt-ſouth-weſt of Bialacerkiew.

AU'TER DROI'T, *ſ.* In law, another's right: where perſons ſue or are ſued, or claim, not in their own right, but in the right of another; as executors and adminiſtrators.

AUTERFOI'TS ACQUI'T, a former acquittal, is a ſpecial plea in bar of an indictment, when a perſon hath been formerly indicted of the ſame offence, and acquitted; for no man ſhall be brought into jeopardy of his life more than once for the ſame offence.—Of the like ſort is the plea of *auterfoits conviɛt*, or a former conviction for the ſame identical crime, though no judgment was given thereupon, as being ſuſpended by the benefit of clergy or other cauſe.—*Auterfoits attaint*, a former attainder, either for the ſame or any other felony, is another plea in bar; for the offender having by the attainder forfeited all that he had, it would be abſurd to endeavour to attaint him a ſecond time. 4 *Black.* 335.

AUTERI'VE, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of Muret, on the Arriege, fifteen miles ſouth of Toulouſe.

AUTHEN'TIC, *adj.* [*authentique*, Fr. *authenticus*, Lat. of αυθεντικος, of αυθεντια, Gr. authority.] That which has every thing requiſite to give it authority; as, an *authentic* regiſter. It is uſed in oppoſition to any thing by which authority is deſtroyed, as, *authentic*, not counterfeit. It is never uſed of perſons. Genuine; not fictitious:

But cenſure's to be underſtood
The *authentic* mark of the elect,
The ſtamp heav'n ſets on all that's great and good. *Swift.*

AUTHEN'TICAL, *adj.* Not fictitious; being what it ſeems.—Of ſtatutes made before time of memory, we have no *authentical* records, but only tranſcripts. *Hale.*

AUTHEN'TICALLY, *adv.* After an authentic manner; with all the circumſtances requiſite to procure authority.—Conſcience never commands or forbids any thing *authentically*, but there is ſome law of God which commands or forbids it firſt. *South.*

AUTEN'TICALNESS, *ſ.* The quality of being authentic; genuineneſs; authority.—Nothing can be more pleaſant than to ſee virtuoſos about a cabinet of medals, deſcanting upon the value, rarity, and *authenticalneſs*, of the ſeveral pieces. *Addiſon.*

To AUTHEN'TICATE, *v. a.* To give authenticity or creditto.

AUTHENTI'CITY, *ſ.* Authority; genuineneſs; the being authentic.

AUTHEN'TICLY, *adv.* After an authentic manner.

AUTHEN'TICNESS, *ſ.* The ſame with AUTHENTICITY.

AUTHI'E, a river of France, which runs into the ſea eight miles north from the mouth of the Somme, and ſeparates the department of the Straits of Calais from the department of the Somme, through almoſt its whole courſe.

AUTHION', a river of France, which runs into the Loire two miles ſouth of Angers.

AUTHON', a town of France, in the department of the Eure and Loire, and chief place of a canton in the diſtrict of Nogent le Rotrou; ſix leagues weſt-north-weſt of Chateaudun.

AU'THOR, *ſ.* [*auɛtor*, Lat.] The firſt beginner or mover of any thing; he to whom any thing owes its original.—That law, the *author* and obſerver whereof is one only God, to be bleſſed for ever. *Hooker.*

But Faunus came from Picus, Picus drew
His birth from Saturn, if records be true.
Thus king Latinus, in the third degree,
Had Saturn *author* of his family. *Dryden.*

The efficient; he that effects or produces any thing.—That which is the ſtrength of their amity, ſhall prove the immediate *author* of their variance. *Shakeſpeare.*—The firſt writer of any thing; diſtinct from the tranſlator or compiler.—An *author* has the choice of his own thoughts and words, which a tranſlator has not. *Dryden.*—A writer in general.

AU'THORESS, *ſ.* A female in any of thoſe capacities which give the title of author.—She was probably the foundreſs of that ſchool of female learning, of which (with herſelf) there were no leſs than four *authoreſſes* in three deſcents. *Walpole.*

All with united grief the loſs bemoan.
Except the *auth'reſs* of his fate alone. *Walſh.*

AUTHOR'ITATIVE, *adj.* Having due authority; having an air of authority.—I dare not give them the *authoritative* title of aphoriſms, which yet may make a reaſonable moral prognoſtic. *Wotton.*

AUTHOR'ITATIVELY, *adv.* In an authoritative manner; with a ſhow of authority; with due authority.—No law foreign binds in England, till it be received, and *authoritatively* engrafted, into the law of England. *Hale.*

AUTHOR'ITATIVENESS, *ſ.* An acting by authority; authoritative appearance.

AUTHOR'ITY, *ſ.* [*auctoritas*, Lat.] Legal power.—Adam's ſovereignty, that by virtue of being proprietor of the whole world, he had any *authority* over men, could not have been inherited by any of his children. *Locke.*

Idle old man,
That ſtill would manage thoſe *authorities*
That he hath given away. *Shakeſpeare.*

Influence; credit.—Power, ariſing from ſtrength, is always in thoſe that are governed, who are many; but *authority*, ariſing from opinion, is in thoſe that govern, who are few. *Temple.*—The woods are fitter to give rules than cities, where thoſe that call themſelves civil and rational go out of their way by the *authority* of example. *Locke.*—Power; rule.—But I ſuffer not a woman to teach, nor to uſurp *authority* over the man, but to be in ſilence. 1 *Tim.* ii. 12.—Support; juſtification; countenance; teſtimony.—We urge *authorities* in things that need not, and introduce the teſtimony of ancient writers, to confirm things evidently believed. *Brown.*—Weight of teſtimony; credibility; cogency of evidence.—They conſider the main conſent of all the churches in the whole world, witneſſing the ſacred *authority* of ſcriptures, ever ſince the firſt publication thereof, even till this preſent day and hour. *Hooker.*

AUTHORITY, legally conſidered, is a power delegated to do ſomething; it is ſometimes given by word, but generally in writing: alſo it is by writ, warrant, commiſſion, letter of attorney, &c. The authority given by letter of attorney muſt be executed during the life of the perſon that gives it; becauſe the letter of attorney is to conſtitute the attorney my repreſentative for ſuch a purpoſe, and therefore can continue in force only during the life of me that am to be repreſented. But if any corporation aggregate, as a mayor and commonalty, or dean and chapter, make a feoffment and letter of attorney to deliver ſeiſin, this authority does not determine by the death of the mayor or dean, but the attorney may well execute the power after their death: becauſe the letter of attorney is an authority for the body aggregate, which ſubſiſts after the death of the mayor or dean, and therefore may be repreſented by their attorney; but if the dean or mayor be named by their own private name, and die before livery, or be removed, livery after ſeems not good. *Co. Lit.* 52.

In many caſes authorities muſt be ſtrictly executed according to the power given. If a man deviſe that his executors ſhall ſell his land, this gives but a naked authority; and the lands, till the ſale is made, deſcend to the heir at law; and in this caſe all muſt join in the ſale; and if one die, it being a bare authority, cannot ſurvive to the reſt. *Co. Lit.* 112. But if a man by will give land to executors to be ſold, and one of them die, the ſurvivors may ſell; for the truſt, being coupled with an intereſt, ſhall ſurvive together with it. *Co. Lit.* 113.

If a letter of attorney be to make livery upon condition, ſo as to make a conditional feoffment, and the attorney delivers ſeiſin abſolutely, the livery is not good; becauſe the attorney had no authority to create an abſolute fee-ſimple; and therefore ſuch abſolute feoffment ſhall not bind the feoffer, becauſe he gave no ſuch authority. 2 *Rol. Abr.* 9. If a warrant of attorney be given to make livery to one, and the attorney makes livery to two; or if the attorney had authority to make livery of *black-acre*, and he made livery of *black-acre* and *white-acre*, though the attorney has in theſe caſes done more, yet there is no reaſon that ſhall vitiate what he has done purſuant to his power, ſince what he did beyond it is a perfect nullity, and void. *Perk.* 189. If a letter of attorney be given to two jointly to take livery, and feoffor makes livery to one in the abſence of the other, in the name of both, this is void; becauſe they, being appointed jointly to receive livery, are to be conſidered but as one. But, if a letter of attorney be made to three *conjunctim et diviſim*, and two only make livery, this is not good, becauſe not purſuant to their authority; for the delegation was to them all three, or to each of them ſeparately; yet if the third was preſent at the time of the livery made by two, though he did not actually join with them in the act of livery, yet the livery is good; becauſe when they all three are upon the land for that purpoſe, and two make livery in the preſence of the third, there is his concurrence to the act, though he did not join in it actually, ſince he did not diſſent to it. *Dyer.* 62. 1 *Rol. Abr.* 329. *Co. Lit.* 181. If a letter of attorney be given to A. to make livery of lands already in leaſe, the attorney may enter upon the leſſee in order to make livery; becauſe, whilſt the leſſee continues in poſſeſſion, the attorney cannot deliver ſeiſin of it; and therefore, to execute the power given him by the letter of attorney, it is neceſſary he ſhould have a power to enter upon the leſſee. *Co. Lit.* 52. *Poph.* 103. *Dyer* 131.

If a ſheriff makes a warrant to four or three, or a capias jointly or ſeverally to arreſt one, two of them may arreſt the party, for the greater expedition of juſtice. *Co. Lit.* 181. *Palm.* 52. So if the lord gives licence to a copyholder for life, to leaſe the copyhold for five years, if the copyhold *tamdiu vixerit*, and he leaſes it for five years generally without limitation, this is a good execution, and purſuant to the licence; for the leaſe is determinable by his death, by a limitation in law; and therefore as much is implied by law, as if he had made an actual limitation. 1 *Rol. Abr.* 330. *Cro. Jac.* 436.

AUTHORITY is repreſented by a woman half naked, holding in one hand a ſphere, with the twelve ſigns of the zodiac; and in the other an image, which holds in one hand a branch of palm, and in the other a garland. Sometimes as a matron, ſeated in a noble chair, clothed with a gold embroidered garment, holding a ſword in her right hand, and a double trophy of books and arms by her ſide. Her age denotes authority, as does alſo the throne; her ſplendid habit, the pre-eminence perſons in authority have over others; the ſword lifted up ſhews the ſovereign power; the ſceptre is likewiſe, in all nations, a badge of authority.

AUTHORIZA'TION, *ſ.* Eſtabliſhment by authority.—The obligation of laws ariſes not from their matter, but from their admiſſion and reception, and *authorization* in this kingdom. *Hale.*

To AU'THORIZE, *v. a.* [*authoriſer*, Fr.] To give authority to any perſon; to make any thing legal.—To have countenanced him in irregularity, and diſobedience to that light which he had, would have been, to have *authorized* diſorder, confuſion, and wickedneſs, in his creatures. *Locke.*—To eſtabliſh any thing by authority.—Thoſe forms are beſt which have been longeſt received and *authorized* in a nation by cuſtom and uſe. *Temple.*—To juſtify; to prove a thing to be right.—All virtue lies in a power of denying our own deſires, where reaſon does not *authorize* them. *Locke.*—To give credit to any perſon or thing.—Although their intention be ſincere, yet doth it notoriouſly ſtrengthen vulgar error, and *authorize* opinions injurious unto truth. *Brown.*

AUTI'RE, a river of France which runs into the Sevre, a little below Maillerais.

AUTI'TES, *ſ.* [from αυτος, itſelf.] A matter or medicine that is pure and unadulterated.

AUTOCHTHO'NES, *ſ.* [αυτοχθωνες, of αυτος, ſelf, and χθων, Gr. the earth.] An appellation aſſumed by ſome nations, importing that they ſprang, or were produced, from the ſame ſoil which they ſtill inhabited. In this ſenſe, *autochthones* amounts to the ſame with *aborigines.* The Athenians valued themſelves on their being autochthones, 'ſelf-born,' or γηγενεις, 'earth-born;' it being the prevailing opinion among the ancients, that, in the beginning, the earth, by ſome prolific power, produced men, as it ſtill does plants. The proper autochthones were thoſe primitive men who had no other parent beſides the earth. But the name was alſo aſſumed by the deſcendants of theſe men, provided they never changed their ancient ſtate, nor ſuffered other nations to mix with them. In this ſenſe it was that the Greeks, and eſpecially the Athenians, pretended to be autochthones; and, as a badge thereof, wore a golden graſshopper woven in their hair, an inſect ſuppoſed to have the ſame origin.

AUTO'CRASY, *ſ.* [αυτοκρατεια, from αυτος, ſelf, and κρατος, power.] Independent power; ſupremacy.

AUTOGE'NEAL, *adj.* [of αυτογενης, of αυτος, ſelf, and γενναω, to beget, γενομαι, Gr. to be begotten.] Self-begotten.

AUTO'GENES, *ſ.* The narciſſius is ſo called, becauſe its bulbous root puts forth leaves bfore it is ſet in the earth, ſo that the plant ſeens to ſpring from itſelf.

AUTOGRA'PHICAL, *adj.* Of one's own writing.

AUTO'GRAPHY, *ſ.* [αυτογραφον, from αυτος, and γραφω, to write.] A particular perſon's own writing; or the original of a treatiſe, in oppoſition to copy.

AUTO'CRATOR, *ſ.* A perſon veſted with an abſolute independent power, by which he is rendered unaccountable to any other for his actions. The power of the Athenian generals, or commanders, was uſually limited; ſo that, at the expiration of their office, they were liable to render an account of their adminiſtration. But, on ſome extraordinary occaſions, they were exempted from this reſtraint, and ſent with a full and uncontroulable authority; in which ſenſe they were ſtyled αυτοκρατορες. The ſame people alſo applied the name to ſome of their ambaſſadors, who were veſted with full power of determining matters according to their own diſcretion. Theſe were denominated πρεσαβεις αυτοκρατορες, and reſembled our plenipotentiaries.

AU'TO DA FE, act of faith. See ACT of FAITH.

AUTODIDAC'TUS, *ſ.* A perſon ſelf-taught, or who has had no maſter or aſſiſtant of his ſtudies beſides himſelf.

AUTOISON', a town of France, in the department of the Upper Saone, and chief place of a canton, in the diſtrict of Veſoul, five leagues ſouth of Beſançon.

AUTOL', a town of Spain, in Old Caſtile, one league from Calahorra.

AUTOLITHO'TOMUS, *ſ.* [from αυτος, himſelf, γιθος, a ſtone, and τεμνω, to cut.] He who cuts himſelf for the ſtone. Of this we have a very extraordinary inſtance given by Reiſelius, in the Ephemerides of the Academy *Naturæ Curioſorum*, dec. 1. an. 3. obſ. 192.

AUTO'LOGY, *ſ.* [of αυτος, and λεγο, Gr. to ſpeak.] Speaking of or to one's ſelf.

AUTO'LYCUS, in fabulous hiſtory, the ſon of Mercury and Chione. He learned the trade of thieving from this god, with the power of aſſuming different ſhapes.

He was diſcovered by Syſyphus in ſtealing cattle; but, as this man was in love with his daughter Anticlea, they made up the matter. *Ovid.*

AUTO'MATE, called alſo *Hiera*, one of the Cyclades, an iſland to the north of Crete, ſaid to have emerged out of the ſea, between the iſlands Thera and Theraſia, in the fifth year of the emperor Claudius; in extent thirty ſtadia. *Oroſius.*

AUTOMA'TIA, the goddeſs of chance, to whom Timoleon, a famous Corinthian general, built a temple.

AUTOMA'TICAL, *adj.* Belonging to an automaton; having the power of moving itſelf.

AUTO'MATON, *ſ.* [*automate*, Fr. *automato*, It. *automaton*, Lat. *αυτοματον*, of *αυτοματος*, Gr. ſpontaneous; in the plural *automata*.] A ſelf-moving machine, or one ſo conſtructed, by means of weights, levers, pullies, &c. as to move for a conſiderable time, as though endowed with animal life. According to this deſcription, clocks, watches, and all machines of that kind, are automata. Very ſurpriſing imitations of this kind have been made. So long ago as 400 years before Chriſt, Archytas of Tarentum is ſaid to have made a wooden pigeon that could fly. Regiomontanus made a wooden eagle that flew forth from the city, met the emperor, ſaluted him, and returned. He alſo made an iron fly, which flew out of his hand at a feaſt, and returned again after flying about the room. Dr. Hook is ſaid to have made the model of a flying chariot, capable of ſupporting itſelf in the air. But M. Vaucanſon diſtinguiſhed himſelf ſtill more eminently; he made a duck, which was capable of eating, drinking, and imitating exactly the voice of a natural one. Nay, what is ſtill more ſurpriſing, the food it ſwallowed was evacuated in a digeſted ſtate; not that it was really in a ſtate of natural excrement, but only conſiderably altered from what it was when ſwallowed; and this digeſtion was performed on the principles of ſolution, not of trituration. The wings, viſcera, and bones, of this artificial duck, were alſo formed ſo as very ſtrongly to reſemble thoſe of a living animal. Even in the actions of eating and drinking, this reſemblance was preſerved; the artificial duck ſwallowed with avidity and vaſtly quick motions of the head and throat; and likewiſe muddled the water with its bill exactly like a natural one. M. le Droz, of la Chaux de Fonds, in the county of Neufchatel, alſo executed ſome very curious pieces of mechaniſm, which deſerve to be ranked with thoſe already mentioned. One was a clock, which was preſented to his Spaniſh majeſty; and had, among other curioſities, a ſheep which imitated the bleating of a natural one; and a dog watching a baſket of fruit. When any one attempted to purloin the fruit, the dog gnaſhed his teeth and barked; and if it was actually taken away he never ceaſed barking till it was reſtored.

But the motions of the human body are more complicated, and conſequently more difficult to be imitated, than thoſe of any other creature; whence the conſtruction of an automaton in ſuch a manner as to imitate any of the human actions with tolerable exactneſs, is juſtly ſuppoſed to indicate a greater ſkill in mechanics than any other piece of workmanſhip whatever. A very remarkable figure of this kind appeared in Paris, in the year 1738. It repreſented a flute-player, and was capable of performing many different pieces of muſic on the German flute; which, conſidering the difficulty of blowing that inſtrument, the different contractions of the lips neceſſary to produce the diſtinctions between the high and low notes, and the complicated motions of the fingers, muſt appear truly wonderful. This machine was the invention of M. Vaucanſon, member of the Royal Academy of Sciences; and a particular deſcription of it was publiſhed in the Memoirs of the Academy for that year. The figure itſelf was about five feet and a half in height, ſituated at the end of an artificial rock, and placed upon a ſquare pedeſtal four feet and an half high, and three and an half broad. The air entered the body by three pipes ſeparated one from the other. It was conveyed to them by nine pair of bellows, three of which were placed above, and ſix below. Theſe were made to expand and contract regularly in ſucceſſion, by means of an axis of ſteel turned round by clock-work. On this axis were different protuberances at proper diſtances, to which were fixed cords thrown over pullies, and terminating in the upper boards of the bellows, ſo that, as the axis turned, theſe boards were alternately raiſed and let down. A contrivance was alſo uſed to prevent the diſagreeable hiſſing fluttering noiſe uſually attending the motion of bellows: this was by making the cord, by which the bellows was moved, preſs, in its deſcent, upon one end of a ſmaller lever, the other end of which aſcending forced open the ſmall leathern valve that admitted the air, and kept it ſo, till, the cord being relaxed by the deſcent of the upper board, the lever fell, and the air was forced out. Thus the bellows performed their functions conſtantly without the leaſt hiſſing or other noiſe by which it could be judged in what manner the air was conveyed to the machine. The three tubes, by which the air entered, terminated in three ſmall reſervoirs in the trunk of the figure. There they united, and, aſcending towards the throat, formed the cavity of the mouth, which terminated in two ſmall lips adapted to perform their proper functions. Within this cavity alſo was a ſmall moveable tongue; which, by its play, at proper periods, admitted the air, or intercepted its paſſage to the flute.

The fingers, lips, and tongue, received their proper directions by means of a ſteel cylinder turned by clock-work. It was divided into fifteen equal parts, which by means of pegs, preſſing upon the ends of fifteen different levers, cauſed the other extremities to aſcend. Seven of theſe levers directed the fingers, having wires and chains affixed to their aſcending extremities, which, being attached to the fingers, cauſed them to aſcend in proportion as the other extremity was preſſed down by the motion of the cylinder, and *vice verſa*. Thus the aſcent or deſcent of one end of a lever produced a ſimilar aſcent or deſcent in the correſponding finger, by which one of the holes of the flute was occaſinally opened or ſtopped, as by a living performer. Three of the levers ſerved to regulate the ingreſs of the air, being contrived ſo as to open or ſhut, by means of valves, the three reſervoirs of air abovementioned, ſo that more or leſs ſtrength might be given, and a higher or lower note produced, as occaſion required. The lips were, by a ſimilar mechaniſm, directed by four levers, one of which opened them, to give the air a free paſſage; the other contracted them; the third drew them backward; and the fourth puſhed them forward. The lips were projected upon that part of the flute which receives the air; and, by the different motions already mentioned, modified the tone in a proper manner. The remaining lever was employed in the direction of the tongue, which it eaſily moved ſo as to ſhut or open the mouth of the flute.

Thus we ſee how all the motions neceſſary for a German-flute player could be performed by this machine; but a conſiderable difficulty ſtill remains, namely, how to regulate theſe motions properly, and make each of them follow in juſt ſucceſſion. This, however, was effected by the following ſimple method. The extremity of the axis of the cylinder was terminated on the right ſide by an endleſs ſcrew, conſiſting of twelve threads, each placed at the diſtance of a line and an half from the other. Above this ſcrew was fixed a piece of copper, and in it a ſteel pivot, which, falling in between the threads of the ſcrew, obliged the cylinder to follow the threads, and, inſtead of turning directly round, it was continually puſhed to one ſide. Hence, if a lever was moved, by a peg placed on the cylinder, in any one revolution, it could not be moved by the ſame peg in the ſucceeding revolution, becauſe the peg would be moved a line and a half beyond it by the lateral motion of the cylinder. Thus, by an artificial diſpoſition of thoſe pegs in different parts of the cylinder, the ſtatue was made, by the ſucceſſive elevation of the proper levers, to exhibit all the different motions of a flute-player, to the admiration of every one who ſaw it.

M. de Kempell, a gentleman of Preſburg in Hungary, excited by the above performances of M. de Vaucanſon, at firſt endenvoured to imitate them, and at laſt excelled them. This gentleman conſtructed an automaton capable of playing at cheſs! Every one who is in the leaſt acquainted with this game muſt know, that it is ſo far from being mechanically performed, as to require a greater exertion of the judgment and rational faculties than is ſufficient to accompliſh many matters of greater importance. An attempt, therefore, to make a wooden cheſs-player, muſt appear as ridiculous as to make a wooden preacher or counſellor of ſtate. That this machine really was made, however, the public have had ocular demonſtration. The inventor came to England in 1783, where he continued above a year with this automaton. It is a figure as large as life, in a Turkiſh dreſs, ſitting behind a table, with doors of three feet and a half in length, two in depth, and two and a half in height. The chair in which it ſits is fixed to the table, which runs on four wheels. The automaton leans its right arm on the table, and in its left hand holds a pipe: with this hand it plays after the pipe is removed. A cheſs-board of eighteen inches is fixed before it. This table, or rather cupboard, contains wheels, levers, cylinders, and other pieces of mechaniſm; all which are publicly diſplayed. The veſtments of the automaton are then lifted over its head, and the body is ſeen full of ſimilar wheels and levers. There is a little door in its thigh, which is likewiſe opened; and with this, and the table alſo open, and the automaton uncovered, the whole is wheeled about the room. The doors are then ſhut, and the automaton is ready to play; and it always takes the firſt move. At every motion the wheels are heard; the image moves its head, and looks over every part of the cheſs-board. When it checks the queen, it ſhakes its head twice, and thrice in giving check to the king. It likewiſe ſhakes its head when a falſe move is made, replaces the piece, and makes its own move; by which means the adverſary loſes one. M. de Kempell remarks as the moſt ſurpriſing circumſtance attending his automaton, that it had been exhibited at Preſburg, Vienna, Paris, and London, to thouſands, many of whom were mathematicians and cheſs-players, and yet the ſecret by which he governed the motions of its arm was never diſcovered. He prided himſelf ſolely on the conſtruction of the mechanical powers, by which the arm could perform ten or twelve moves. It then required to be wound up like a watch, after which it was capable of continuing the ſame number of motions. The automaton could not play unleſs M. de Kempell or his ſubſtitute was near it, to direct its moves. A ſmall ſquare box, during the game, was frequently conſulted by the exhibiter; and herein conſiſted the ſecret, which he ſaid he could in a moment communicate. He who could beat Kempell was, of courſe, certain of conquering the automaton. It was made in 1769. His own account of it was: "C'eſt une bagatelle qui n'eſt pas ſans merite du coté du mechaniſme, mais les effets n'en paroiſſent ſi merveilleux que par la hardieſſe de l'idée, & par l'heureux choix des moyens employés pour faire illuſion."

To the no ſmall diminution of the merit of this cheſs-player, however, the following Letter of Thomas Collinſon, Eſq. nephew of the late Peter Collinſon, F. R. S. is publiſhed in Dr. Hutton's Mathematical Dictionary, Vol. ii. p. 730. "M. de Kempell's cheſs-player would have been the greateſt maſter-piece in mechanics, had its ſcientific movements depended merely on mechaniſm. Being ſlightly acquainted with M. de Kempell when he exhibited his cheſs-playing figure in London, I called on him about five years ſince at his houſe in Vienna; another gentleman and myſelf being then on a tour on the continent. The baron (for I think he is ſuch) ſhewed me ſome working models which he had lately made; among them, an improvement on Arkwright's cotton-mill, and alſo one which he thought an improvement on Boulton's and Watts's leaſt ſteam-engine. I aſked him after a piece of ſpeaking mechaniſm, which he had ſhewn me when in London. It ſpoke as before, and I gave the ſame word as I gave when I firſt ſaw it, *Exploitation*, which it diſtinctly pronounced with the French accent. But I particularly noticed, that not a word paſſed about the cheſs-player; and of courſe I did not aſk to ſee it. In the progreſs of the tour I came to Dreſden, where becoming acquainted with Mr. Eden our envoy there, by means of a letter given me by his brother lord Auckland, who was ambaſſador when I was at Madrid, he obligingly accompanied me in ſeeing ſeveral things worthy of attention. And he introduced my companion and myſelf to a gentleman of rank and talents, named Joſeph Frederick Freyhere, who ſeems completely to have diſcovered the *vitality* and ſoul of the cheſs-playing figure. This gentleman courteouſly preſented me with the treatiſe he had publiſhed, dated at Dreſden, September 30, 1789, explaining its principles, accompanied with curious plates neatly coloured. This treatiſe is in the German language. A well-taught boy, very thin and ſmall of his age (ſufficiently ſo that he could be concealed in a drawer almoſt immediately under the cheſs-board), agitated the whole. Even after this abatement of its being ſtrictly an automaton, much ingenuity, however, remains to the contriver. This diſcovery at Dreſden accounts for the ſilence about it at Vienna; for I underſtand, by Mr. Eden, that Mr. Freyhere had ſent a copy to baron Kempell: though he ſeems unwilling to acknowledge that Mr. F. has completely analyſed the whole.

"I know that long and unintereſting letters are formidable things to men who know the value of time and ſcience: but, as this happens to be upon the ſubject, forgive me for adding one very admirable piece of mechaniſm. When at Geneva I called upon Droz, ſon of the original Droz of la Chaux de Fonds. He ſhewed me an oval gold ſnuff-box, about four inches and a half long, by three inches broad, and about a inch and a half thick. It was double, having an horizontal partition; ſo that it may be conſidered as one box placed on another, with a lid of courſe to each box. One contained ſnuff, and in the other, as ſoon as the lid was opened, there roſe up a very ſmall bird, of green enamelled gold, ſitting on a gold ſtand. Immediately this minute curioſity wagged its tail, ſhook its wings, opened its bill of white enamelled gold, and poured forth, minute as it was (being only three quarters of an inch from the beak to the extremity of the tail), ſuch a clear melodious ſong, as would have filled a room of twenty or thirty feet ſquare with its harmony. Droz agreed to meet me at Florence; and we viſited the abbé Fontana together. He afterwards joined me at Rome, and exhibited his bird to the pope and the cardinals in the Vatican palace, to the admiration, I may ſay to the aſtoniſhment, of all who ſaw and heard it."

Another extract from a ſecond letter upon the ſame ſubject, by Mr. Collinſon, is as follows: "Permit me to ſpeak of another automaton of Droz's, which ſeveral years ſince he exhibited in England; and which, from my perſonal acquaintance, I had a commodious opportunity of particularly examining. It was a figure of a man, a drawing-maſter, the ſize of life. It held in its hand a metal ſtyle; a card of Dutch vellum being laid under it. A ſpring was touched, which releaſed the internal clock-work from its ſtop, when the figure immediately began to draw. Mr. Droz, happening once to be ſent for in a great hurry to wait upon ſome conſiderable perſonage at the weſt end of the town, left me in poſſeſſion of the keys which opened the receſſes of all his machinery. He opened the drawing-maſter himſelf; wound it up; explained its leading parts; and taught me how to make it obey my requirings, as it had obeyed his own. Mr. Droz then went away. After the firſt card was finiſhed, the figure reſted. I put a ſecond; and ſo on, to five ſeparate cards, all different ſubjects: but five or ſix was the extent of its delineating powers. The firſt card contained, I may truly ſay, elegant portraits and likeneſſes of the king and queen, facing each other: and it was curious to obſerve with what preciſion the figure lifted up its pencil, in the tranſition of it from one point of the draft to another, without making the leaſt ſlur whatever: for inſtance, in paſſing from the forehead to the eye, noſe, and chin; or from the waving curls of the hair to the ear, &c.

AUTO'MATOUS, *adj.* [from αυτος, itſelf, and ματην, ſpontaneouſly.] Having in itſelf the power of motion.—Clocks or *automatous* organs, whereby we diſtinguiſh time, have no mention in ancient writers. *Brown.*

AUTON'NE, a river of France, which runs into the Oiſe near Verberie.

AUTO'NOE, a daughter of Cadmus, who married Ariſtæus, by whom ſhe had Actæon.

AUTO'NOMY, *ſ.* [*autonomia*, Lat. of αυτονομια, Gr. of αυτος, itſelf, and νομος, law.] The living according to one's mind and preſcription. The liberty of the cities which lived under the protection of the Romans, conſiſted in their autonomia, i.e. they were allowed to make their own laws, and elect their own magiſtrates; by whom juſtice was to be adminiſtered, and not by Roman preſidents or judges, as was done in other places which were not indulged with autonomia.

AUTO'PHOROS, *ſ.* [of αυτος, himſelf, and φερω, to bear.] A thief taken in the fact, or with the thing he ſtole upon him.

AUTOPHOS'PHORUS, *ſ.* [from αυτος, himſelf, and φωσφορος, phoſphorus.] The real phoſphorus.

AU'TOPSY, *ſ.* [*autopſia*, Lat. of αυτοψια, Gr. of αυτος, and οπτομαι, to ſee.] Ocular demonſtration; ſeeing a thing one's ſelf.—In thoſe that have forked tails, *autopſy* convinceth us, that it hath this uſe. *Ray.*

AUTOP'TICAL, *adj.* Perceived by one's own eyes.

AUTOP'TICALLY, *adv.* By means of one's own eyes.—That the galaxy was a meteor, was the account of Ariſtotle; but the teleſcope hath *autoptically* confuted it. *Glanville.*

AUTOPY'ROS, *ſ.* [from αυτος, and πυρος, wheat.] In the ancient diet, an epithet given to a ſpecies of bread, wherein the whole ſubſtance of the wheat was retained without retrenching any part of the bran. Galen deſcribes it otherwiſe, viz. as bread where only the coarſer bran was taken out. And thus it was a medium between the fineſt bread, called *ſimilogineus*, and the coarſeſt, called *ſurfuraceus*. This was alſo called *autopyrites* and *ſyncomiſtus*.

AUTOTHE'ISM, *ſ.* [of αυτος, himſelf, and Θεος, God.] God's ſelf-exiſtence, or being of himſelf.

AUTOUR', [Ind.] A ſort of bark brought from India.

AU'TRECOURT, a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of Clermont: four miles ſouth-ſouth-eaſt of Clermont, and eleven ſouth-weſt of Verdun.

AU'TRE-EGLI'SE, a village of Brabant, in the Netherlands; to which the left wing of the French army extended, when the confederates obtained the victory at Ramillies, in 1706.

AU'TREY, a town of France, in the department of the Upper Saone, and chief place of a canton, in the diſtrict of Champlitte: one league north-weſt of Gray.

AU'TRICOURT, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the diſtrict of Chatillon-ſur-Seine: eight miles north of Chatillon.

AU'TRICUM, the capital of the Curnutas, a people of Gallia Celtica; afterwards called *Carnotena*, *Carnotenus*, and *Civitas Carnotenum*; now *Chartres*, on the Eure.

AU'TRY, a town of France, in the department of the Ardennes, and chief place of a canton, in the diſtrict of Grandpré: three leagues weſt of Varennes.

AU'TUMN, *ſ.* [*autumnus*, Lat.] The ſeaſon of the year between ſummer and winter, beginning aſtronomically at the equinox, and ending at the ſolſtice:

Autumn, nodding o'er the yellow plain,
Comes jovial on. *Thomſon.*

Autumn begins on the day when the ſun's meridian diſtance from the zenith, being on the decreaſe, is a mean between the greateſt and the leaſt; which in theſe countries happens when the ſun enters Libra. Its end coincides with the beginning of winter. Several nations have computed the years by autumns; the Engliſh-Saxons by winters. Tacitus tells us, the ancient Germans were acquainted with all the other ſeaſons of the year, but had no notion of autumn. Autumn has always been reputed an unhealthy ſeaſon. Tertullian calls it *tentator valetudinum;* and the ſatyriſt ſpeaks of it in the ſame light: *Autumnus libitinæ queſtus acerbæ.* Celſus wiſely adviſes people to begin early in this ſeaſon with warmer clothes, for the irregularity of the weather at this time ſubjects them to many diſeaſes.

Autumn is repreſented, in painting, by a man at perfect age, clothed like the vernal, and likewiſe girded with a ſtarry girdle; holding in one hand a pair of ſcales equally poiſed, with a globe in each; in the other hand, a bunch of divers fruits and grapes. His age denotes the perfection of this ſeaſon; and the balance, that ſign of the zodiac which the ſun enters when our autumn begins.

AUTUM'NA, an allegorical deity, ſaid to be the goddeſs of fruits: ſhe is the ſame as Pomona.

AUTUM'NAL, *adj.* Belonging to autumn; produced in autumn.—Bind now up your *autumnal* flowers, to prevent ſudden guſts, which will proſtrate all. *Evelyn.*

Not the fair fruit that on yon branches glows
With that ripe red th' *autumnal* ſun beſtows. *Pope.*

Autumnal Equinox, the time when the ſun enters the deſcending point of the ecliptic, where it croſſes the equinoctial; and is ſo called, becauſe the nights and days are then equal.

Autumnal Point, the point of the ecliptic anſwering to the autumnal equinox.

Autumnal Signs, are the ſigns Libra, Scorpio, Sagittary, through which the ſun paſſes during autumn.

AUTUM'NITY, *ſ.* [*autumnitas*, Lat.] The time of harveſt; the fall of the leaf.

AUTUN', a town of France, and principal place of a diſtrict, in the department of the Saone and Loire, before the revolution, the capital of a diſtrict, called the *Autunois*, ſituated near the river Arroux, at the foot of three mountains, from whence iſſue ſix ſprings, that well ſupply the town with water. It was the ſee of a biſhop, whoſe dioceſe extended over upwards of ſix hundred pariſhes: beſides the cathedral, it contained eight pariſh churches and ſeveral religious houſes. Autun was made a Roman colony by Auguſtus, and called after him *Auguſtodunum*, and many veſtiges are yet viſible of Roman magnificence: eighteen poſts and a half weſt-ſouth-weſt of Beſançon, twenty and a half north-north-weſt of Lyons, and thirty-five and a half ſouth-ſouth-eaſt of Paris. Lat. 46. 58. N. lon. 21. 58. E. Ferro.

AUTUNOIS', a ſmall country or diſtrict of France, before the revolution, in the duchy of Burgundy, round the city of Autun, which was the capital.

AUTU'RA, or Audu'ra, a river of Gallia Celtica, mentioned in the lives of the ſaints. Now the *Eure*, which falls into the Seine.

AUTUR'GY, *ſ.* [*auturgia*, Lat. αυτεργια, Gr. of αυτος, ſelf, and εργον, work.] Self-working; an operation performed by a man's own hands. It is oppoſed to what he does by the inſtrumentality of another.

AUTZ, a town of the duchy of Courland, thirty-ſix miles ſouth-ſouth-eaſt of Goldingen.

AUVE, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of St. Menehould: thirteen miles eaſt-north-eaſt of Chalons.

AUVER'GNE, before the revolution, a province of France, bounded on the eaſt by Forez, on the ſouth by Rouergue and Gevaudan, on the weſt by Limoges and Marche, and on the north by Bourbonnois. It is about forty leagues long and thirty broad, and is uſually divided into Upper and Lower: the climate of the latter is very temperate, but the former is very cold, the clouds hanging on the mountains the greateſt part of the year. Lower Auvergne, called alſo *Limagne*, produces wine, corn, hemp, &c. and in the paſture-ground they fatten prodigious quantities of cattle, which are ſent to Paris, Lyons, and other places. There are mines of ſilver, iron, lead, and coals. The principal rivers are the Allier, the Dordoune, and the Alagnon; and among the principal mountains are the Puy-Dôme, Mont d'Or, and Cantal. Clermont is the capital town.

AUVER'NAS, *ſ.* a deep-coloured heady wine, made of black raiſins, which comes from Orleans. It is not fit to drink while new; but, if kept two or three years, it becomes excellent.

AUVERNI'E, a town of Swiſſerland, one league ſouth of Neufchatel.

AUVILLARD', a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Valence: thirteen miles ſouth-eaſt of Agen, and two ſouth of Valence. Lat. 44. 3. N. lon. 18. 34. E. Ferro.

AUVILLIE'RS-LES-FOR'GES, a town of France, in the department of the Ardennes, and chief place of a canton, in the diſtrict of Rocroi: ten miles weſt-north-weſt of Mezieres.

AVUL'SION, *ſ.* [*avulſio*, Lat.] The act of pulling one thing from another:

Spare not the little offsprings, if they grow
Redundant; but the thronging cluſters thin
By kind *avulſion*. *Phillips.*

AUW, a town of Germany, in the archduchy of Auſtria, ſituated on the Danube: ten miles W. S. W. of Grein.

AUXER'RE, a city of France, and capital of the department of the Yonne, ſituated on the ſide of a hill, near the Yonne, which waſhes part of the walls. Before the revolution, it was the ſee of a biſhop, ſuffragan of Sens, and capital of a country called *Auxerrois*. It was anciently governed by its own counts. The cathedral has nothing remarkable, but the epiſcopal palace was conſidered one of the moſt beautiful in France. It contained twelve pariſhes, ſeveral religious houſes, two hoſpitals, &c. The inhabitants are about 16,000. It is forty poſts and a half weſt-north-weſt of Lyons, and twenty-one and a quarter S. S. E. of Paris. Lat. 47. 48. N. lon. 21. 14. E. Ferro.

AUXERROIS', before the revolution, a country of France, in the northern part of Burgundy, bounded on the eaſt and north by Champagne, on the weſt by Nivernois, and on the ſouth by the reſt of Burgundy; and is about nine leagues long, and five broad. Auxerre is the capital.

AUXE'SIS, *ſ.* [from αυξανω, to increaſe.] The augmentation or growth of a diſorder.

Auxesis, in mythology, a goddeſs worſhipped by the inhabitants of Egina, mentioned by Herodotus and Pauſanias.

Auxesis, in rhetoric, a figure whereby any thing is magnified too much.

AUXI'LIAR, or Auxi'liary, *adj.* [from *auxilium*, Lat.] Helping; aſſiſtant; confederate:

Nor from his patrimonial heav'n alone
Is Jove content to pour his vengeance down;
Aid from his brother of the ſeas he craves,
To help him with *auxiliary* waves. *Dryden.*

Auxiliar, or Auxiliary, *ſ.* [from *auxilium*, Lat.] Helper; aſſiſtant; confederate.—There are, indeed, a ſort of underling *auxiliaries* to the difficulty of a work, called commentators and critics. *Pope.*

Auxiliary Verbs, in grammar, are ſuch as help to form or conjugate others; that is, are prefixed to them, to form or denote the moods or tenſes thereof; as *to have* and *to be*, in the Engliſh; *etre* and *avoir*, in the French; *ho* and *ſono*, in the Italian, &c. In the Engliſh language, the auxiliary verb *am* ſupplies the want of paſſive verbs.

AUXILIA'TION, *ſ.* [from *auxiliatus*, Lat.] Help; aid; ſuccour.

AUXI'LIUM AD FILIUM MILITEM FACIENDUM ET FILIUM MARITANDAM, a writ formerly directed to the ſheriff of every county where the king or other lord had any tenants, to levy of them an aid towards the knighting of a ſon, and the marrying of a daughter.

Auxilium Curiæ, a precept or order of court for the citing or convening of one party, at the ſuit and requeſt of another, to warrant ſomething. *Kennet's Paroch. Ant.* 477.

Auxilium Facere Alicui in Curia Regis. To be another's friend and ſolicitor in the king's courts; an office undertaken for and granted by ſome courtiers to their dependants in the country. *Paroch. Antiq.* 126.

Auxilium Regis, the king's aid, or money levied for the king's uſe, and the public ſervice; as where taxes are granted by parliament.

Auxilium Vicecomiti, a cuſtomary aid or duty anciently payable to ſheriffs, out of certain manors, for the better ſupport of their offices. An exemption from this duty was ſometimes granted by the king: and the manor of Stretton in Warwickſhire was freed from it by charter, 14 Hen. III. *M.* 4.

AUXOIS', before the late diviſion, a country of France, in Burgundy, of which Semur-en-Auxois was the capital.

AUXON', a town of France, in the department of the Aube, and chief place of a canton, in the diſtrict of Evry: four leagues and a half ſouth of Troyes, and one and a half north of Evry.

AUXON'NE, a town of France, in the department of the Côte d'Or, and chief place of a canton, and ſeat of a tribunal, in the diſtrict of St. Jean de Loſne, ſituated in a plain, near the eaſt ſide of the Saone. The town is ſurrounded with a double wall, built the latter end of the 17th century: ſix leagues ſouth of Gray, and five and a half eaſt-ſouth-eaſt of Dijon. Lat. 47. 11. N. lon. 23. 3. E. Ferro.

AUXY', a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of Montreuil: three leagues S. S. E. of Heſdin.

Auxy-wool, *ſ.* The French give the name of *auxy-wool* to that which is ſpun in the neighbourhood of Abbeville, by thoſe workmen who are called *houpiers*. It is a very fine and beautiful wool, which is commonly uſed to make the fineſt ſtockings.

AUZAN'CE, a town of France, in the department of the Creuſe, and chief place of a canton, in the diſtrict of Evaux, ſituated on a hill, ſurrounded with ponds: twenty-five miles E. S. E. of Gueret, and nine S. of Evaux.

AUZIL'S, a town of France, in the department of the Aveiron, and chief place of a canton, in the diſtrict of Albin: fifteen miles north-weſt of Rhodez.

AUZON', a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Brioude on the Allier: thirty miles north-weſt of le Puy, and ſix north of Brioude.

AW, a town of Germany, in the county of Bregentz, twenty-five miles ſouth-eaſt of Bregentz.

AWA', a town of Japan, in a province of the ſame name.

Awa, a town of Perſia, in the province of Irak, twenty-eight leagues ſouth of Caſbin.

To AWAIT', *v. a.* [from *a* and *wait*.] To expect; to wait for:

Ev'n as the wretch condemn'd to loſe his life
Awaits the falling of the murd'ring knife. *Fairfax.*

To attend; to be in ſtore for.—Unleſs his wrath be appeaſed, an eternity of torments *awaits* the objects of his diſpleaſure. *Rogers.*

Await, *ſ.* Ambuſh:

And leaſt miſhap the moſt bliſs alter may:
For thouſand perils lie in cloſe *await*
About us daily, to work our decay. *Spenſer.*

Await, in this ſenſe, ſignifies what we now call *way-laying*, or *lying in wait*, to execute ſome miſchief. By ſtat. 13 Rich. II. it is ordained, that no charter of pardon ſhall be allowed before any juſtice for the death of a man ſlain by await, or malice prepenſed, &c.

To AWA'KE, *v. a.* [*weccian*, Sax. *To awake* has the preterite *awoke*, or, as we now more commonly ſpeak, *awaked.*] To rouſe out of ſleep.—Our friend Lazarus ſleepeth; but I go that I may *awake* him out of ſleep. *John*, xi. 11.—To raiſe from any ſtate reſembling ſleep. To put into new action:

The fair
Repairs her ſmiles, *awakens* ev'ry grace,
And calls forth all the wonders of her face. *Pope.*

To Awake, *v. n.* To break from ſleep; to ceaſe to ſleep.—I *awaked* up laſt of all, as one that gathereth after the grape-gatherers. *Ecclus*, xxxiii. 16.

Awake, *adj.* Not being aſleep; not ſleeping.—Imagination is like to work better upon ſleeping men, than men *awake*. *Bacon.*

To AWA'KEN, *v. a.* and *v. n.* Same with Awake:

Awake Argantyr, Hervor the only daughter
Of thee and Suafu doth *awaken* thee. *Hickes.*

To AWARD', *v. a.* [derived by Skinner, ſomewhat improbably, from *weard*, Sax. towards.] To adjudge.—It advances that grand buſineſs, according to which their eternity hereafter will be *awarded*. *Decay of Piety.*

To Award, *v. n.* To judge; to determine:

Th' unwiſe *award* to lodge it in the tow'rs,
An off'ring ſacred. *Pope's Odyſſey.*

Award, *ſ.* Judgment; ſentence; determination.—Affection bribes the judgment, and we cannot expect an equitable *award*, where the judge is made a party. *Glanville.*

To urge the foe,
Prompted by blind revenge and wild deſpair,
Were to refuſe th' *awards* of Providence. *Addiſon.*

Award, in law, the judgment of an arbitrator, or of one who is not appointed by the law a judge, but choſen by the parties themſelves for terminating their difference. See Arbitration.

AWA'RE, *adv.* [from *a* and *ware*, an old word for *cautious*; it is, however, perhaps an adjective; *gewarian*, Sax.] Excited to caution; vigilant; in a ſtate of alarm; attentive.—Temptations of proſperity inſinuate themſelves; ſo that we are but little *aware* of them, and leſs able to withſtand them. *Atterbury.*

To Aware, *v. n.* To beware; to be cautious:

So warned he them *aware* themſelves; and
Inſtant, without diſturb, they took alarm. *Milton.*

This paſſage is by others underſtood thus: He warned thoſe, who were *aware*, of themſelves.

AWATS'KA-BAY, a large harbour, on the eaſtern coaſt of Kamtſchatka. Lat. 52. 50. N. lon. 158. 48. E. Greenwich.

AWAY', *adv.* [*aweg*, Sax.] In a ſtate of abſence; not in any particular place:

They could make
Love to your dreſs, altho' your face were *away*. *Ben Jonſon.*

From any place or perſon.—When the fowls came down upon the carcaſes, Abraham drove them *away* again. *Gen.* xv. 11.—Summer ſuns roll unperceiv'd *away*. *Pope.*—Let us go:

Away, old man; give me thy hand; *away*;
King Lear hath loſt, he and his daughter ta'en;
Give me thy hand. Come on. *Shakeſpeare.*

Be gone:

I'll to the woods among the happier brutes.
Come, let's *away*; hark, the ſhrill horn reſounds. *Smith.*

Out of one's own hands; into the power of ſomething elſe.—It concerns every man, who will not trifle *away* his ſoul, and fool himſelf into irrecoverable miſery, to enquire into theſe matters. *Tillotſon.*—It is often uſed with a verb; as, to *drink away* an eſtate; to *idle away* a manor; that is, to drink or idle till an eſtate or manor is gone:

He *play'd* his life *away*. *Pope.*

On the way; on the road. Perhaps this is the original import of the following phraſe:

Sir Valentine, whither *away* ſo faſt? *Shakeſpeare.*

Perhaps the phraſe, He cannot *away* with, may mean, He cannot *travel* with; He cannot *bear the company*.—She never could *away* with me.--Never, never: ſhe would always ſay, ſhe could not abide maſter Shallow. *Shakeſpeare.*—*Away with.* Throw away; take away:

If you dare think of deſerving our charms,
Away with your ſheephooks, and take to your arms. *Dryd.*

"When the cat is *away*, the mice play." *Quand il n'y a point de chat, les rats ſe promenent à leur aiſe*, Fr. The Latins ſay: *Oculus domini ſaginat equum.* The Germans, *Des herrn auge maſtet das pferd:* 'The maſter's eye makes the horſe fat.' The Spaniſh, *Vánſe los gátos, eſtcind enſe los rátos.* Theſe proverbs are applied to ſervants, who, in their maſters abſence, are but too apt to ſpend their time in playing, junketting, and revelling.

AW'CHAR, a town of Perſia, in the province of Adirbeitzan, fifty leagues ſouth-weſt of Tauris.

AWE, *ſ.* [*ege*, *oga*, Sax.] Reverential fear; reverence.—This is the proper *awe* and fear, which is due from man to God. *Rogers.*

To Awe, *v. a.* To ſtrike with reverence, or fear; to keep in ſubjection.—If you will work on any man, you muſt either know his nature and faſhions, and ſo lead him; or his ends, and ſo perſuade him; or his weakneſſes and diſadvantages, and ſo *awe* him; or thoſe that have intereſt in him, and ſo govern him. *Bacon.*—The rods and axes of princes, and their deputies, may *awe* many into obedience; but the fame of their goodneſs, juſtice, and other virtues, will work on more. *Atterbury.*

AW'EBAND, *ſ.* [from *awe* and *band*.] A check.

AW'ERI, Overa, or Oese, a kingdom of Africa, dependant on Benin, with a town of the ſame name, on the river Formoſa.

AW'FUL, *adj.* [from *awe* and *full*.] That which ſtrikes with awe, or fills with reverence:

I approach thee thus, and gaze
Inſatiate; I thus ſingle; nor have fear'd
Thy *awful* brow, more *awful* thus retir'd,
Faireſt reſemblance of thy Maker fair! *Milton.*

Worſhipful; in authority; inveſted with dignity. *This ſenſe is obſolete:*

Know, then, that ſome of us are gentlemen,
Such as the fury of ungovern'd youth
Thruſt from the company of *awful* men. *Shakeſpeare.*

Struck with awe; timorous; ſcrupulous. *This ſenſe occurs but rarely.*—It is not nature and ſtrict reaſon, but a weak and *awful* reverence for antiquity, and the vogue of fallible men. *Watts.*

AW'FULLY, *adv.* In a reverential manner.—It will concern a man, to treat this great principle *awfully* and warily, by ſtill obſerving what it commands, but eſpecially what it forbids. *South.*

AW'FULNESS, *ſ.* The quality of ſtriking with awe; ſolemnity.—Theſe objects naturally raiſe ſeriouſneſs; and night heightens the *awfulneſs* of the place, and pours out her ſupernumerary horrors upon every thing. *Addiſon.*—The ſtate of being ſtruck with awe: *little uſed.*—An help to prayer, producing in us reverence and *awfulneſs* to the divine majeſty of God. *Taylor.*

To AWHA'PE, *v. n.* [from *wapen*, Teut. to ſtrike.] To ſtrike; to confound; to terrify:

Ah! my dear goſſip, anſwer'd then the ape,
Deeply do your ſad words my wits *awhape*,

Both for becauſe your grief doth great appear,
And eke becauſe myſelf am touched near. *Spenſer.*

AWHI'LE, *adv.* [This word, generally reputed an adverb, is only *a while,* that is, a time, an interval.] Some time; ſome ſpace of time:

Into this wild abyſs the wary fiend
Stood on the brink of hell, and look'd *awhile,*
Pond'ring his voyage. *Milton.*

AW'IN E'A, a river of Ireland, which riſes in lake Ea, in the province of Donegal, and runs into the ſea ſeven miles north of Killebegs.

AWK, *adj.* [a barbarous contraction of the word *awkward.*] Odd; out of order.—We have heard as arrant jangling in the pulpits as the ſteeples; and profeſſors ringing as *awk* as the bells to give notice of the conflagration. *L'Eſtrange.*

AWK'WARD, *adj.* [*æward,* Sax. backward, untoward.] Inelegant; unpolite; untaught; ungenteel.—Their own language is worthy their care; and they are judged of by their handſome or *awkward* way of expreſſing themſelves in it. *Locke.*—Unready; unhandy; not dexterous; clumſy. Perverſe; untoward:

Slow to reſolve, but in performance quick;
So true, that he was *awkward* at a trick. *Drydeu.*

AWK'WARDLY, *adv.* Clumſily; unreadily; inelegantly; ungainly.—When any thing is done *awkwardly,* the common ſaying will paſs upon them, that it is ſuitable to their breeding. *Locke.*—If a man be taught to hold his pen *awkwardly,* yet writes ſufficiently well, it is not worth while to teach him the accurate methods of handling that inſtrument. *Watts.*

AWK'WARDNESS, *ſ.* Inelegance; want of gentility; oddneſs; unſuitableneſs.

AWL, *ſ.* [*æle, ale,* Sax.] A pointed inſtrument to bore holes.—He which was minded to make himſelf a perpetual ſervant, ſhould, for a viſible token thereof, have alſo his ears bored through with an *awl. Hooker.*

AWL-WORT, *ſ.* in botany. See SUBULARIA.

AW'LESS, *adj.* [from *awe,* and the negative *leſs.*] Wanting reverence; void of reſpectful fear:

He claims the bull with *awleſs* inſolence,
And, having ſeiz'd his horns, accoſts the prince. *Dryden.*

Wanting the power of cauſing reverence:

Ah me! I ſee the ruin of my houſe;
The tyger now hath ſeiz'd the gentle hind:
Inſulting tyranny begins to jut
Upon the innocent and *awleſs* throne. *Shakeſpeare.*

AWME, or AUME, *ſ.* A Dutch meaſure of capacity for liquids, containing eight ſteckans, or twenty verges or verteels; anſwering to what in England is called a tierce, or 1-6th of a ton of France, or 1-7th of an Engliſh ton.

AWN, *ſ.* [*ariſta,* Lat.] The beard of corn or graſs.

AWN'ING, *ſ.* A cover ſpread over a boat or veſſel, to keep off the weather.—Of theſe boards I made a *awning* over me. *Robinſon Cruſoe.*

AWO'KE. The preterite from AWAKE.—And ſhe ſaid, The Philiſtines be upon thee, Sampſon. And he *awoke* out of his ſleep. *Judges,* xvi. 20.

AWO'RK, *adv.* [from *a* and *work.*] On work; into a ſtate of labour; into action.—By preſcribing the condition, it ſets us *awork* to the performances of it, and that by living well. *Hammond.*

AWORK'ING, *adj.* Into the ſtate of working:

Long they thus travelled, yet never met
Adventure which might them *aworking* ſet. *Spenſer.*

AWRY', *adv.* [from *a* and *wry.*] Not in a ſtraight direction; obliquely:

But her ſad eyes, ſtill faſt'ned on the ground,
Are governed with goodly modeſty;
That ſuffers not one look to glance *awry,*
Which may let in a little thought unſound. *Spenſer.*

Aſquint; with oblique viſion:

You know the king
With jealous eyes has look'd *awry*
On his ſon's actions. *Denham.*

Not in the right or true direction. Not equally between two points; unevenly:

Not tyrants fierce that unrepenting die,
Not Cynthia when her manteau's pinn'd *awry,*
Ere felt ſuch rage. *Pope.*

Not according to right reaſon; perverſely:

Much of the ſoul they talk, but all *awry,*
And in themſelves ſeek virtue, and to themſelves
All glory arrogate, to God give none. *Milton.*

AX, a town of France, in the department of the Arriege, and chief place of a canton, in the diſtrict of Taraſcon, on the Arriege: nine leagues weſt of Prades, and four and a half ſouth-eaſt of Taraſcon.

Ax, a river which runs into the Engliſh Channel, ſix miles ſouth-ſouth-weſt of Axminſter.

Ax, a river which runs into the Briſtol Channel, eight miles weſt of Axbridge.

AXAMEN'TA, *ſ.* [The word is formed, according to ſome, from *axare,* q. d. *nominare.* Others will have the *carmina ſaliaria* to have been denominated *axamenta,* on account of their having been written in *axibus,* or on wooden tables.] In antiquity, a denomination given to the verſes or ſongs of the *ſalii,* which they ſang in honour of all men. The axamenta were not compoſed, as ſome have aſſerted, but only ſung by the ſalii. The author of them was Numa Pompilius; and, as the ſtyle might not be altered, they grew in time ſo obſcure, that the ſalii themſelves did not underſtand them. Varro ſays they were 700 years old. *Quint. Inſt. Or.* lib. i. c. 11.

AXAMENTA, or ASSAMENTA, in ancient muſic, hymns or ſongs performed wholly with human voices.

AX'AT, or A'ZAT, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Quillan, on the Aude: twenty-five miles ſouth of Carcaſſonne, and five ſouth-ſouth-eaſt of Quillan.

AX'ATI, a town of ancient Bætica, in the Bœtis; now *Lora,* a ſmall city of Andaluſia, in Spain, ſeated on the Guadalquivir.

AXAYACAT'L, *ſ.* the name of a ſpecies of fly, common in Mexico, about the lake; the eggs of which, being depoſited in immenſe quantities upon the ruſhes and cornflags, form large maſſes, which are taken up by fiſhermen and carried to market for ſale. This caviare, called *ahuauhtli,* which has much the ſame taſte with the caviare of fiſh, uſed to be eaten by the Mexicans, and is now a common diſh among the Spaniards. The Mexicans eat not only the eggs, but the flies themſelves, made up together into a maſs, and prepared with ſaltpetre.

AX'BERG, a town of Sweden, in the province of Nericia.

AX'BRIDGE, a ſmall town in Somerſetſhire, ſituated under the Mendip-hills, on the river Ax, near the great road from Briſtol to Plymouth. It has a corporation, conſiſting of a mayor, bailiff, eight capital burgeſſes, and twenty-two common-councilmen. Here is a large handſome church, in which are ſeveral ſtately monuments to the Prowſe family. On the tower are two very ancient ſtatues, which have the appearance of being ſet up under the Weſt Saxon kings, during the heptarchy; and, before the reformation, here was a chantry founded by a Saxon warrior. A market is held here on Saturdays, and two fairs annually, for cheeſe and cattle; the one on the 3d of February, and the other on Lady-day. The village of Cheddar (remarkable for its good cheeſe, and for its wonderful rocks) lies two miles eaſt of Axbridge, by the ſide of the Mendip-hills. Axbridge is diſtant from Bridgwater eighteen miles, Briſtol eighteen, Wells ten, and one hundred and fifty from London.

AXE, *ſ.* [*eax, acſe,* Sax. *aſcia,* Lat.] An inſtrument conſiſting of a metal head, with a ſharp edge, fixed in a helve or handle, to cut with:

No metal can,
No, not the hangman's *axe*, bear half the keenneſs
Of thy ſharp envy. *Shakeſpeare.*

AX'EA, *ſ.* [from *axis*, Lat. an axle-tree.] A ſort of commiſſure or articulation is ſo called when one part is inſerted into the other in the form of an axle.

AXE'DO, *ſ.* the name of a ſpell, in Marcellus Empiricus, to render a perſon impotent.

AX'EL, a town of Flanders, ſtrongly fortified. It was taken from the Spaniards by Maurice prince of Naſſau in 1586, and is nine leagues weſt of Antwerp. Lat. 51. 15. N. lon. 3. 45. E. Greenwich.

AX'EM, or Axim, a country of Africa, on the Gold Coaſt, with a town of the ſame name. The country is fertile and well cultivated, producing great quantities of rice, water-melons, pine-apples, cocoa, oranges, yams, and palm-oil. Among the animals of the country, are ſheep in great numbers, with apes, pigeons, and varieties of wild fowl. The Portugueſe and Dutch have eſtabliſhments here.

AX'ENS, a town of Germany, in the county of Tyrol, nine miles ſouth-weſt of Inſpruck.

AX'HOLM, an iſland, formed by the rivers Trent, Idle, and Dun, in the north-weſt part of the county of Lincoln, about twenty miles in circumference, with three villages on it, near the mouth of the Trent.

AXIA'CE, an ancient town of Sarmatia Europea; now *Oxakow*, the capital of Budziac Tartary.

AXIL'LA, *ſ.* [from אציל Heb. Scaliger deduces it from *ago*, Lat. to act, in this manner, *ago*, *axo*, *axa*, *axula*, *axilla*.] The arm-pit. In many perſons an offenſive ſmell proceeds from the arm-pits; to remove which Dioſcorides and Ætius recommend the decoction of wild artichoke in wine, which, by bringing off much fetid urine, may effect a cure.

Axilla, in botany, is the ſpace comprehended between the ſtems of plants and their leaves. Hence we ſay thoſe flowers grow in the axillæ of the leaves; i. e. at the baſe of the leaves, or juſt within the angle of their pedicles.

AXIL'LAR, or Ax'illary, *adj.* [from *axilla*, Lat.] Belonging to the arm-pit. Thus, *axillary artery* is that part of the ſubclavian branches of the aſcending trunk of the aorta which paſſeth under the arm-pits; *axillary glands* are ſituated under the arm-pits, enveloped in fat, and lie cloſe by the axillary veſſels; and *axillary vein* is one of the ſubclavians which paſſes under the arm-pit, dividing itſelf into ſeveral branches, which are ſpread over the arm.

AXIN'OMANCY, *ſ.* [*axinomantia*, Lat. from αξινη, *ſecuris*, and μαντεια, Gr. *divinatio*.] An ancient ſpecies of divination, or a method of foretelling future events, by means of an axe or hatchet. This art was in conſiderable repute among the ancients; and was performed, according to ſome, by laying an agate-ſtone on a red-hot hatchet; and alſo by fixing a hatchet on a round ſtake ſo as to be exactly poiſed; then the names of thoſe that were ſuſpected were repeated, and he at whoſe name the hatchet moved was pronounced guilty.

AX'IOM, *ſ.* [*axiome*, Fr. *axioma*, Lat. of αξιωμα and αξιωμαι, Gr. I account worthy, of αξιοω.] A ſelf-evident truth, or a propoſition whoſe truth every perſon receives at firſt ſight. Thus, that the whole is greater than a part; that a thing cannot be and not be at the ſame time; and that from nothing, nothing can ariſe; are axioms. *Axiom* is alſo an eſtabliſhed principle in ſome art or ſcience. Thus, it is an axiom in phyſics, that nature does nothing in vain; that effects are proportional to their cauſes, &c. So it is an axiom in geometry, that things equal to the ſame third are alſo equal to one another; that, if to equal things you add equals, the ſums will be equal, &c. It is an axiom in optics, that the angle of incidence is equal to the angle of reflection, &c.

AXI'POLIS, anciently a town of the Triballi in Mæſia Inferior; now *Axiopoli*, in Bulgaria.

AX'IS, *ſ.* [*axis*, Lat.] The line real or imaginary that paſſes through any thing, on which it may revolve:

On their own *axis* as the planets run,
And make at once their circle round the ſun;
So two conſiſtent motions act the ſoul,
And one regards itſelf, and one the whole. *Pope.*

Axis, in geometry, the ſtraight line in a plane figure, about which it revolves, to produce or generate a ſolid. Thus, if a ſemicircle be moved round its diameter at reſt, it will generate a ſphere, whoſe axis is that diameter. And, if a right-angled triangle be turned about its perpendicular at reſt, it will deſcribe a cone, whoſe axis is that perpendicular.

Axis is yet more generally uſed for a right line conceived to be drawn from the vertex of a figure to the middle of the baſe. Hence the *axis* of a *circle* or *ſphere*, is any line drawn through the centre, and terminated at the circumference, on both ſides. So the *axis* of a *cone*, is the line from the vertex to the centre of the baſe. And the *axis* of a *cylinder*, is the line from the centre of the one end to that of the other.

Axis of a Conic Section, is the line from the principal vertex, or vertices, perpendicular to the tangent at that point. The ellipſe and hyperbola have each two axes, which are finite and perpendicular to each other; but the parabola has only one, and that infinite in length.

Axis (Tranſverſe), in the ellipſe and hyperbola, is the diameter paſſing through the two foci, and the two principal vertices of the figure. In the hyperbola it is the ſhorteſt diameter, but in the ellipſe it is the longeſt.

Axis (Conjugate), or *ſecond axis*, in the ellipſe and hyperbola, is the diameter paſſing through the center, and perpendicular to the tranſverſe axis; and is the ſhorteſt of all the conjugate diameters.

Axis, of a curve line, is ſtill more generally uſed for that diameter which has its ordinates at right angles to it, when that is poſſible. For, as in the conic ſections, any diameter biſects all its parallel ordinates, making the two parts of them on both ſides of it equal; and that diameter which has ſuch ordinates perpendicular to it, is an axis; ſo, in curves of the ſecond order, if any two parallel lines each meeting the curve in three points; the right line which cuts theſe two parallels ſo, that the ſum of the two parts on one ſide of the cutting line, between it and the curve, is equal to the third part terminated by the curve on the other ſide, then the ſaid line will in like manner cut all other parallels to the former two lines, viz. ſo that, of every one of them, the ſum of the two parts, or ordinates, on one ſide, will be equal to the third part or ordinate on the other ſide. Such cutting line then is a diameter; and that diameter whoſe parallel ordinates are at right angles to it, when poſſible, is an axis. And the ſame for other curves of ſtill higher orders.

Axis, in aſtronomy, is the axis of the world, or an imaginary right line conceived to paſs through the centre of the earth, and terminating at each end in the ſurface of the mundane ſphere.

Axis of the Earth, is the line connecting its two poles, and about which the earth performs its diurnal rotation, from weſt to eaſt. This is a part of the axis of the world, and always remains parallel to itſelf during the motion of the earth in its orbit about the ſun, and perpendicular to the plane of the equator.

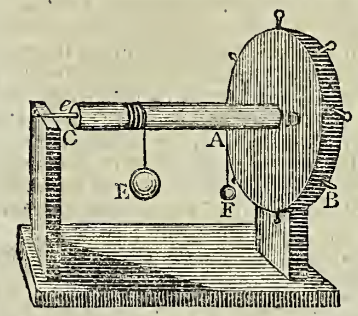
Axis of a Planet, is the line paſſing through its centre, and about which the planet revolves. The Sun, Earth, Moon, Jupiter, Mars, and Venus, it is known from obſervation, move about their ſeveral axes; and the like motion is eaſily inferred of the other three, Mercury, Saturn, and Georgian planet.

Axis of the Horizon, Equator, Ecliptic, Zodiac, &c. are right lines paſſing through the centres of thoſe circles, perpendicular to their planes.

Axis of a Magnet, or *magnetical axis*, is a line paſſing through the middle of a magnet, lengthwiſe; in ſuch manner, that, however the magnet be divided, provided the diviſion be made according to a plane paſſing through that line, the magnet will then be cut into two loadſtones. And the extremities of ſuch lines are called the poles of the ſtone.

Axis, in mechanics. The axis of a balance, is the line upon which it moves or turns.

Axis of Oscillation, is a line parallel to the horizon, paſſing through the centre about which a pendulum vibrates, and perpendicular to the plane in which it oſcillates.



Axis in Peritrochio, or *wheel and axle*, is one of the five mechanical powers, or ſimple machines; contrived chiefly for the raiſing of weights to a conſiderable height, as water from a well, &c. This machine conſiſts of a circle A B, concentric with the baſe of a cylinder, and moveable together with it about its axis C D. This cylinder is called the *axis*; and the circle, the *peritrochium*; and the radii, or ſpokes, which are ſometimes fitted immediately into the cylinder, without any circle, the *ſcytalæ*. About the axis winds a rope, or chain, by means of which great weights are raiſed by turning the wheel. The axis in peritrochio takes place in the motion of every machine, in which a circle may be conceived as deſcribed about a fixed axis, concentric with the plane of a cylinder about which it is placed; as in crane-wheels, mill-wheels, capſtans, &c. The chief properties of the axis in peritrochio, are as follow: 1. If the power F applied in the direction A F a tangent to the circumference, or perpendicular to the ſpoke, be to a weight E, as the radius of the axis C *e* is to the radius of the wheel A D, or the length of the ſpoke; the power will juſt ſuſtain the weight; that is, the power and the weight will be in equilibrio, when they are in the reciprocal proportion of their diſtances from the centre. 2. When the wheel moves, with the power and weight; the velocities of their motion, and the ſpaces paſſed over by them, will be both in the ſame proportion as above, namely, directly proportional to their diſtances from the centre, and reciprocally proportional to their own weights when they are in equilibrio. 3. A power and a weight being given, to conſtruct an axis in peritrochio, by which it ſhall be ſuſtained and raiſed: Let the axis be taken large enough to ſupport the weight and power without breaking: then, as the weight is to the power, ſo make the radius of the wheel to the radius of the axis. Hence, if the power be very ſmall in reſpect of the weight, the radius of the wheel will be vaſtly great. For example, ſuppoſe the weight 4050, and the power only 50; then the radius of the wheel will be 81 times that of the axis; which would be a very inconvenient ſize. But this inconvenience is provided againſt by increaſing the number of the wheels and axes; making one to turn another, by means of teeth or pinions. And, to find the effect of a number of wheels and axes, thus turning one another, multiply together all the radii of the axes, and all the radii of the wheels, and then it will be, as the product of the former is to the product of the latter, ſo is the power to the weight. So, if there be 4 wheels and axes, the radius of each axis being 1 foot, and the radius of each wheel 3 feet; then the continual product of all the wheels is 3×3×3×3, or 81 feet, and that of the axis only 1; therefore the effect is as 81 to 1, or the weight is 81 times the power. And, on the contrary, if it be required to find the diameter of each of four equal wheels, by which a weight of 4050lb. ſhall be balanced by a power of 50lb. the diameter of each axis being one foot: dividing 4050 by 50, the quotient is 81; extract the fourth root of 81, or twice the ſquare root, and it will give 3, for the diameter of the four wheels ſought.

Axis of a Vessel, is that quieſcent right line paſſing through the middle of it, perpendicular to its baſe, and equally diſtant from its ſides.

Axis, in optics. Optic axis, or *viſual* axis, is a ray paſſing through the centre of the eye, or falling perpendicularly on the eye.

Axis of a Lens, or Glass, is the axis of the ſolid of which the lens is a ſegment. Or the axis of a glaſs, is the line joining the two vertices or middle points of the two oppoſite ſurfaces of the glaſs.

Axis of Incidence, in dioptrics, is the line paſſing through the point of incidence, perpendicularly to the refracting ſurface.

Axis of Refraction, is the line continued from the point of incidence or refraction, perpendicularly to the refracting ſurface, along the farther medium.

AX'LE, or Axle-tree, *ſ.* [*axis*, Lat.] The pin which paſſes through the midſt of the wheel, on which the circumvolutions of the wheel are performed.—The fly ſat upon the *axle-tree* of the chariot-wheel, and ſaid, What a duſt do I raiſe! *Bacon.*

AX'MINSTER, a market-town in Devonſhire, 150 miles from London, ſixty from Bath and Briſtol, twenty-five from Exeter, twenty-three from Taunton, and five from the Britiſh Channel. It takes one part of its name from the river Ax, near which it ſtands, and the other from a minſter, erected by king Athelſtan, for ſeven prieſts to pray for the departed ſouls of ſome perſons buried here, who were killed in his army, when he defeated the Danes in a battle in a neighbouring field, which, to this day, is called King's-field, and their monuments are yet remaining in the church, which is a vicarage, with two chapels of eaſe, value 500l. per ann. in the gift of the prebends of York. The carpet manufactory is carried on here in great perfection, being worked of any ſize in one piece, with needles, by women; and, in point of colours and ſtrength, they are allowed to be the firſt in the world. Broad and narrow cloths, cotton tapes, druggets, and gloves, are alſo made here.

AX'MOUTH, a village in the county of Devon, ſituated on the coaſt, at the mouth of the river Ax, with a large bay: ſix miles ſouth-ſouth-weſt of Axminſter, and 153 weſt of London.

AX'UM, an ancient city, ſuppoſed to have been once the capital of Abyſſinia; the ruins of which are ſtill very extenſive. In one ſquare, which ſeems to have been the centre of the town, there are forty obeliſks. They are all of one piece of granite; and, on the top of that which is entire, there is a patera, exceedingly well executed, in the Greek ſtyle. Axum is watered by a ſmall ſtream, which flows all the year from a fountain contiguous to the row of obeliſks. The ſpring is received into a magnificent baſon of 150 feet ſquare, and thence it is carried at pleaſure to water the neighbouring gardens, &c. where, however, there is little fruit except pomegranates; neither are theſe very excellent.

AXUN'GIA, *ſ.* [from *axis*, Lat. an axle-tree, and *unguo*, to anoint.] Hog's lard; greaſe of any kind.

Axungia Vitri, Sandiver, or Salt of Glass, a kind of ſalt which ſeparates from the glaſs while it is in fuſion. It is of an acrimonious and biting taſte. The farriers uſe it for cleanſing the eyes of horſes. It is alſo made uſe of for cleanſing the teeth; and it is ſometimes applied to running ulcers, the herpes, or the itch, by way of deſiccative.

AXY'RIS, *ſ.* in botany, a genus of the claſs monoecia, order triandria, natural order holoraceæ. The generic characters are—I. Male flowers in an ament. Calyx: perianthium three-parted, ſpreading, obtuſe. Corolla: none. Stamina: filaments three, capillary, ſpreading; antheræ roundiſh. II. Female flowers ſcattered. Calyx: perianthium five-leaved (two-leaved, *Syſt.*) concave, obtuſe, converging, permanent; the two outer leaflets ſhorter. Corolla: none. Piſtillum: germ roundiſh; ſtyles two, capillary; ſtigmas acuminate. Pericarpium: none; calyx cloſely involving the ſeed with its three larger leaflets.

Seed: one, ovate, compreſſed, obtuſe.—*Eſſential Character.* Male. Calyx three-parted. Female. Calyx two-leaved; ſtyles two; ſeed one.

Species. 1. Axyris amaranthoides, or ſimple-ſpiked axyris: leaves ovate, ſtem erect, ſpike ſimple. Leaves rugged; fruit-bearing branches naked for a long way at the baſe. It was cultivated by Mr. Miller in 1758.

2. Axyris hybrida: leaves ovate, ſtem erect, ſpikes conglomerate. This much reſembles the foregoing ſort, from which however it differs in the ſpike of flowers being on long peduncles, conglomerate, or directed the ſame way, twiſted, with the fruit-bearing branches crowded cloſe to the ſtem, and the leaves more rough. Pallas ſuppoſes this to be only a variety of the former ſort.

3. Axyris proſtrata: leaves obovate, ſtem ſubdivided, flowers capitated. Stem much branched, ſix or ſeven inches high. All theſe are annual Siberian plants.

AXYRIS CERATOIDES. See DIOTIS.

AY, *adv.* [perhaps from *aio*, Lat.] Yes; an adverb of anſwering affirmatively:

What ſay'ſt thou? Wilt thou be of our conſort?
Say *ay*, and be the captain of us all. *Shakeſpeare.*

It is a word by which the ſenſe is enforced; even; yes, certainly; and more than that:

Remember it, and let it make thee creſt-fall'n;
Ay, and allay this thy abortive pride. *Shakeſpeare.*

AY, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Epernay, ſituated on the Marne: four leagues ſouth of Rheims, and one north-eaſt of Epernay.

AY, or PULO AY, one of the Banda iſlands, in the Indian Sea, about three leagues in circumference, where the Dutch have built a fort.

AYAMON'TE, a ſea-port town of Spain, ſituated at the mouth of the Guadiana, on the frontiers of Portugal, with a good haven, in the gulf of Cadiz, ſmall but well fortified, and defended by a caſtle, on a rock: thirty-four miles weſt-ſouth-weſt of Seville. Lat. 37. 10. N. lon. 11. 16. E. Ferro.

AYBAR', a town of Spain, in Navarre, on the river Arragon, one league from Sangueſa.

AY'BLING, a town of Germany, in Upper Bavaria, twenty-ſix miles ſouth-eaſt of Munich.

AY'CHA, a town of Bohemia, in the circle of Boleſlaw, ſixteen miles north of Jung-Buntzel.

AYE, *adv.* [*awa*, Sax.] Always; to eternity; for ever. *It is now rarely uſed, and only in poetry:*

The ſoul, though made in time, ſurvives for *aye*;
And, though it hath beginning, ſees no end. *Sir J. Davies.*

AYE, a town of Norway, in the iſland of Shierney.

AY'EN, a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Brive: fourteen miles ſouth-ſouth-weſt of Uzerches.

AYE'NIA, *ſ.* [given in honour of the duke *d'Ayen*, duke and marechal de Noailles, a great promoter of the ſcience of botany, who had a noble garden at St. Germain en Laye.] In botany, a genus of the claſs gynandria, order pentandria, natural order columniferæ. The generic characters are—Calyx: perianthium one-leafed, five-parted; parts ovate-oblong, acute, coloured in the middle, reflex, withering. Corolla: pentapetalous; petals five, united at the top to the nectary into a flat ſtar; claws capillary, very long, bowed outward; borders obcordate, reſupinate, with a clubbed point at the top turned upward; nectary bell-ſhaped, ſitting on a cylindric erect column, ſhorter than the calyx; border five-lobed; lobes elevated, above flattiſh with a longitudinal furrow, excavated underneath, and ſharp. Stamina: filaments five, very ſhort, inſerted into the margin of the nectary, on the top of the ribs, between the diviſions of the border, each bent downwards archwiſe through a notch at the end of each petal; antheræ roundiſh, under the borders of the petals. Piſtillum: germ roundiſh, five-cornered, at the bottom of the nectary; ſtyle cylindric; ſtigma obtuſe, five-lobed. Pericarpium: capſule five-grained, roundiſh, muricate, five-celled, ten-valved, elaſtic. Seeds: ſolitary, rather oblong, gibbous on one ſide, angular on the other.—*Eſſential Character.* Monogonous. Calyx five-leaved; petals united into a ſtar, with long claws; antheræ five, under the ſtar; capſule five-celled.

Species. 1. Ayenia puſilla, or ſmooth ayenia: leaves cordate, ſmooth. This has a weak woody ſtem, dividing into ſeveral ſlender branches, and riſing from nine inches to a foot high. Leaves ſlightly indented on their edges, on pretty long footſtalks, of a lucid green, ending in acute points, and placed alternately. At the baſe of each footſtalk, from the ſide of the branches, come out two, three, or four, flowers, from the ſame point, each on a ſeparate ſlender peduncle. Many of the flowers being abortive, Linnæus ſuggeſts that they may poſſibly be of different ſexes. Native of Peru, whence the ſeeds were ſent by the younger Juſſieu to Paris. Mr. Miller received them (about the year 1756) from Dr. Monier, intendant of the duke d'Ayen's gardens; and the plants flowered and perfected ſeeds annually in Chelſea-garden. The flowers continue in ſucceſſion on the ſame plants from July to winter.

2. Ayenia tomentoſa: leaves ovate-roundiſh, tomentoſe. Native of South America.

3. Ayenia magna: leaves cordate, pubeſcent; germ of the flowers ſeſſile. An upright ſhrub, five feet high. Flowers ſmall, herbaceous. Native of Carthagena, and other places in South America.

4. Ayenia lævigata: leaves ovate entire, very ſmooth; germ pedicelled; nectary ten-cleft, radiated. Native of Jamaica.

Propagation and Culture. Theſe plants are propagated by ſeeds, ſown upon a moderate hot-bed early in the ſpring; when they come up, and have four leaves, they ſhould be tranſplanted on a freſh hot-bed to bring them forward; part of them may be planted in ſmall pots, and the others on the bed: thoſe in the pots ſhould be plunged into a hot-bed of tanner's bark; they muſt be ſhaded till they have taken new root, then they muſt have free air admitted to them every day, in proportion to the warmth of the ſeaſon; they require to be frequently watered in warm weather, but they ſhould not have it in too great plenty. The plants ſhould continue all the ſummer in the hot-bed, where they muſt have a good ſhare of air; for thoſe which are fully expoſed to the open air will not thrive, and, if they be too much drawn, they do not flower well. The plants will live through the winter in a moderate ſtove; but, as they perfect their ſeeds well the firſt year, few perſons care to continue the old plants.

AYER'BA, a town of Spain, in Arragon, on the Gallego, between Saragoſa and Jaca.

AYERBEN'GUI, a town of the iſland of Sumatra.

AY'GREEN, *ſ.* The ſame with HOUSELEEK.

AYLE, *ſ.* in law. See AILE.

AYLES'BURY, a borough-town in Buckinghamſhire, ſituated in a pleaſant vale, to which it gives name, abounding with very good corn, and paſture for feeding ſheep and beaſts. Ayleſbury was a ſtrong town in the beginning of the Saxon times; and was made a manor royal in the time of William the Conqueror, who parcelled it out under this odd tenure, that the tenants ſhould find litter or ſtraw for the king's bed-chamber three times a-year, if he came that way ſo often, and provide him three eels in winter and three green geeſe in ſummer. Ayleſbury ſends two members to parliament. Its market-day is on Saturday. Here the quarter-ſeſſions and Lent aſſizes are held. At the bottom of the market-ſquare ſtands the county gaol, a very ſtately fabric of brick. Here are ſix fairs yearly, viz. the Friday after the 18th of January, Palm Saturday, the 8th of May, the 14th of June, the 25th of September, and the 12th of October, all for the ſale of cattle. Ayleſbury is ſeventeen miles ſouth-eaſt from Buckingham, and forty and a half from London.

AYLES'FORD, [*Eagleford*, Sax. the eagle's ford.] A town in Kent, ſituated on the river Medway, thirty-four miles eaſt from London, four from Maidſtone, and ſix from Rocheſter. It was noted for a great overthrow given to Hengiſt, and his Saxon army, by Vortimer the Britiſh king.

AYLE'SHAM. See Alesham.

AYL'MER (John), biſhop of London, in the reign of queen Elizabeth, was born in the year 1521, at Aylmer-hall in the pariſh of Tilney, in the county of Norfolk. Whilſt a boy, he was diſtinguiſhed for his quick parts by the marquis of Dorſet, afterwards duke of Suffolk; who ſent him to Cambridge, made him his chaplain, and tutor to his children. One of theſe children was the unfortunate lady Jane Gray, who ſoon became perfectly acquainted with the Latin and Greek languages. His firſt preferment was to the archdeaconry of Stow in the dioceſe of Lincoln, which gave him a ſeat in the convocation held in the firſt year of queen Mary, where he reſolutely oppoſed the return to Popery, to which the generality of the clergy were inclined. He was ſoon after obliged to fly his country, and take ſhelter among the Proteſtants in Switzerland. On the acceſſion of queen Elizabeth, he returned to England. In 1562, he obtained the archdeaconry of Lincoln; and was a member of the famous ſynod of that year, which reformed and ſettled the doctrine and diſcipline of the church of England. In the year 1576, he was conſecrated biſhop of London. He preached frequently in his cathedral, and had an admirable talent of captivating the attention of his hearers. At one time, perceiving his audience to be very inattentive, he took a Hebrew bible out of his pocket, and began to read it: this immediately awakened his hearers, who looked up at him, amazed that he ſhould entertain them ſo unprofitably; when, finding they were thoroughly awake and very attentive, he proceeded in his ſermon, after admoniſhing them how much it reflected on their good ſenſe, that in matters of mere novelty, and when they underſtood not a word, they ſhould liſten ſo heedfully, and yet be ſo very negligent and regardleſs of points of the utmoſt importance. He died at Fulham, the 3d of June, 1594, aged ſeventy-three, and was buried in St. Paul's. He was a learned man, a zealous father of the church, and a bitter enemy to the puritans. He publiſhed a piece intitled, 'An Harbrowe for faithful and trewe Subjects againſt the late blowne Blaſte concerning the Government of Women, &c. 'This was written whilſt he was abroad, in anſwer to Knox, who publiſhed a book at Geneva under this title, 'The firſt Blaſt againſt the monſtrous Regiment and Empire of Women.' He is by Strype ſuppoſed to have publiſhed Lady Jane Gray's Letter to Harding. He alſo aſſiſted Fox in tranſlating his Hiſtory of Martyrs into Latin.

AY'LOFFE (Sir Joſeph), Bart. V.P.A.S. and F.R.S. born 1708, died 1781. His extenſive knowledge of our national antiquities and municipal rights, and the agreeable manner in which he communicated it to his friends and the public, cauſed his death to be conſidered as a public misfortune.

AYMAR'GUES, a town of France, in the department of the Gard, and chief place of a canton in the diſtrict of Niſmes, ſituated in a marſhy country, which renders the acceſs to it difficult: five leagues weſt of Arles, and three and a half ſouth of Niſmes.

AY'NAC, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Figeac: twelve miles north-north-weſt of Figeac.

AYR, a town and county of Scotland. See Air.

Ayr, a river of Scotland, which riſes on the borders of Lanerkſhire, and runs into the frith of Clyde.

Ayr, a river of France, which runs into the Aiſne, near Grandpré.

AYRAI'NES, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Amiens: nine miles ſouth-ſouth-eaſt of Abbeville.

AY'RY, *ſ.* [of *eyra*, Teut. eggs; becauſe at that time hatched of eggs.] The neſt of the hawk.—I ſhould diſcourſe on the brancher, the haggard, and then treat of their ſeveral *ayries.* *Walton.*

AYS'CUE (Sir George), a gallant Engliſh admiral, deſcended from a good family in Lincolnſhire. He obtained the honour of knighthood from Charles I. which, however, did not withhold him from adhering to the parliament in the civil war: he was by them conſtituted admiral of the Iriſh ſeas, where he is ſaid to have done great ſervice to the Proteſtant intereſt, and to have contributed much to the reduction of the whole iſland. In 1651 he reduced Barbadoes and Virginia, then held for the king, to the obedience of the parliament; and ſoon after the reſtoration behaved with great honour in the war with the Dutch. In the famous engagement in June 1666, when Sir George was admiral of the white ſquadron, his ſhip, the Royal Prince, ran upon the Gallop-ſand; where, being ſurrounded with enemies, his men obliged him to ſtrike. He went no more to ſea after this, but ſpent the reſt of his life in retirement.

AZAB', in the Turkiſh armies, a diſtinct body of ſoldiery, who are great rivals of the Janiſaries.

AZADARICH'TA, *ſ.* in botany. See Melia.

AZA'GRA, a town of Spain, in Navarre, on the Ebro, two leagues from Calahorra.

AZA'LEA, *ſ.* [αζαλεος, dry; from its growing in a dry ſoil.] In botany, a genus of the claſs pentandria, order monogynia, natural order bicornes. The generic characters are—Calyx: perianthium five-parted, acute, erect, ſmall, coloured, permanent. Corolla: monopetalous, bell-ſhaped, ſemiquinquefid; the ſides of the diviſions bent in. Stamina: filaments five, filiform, inſerted into the receptacle, free; antheræ ſimple. Piſtillum: germ roundiſh; ſtyle filiform, the length of the corolla, permanent; ſtigma obtuſe. Pericarpium: capſule roundiſh, five-celled, five-valved. Seeds: many, roundiſh.—*Eſſential Character.* Corolla bell-ſhaped; ſtamina inſerted into the receptacle; capſule five-celled.

Species. 1. Azalea Pontica, or Pontic azalea: leaves ſhining, lanceolate, ſmooth on both ſides; racemes terminal. This ſpecies much reſembles *rhododendron Ponticum*, but it has five ſtamens and yellow corollas, not ten ſtamens and violet-coloured corollas, as that has. The leaves are ſmaller. Native of Pontus.

2. Azalea Indica, or Indian azalea: flowers ſubſolitary, calyxes hairy. This is a ſhrub three feet in height, with a trunk an inch thick, having a rough cinereous brown bark: the branches are ſhort, twiſted, and irregular; the leaves ſtiff, cloſe, and evergreen. Beautiful bright-red flowers cover the whole upper part of the ſhrub. Native of the Eaſt Indies. Much cultivated in Japan for the elegance of its flowers, and the variety in ſize and colours.

3. Azalea nudiflora, or naked-flowered azalea: leaves ovate, corollas hairy, ſtamens very long. This, in its native country, frequently riſes to the height of fifteen feet, but in England is never more than half ſo high. It ſends out ſeveral ſtems from the root. Linnæus obſerves, that it flowers before the leaves come out, whence the trivial name; and that the ſtamens are double the length of the corolla. The flowers ſit in a circle round the extremity of the ſtem, and in their wild ſtate are either of a dark or lively red colour; by degrees the ſun bleaches them. There are many varieties in the gardens: Colden ſpeaks of yellow flowers, but that is probably a miſtake. Some of the buſhes, in their native place of growth, are ſix feet high and more; others are low; and ſome not more than a few inches from the ground, all covered with flowers. It is a native of Virginia, and other provinces of North America; in the woods of New Jerſey it is common, and is called *mayflowers*, *wild honeyſuckles*, and *upright honeyſuckles*. Peter Collinſon, Eſq. introduced it here in 1734.

4. Azalea viſcoſa, or viſcid azalea: leaves ſcabrous at the edge, corollas with glutinous hairs. This is a low ſhrub, riſing with ſeveral ſlender ſtems near four feet high. The leaves come out in cluſters at the ends of the ſhoots

without order; they are ſpear-ſhaped, and narrow at their baſe; their edges are ſet with very ſhort teeth, which are rough. The flowers come forth in cluſters between the leaves, at the extremities of the branches; they are white, with a mixture of dirty yellow on the outſide; the tube is an inch long, and at the top they are pretty deeply cut into five ſegments; the two upper are reflex, the two ſide ones are bent inward, and the lower one is turned downward. Theſe flowers have much the appearance of thoſe of the honeyſuckle, and are as agreeably ſcented; more ſo than the foregoing ſort. They appear the middle of July, but are not ſucceeded by ſeeds in England. Linnæus remarks, that this is very nearly alled to the foregoing, but flowers after all the leaves are fully expanded. There are ſeveral varieties of this alſo, but all with white flowers. It is likewiſe a native of North America, in woods and moiſt places; and was introduced, with the other, by the ſame curious gentleman.

5. Azalea Lapponica, or Lapland azalea: leaves with excavated dots ſprinkled over them. This is a divaricated ſhrub, ſix or ſeven inches high.

6. Azalea procumbens, or procumbent azalea: branches diffuſely-procumbent. Stems procumbent, branching, half a foot long and more; leaves hard, convex, with the edges contracted, concave underneath; flowers cloſe, three or four together. Native of the mountains of Europe; and was found in the Highlands of Scotland by Mr. Lightfoot, Dr. Hope, and others.

7. Azalea punctata, or dotted azalea: leaves rugged about the edge; flowers dotted, heaped. This ſhrub is five feet high, upright, and branched. Native of the woods of Cochin-China.

Propagation and Culture. The Pontic and Indian ſpecies have not yet been cultivated in Europe. The third and fourth ſorts grow naturally in ſhade, and on moiſt grounds, in moſt parts of North America, from whence many of the plants have been ſent of late years to England, and ſeveral of them have produced their beautiful flowers in many curious gardens. They muſt have a moiſt ſoil and a ſhady ſituation, otherwiſe they will not thrive. They can only be propagated by ſhoots from their roots, and laying down their branches, for they do not produce ſeeds here; and, if good ſeeds could be obtained, they would be difficult to raiſe, and a long time before they would flower. But, when they are in a proper ſituation, their roots extend, and put out ſhoots, which may be taken off with roots, and tranſplanted. When any of them are laid down, it ſhould be only the young ſhoots of the ſame year, for the old branches will not put out roots. The beſt time for this is at Michaelmas, and if they are covered with ſome old tan, to keep out the froſt, it will be of great uſe to them. The autumn is alſo the beſt time to remove the plants, but the ground about their roots ſhould be covered in winter to keep out the froſt; and, if this is every year practiſed to the old plants, it will preſerve them in vigour, and cauſe them to flower well. The fifth and ſixth ſpecies are low plants of little beauty, and, growing naturally on boggy grounds upon mountains, are difficult to keep in gardens.

A'ZAMOR, a town of Africa, in the empire of Morocco, and province of Duquella, on the river Morbeys, near the ſea, but not convenient for commerce, as the entrance of the river is dangerous. It was taken by the Portugueſe in the year 1513, but abandoned at the end of the ſame century: eighty miles north of Morocco. Lat. 33. 20. N. lon. 9. 10. E. Ferro.

A'ZAN, a mountain of Arcadia, conſecrated to Cybele.

A'ZAR, a town of Arabia, ſeventy-ſix miles ſouth-eaſt of Amanzirifdin.

AZA'RAKITES, a ſect of Mahometan Arabs. See Arabia.

AZARE'DO, a ſea-port of South America, in the bay of Spirito Santo, on the coaſt of Braſil, a celebrated port for ſugar. Lat. 20. 18. S. lon. 40. 10. W. Greenwich.

AZARI'AH, [עזריה Heb. of עזר the help, and יה the Lord; i. e. the help of the Lord.] King of Judah, ſucceeded his father Amaziah, 810 years before Chriſt. He aſſembled an army of above 300,000 men, with which he conquered the Philiſtines, and demoliſhed the walls of Gath, Jabniel, and Aſhdod; built up the walls of Jeruſalem; furniſhed the city with conduits; and planted gardens and vineyards: but at laſt, being elated with his proſperity, and reſolving to uſurp the office of high prieſt, he was ſtruck with a leproſy, which obliged him to remain ſhut up in his palace for the reſt of his days. He died about 759 years before the Chriſtian era, and was ſucceeded by Jonathan his ſon. There are ſeveral other perſons of this name mentioned in the Scripture.

AZARO'LUS, and Azarole. See Cratægus.

A'ZAZEL, *ſ.* The word relates to the authority of the ſcape-goat, under the Jewiſh religion. Some call the goat itſelf by this name, as St. Jerom and Theodoret. Dr. Spencer ſays, the ſcape-goat was to be ſent to azazel; by which is meant the devil. M. le Clerc tranſlates it *præcipitium*, making it to be that ſteep and inacceſſible place to which the goat was ſent, and where it was ſuppoſed to periſh.

AZAY'-LE-FERON', a town of France, in the department of the Indre, and chief place of a canton, in the diſtrict of Chatillon-ſur-Indre: twenty-ſix miles weſt of Chateauroux, and nine ſouth-ſouth-eaſt of Chatillon.

Azay-le-Rideau, a town of France, in the department of the Indre and Loire, and thief place of a canton, in the diſtrict of Chinon: four leagues ſouth-weſt of Tours, and four north-eaſt of Chinon.

AZEDA'RACH, *ſ.* in botany. See Melia.

AZE'KA, a city of the Amorites, in the lot of Judah, ſituated between Eleutheropolis and Aelia; where the five kings of the Amorites and their army were deſtroyed by hailſtones from heaven. *Joſhua.*

A'ZEM, or A'sem, a town of Africa, and capital of Adra, on the Slave Coaſt, about ſixteen leagues from the ſea. It was almoſt deſtroyed by the king of Dahomi in 1724.

AZERAI'LLES, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Luneville: three leagues ſouth-eaſt of Luneville, and two and a half ſouth-weſt of Blamont.

AZIALCOLLAR', a town of Spain, in the country of Seville, nineteen miles north-weſt of Seville.

A'ZILAR, a town of Aſiatic Turkey, in Natolia, in the road between Conſtantinople and Tocat.

AZIL'LE, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Carcaſſonne: ſixteen miles weſt-north-weſt of Narbonne, and thirteen eaſt-north-eaſt of Carcaſſonne. Lat. 43. 17. N. lon. 20. 19. E. Ferro.

AZIMGUR', a town of Hindoſtan, in the country of Allahabad, 108 miles weſt-north-weſt of Patna, and fifty north of Benares.

A'ZIMEN DEGREES, in aſtrology, are certain degrees in the zodiac, ſo called, becauſe perſons born when any of them aſcend, are commonly afflicted with lameneſs, or ſome other natural imperfection.

A'ZIMUTH, *ſ.* of the ſun, or ſtar, &c. in aſtronomy, is an arch of the horizon, intercepted between the meridian of the place and the azimuth or vertical circle paſſing through the ſun or ſtar; and is equal to the angle at the zenith formed by the ſaid meridian and vertical circle. Or it is the complement to the eaſtern or weſtern amplitude. The azimuth is thus found by trigonomety: As radius is to the tangent of the latitude, ſo is the tangent of the altitude of the ſun or ſtar to the coſine of the azimuth from the ſouth at the time of the equinox.

Azimuth (Magnetical), an arch of the horizon contained between the magnetical meridian and the azimuth or vertical circle of the object; or its apparent diſtance from the north or ſouth point of the compaſs. This is found by obſerving the ſun, or ſtar, &c. with an azimuth-compaſs, when it is ten or fifteen degrees high, either before or after noon.

Azimuth-Compass, an inſtrument for finding either the magnetical azimuth or amplitude of a celeſtial object. The deſcription and uſe of this inſtrument ſee under the article Compass.

Azimuth-Dial, a dial whoſe ſtile or gnomon is perpendicular to the plane of the horizon.

A'ZIMUTHS, or Vertical Circles, are great circles of the ſphere interſecting each other in the zenith and nadir, and cutting the horizon at right angles. Theſe azimuths are repreſented by the rhumbs on common ſea-charts; and on the globe by the quadrant of altitude, when ſcrewed in the zenith. On theſe azimuths is counted the height of the ſun or ſtars, &c. when out of the meridian.

A'ZIO, a town of European Turkey, in the province of Livadia, ſixty-four miles north-eaſt of Lepanto.

AZNALCACAR', or Aznalcaçar', a town of Spain, in the province of Andaluſia, ſeven leagues from Seville.

AZO'GA SHIPS, are thoſe Spaniſh ſhips commonly called the *quickſilver ſhips*, from their carrying quickſilver to the Spaniſh Weſt Indies, in order to extract the ſilver out of the mines of Mexico and Peru. Theſe ſhips, ſtrictly ſpeaking, are not to carry any goods unleſs for the king of Spain's account.

AZO'NI, *ſ.* in ancient mythology, a name applied by the Greeks to ſuch of the gods as were deities at large, not appropriated to the worſhip of any particular town or country; but acknowledged in general by all countries, and worſhipped by every nation. Theſe the Latins called *dii communes*. Of this ſort were the Sun, Mars, Luna, &c.

A'ZOPH, a town of Tartary, ſituated at the eaſtern extremity of a large lake, or inland ſea, called the *Sea of Azoph*, at the mouth of the Don. It was taken from the Turks, and fortified by Peter the Great, emperor of Ruſſia, in the year 1696; but, in 1711, he was compelled to abandon it to the Turks; and, by a treaty of peace made in 1719, the fortifications were demoliſhed. By another treaty, in 1774, it was ceded to Ruſſia, and has ſince been put into a better ſtate of defence. The poſſeſſion of this place induced the late empreſs Catharine to extend her dominions between the Don and Kuban, to the Caſpian Sea. It is 320 miles eaſt of Otchakov, 368 ſouth-weſt of Saratov, and 812 ſouth-ſouth-eaſt of Peterſburgh. Lat. 47. 0. N. lon. 57. 0. E. Ferro.

Azoph (Sea of), a large lake, or inland ſea, in Tartary, ſituated in the dominions of Ruſſia, about 210 miles in length, and from forty to ſixty in breadth. It communicates with the Black Sea nearly in the centre, and is called alſo *Palus Mæotis*, and *Zabach Sea*. Lat. 45. 20. to 47. 20. N. lon. 52. 0. to 57. 0. E. Ferro.

AZO'RES, Terceras, or Western-Islands, in the Atlantic, which ſome deſcribe as belonging to Africa, ſome to America, and others, perhaps on better grounds, to Europe; called *Azores*, from flights of hawks which the firſt diſcoverers ſaw. They are nine in number, and their names are Tercera, St. Michael, Fayal, Gratioſa, St. George, Pico, Corvo, Flores, and St. Maloes. They were formerly called the *Flemiſh Iſles*, as ſuppoſed to have been diſcovered by a Flemiſh merchant, who, in his voyage to Liſbon, was driven ſo far to the weſt by a ſtorm, as to fall in with theſe iſlands, which he found uninhabited. They are called weſtern from their ſituation, and they are alſo called *Terceras*, from *Tercera*, one of the principal of them. They are fertile, but ſubject to dreadful earthquakes and tempeſts. They ſay, that, as ſoon as ſhips bound from Europe to America touch here, they are immediately freed from all the vermin that before infeſted them; no ſpecies of noxious or poiſonous animal being able to live above a few hours in the Azores. Lat. 36. 0. to 40. 0. N. lon. 25. 0. to 33. 0. W. Greenwich.

AZO'TE, *ſ.* [from *α* priv. and ζωη, life.] The baſe of that part of the atmoſpheric air which is unfit for reſpiration, and which deſtroys animal life. It has been called *azotic* by modern chemiſts, becauſe, the chemical properties of the noxious portion of atmoſpheric air being hitherto little known, they have thought it right to derive the name of its baſe from the known quality of killing ſuch animals as breathe in it. The weight of this gas, at the temperature of 54° 50', and under a preſſure equal to 28 inches of the barometer, is 1 oz. 2 gros. and 48 gr. to the cubical foot, or 0·444 of a grain to a cubical inch. See Chemistry.

A'ZOTH, *ſ.* in ancient chemiſtry, the firſt matter of metals, or the mercury of a metal; more particularly that which they call the *mercury of philoſophers*, which they pretended to draw from all ſorts of metallic bodies.

AZO'TUS, A'zoth, or Ash'dod, one of the five cities of the Philiſtines, and a celebrated ſea-port on the Mediterranean, ſituated about fourteen or fifteen miles ſouth of Ekron, between that and Aſcalon. It was in this city that the idol Dagon fell down before the ark: and ſo ſtrong a place it was, if we may believe Herodotus, that it ſuſtained a ſiege of twenty-nine years by Pſammiticus king of Egypt. It was, however, taken by the Maccabees in a much ſhorter time; who burnt both city and temple, and with them about 8000 men. The town is called by the Arabs *Haſaneyun*. The moſt remarkable thing in this place is an old ſtructure with fine marble pillars, which the inhabitants ſay was the houſe that Samſon pulled down; and, to the ſouthward, juſt out of the town, the water in which the eunuch Candace was baptized by the apoſtle Philip: beſides theſe two, there are ſeveral ancient buildings with capitals and pillars ſtanding.

A'ZUA DE COMPOSTEL'LA, a ſea-port town, on the ſouth coaſt of St. Domingo, twelve leagues ſouth-ſouth-eaſt of Cape Salinas.

AZUA'GA, a town of Spain, in the province of Eſtremadura, three leagues ſouth-eaſt of Llerena.

A'ZUL, *ſ.* [אזל Arab. durable.] The lapis lazuli.

AZUMAR', a town of Portugal, in the province of Alentejo, five miles weſt-north-weſt of Aranches.

A'ZURE, *adj.* [*azur*, Fr. *azurro*, Sp. *lazar*, Arab. from *lazuli*, Lat. a blue ſtone.] Blue; faint blue.—The blue of the firſt order, though very faint and little, may be the colour of ſome ſubſtance; and the *azure* colour of the ſkies ſeems to be this order. *Newton.*

Thus replies
Minerva, graceful, with her *azure* eyes. *Pope.*

Azure, *ſ.* among painters, which at preſent ſignifies in general a fine blue colour, was formerly applied to lapis lazuli, called *azure-ſtone*, and to the blue prepared from it. But, ſince a blue has been extracted from cobalt, cuſtom has applied to it the name of *azure*, although it differs conſiderably from the former, and is incapable of being uſed for the ſame purpoſes, and particularly for painting in oil. The former at preſent is called *lapis lazuli*, or only *lapis*; and the blue prepared from it for painting in oil, is called *ultramarine*. The name azure is generally applied to the blue glaſs made from the earth of cobalt and vitrifiable matters. This glaſs, which is called *ſmalt* when in maſſes, is called *azure* only when it is reduced to a fine powder. Several kinds of azure are diſtinguiſhed, according to its degrees of beauty, by the names of *fine azure*, *powdered azure*, and *azure of four fires*. In general, the more intenſe the colour, and the finer the powder, the more beautiful and dear it is. Azure is employed to colour ſtarch; hence it has alſo been called *ſtarch-blue*. It is uſed for painting with colours, and for a blue enamel.

Azure, in heraldry, the blue colour in the arms of any perſon below the rank of a baron. In the eſcutcheon of a nobleman, it is called *ſapphire*; and, in that of ſovereign princes, *Jupiter*. In engraving, this colour is expreſſed by lines or ſtrokes drawn horizontally.

Azure is emblematical of juſtice, chaſtity, humility, loyalty, and eternal felicity; of worldly virtues, beauty, praiſe, meekneſs, humility, victory, perſeverance, riches, vigilance, and recreation; of the planets, Venus and Jupiter; of metals, tin; of precious ſtones, the Turkey ſtone; of the months of the year, September; of the days of the week, Wedneſday and Friday; of trees, the poplar; of flowers, the violet; of four-footed animals, the cameleon; of fowls, the peacock; of human conſtitutions, the ſanguine; and of the ages, youth.

AZY'GES, *ſ.* [from α priv. and ζυγος, a yoke.] In anatomy, the os ſphenoides.

AZY'GOS, *ſ.* [from α priv. and ζυγος, a yoke, becauſe it has no fellow.] Having nothing anſwerable, or that will pair with it, as the azygos vein of the thorax, &c.

AZY'MA, *ſ.* [of α, without, and ζυμη, leaven.] The feaſt of unleavened bread among the Jews.

A'ZYMITES, *ſ.* [from α priv. and ζυμη, ferment.] In church hiſtory, Chriſtians who adminiſter the euchariſt with unleavened bread. This appellation is given to the Latin by the Greek church, becauſe the members of the former uſe fermented bread in the celebration of the euchariſt. They alſo call the Armenians and Maronites by the ſame name, and for the ſame reaſon.

A'ZYMOUS, *ſ.* [from α priv. and ζυμη, fermentation.] Unfermented, or made without leaven; as unleavened bread. Sea-biſcuit is of this kind; and therefore, according to Galen, leſs wholeſome than bread that has been fermented.

AZYR', (Felix Vicq d'), was phyſician to the late queen of France, one of the forty members of the late French Academy, member of the Academy of Sciences, ſecretary of the Medical Society at Paris, and author of many valuable works, chiefly on anatomical ſubjects. Of his ſplendid anatomical plates only five numbers were publiſhed; but he has left many more plates finiſhed, and much MS deſcription prepared for the preſs. Theſe are to be publiſhed at the expence of the French nation. His laſt performance was an anatomical deſcription of the rhinoceros that died lately at Verſailles. He died at Paris in June, 1794, of a pulmonary inflammation, in the forty-ſixth year of his age.

AZZO'GLIO, a town of Italy, in the principality of Maſſerano, ſix miles north-north-eaſt of Maſſerano.

B.

THE letter B is the ſecond of the Engliſh and moſt other alphabets. It is the firſt conſonant, and firſt mute, and its pronunciation is ſuppoſed to reſemble the bleating of a ſheep; upon which account Pierius tells us, in his Hieroglyphics, that the Egyptians repreſented the ſound of this letter by the figure of that animal. B is alſo one of thoſe letters which the eaſtern grammarians call *labial*, becauſe the principal organs employed in its pronunciation are the lips. It is pronounced by preſſing the whole length of them together, and forcing them open with a ſtrong breath. It has a near affinity with the other labials P and V, and is often uſed for P both by the Armenians and other orientals, as in *Betrus* for *Petrus*, *apſens* for *abſens*, &c. and by the Romans for V, as in *amabit* for *amavit*, *berna* for *verna*, &c. whence aroſe that jeſt of Aurelian on the emperor Bonoſus, *Non ut vivat natus eſt, ſed ut bibat.* Plutarch obſerves, that the Macedonians changed φ into B, and pronounced *Bilip*, *Berenice*, &c. for *Philip*, *Pherenice*, &c. and thoſe of Delphos uſed B inſtead of Π, βαθειν for παθειν, βικρον for πικρον, &c. The Latins ſaid *ſuppono*, *oppono*, for *ſubpono*, *obpono*; and pronounced *optinuit*, though they wrote *obtinuit*, as Quintillian has obſerved. They alſo uſed B for F or PH: thus, in an ancient inſcription mentioned by Gruter, OBRENDARIO is uſed for OFRENDARIO. In Germany this letter is confounded with P, and in Gaſcony with V, from whence an epigrammatiſt remarks, that *bibere* and *vivere* are in Gaſcony the ſame. The Spaniards, in moſt words, uſe B or V indifferently.

As a numeral, B was uſed by the Greeks and Hebrews to denote 2; but among the Romans for 300, and with a daſh over it for 3000. B is alſo uſed as an abbreviation: thus B. A. ſtands for bachelor of arts; B. L. for bachelor of laws; and B. D. for bachelor of divinity. B. F. in the preface to the decrees or ſenatus-conſulta of the old Romans ſignified *bonum factum*. In muſic, B ſtands for the tone above A; as B^{b}, or ^{b}B, does for B flat, or the ſemitone major above A. B alſo ſtands for baſs; and B. C. for *baſſo continuo*, or thorough baſs.

BA, a town of Africa, in the country of Adra, on the Slave Coaſt.

BAA, *ſ.* The cry of a ſheep:

—Therefore thou art a ſheep———
Such another proof would make me cry *baa*. *Shakeſpeare.*

To BAA, *v. n.* [*balo*, Lat.] To cry like a ſheep:

Or like a lamb, whoſe dam away is ſet,
He treble *baas* for help, but none can get. *Sydney.*

BAAD'STED, or BAT'STED, a ſea-port town of Sweden, in South Gothland, with a bay, in which are ſeveral ſmall ports: ten miles north of Engelholm. Lat. 56. 28. N. lon. 18. 0. E. Ferro.

BA'AL, [בעל Heb. a lord or poſſeſſor.] The ſame as BEL, or BELUS; an idol of the Chaldeans, the Phœnicians, or Canaanites. The former worſhipped Mars under this name, according to Joſephus; who, ſpeaking of Thurus the ſucceſſor of Ninus, ſays, "To this Mars the Aſſyrians erected the firſt ſtatue, and worſhipped him as a god, calling him *Baal*." It is probable that the Phœnicians worſhipped the ſun under the name of Baal; for Joſiah, willing to make ſome amends for the wickedneſs of Manaſſeh, in worſhipping Baal, and all the hoſt of heaven, *put to death the idolatrous prieſts that burnt incenſe unto Baal, to the ſun, and to the moon, and to the planets, and to all the hoſt of heaven. He likewiſe took away the horſes that the kings of Judah had given to the ſun, and burnt the chariots of the ſun with fire.*

The temples conſecrated to this god are called in the Scripture *chamanim*, which ſignifies 'places incloſed with walls,' in which was kept a perpetual fire. Maundrell, in his journey from Aleppo to Jeruſalem, obſerved ſome traces of theſe incloſures in Syria. In moſt of them were no ſtatues; in a few there were ſome, but of no uniform figure.

The word *baal* (in the Punic language) ſignifies 'lord or maſter;' and doubtleſs meant the ſupreme Deity, the lord and maſter of the univerſe. It is often joined with the name of ſome falſe god, as *Baal-berith*, *Baal-peor*, *Baal-zephon*, and the like. This deity paſſed from the Phœnicians to the Carthaginians, who were a colony of the Phœnicians; as appears from the Carthaginian names, Hannibal, Aſdrubal, &c. according to the cuſtom of the eaſt, where kings and great men added to their own names thoſe of their gods.

This falſe deity is frequently mentioned in Scripture in the plural number *(Baalim)*; which may ſignify, either that the name Baal was given to ſeveral different gods, or that there were many ſtatues, bearing different appellations, conſecrated to this idol. Arnobius tells us, that Baal was of an uncertain ſex; and that his votaries, when they called upon him, invoked him thus: "Hear us, whether thou art a god or a goddeſs."

Some learned men think, that the Baal of the Phœnicians is the Saturn of the Greeks; which is probable enough from the conformity there is between the human ſacrifices offered to Saturn and thoſe which the Scripture tells us were offered to Baal. Others are of opinion, that Baal was the Phœnician or Tyrian Hercules, a god of great antiquity in Phœnicia.

Baal-berith, the god of the Shechemites. Bochart conjectures, that Berith is the ſame as *Beroe*, the daughter of Venus and Adonis, who was given in marriage to Bacchus; and that ſhe gave her name to the city of Berith in Phœnicia, and became afterwards the goddeſs of it. Baal-berith ſignifies 'lord of the covenant,' and may be taken for the god who preſides over alliances and oaths, in like manner as the Greeks had their ζευς ορκιος, and the Romans their *deus fidius*, or *Jupiter Piſtius*. The idolatrous Iſraelites, we are told, *made Baal-berith their god*. Judg. viii. 33.

Baal-peor, Baal-phegor, or **Beel-phegor**, an idol of the Moabites and Midianites: We are told, that *Iſrael joined himſelf to Baal-peor*; and that Solomon erected an altar to this idol upon the mount of Olives. Baal-peor has been ſuppoſed to be no other than a Priapus, and that the worſhip of him conſiſted in the moſt obſcene practices. Others have thought, that, as Baal is a general name ſignifying 'lord,' Peor may be the name of ſome great prince deified after his death. Mede imagines, that Peor being the name of a mountain in the country of Moab, on which the temple of Baal was built, Baal-peor may be only another name of that deity, taken from the ſituation of his temple; in like manner as Jupiter is ſtyled *Olympius*, becauſe he was worſhipped in a temple built on mount Olympus. Selden, who is of this latter opinion, conjectures likewiſe, that Baal-peor is the ſame with Pluto; which he grounds upon theſe words of the Pſalmiſt, *They joined themſelves unto Baal-peor, and ate the offerings of the dead*; though by the *ſacrifices* or *offerings of the dead*, in this paſſage, may be meant no more than ſacrifices or offerings made to idols, or falſe gods, who are very properly called the *dead*, in contradiſtinction to the true God, who is ſtyled in Scripture the *living* God.

Baal-zebub, Beel-zebub, or **Belzebub**, [בעל זבוב Heb. the lord of flies, or devils.] The idol, or god, of the Ekronites. In Scripture he is called the *prince of devils*. His name is rendered the 'lord of flies,' or the 'god-fly;' which ſome think was a mock appellation beſtowed on him by the Jews. He had a famous temple and oracle at Ekron. Ahaziah, king of Iſrael, having fallen from the terrace of his houſe into a lower room, and being dangerouſly hurt, ſent to conſult this deity, to know if he ſhould be cured of his wounds. The worſhip of this falſe god muſt have prevailed in our Saviour's time, ſince the Jews accuſed him of driving out devils in the name of Belzebub their prince.

BA'ALIM, [בעלים Syr. lords.] The plural number of **Baal**, or Bel, a god of the Phœnicians and Samaritans.

BA'ANITES, heretics, followers of one *Baanes*, who taught the errors of the Manichees in the ninth century.

BA'ARD, *ſ.* a ſort of ſea-veſſel, or tranſport-ſhip.

BAA'SHA, [בעשא Heb. making or preſſing together.] A king of Iſrael.

BA'BA, a town of Terra Firma, in South America, the capital of a juriſdiction to which it gives name; the country produces abundance of cocoas, of which they make two gatherings in a year.

Baba, or **Temisvar**, a town of European Turkey, in Bulgaria, ſixty-four miles eaſt of Siliſtra.

BABACHO'KA, one of the Biſſagos Iſlands, on the weſt coaſt of Africa, in the Atlantic Ocean.

BABAHOY'A, a town of South America, in the country of Terra Firma, the chief place of a bailiwick, and extenſive juriſdiction: the country about it is low, and ſubject to inundations, but fertile in cocoa, cotton, rice, and fruit.

BABAIN', a town of Perſia, in the province of Kerman, ninety miles ſouth-eaſt of Sergian.

BAB'BIN, a town of Pomerania, in the iſland of Rugen, twelve miles north of Bergen.

To BAB'BLE, *v. n.* [*babbelen*, Germ. *babiller*, Fr.] To prattle like a child; to prate imperfectly:

My *babbling* praiſes I repeat no more,
But hear, rejoice, ſtand ſilent, and adore. *Prior.*

To talk idly, or irrationally.—John had conned over a catalogue of hard words; theſe he uſed to *babble* indifferently in all companies. *Arbuthnot.*—To talk thoughtleſly; to tell ſecrets.—There is more danger in a reſerved and ſilent friend, than in a noiſy *babbling* enemy. *L'Eſtrange.*—To talk much:

The *babbling* echo mocks the hounds,
Replying ſhrilly to the well-tun'd horns,
As if a double hunt were heard at once. *Shakeſpeare.*

Bab'ble, *ſ.* [*babil*, Fr.] Idle talk; ſenſeleſs prattle.—The *babble*, impertinence, and folly, I have taken notice of in diſputes. *Glanville.*

BAB'BLEMENT, *ſ.* Senſeleſs prate; empty words.—Deluded all this while with ragged notions and *babblements*, while they expected worthy and delightful knowledge. *Milton.*

BAB'BLER, *ſ.* An idle talker; an irrational prattler.—The apoſtle had no ſooner propoſed it to the maſters at Athens, but he himſelf was ridiculed as a *babbler*. *Rogers.*—A teller of ſecrets.—Great *babblers*, or talkers, are not fit for truſt. *L'Eſtrange.*

BABE, *ſ.* [of *babola*, Ital. as ſome imagine; others of *bab*, being a word of eaſy pronunciation, and one of the firſt uſed by infants; others from *pappus* or *puppa*, thence *bube*, Teut. though *bube* ſignifies a young boy, and not an infant; it ſeems more likely to be a contraction of the Italian word *bambino.*] An infant; a child of either ſex:

The *babe* had all that infant care beguiles,
And early knew his mother in her ſmiles. *Dryden.*

BABEIN', a town of Egypt, built on the ruins of an ancient city, ſix miles weſt of Aſhmunein.

BA'BEL, [בבל Heb. confuſion.] A city and tower undertaken to be built by the whole human race ſoon after the flood, and remarkable for the miraculous fruſtration of the attempt by the confuſion of languages. As to the ſituation of ancient Babel, moſt authors are of opinion that it was exactly in the place where the celebrated city of Babylon afterwards ſtood. That it was in the ſame country, appears indiſputably from Scripture; but that it was exactly in the ſame place is what cannot be proved, nor is it a matter of any conſequence.

Authors have been much divided about the motive by which the whole race of mankind were induced to join as one man in ſuch an undertaking. Some have imagined that it was out of fear of a ſecond deluge; others, that they knew beforehand that they were to be diſperſed thro' all the different countries of the world, and built this tower in order to defeat the deſign of the Deity, becauſe, having a tower of ſuch vaſt height as they propoſed, thoſe who were at a diſtance could eaſily find their way back again. Had either of theſe been their deſign, however, it is probable they would have choſen an eminence rather than a plain for the ſituation of their tower, or indeed that they would have choſen ſome high mountain ſuch as Ararat for their mark, rather than any tower at all: for though it is ſaid that they deſigned the top of their tower to reach to heaven, we can ſcarcely ſuppoſe them to have been ſo abſurd, as to imagine this poſſible in the ſenſe we underſtand it; and muſt therefore rather take it in the limited ſenſe in which it is often uſed by Moſes and his countrymen, where they ſpeak of cities walled up to heaven. Others there are who imagine that the top of this tower was not to reach up to heaven, but to be conſecrated to the heavens, i. e. to the worſhip of the ſun, moon, and ſtars; of the fire, air, &c. and other natural powers, as deities; and therefore that the true Deity interpoſed in order to prevent a total and irrecoverable defection. Certain it is, that the ſpecies of idolatry which takes for the objects of its worſhip thoſe natural agents, as it is the moſt ancient, ſo it is by far the moſt rational, and the moſt difficult to be diſproved. It is much more difficult, for inſtance, to prove that the ſun, which by his enlivening beams gives vigour to the whole creation, is not a deity, than that a log of wood is not one; and hence, if ſuch a ſyſtem of religion became univerſally eſtabliſhed among mankind, it would be impoſſible ever afterwards to eradicate it. Indeed, that the ſcheme of Babel, whatever it was, could have been put into execution by man, ſeems evident from the interpoſition of the Deity on the occaſion; for we cannot ſuppoſe that he would have worked a miracle on purpoſe to defeat that which would have defeated itſelf if he had let it alone: and he expreſsly ſays, 'That now nothing could be reſtrained from them;' which intimates very plainly, that, had this ſcheme gone on, the plan which God had laid for the government of the world would have been totally fruſtrated: and, agreeable to this hypotheſis, Dr. Tenniſon ſuppoſes that the tower was of a pyramidal form, in imitation of the ſpires of flame; and that it was erected in honour of the ſun, as being the moſt probable cauſe of drying up the flood.

As to the materials made uſe of in the building of this tower, the Scripture informs us that they were bricks and ſlime or bitumen. According to an eaſtern tradition, three years were taken up in making the bricks, each of which was thirteen cubits long, ten broad, and five thick. Oriental writers ſay, that the city was 313 fathoms in length, and 151 in breadth; that the walls were 5533 fathoms high, and thirty-three in breadth; and that the tower itſelf was no leſs than 10,000 fathoms, or twelve miles high. Even St. Jerome affirms from the teſtimony of eye-witneſſes, who as he ſays had examined the remains of the tower, that it was four miles high; but Ado makes the height to have been no leſs than 5000 miles. The only account of its dimenſions which can be at all depended upon (ſuppoſing it to have been the ſame which afterwards ſtood in the midſt of the city of Babylon, and round which Nebuchadnezzar built the temple of Belus), is that given under the article BABYLON.

BA'BEL-MAN'DEL, a narrow ſtraight between the Indian Ocean and the Red Sea, formed by the projecting land of Arabia in Aſia, and Abyſſinia in Africa.

BABEL-MANDEL, an iſland, in the ſtraights ſo called at the entrance of the Red Sea, between the coaſt of Arabia on the eaſt, and the coaſt of Abyſſinia on the weſt; about five miles in circumference, but barren, and almoſt uninhabited, lat. 44. 28. N. lon. 44. 30. E. Greenwich.

BABENHAU'SEN, a town of Germany, in the circle of Swabia; a lordſhip belonging to the counts of Fugger, on the Gunz, twenty-ſix miles weſt-ſouth-weſt of Augſburg, and ſixteen ſouth-eaſt of Ulm. Lat. 48. 11. N. lon. 27. 53. E. Ferro.

BA'BENSKOI, a town of Ruſſia, in the government of Archangel, ninety miles ſouth-ſouth-weſt of Kola.

BA'BERY, *ſ.* Finery to pleaſe a babe or child.

BA'BIA, a river of Ruſſian Lapland, which runs into the White Sea, ſix miles ſouth of Pialitza.

BA'BICA, a town of Poland, in the palatinate of Minſk, eight miles eaſt of Mozyr.

BABIN', a town of Poland, in the palatinate of Lublin, eight miles ſouth-weſt of Lublin.

BABIN, a town of Poland, in the palatinate of Braclaw, twenty-eight miles north-eaſt of Braclaw.

BABIN, a town of Poland, in the palatinate of Belcz, thirty-ſix miles eaſt of Belcz.

BABI'NA (Commonwealth of), a ſociety ludicrouſly ſo called, which was founded in Poland, in the reign of Sigiſmund-Auguſtus, in the ſixteenth century. It took its riſe from ſome gentlemen, inhabitants of Lublin, who had agreed to meet at a place called *Babina* merely for the purpoſes of mirth and jollity. In time their number increaſed, and they formed themſelves into a regular government, under the preſidency of a king, ſenate, and chief magiſtrates. The magiſtrates were elected from ſomething which appeared ridiculous in the character or conduct of any of the members. For inſtance, if any perſon was meddling or officious, he was created an archbiſhop; a blundering or diſputatious member was promoted to the ſpeaker's chair; a cowardly boaſter of his own courage was honoured with the commiſſion of generaliſſimo. Thoſe who declined the office for which they were declared qualified, were perſecuted with hiſſings, and abandoned by the ſociety. Thus every vice and every foible was attacked with ridicule; and Babina became the terror, the admiration, and the reformer, of the Poliſh nation: genius flouriſhed, wit was cultivated, and the abuſes which had crept into government and ſociety were corrected by the judicious application of good-humoured ſatire. Never did any inſtitution of this nature become ſo general or ſo uſeful; but at length it degenerated into a ſet of buffoons who ridiculed every thing ſacred or profane. Not the leaſt remnant of the ſociety now remains, though it was honoured with extraordinary privileges by the kings of Poland.

BA'BINGTON (Gervaſe), biſhop of Worceſter, was born, according to Fuller, in Nottinghamſhire; but in what year is uncertain. He was ſent to Trinity College, Cambridge, of which he was made fellow; and, in 1578, was incorporated maſter of arts at Oxford. He appears, however, to have made Cambridge the place of his reſidence, where he became an eminent preacher; and was made domeſtic chaplain to Henry earl of Pembroke. In this ſtation he is ſuppoſed to have aſſiſted the counteſs in her tranſlation of the Pſalms. In 1588 he was inſtalled prebend of Hereford, and in 1591 conſecrated biſhop of Landaff. In 1594 he was tranſlated to the ſee of Exeter, and thence to Worceſter in 1597. About this time he was made queen's counſel for the marſhes of Wales. He was a conſiderable benefactor to the library belonging to the cathedral of Worceſter, where he was buried in May 1610 without a monument. He had the character of a learned and pious man. His works were printed in folio and quarto in 1615, and again in folio in 1637, under this title: Comfortable Notes upon the Five Books of Moſes. An Expoſition upon the Creed, the Ten Commandments, and the Lord's Prayer; and Three Sermons, &c.

BABINOVITS'CHI, a town of Ruſſia, in the government of Mogilev, ſixty miles N. of Mogilev, and 308 S. of Peterſburg. Lat. 54. 52. N. lon. 48. E. Ferro.

BA'BISH, *adj.* Childiſh.—If he be baſhful, and will ſoon bluſh, they call him a *babiſh* and ill brought up thing. *Aſcham.*

BABITZ', a town of Bohemia, in the circle of Czaſlau, five miles weſt-north-weſt of Teutſch Brod.

BABOEUF', a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Noyon, two miles eaſt-north-eaſt of Noyon.

BABOON', *ſ.* [*babion*, or *babouin*, Fr. Some derive it of a *babe*, with the termination *oo*, q. d. a great babe, from its reſemblance to mankind.] A monkey of the largeſt kind. For the natural hiſtory of this animal, ſee SIMIA.

BABO'RA, a town of Poland, in the palatinate of Lemberg, twelve miles ſouth of Lemberg.

BA'BRA, a town of North America, in the country of New Navarre, 205 miles ſouth of Caſa Grand.

BABUYA'NES, a cluſter of ſix or ſeven ſmall iſlands, about ten leagues north of the iſle of Luçon, in the Pacific Ocean. One of them contains about 500 inhabitants; the chief produce is wax, ebony, bananas, cocoas, and plantains.

BABUY'CA, a town of North America, in the province of Culiacan, ſixty-miles north-north-eaſt of Culiacan.

BABUZICA'RIUS, *ſ.* [from ϐαϐαζω, to ſpeak inarticulately.] The incubus or night-mare; ſo called becauſe in this diſorder the perſon is apt to make an inarticulate and confuſed noiſe.

BA'BY, *ſ.* A child; an infant. A ſmall image in imitation of a child, which girls play with, called a *doll.*

BA'BYLON, the capital of the ancient kingdom of Babylonia or Chaldæa, and ſuppoſed to have ſtood in lat. 32. 0. N. lon. 44. 0. E. Semiramis is ſaid by ſome, and Belus by others, to have founded this city. But, by whomſoever it was founded, Nebuchadnezzar was the perſon who put the laſt hand to it, and made it one of the wonders of the world. The moſt famous works in and about it were the walls of the city, the temple of Belus, Nebuchadnezzar's palace, the hanging-gardens, the banks of the river, the artificial lake, and canals. The city was ſurrounded with walls, in thickneſs eighty-ſeven feet, in height 350 feet, and in compaſs 480 furlongs or ſixty of our miles. Thus Herodotus, who was himſelf at Babylon; and, though ſome diſagree with him in theſe dimenſions, yet moſt writers give the ſame, or nearly the ſame, as he does. Diodorus Siculus diminiſhes the circumference of theſe walls very conſiderably, and takes ſomewhat from the height of them, as in Herodotus; though he ſeems to add to their breadth, by ſaying that ſix chariots might drive abreaſt thereon, while the former writes that one chariot only might turn upon them; but then he places buildings on each ſide of the top of theſe walls, which, according to him, were but one ſtory high; which may pretty well reconcile them together in this reſpect. It is obſerved, that thoſe, who give the height of theſe walls but at fifty cubits, ſpeak of them only as they were after the time of Darius Hyſtaſpis, who had cauſed them to be beaten down to that level. Theſe walls formed an exact ſquare, each ſide of which was 120 furlongs, or fifteen miles, in length; and were all built of large bricks cemented together with bitumen, which in a ſhort time grows harder than the very brick and ſtone which it holds together. The city was encompaſſed with a vaſt ditch filled with water, and lined with bricks on both ſides; and, as the earth that was dug out of it ſerved to make the bricks, we may judge of the depth and largeneſs of the ditch from the height and thickneſs of the walls. In the whole compaſs of the wall there were 100 gates, that is, twenty-five on each of the four ſides, all made of ſolid braſs. Between every two of theſe gates, at proper diſtances, were three towers, and four more at the four corners of this great ſquare, and three between each of theſe corners and the next gate on either ſide, and each of theſe towers was ten feet higher than the walls. But this is to be underſtood only of thoſe parts of the walls where towers were needful for defence. For ſome parts of them being upon a moraſs, and inacceſſible by an enemy, there the labour and coſt was ſpared, which, though it muſt have ſpoiled the ſymmetry of the whole, muſt be allowed to have ſavoured of good economy; though that is what one would not have expected from a prince who had been ſo determined, as Nebuchadnezzar muſt have been, to make the city complete both for ſtrength and beauty. The whole number, then, of theſe towers amounted to no more than 250; whereas a much greater number would have been neceſſary to have made the uniformity complete all round. From the twenty-five gates on each ſide of this ſquare, there was a ſtraight ſtreet, extending to the correſponding gate in the oppoſite wall; whence the whole number of the ſtreets muſt have been but fifty; but then they were each about fifteen miles long, twenty-five of them croſſing the other twenty-five exactly at right angles. Beſides theſe whole ſtreets, we muſt reckon four half-ſtreets, which were but rows of houſes facing the four inner ſides of the walls. Theſe four half-ſtreets were properly the four ſides of the city within the walls, and were each of them 200 feet broad, the whole ſtreet being about 150 of the ſame. By this interſection of the fifty ſtreets, the city was divided into 676 ſquares, each of four furlongs and an half on each ſide, or two miles and a quarter in compaſs. Round theſe ſquares on every ſide towards the ſtreets, ſtood the houſes, all of three or four ſtories in height, and beautified with all manner of ornaments; and the ſpace within each of theſe ſquares was all void, and taken up by yards, or gardens, either for pleaſure or convenience. A branch of the Euphrates divided the city into two, running through the midſt of it, from north to ſouth; over which, in the center, was a bridge, a furlong in length, or, according to others, five furlongs in length, though but thirty feet broad, a difference we ſhall never be able to decide. This bridge, however, is ſaid to have been built with wonderful art, to ſupply a defect in the bottom of the river. At each end of this bridge were two palaces; the old palace on the eaſt ſide, the new one on the weſt ſide, of the river; the former of which took up four of the ſquares above-mentioned, and the latter nine. The temple of Belus, which ſtood next to the old palace, took up another of the ſame ſquares.

The whole city ſtood in a large flat or plain, in a fat and deep ſoil: that part or half of it on the eaſt ſide of the river was the old city, and the other on the weſt was added by Nebuchadnezzar, both being included within the vaſt ſquare bounded by the walls. The form of the whole was ſeemingly borrowed from Nineveh, which was alſo 480 furlongs; but, though it was equal in dimenſions to this city, it was leſs with reſpect to its form, which was a parallelogram, whereas that of Babylon was an exact ſquare. It is ſuppoſed, that Nebuchadnezzar, who had deſtroyed that old ſeat of the Aſſyrian empire, propoſed that this new one ſhould rather exceed it; and that it was to fill it with inhabitants, that he tranſported ſuch numbers of the captives from other countries hither; though that may be diſputed, ſeeing he only followed the uſual practice of the kings of Aſſyria, who thought this the moſt certain means of aſſuring their conqueſts either to themſelves or their poſterity.

But it plainly appears, that it was never wholly inhabited; ſo that, even in the meridian of its glory, it may be compared with the flower of the field, which flouriſhes to-day, and to-morrow is no more. It never had time to grow up to what Nebuchadnezzar viſibly intended to have made it; for, Cyrus removing the ſeat of the empire ſoon after to Shuſhan, Babylon fell by degrees to utter decay: yet it muſt be owned, that no country was better able to ſupport ſo vaſt and populous a city, had it been completed up to its firſt deſign. But ſo far was it from being finiſhed according to its original deſign, that, when Alexander came to Babylon, Q. Curtius tells us, "No more than ninety furlongs of it were then built:" which can be no otherwiſe underſtood than of ſo much in length; and, if we allow the breadth to be as much as the length (which is the utmoſt that can be allowed), it will follow, that no more than 8100 ſquare furlongs were then built upon: but the whole ſpace within the walls contained 14,400 ſquare furlongs; and therefore there muſt been 6300 ſquare furlongs remaining unbuilt, which, Curtius tells us, were ploughed and ſown. And, beſides this, the houſes were not contiguous, but all built with a void ſpace on each ſide, between houſe and houſe.

The next great work of Nebuchadnezzar was the temple of Belus. The wonderful tower, however, that ſtood in the middle of it, was not his work, but was the famous tower of Babel. This tower is ſaid to have been compoſed of eight pyramidal ones raiſed above one another, and by Herodotus ſaid to have been a furlong in height; but, as there is an ambiguity in his expreſſion, it has been diſputed whether each of the towers was a furlong in length, or the whole of them taken together. On the latter ſuppoſition, which is the moſt probable, this tower muſt have exceeded the higheſt of the Egyptain pyramids by 179 feet, though it fell ſhort of its breadth at the baſis by thirty-three. The way to go up was by ſtairs on the outſide round it; whence it ſeems moſt likely, that the whole aſcent was, by the benching in, drawn in a ſloping line from the bottom to the top eight times round it; and that this made the appearance of eight towers, one above the other. Till the times of Nebuchadnezzar, it is thought that this tower was all the temple of Belus; but, as he did by the other ancient buildings of the city, ſo he did by this, making great additions thereto, by vaſt edifices erected round it, in a ſquare of two furlongs on every ſide, and juſt a mile in circumference, which exceeded the ſquare at the temple of Jeruſalem by 1800 feet. On the outſide of theſe buildings was a wall, which incloſed the whole; and, in conſideration of the regularity wherewith this city was to all appearance marked out, it is ſuppoſed, that this wall was equal to the ſquare of the city wherein it ſtood, and ſo is concluded to have been two miles and a half in circumference. In this wall were ſeveral gates leading into the temple, and all of ſolid braſs; which it is thought may have been made out of the braſen ſea, and braſen pillars, and other veſſels and ornaments of the kind, which Nebuchadnezzar had tranſported from Jeruſalem; for in this temple he is ſaid to have dedicated his ſpoils from that of Jeruſalem.

In this temple were ſeveral images or idols of maſſy gold, and one of them, as we have ſeen, forty feet in height; the ſame, as ſuppoſed, with that which Nebuchadnezzar conſecrated in the plains of Dura. For, though this laſt is ſaid to have been ſixty cubits, or ninety feet, high, theſe dimenſions appear ſo incredible, that it has been attempted to reconcile them into one, by ſuppoſing, that in the ninety feet the height of the pedeſtal is included, and that the forty feet are for the height of the ſtatue without the pedeſtal; and, being ſaid to have weighed 1000 talents of Babylon, it is thence computed, that it was worth three millions and a half of our money. In a word, the whole weight of the ſtatues and decorations, in Diodorus Siculus, amounting to 5000 and odd talents in gold, the whole is eſtimated at above one and twenty millions of our money; and a ſum about equal to the ſame, in treaſure, utenſils, and other ornaments, is allowed for beſides.

But nothing was more wonderful at Babylon than the hanging-gardens, which Nebuchadnezzar made in complaiſance to his wife Amyte; who being a Mede, and retaining a ſtrong inclination for the mountains and foreſts of her own country, was deſirous of having ſomething like them at Babylon. They are ſaid to have contained a ſquare of four plethra, or 400 feet, on each ſide; and to have conſiſted of terraces one above another, carried up to the height of the wall of the city, the aſcent from terrace to terrace being by ſteps ten feet wide. The whole pile conſiſted of ſubſtantial arches upon arches, and was ſtrengthened by a wall ſurrounding it on every ſide, twenty-two feet thick; and the floors on each of them were laid in this order; firſt, on the tops of the arches, a bed or pavement of ſtones ſixteen feet long, and four feet broad; over this was a layer of reed mixed with a quantity of bitumen; and over this two courſes of brick, cloſely cemented with plaſter; and over all theſe were thick ſheets of lead, and on theſe the earth or mould of the garden. This floorage was deſigned to retain the moiſture of the mould; which was ſo deep, as to give root to the greateſt trees which were planted upon every terrace, together with great variety of aromatic ſhrubs and flowers. Upon the uppermoſt of theſe terraces was a reſervoir, ſupplied by an engine with water from the river, from whence the gardens on the other terraces were watered.

The other works attributed to Nebuchadnezzar by Beroſus and Abydenus, were the banks of the river, the artificial canals, and the great artificial lake ſaid to have been ſunk by Semiramis. The canals were cut out on the eaſt ſide of the Euphrates, to convey the water of the river, when it overflowed its banks, into the Tigris, before they reached Babylon. The lake was on the weſt ſide of Babylon; and, according to the loweſt computation, forty miles ſquare, 160 in compaſs, and in depth thirty-five feet, as we read in Herodotus, or ſeventy-five according to Megaſthenes; the former, perhaps, meaſured from the ſurface of the ſides, and the latter from the tops of the banks that were caſt up upon them. This lake was dug to receive the waters of the river, while the banks were building on each ſide of it. But both the lake and the canal which led to it, were preſerved after the work was completed, being found of great uſe, not only to prevent overflowings, but to keep water all the year, as in a common reſervoir, to be let out, on proper occaſions, by ſluices, for the improvement of the land. Beroſus, Megaſthenes, and Abydenus, attribute all theſe works to Nebuchadnezzar; but Herodotus tells us, the bridge, the banks, and the lake, were the works of queen Nitocris; who may indeed have finiſhed what Nebuchadnezzar left imperfect, and thence have had the honour this hiſtorian gives her of the whole.

The tower or temple ſtood till the time of Xerxes. But that prince, on his return from the Grecian expedition, having firſt plundered it of its immenſe wealth, demoliſhed the whole, and laid it in ruins. Alexander, on his return to Babylon from his Indian expedition, propoſed to rebuild it, and accordingly ſet 10,000 men to work to clear away the rubbiſh. But, his death happening ſoon after, a ſtop was put to all further proceedings. After the death of that conqueror, the city of Babylon began to decline apace; which was chiefly owing to the neighbourhood of Seleucia, built by Seleucus Nicator, as is ſaid, out of reſentment to the Babylonians, and peopled with 500,000 perſons drawn from Babylon, which by that means continued declining, till the very people of the country were at a loſs to tell where it had ſtood.

Such is the deſcription given by ancient hiſtorians of the grandeur of this city; which, if this theſe accounts be not exaggerated, muſt have exceeded every other example of human magnificence in the world. Many of the moderns, however, are of opinion that theſe deſcriptions are very far from being true; although it is certain that few other arguments can be brought againſt the reality of them, than that we do not ſee things of a ſimilar kind executed in our own days; not conſidering, that, in the preſent ſtate of ſociety, ſuch undertakings are utterly impoſſible. In the remote periods of antiquity, however, before ſo many different monarchies were eſtabliſhed, acting as a check upon each other; and when the all-conquering ſword of one mighty prince had ſubjected half the human race to his authority; had poſſeſſed himſelf of the richeſt territories, and beſt productions of the whole earth, there could be little difficulty, from the multiplicity of hands, and the infinity of wealth, ſuch reſources ſupplied, of erecting the ſtupendous works of Babylon, even in the utmoſt extent that has been given them. This we have already ſhewn, and we think in a ſatisfactory manner, by a compariſon of the famous Chineſe wall, with that of Babylon, under the article ARCHITECTURE, in p. 66 of this volume, to which we beg to refer the reader. But as ſome traces of the foundations and buildings of the ancient city of Babylon have been recently diſcovered, and exertion making to explore the ſame, as announced in the public prints of October 1797, it may be poſſible, even at this diſtant day, that many of the ſeeming contradictions of the ancient hiſtorians may be reconciled, and the diſputed facts eſtabliſhed; in which caſe we ſhall not fail to notice them, under the article RUINS.

BABYLON, anciently a town of Egypt near the eaſtern branch of the river Nile, now ſuppoſed to be Grand Cairo.

BABYLO'NIA, or CHALDÆA, a kingdom of Aſia, and the moſt ancient in the world, being founded by Nimrod the grandſon of Ham, who alſo, according to the margin of our Bibles, founded Nineveh the capital of the kingdom of Aſſyria. Indeed, theſe two kingdoms ſeem to have always continued in ſuch a ſtate of friendſhip, that we can ſcarce help thinking they muſt have been the ſame, or perhaps Babylonia was for ſome time a province of Aſſyria. Nothing certain is known concerning either of them, except what may be gathered from Scripture. From thence we learn, that in the days of Abraham there was a king of Shinar, called *Amraphel*, who, under the king of Elam or Perſia, made war upon the Canaanites. From this time we have nothing that can be depended upon till the days of Nabonaſſer, the firſt king of Babylon mentioned in Ptolemy's canon. It is plain indeed, both from Scripture and prophane hiſtory, that Babylonia ſubſiſted as a diſtinct kingdom from Aſſyria even when the latter was in all its glory. The moſt probable account is this; The empire of Aſſyria was founded by Pul, on the ruins of that of Damaſcus or Syria, in the days of Menahem king of Judah. This king left two ſons, Tiglath-Pileſer, and Nabonaſſer. To the former he bequeathed the empire of Aſſyria, and to the latter that of Babylon. Tiglath-

Pileſer reſided at Nineveh, the original ſeat of the Aſſyrian empire; while Nabonaſſer, who was the younger brother, held his reſidence at Babylon. As the two kingdoms were governed by princes of the ſame family, we may well ſuppoſe a perfect harmony to have reigned between them, the younger branch at Babylon acknowledging a kind of ſubjection to the elder at Nineveh. That the Babylonian empire was of Aſſyrian origin, we are aſſured by the prophet Iſaiah, in the following words: "Behold the land of the Chaldeans: this people was not till the Aſſyrian founded it for them that dwelt in the wilderneſs; they ſet up the towers thereof: they built the palace thereof." As to the kingdom of Aſſyria, the Scripture mentions only five kings, viz. Pul, Tiglath-Pileſer, Shalmanaſer, Sennacharib, and Eſarhaddon; whoſe hiſtory, as related by the ſacred writers, it is needleſs to mention here. From the days of Nabonaſſer to Nabopolaſſer, that is, from the year before Chriſt 747 to 626, the kings of Babylon made no figure, and were therefore probably in a ſtate of dependance on the kings of Aſſyria; but at that time, in the reign of Chyniladan, the Sardanapalus of the Greeks, Nineveh was taken and deſtroyed by the Medes and Babylonians, and the ſeat of the empire transferred to Babylon. This Nabopolaſſer was the father of the famous Nebuchadnezzar, for whoſe hiſtory we muſt refer to the ſacred writers: and from his time to that of the Belſhazzar of Daniel, and Nabonadius of other authors, the hiſtory of Babylon is little better than a mere blank. Of the reduction of Babylon by Cyrus, which happened at this time, we have the following account.

War had been begun betwixt the Medes, Perſians, and Babylonians, in the reign of Nerigliſſar the father of Nabonadius, which had been carried on with very bad ſucceſs on the ſide of the Babylonians. Cyrus, who commanded the Median and Perſian army, having ſubdued the ſeveral nations inhabiting the great continent from the Ægean ſea to the Euphrates, bent his march towards Babylon. Nabonadius, hearing of his march, immediately advanced againſt him with an army. In the engagement which enſued, the Babylonians were defeated; and the king, retreating to his metropolis, was blocked up and cloſely beſieged by Cyrus. The reduction of this city was no eaſy enterpriſe. The walls were of a prodigious height, the number of men to defend them very great, and the place ſtored with all ſorts of proviſions for twenty years. Cyrus, deſpairing of being able to take ſuch a city by ſtorm, cauſed a line of circumvallation to be drawn quite round it, with a large and deep ditch; reckoning, that, if all communication with the country were cut off, the beſieged would be obliged to ſurrender through famine. That his troops might not be too much fatigued, he divided his army into twelve bodies, appointing each body its month to guard the trenches; but the beſieged, looking upon themſelves to be out of all danger by reaſon of their high walls and magazines, inſulted him from the ramparts, and looked upon all the trouble he gave himſelf as ſo much unprofitable labour.

After Cyrus had ſpent two whole years before Babylon, without making any progreſs in the ſiege, he at laſt thought of the following ſtratagem, which put him in poſſeſſion of it. He was informed, that a great annual ſolemnity was to be held at Babylon: and that the inhabitants on that occaſion were accuſtomed to ſpend the whole night in drinking and debauchery. This he thought a proper time for ſurpriſing them; and accordingly ſent a ſtrong detachment to the head of the canal leading to the great lake, with orders, at a certain time, to break down the great bank which was between the lake and the canal, and to turn the whole current into the lake. At the ſame time he appointed one body of troops at the place where the river entered the city, and another where it came out; ordering them to march in by the bed of the river as ſoon as they ſhould find it fordable. Towards the evening he opened the head of the trenches on both ſides the river above the city, that the water might diſcharge itſelf into them; by which means, and the breaking down of the great dam, the river was ſoon drained. Then the two bodies of troops, according to their orders, entered the channel; the one commanded by Gobryas, and the other by Gadates: and, finding the gates all left open by reaſon of the diſorders of that riotous night, they penetrated into the very heart of the city without oppoſition; and meeting, according to agreement, at the palace, they ſurpriſed the guards, and cut them in pieces. Thoſe who were in the palace opening the gates to know the cauſe of this confuſion, the Perſians ruſhed in, took the palace, and killed the king, who came out to meet them ſword in hand. Thus an end was put to the Babylonian empire; and Cyrus took poſſeſſion of Babylon for one called in Scripture *Darius the Mede*, moſt probably Cyaxares II. uncle to Cyrus. From this time Babylonia never was erected into a diſtinct kingdom, but hath always followed the fortune of thoſe great conquerors who at different times have appeared in Aſia. It is now frequently the object of contention between the Turks and Perſians. See ASSYRIA.

Concerning the nature of the country, manners, cuſtoms, &c. of the ancient Babylonians, the following account is collected by M. Sabbathier. "As all the nations under the dominion of Cyrus, beſides the ordinary tributes, were obliged to maintain him and his army, the monarch and his troops were ſupported by all Aſia. The country of Babylon alone was obliged to maintain him four months of the year; its fertility, therefore, yielded a third of the produce of Aſia. The government of this country, which the Perſians termed *ſatraphy*, was richer and more extenſive than any of the reſt. It maintained for the king, beſides the war-horſes, a ſtud of 800 ſtallions, and 16,000 mares. So great a number of Indian dogs were likewiſe bred in this province for the king, that four of its cities kept thoſe animals; and in return, they were exempted from all taxes and tributes.

"It rained very ſeldom in this country, according to Herodotus. The earth was watered by the river, which was here diffuſed by human induſtry, as the Nile is over Egypt by nature; for all the country of Babylon was divided by canals, the greateſt of which was navigable, and flowed from ſouth to north, from the Euphrates to the Tigris. In ſhort, it was one of the fineſt countries for corn in the world; but for producing trees, the fig-tree, the vine, and the olive, it was not famous. It was ſo luxuriant in grain, that it commonly yielded a hundred times more than what was ſown; and in its good years it yielded three hundred times more than it received. The leaves of its wheat and barley were four inches broad. 'Though I know,' ſays Herodotus, 'that the millet and the ſeſame of that country grow to the ſize of trees, I will not deſcribe them particularly; leſt thoſe who have not been in Babylonia ſhould think my account fabulous.' They had no oil but what they made from Indian corn. The country abounded with palm-trees, which grew ſpontaneouſly; and moſt of them bore fruit, of which the inhabitants made bread, wine, and honey. They cultivated theſe trees and their fig-trees in the ſame manner. Some of them, as of other trees, the Greeks called *male ones*. They tied the fruit of the male to the trees which bore dates; that the moſquito, leaving the male, might cauſe the date to ripen, by penetrating it; for without that aſſiſtance it came not to maturity. Moſquitos bred in the male palms as in the wild fig-trees.

"But we muſt not here omit to give an account of the peculiar and ſurpriſing conſtruction of their boats of ſkins, in which they ſailed along the river to Babylon. Theſe boats were invented by the Armenians, whoſe country lay north from Babylonia. They made them with poles of willow, which they bent, and covered with ſkins; the bare ſide of the ſkins they put outwards; and they made them ſo tight, that they reſembled boards. The boats had neither prow nor ſtern, but were of a round form like a buckler. They put ſtraw on the bottom. Two men, each with an oar, rowed them down the river, laden with different wares, but chiefly with palm-wine. Of theſe boats ſome were very large, and ſome very ſmall. The largeſt carried the weight of 500 talents. There was room for an aſs in one of their ſmall boats; they put many into a large one. When they had unloaded, after their arrival at Babylon, they ſold the poles of their boats and the ſtraw; and, loading their aſſes with the ſkins, returned to Armenia: for they could not ſail up the river, its current was ſo rapid. For this reaſon they made their boats of ſkins, inſtead of wood; and on their return to Armenia with their aſſes, they applied the ſkins to their former uſe.

"As to their dreſs, they wore a linen ſhirt, which came down to their feet. Over it they wore a woollen robe; their outer garment was a white veſt. Their ſhoes reſembled thoſe of the Thebans. They let their hair grow. On their heads they wore a turban. They rubbed their bodies all over with fragrant liquors. Each man had a ring on his finger, and an elegant cane in his hand, with an apple at the top, or a roſe, a lily, or an eagle, or ſome other figure; for they were not ſuffered to uſe canes without devices. With regard to their policy, Herodotus thinks that their beſt law was one which the Heneti, an Illyrian people, likewiſe obſerved in every town and village. When the girls were marriageable, they were ordered to meet in a certain place, where the young men likewiſe aſſembled. They were then ſold by the public crier; but he firſt ſold the moſt beautiful one. When he had ſold her at an immenſe price, he put up others to ſale, according to their degrees of beauty. The rich Babylonians were emulous to carry off the fineſt women, who were ſold to the higheſt bidders. But, as the young men who were poor could not aſpire to have fine women, they were content to take the uglieſt with the money which was given them: for, when the crier had ſold the handſomeſt, he ordered the uglieſt of all the women to be brought; and aſked, if any one was willing to take her with a ſmall ſum of money. Thus ſhe became the wife of him who was moſt eaſily-ſatisfied; and thus the fineſt women were ſold; and from the money which they brought, ſmall fortunes were given to the uglieſt, and to thoſe who had any bodily infirmity. A father could not marry his daughter as he pleaſed; nor was he who bought her allowed to take her home, without giving ſecurity that he would marry her. But, after the ſale, if the parties were not agreeable to each other, the law enjoined that the purchaſe-money ſhould be reſtored. The inhabitants of any of their towns were permitted to marry wives at theſe auctions. Such were the early cuſtoms of the Babylonians. But they afterwards made a law, which prohibited the inhabitants of different towns to intermarry, and by which huſbands were puniſhed for treating their wives ill. When they had become poor by the ruin of their metropolis, fathers uſed to proſtitute their daughters for gain. There was a ſenſible cuſtom among the Babylonians worthy to be related. They brought their ſick into the forum, to conſult thoſe who paſſed on their diſeaſes; for they had no phyſicians. They aſked thoſe who approached the ſick, if they ever had the ſame diſtemper? if they knew any one who had it? and how he was cured? Hence, in this country, every one who ſaw a ſick perſon was obliged to go to him, and inquire into his diſtemper. They embalmed their dead with honey; and their mourning was like that of the Egyptians.

"There were three Babylonian tribes, who lived only upon fiſh, and who prepared them in the following manner: they dried them in the ſun, and then beat them in a mortar to a kind of flour, which, after they had ſifted through linen, they baked in rolls. The Babylonians at firſt worſhipped only the ſun and the moon; but they ſoon multiplied their divinities. They deified Baal, Bel, or Belus, one of their kings, and Merodach-Baladan. They alſo worſhipped Venus, under the name of *Mylitta*. She and Belus were the principal deities of the Babylonians. They counted their day from ſun-riſe to ſun-riſe. They ſolemnized five days of the year with great magnificence, and almoſt the ſame ceremonies with which the Romans celebrated their Saturnalia.

"The Babylonians were very much addicted to judicial aſtrology. Their prieſts, who openly profeſſed that art, were obliged to commit to writing all the events of the lives of their illuſtrious men; and on a compariſon between thoſe events and the motions of the heavenly bodies, the principles of their art were founded. They aſſerted that ſome of their books, in which their hiſtorical tranſactions and revolutions were accurately compared with the courſes of the ſtars, were thouſands of years old. This aſſertion of their judicial aſtrologers we may perhaps diſpute; but that their aſtronomers had made a long ſeries of obſervations, is inconteſtably true. It is certain that ſome of thoſe obſervations were extant in the days of Ariſtotle, and that they were older than the empire of the Babylonians."

BABYLO'NIAN, Babylonius, is uſed in ſome ancient writers for an aſtrologer, or any thing related to aſtrology. Hence *Babylonia cura*, the art of caſting nativities; and *numeri Babylonii*, the computation of aſtrologers.

BABYLO'NICA TEX'TA, a rich ſort of weaving, denominated from the city of Babylon, where the practice of interweaving divers colours in their hangings firſt obtained. Hence alſo Babylonic garments, Babylonic ſkins, Babylonic carpets, houſings, &c. *Babylonica ſolana*, coverings laid over couches, &c. painted with gold, purple, and other colours.

BABYLO'NICS, Babylonica, in natural hiſtory, a fragment of the ancient hiſtory of the world, ending at 267 years before Chriſt; and compoſed by Beroſus, a prieſt of Babylon, about the time of Alexander. Babylonics are ſometimes alſo cited in ancient writers by the title of *Chaldaics*. The Babylonics were very conſonant with Scripture, as Joſephus and the ancient Chriſtian chronologers aſſure; whence the author is uſually ſuppoſed to have conſulted the Jewiſh writers. Beroſus ſpeaks of an univerſal deluge, an ark, &c. He reckons ten generations between the firſt man and the deluge; and marks the duration of the ſeveral generations by *ſaroi*, or periods of 223 lunar months; which, reduced to years, differ not much from the chronology of Moſes. The Babylonics conſiſted of three books, including the hiſtory of the ancient Babylonians, Medes, &c. But only a few imperfect extracts are now remaining of the work; preſerved chiefly by Joſephus and Syncellus, where all the paſſages or citations of ancient authors out of Beroſus are collected with great exactneſs. Annius of Viterbo, to ſupply the loſs, forged a complete Beroſus out of his own head. The world has not thanked him for the impoſture.

BABYROUS'SA, *ſ.* in zoology. See Sus.

BAC, *ſ.* in navigation, a praam, or ferry-boat.

BA'CA, or Baça, a town of North America, in New Navarre, forty-five miles north-eaſt of Cinaloa.

Baça. See Baza.

BA'CACUM, anciently a town of the Nervii in Gallia Belgica; now Bavay, in Hainault.

BACADU'CHI, a town of North America, in New Navarre, 240 miles north of Cinaloa.

BACAI'M, or Baçaim, a town in the iſland of Salſete, near the coaſt of Concan, in Aſia, of which the Portugueſe were a long time in poſſeſſion, but were driven away by the Mahrattas.

BACAM, a town of North America, in New Navarre, 165 miles north-weſt of Cinaloa.

BA'CANON, *ſ.* The ſeed of rape or cabbage.

BACANO'RA, a town of North America, in New Navarre, 230 miles ſouth of Caſa Grand.

BACAN'TIBI, *ſ.* [the word ſeems formed by corruption from *vacantivi*.] In eccleſiaſtical antiquity, wandering clerks, who ſtrolled from church to church.

BACA'PA, a town of North America, in New Navarre, 120 miles ſouth-weſt of Caſa Grand.

BACARA'CH, or Baccarac, a town of Germany in the circle of the Lower Rhine, and the Lower Palatinate, at the foot of a mountain called Voitſberg. It is ſuppoſed to have its name corrupted from *Bacchi ara*, the altar of Bacchus. The wine produced in its neighbourhood has been always in great requeſt. Baccharach was ſo completely pillaged by the troops of Louis XIV. in 1689, that the French commander, the night before he left the town, had nothing to ſleep on but ſtraw, which was next day employed to burn it down: forty-eight miles north of Deux Ponts, twenty-three ſouth of Coblentz, and ten north-weſt of Bingen. Lat. 50. 2. N. lon. 9. 5. E. Ferro.

BA'CARAT, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Luneville, four leagues ſouth-eaſt of Luneville.

BACAR'DO, a town of Italy, in the ſtate of Genoa, eight miles north-north-eaſt of Vintimiglia.

BAC'CA, or Berry, *ſ.* [Blanchard derives it from *Bacchus*, the inventor of wine, which is produced from the berry of the vine; but it ſeems to be from בכה *baccah*, Heb.] In botany, is uſed to ſignify ſuch fruits as conſiſt of a pericarpium full of juice and ſeeds, without any valves.

BACCALA'RIA, *ſ.* In middle-age writers, denotes a kind of country-farms, conſiſting of ſeveral manſes. *Baccalaria dominicaria*, or *indominicata*, was more particularly uſed for a farm belonging to the lord, and kept in his own hands.

BACCALAU'REUS, *ſ.* [of *bacca laurea*, Lat. a bayberry, becauſe anciently they uſed to have their heads adorned with a garland of bayberries.] A bachelor in the univerſity.

BAC'CATED, *adj.* [*baccatus*, Lat.] Beſet with pearls; having many berries.

BAC'CHÆ, *ſ.* In antiquity, the prieſteſſes of Bacchus, who celebrated the *orgia* or myſteries of that god, called alſo *bacchantes*, *baſſarides*, and *thyades*. The word was alſo uſed for the ivy crowns or garlands worn by the prieſts of Bacchus in offering ſacrifices to him.

BACCHANA'LIAN, *ſ.* [from *bacchanalia*, Lat.] A riotous perſon; a drunkard.

BAC'CHANALS, *ſ.* Feaſts celebrated in honour of Bacchus by the ancients. The two moſt remarkable were called the *greater* and *leſſer*. The latter, called *lenæa*, from a word ſignifying a 'wine-preſs,' were held in the open fields about autumn; the greater, called *Dionyſia*, from one of the names of Bacchus, were celebrated in the city, about the ſpring-time. Both theſe feaſts were accompanied with games, ſpectacles, and theatrical repreſentations; and it was at this time the poets contended for the prize of poetry. Thoſe who were initiated into the celebration of theſe feaſts, repreſented, ſome Silenus; others Pan; others Satyrs; and in this manner appeared in public, night and day, counterfeiting drunkenneſs, dancing obſcenely, and committing all kinds of licentiouſneſs and debauchery. See the article Bacchus.

BACCHAN'TES, thoſe women who followed Bacchus, in his conqueſts of the Indies, and who made great acclamations every where to publiſh his victories. During the ceremony of the Bacchanals and the orgies, they ran about clad in ſkins of tigers, with their hair looſe, and with torches and flambeaux in their hands, making frightful cries. *Euripides.*

BACCHA'RIS, *ſ.* [from Βακχος, Bacchus.] Ploughman's Spikenard. In botany, a genus of the claſs ſyngeneſia, order polygamia ſuperflua, natural order of (compoſitæ) compound flowers, diviſion the third, diſcoideæ. The generic characters are—Calyx: common cylindric, imbricate; ſcales linear, acute. Corolla: compound equal; corollules hermaphrodite and female mixed; proper, to the hermaphrodite, funnel-form, five-cleft; to the females, ſcarcely apparent, almoſt none. Stamina: filaments five, capillary, very ſmall; antheræ cylindric, tubular. Piſtillum: germ ovate; ſtyle filiform, the length of the flower; ſtigma bifid. Pericarpium: none; calyx unchanged. Seeds ſolitary, very ſhort, oblong; down ſimple. Receptaculum: naked. The down in ſome ſpecies is very long; in others ſcarcely exceeding the calyx. —*Eſſential Character.* Calyx imbricate, cylindric; florets female mixed with hermaphrodites; down ſimple; receptacle naked.

Species. 1. Baccharis ivæfolia, or Peruvian ploughman's ſpikenard: leaves lanceolate, longitudinally tooth-ſerrate. This grows to the height of five or ſix feet. The female florets with a trifid corolla are very abundant; the hermaphrodites of the diſk are few and five-cleft. Seeds ſmall, ovate-oblong, flatted a little; down twice as long as the ſeed, ſcarcely toothed. Native of America. It was cultivated in 1696, in the botanic garden at Chelſea; and flowers in July and Auguſt.

2. Baccharis neriifolia, or oleander-leaved ploughman's ſpikenard: leaves lanceolate, ſerrate in the upper part with one or two toothlets. This has a ſoft ſhrubby ſtalk, which riſes to the height of eight or ten feet, putting out ſide branches toward the top. Leaves ſtiff, having a few indentures toward their top, and placed without order. The flowers are produced at the extremity of the branches in a cloſe ſpike; they make little appearance, being of an herbaceous colour, and are not ſucceeded by ſeeds in England. Linnæus ſays, that it grows to twice the height of a man in our gardens; that the ſtem is rugged and upright, with patulous branches; that the branches of the preſent and paſt year are leafy, but that the reſt are naked, ſtreaked, and irregular, from the ſcars of fallen leaves; that theſe are narrow, acuminate to both ends, ending in the petioles, and bent down at the edge.

3. Baccharis arborea: leaves eliptic-lanceolate, quite entire, naked, petioled. Height three feet, trunk the thickneſs of the human arm, and the largeſt of the genus. Leaves a hand-breadth long, and half as wide. Obſerved in woods, on the iſland of Johanna, by Koenig.

4. Baccharis halimifolia, or ſea-purſlane-leaved ploughman's ſpikenard, or grounſel tree: leaves obovate, emarginate-crenate in the upper part. This is an herbaceous kind of ſhrub, ſix, ſeven, or eight, feet high. Leaves many, like thoſe of gooſefoot, but ſtiffer, irregularly ſet on the branches. Flowers crowded, naked, at the end of the twigs. Theſe are not very beautiful, but the leaves continuing green through the year, has occaſioned this ſhrub to be admitted into many curious gardens. It is a native of Virginia and other parts of North America; and flowers in October. It was cultivated in 1688, by biſhop Compton.

5. Baccharis Dioſcoridis: leaves broad-lanceolate, toothed, ſeſſile, ſtipuled. Stems ſhrubby, ſix feet high, weak, a little hairy, much branching, luxuriant. It is wrongly named baccaris of Dioſcorides. Loureiro deſcribes the ſtem as five feet high, upright and round, with many weak branches; the leaves as dark-green, ſmooth aromatic, ſtipuled; the flowers many, yellow, on terminating corymbs.

6. Baccharis Indica: leaves obovate, toothletted, petioled. Native of Ceylon and the Cape of Good Hope.

7. Baccharis Braſiliana: leaves obovate, entire, ſcabrous, ſeſſile; veined underneath. Native of Braſil.

8. Baccharis fœtida: leaves lanceolate, ſerrate-toothed; corymbs leafy. This riſes with a woody ſtem ſix or ſeven feet high. The leaves are long, hoary on their under ſide, and have a diſagreeable ſcent when handled. The ſtems are terminated by looſe corymbs of flowers, which, appearing late in autumn, are not followed by ſeeds in this country. It is a native of Carolina, and ſome other parts of North America.

9. Baccharis Chinenſis: leaves lanceolate, quite entire, tomentoſe beneath, petioled; peduncles many-flowered, axillary. This is an underſhrub, three feet high, upright, ſimple, round. Leaves alternate, on ſhort petioles. Flowers yellow, oblong. Native of China, near Canton.

Propagation and Culture. The firſt ſpecies is a manageable ſhrub. It may be propagated by cuttings, planted in a ſhady border, during any of the ſummer months; or by ſeeds, ſown on a common border in the ſpring. Theſe ſeeds ripen well in this country; and, if permitted to ſcatter on the ground, the plants will come up the following ſpring. It is pretty hardy, and will live abroad in mild winters, if planted in a warm ſituation; but it is uſually kept in the greenhouſe, and placed abroad in ſummer; it requires much water in warm weather. The ſecond ſort is difficult to propagate, for the cuttings with great difficulty take root; and it is very rare to find ſhoots near the root to lay down, ſo that in Holland they lay down the entire head of young plants, ſlitting the ſmaller branches in the ſame manner as is practiſed for carnations, laying them into the ground and forking each down to prevent their riſing; theſe, when duly watered, put out roots in one year, when they may be taken off, and planted in ſmall pots filled with light earth, and placed in the ſhade till they have taken new root; after which they may be placed in a ſheltered ſituation in ſummer, but in winter in a green-houſe. The fourth and eighth ſort may be propagated by cuttings, which ſhould be planted in April or May, upon a ſhady border, and duly watered in dry weather, until they have taken root; and, at Michaelmas, they will be fit to tranſplant where they are to remain; this will live in the open air, and never is injured by the cold of our ordinary winters, but ſevere froſt will ſometimes deſtroy it. The other ſorts are more tender, and moſtly require the protection of a ſtove, but are little known in this country. See ATHANASIA, CHRYSOCOMA, and CONYZA.

BACCHAROI'DES, *ſ.* in botany. See CONYZA.

BAC'CHI, *ſ.* in mechanics, a kind of ancient machines, in form of goats, uſed by Jupiter, in his wars againſt the giants. Rudbeck deſcribes two kinds of bacchi, one made like the battering-ram, wherewith Jupiter demoliſhed the enemy's fortifications; the other contrived to caſt fire out of fortified places, from whence the Greeks are conjectured to have framed their idea of chimera.

BAC'CHIA, *ſ.* [from βακχος, wine, becauſe it commonly proceeds from hard drinking and intemperance.] The gutta roſacea, or fiery pimples diſperſed about the face and noſe.

BACCHI'ADÆ, a Corinthian family, who affirmed they were deſcended from Bacchia, the daughter of Bacchus. They were baniſhed, and went to ſettle in Sicily. *Ovid.*

BAC'CHIC, *ſ.* ſomething relating to the ceremonies of Bacchus. The celebrated *intaglio*, called Michael Angelo's ring, is a repreſentation of a bacchic feaſt.

BACCHIC SONG, *ſ.* is ſometimes uſed for a *chanſon à boire*, or compoſition to inſpire jollity. But in a more proper ſenſe, it is reſtrained to a dithyrambic ode or hymn.

BACCHI'NI (Benedict), a Benedictine monk, and one of the moſt learned men of his time, was born at Borgo San Domino in 1651; and wrote a number of books in Latin and Italian, the moſt conſiderable of which is a Literary Journal. He died at Bologna in 1721, aged 70.

BAC'CHIUS, a follower of Ariſtoxenus, ſuppoſed by Fabricius to have been tutor to the emperor Marcus Antoninus, and conſequently to have lived about A. C. 140. He wrote in Greek a ſhort introduction to muſic, in dialogue, which, with a Latin tranſlation thereof, Meibomius has publiſhed.

BACCHIUS, in ancient poetry, a kind of foot compoſed of a ſhort ſyllable and two long ones; as the word ăvārī. It takes its name from the god Bacchus, becauſe it frequently entered into the hymns compoſed in honour of him. The Romans called it *ænotrius*, *tripodius*, *ſaltans.*

BAC'CHUS, [Βακχος, from בכה to vociferate, Heb.] In the heathen mythology, the ſon of Jupiter and Semele, whoſe birth is related in the following manner: Juno, always enraged againſt the concubines of Jupiter, in order to be revenged, counſelled Semele, in the ſhape of an old woman, to require of Jupiter, by an inviolable oath, to grant her a favour; and then to aſk him to come to her in the majeſty of a god, as he careſſed Juno. Semele obtained her requeſt, and would not give it up, though warned that ſhe ſhould be burnt alive, as her mortal nature could not endure the embraces of the god of thunder. But, however, for fear that Bacchus, of whom ſhe was then big with child, might be burned with her, Jupiter opened his thigh, and put him therein, where he continued till his mother's time was accompliſhed: after birth he was privately put into the hands of Ino his aunt, who was to take care of him with the aſſiſtance of the Hyades, the Horæ, and the nymphs of Nyſa. When he was grown up, he conquered the Indies; from whence he paſſed into Egypt, where he taught huſbandry to the inhabitants, planted the firſt vine, and was hence adored as the god of wine. He puniſhed Pentheus ſeverely, becauſe he oppoſed his ſolemnities. He triumphed over all his enemies, and overcame all dangers to which the perſecution of Juno continually expoſed him; for the reſentments of that goddeſs did not only extend to the concubines of Jupiter, but alſo to their children. Bacchus transformed himſelf into a lion to devour the giants, who attempted to ſcale heaven, and was looked upon, next to Jupiter, as the moſt powerful of the gods. He was ſometimes repreſented with horns on his head, becauſe, when he travelled, he was always clothed in the ſkin of a goat, an animal which they ſacrifice to him. Sometimes he is painted ſitting on a tun; ſometimes on a car, drawn by tigers, lynxes, or panthers; likewiſe often holding a cup in one hand, and in the other a thyrſis, that is, a ſpear wrapped about with ivy or bay leaves.

Bacchus is ſeldom named in modern times but as a ſenſual encourager of feaſt and jollity; but he was regarded in a more reſpectable light by the ancients, who worſhipped him in different countries under the following appellations: in Egypt, he was called *Oſiris*; in Myſia, *Fanaces*; in India, *Dionyſius*; *Liber*, throughout the Roman dominions; *Adoneus*, in Arabia; and *Pentheus*, by the Lucanians. Mythologiſts furniſh reaſons for all theſe different names given to the ſame god; which may be ſeen in the ſecond volume of Banier's Mythology.

It is natural to ſuppoſe that the Greeks and Romans, as uſual, beſtowed upon the Bacchus which they worſhipped the ſeveral actions and attributes of the many divinities known by that name, and by other equivalent denominations in different countries. However, antiquity hath only diſtinguiſhed two gods under the title of *Bacchus*; viz. the ſon of Ammon, and the ſame as Oſiris; and the ſon of Jupiter and Semele, above-mentioned. Diodorus Siculus tells us, that Orpheus firſt deified the ſon of Semele by the name of Bacchus, and appointed his ceremonies in Greece, in order to render the family of Cadmus, the grandfather of the Grecian Bacchus, illuſtrious.

The great Bacchus, according to Sir Iſaac Newton, flouriſhed but one generation before the Argonautic expedition. This Bacchus, ſays Hermippus, was potent at ſea, conquered eaſtward as far as India, returned in triumph, brought his army over the Helleſpont, conquered Thrace, and left muſic, dancing, and poetry, there. And, according to Diodorus Siculus, it was the ſon of Semele who invented farces and theatres, and who firſt eſtabliſhed a muſic-ſchool, exempting from all military functions ſuch muſicians as diſcovered great abilities in their art; on which account, ſays the ſame author, muſicians formed into companies have ſince frequently enjoyed great privileges. Dr. Burney obſerves, that the dithyrambics which gave birth to dramatic repreſentations are as ancient as the worſhip of Bacchus in Greece; and there is little doubt but that the ceremonies of his myſteries gave riſe to the pomp and illuſions of the theatre. Many of the moſt ſplendid exhibitions upon the ſtage for the entertainment of the people of Athens and Rome, being performed upon the feſtivals of Bacchus, gave occaſion to the calling all thoſe that were employed in them, whether for ſinging, dancing, or reciting, *ſervants of Bacchus.*

Pauſanias, in his Attics, ſpeaks of a place at Athens conſecrated to *Bacchus the ſinger*; thus named, he ſays, for the ſame reaſon as Apollo is called the *chief* and *conductor* of the muſes. Whence it ſhould ſeem that Bacchus was regarded by the Athenians not only as the god of wine, but of ſong; and it muſt be owned, that his followers, in their cups, have been much inclined to ſinging ever ſince. Indeed we are certain, that in none of the orgies, proceſſions, triumphs, and feſtivals, inſtituted by the ancients to the honour and memory of this prince of *bons vivans*, muſic was forgotten, as may be ſtill gathered from ancient ſculpture, where we find not only that muſicians, male and female, regaled him with the lyre, the flute, and with ſong; but that he was accompanied by fawns and ſatyrs playing upon timbrels, cymbals, bagpipes, and horns: theſe Suidas calls his minſtrels; and Strabo gives them the appellations of *Bacchi*, *Sileni*, *Satyri*, *Bacchæ*, *Lenæ*, *Thyæ*, *Mamillones*, *Naiades*, *Nymphæ*, and *Tityri*. Theſe repreſentations have furniſhed ſubjects for the fineſt remains of ancient ſculpture; and the moſt voluptuous paſſages of ancient poetry are deſcriptions of the orgies and feſtivals of Bacchus.

BACCHYLI'DES, a famous Greek poet, was the nephew of Simonides, and the cotemporary and rival of Pindar. Both ſung the victories of Hiero at the public games. Beſides odes to athletic victors, he was author of Love Verſes, Proſodies, Dithyrambics, Hymns, Pæans, Hyporchemes, Parthenia, or ſongs to be ſung by a chorus of virgins at feſtivals. The chronology of Euſebius places the birth of Bacchylides in the 82d Olympiad, about 450 years before Chriſt.

BACCI'FEROUS, *adj.* [from *bacca*, a berry, and *fero*, to bear, Lat.] Berry-bearing.—*Bacciferous* trees are of four kinds: 1. Such as bear a caliculate or naked berry; the flower and calyx falling off together, and leaving the berry bare; as the ſaſſafras trees. 2. Such as have naked monoſpermous fruit, that is, containing in it only one ſeed; as the arbutes. 3. Such as have but polyſpermous fruit, that is, containing two or more kernels or ſeeds within it; as the jeſminum, liguſtrum. 4. Such as have their fruit compoſed of many acini, or round ſoft balls ſet cloſe together like a bunch of grapes; as the uva marina. *Ray.*

BACCIL'LUM, *ſ.* [dim. of *baculus*, Lat. a ſtick.] A troche or ſmall odoriferous candle, like a little ſtick, which is burnt to perfume the air, and prevent infection.

BAC'CIO, or BAC'CIUS (Andrew), a celebrated phyſician of the 16th century, born at St. Elpideo. He practiſed phyſic at Rome with great reputation, and was firſt phyſician to pope Sixtus V. The moſt ſcarce and valuable of his works are, 1. De Thermis. 2. De Naturali Vinorum Hiſtoria. 3. De Venenis et Antidotis. 4. De Gemmis ac Lapidus Pretioſis.

BACCIO (Fran. Bartolomeo), called *Bartelemi di S. Marco*, a celebrated hiſtory and portrait painter, was born at Savignano, near Florence, in 1469, and was a diſciple of Coſumo Roſelli; but his principal knowledge in the art was derived from Leonardo da Vinci. He viſited Rome, and by the obſervations he made on the antiques, and the works of Raphael, which were then the admiration of the world, he was extremely improved, and manifeſted his abilities by a picture of St. Sebaſtian, which he finiſhed on his return to Florence. It was ſo well deſigned, ſo beautifully coloured, and had ſo ſtrong an impreſſion of pain and agony, that it was removed from the place where it was publicly ſeen (in the chapel of a convent), for having made too ſtrong an impreſſion on the imaginations of many women who beheld it. He was very laborious, and made nature his perpetual ſtudy. He is accounted the firſt inventor of that machine, called a *layman* by the artiſts, and which to this day is in general uſe. Upon that he placed his draperies, to obſerve with greater exactneſs their natural and more elegant folds. A capital picture of the aſcenſion, by Baccio, is in the Florentine collection. He died in 1517.

BACCI'VOROUS, *adj.* [from *bacca*, a berry, and *voro*, to devour, Lat.] Devouring berries.

BACH, or BACS, or BATCH, or BATHA, a town of Lower Hungary, on the north-weſt ſide of the Danube, about four miles from that river, and twenty from the conflux of the Drave and Danube. It was formerly more conſiderable than it now is, having been the ſee of a biſhop, ſuffragan of Colocza, but united to that ſee: it is fifty-two miles north of Belgrade, and 106 ſouth of Buda. Lat. 45. 33. N. lon. 36. 45. E. Ferro.

BACHA'ASH, a ſmall iſland among the weſtern iſlands of Scotland, near the north-eaſt coaſt of North Viſt.

BACHELE'RI, a town of France, in the department of the Dordogne, chief place of a canton, in the diſtrict of Martignac, four leagues north of Sarlat.

BA'CHELOR, *ſ.* [This is a word of very uncertain etymology, it not being well known what was its original ſenſe. Junius derives it from βακηλος, fooliſh; Menage, from *bas chevalier*, a knight of the loweſt rank; Spelman, from *baculus*, a ſtaff; Cujas, from *buccella*, an allowance of proviſion. The moſt probable derivation ſeems to be from *bacca laurus*, the berry of a laurel or bay; bachelors being young, are of good hopes, like laurels in the berry. Dr. Lawrence obſerved, that Menage's etymology is much confirmed by the practice in our univerſities calling a Bachelor, *Sir*. In Latin, *baccalaureus*.] A man unmarried:

Let ſinful *bachelors* their woes deplore,
Full well they merit all they feel and more. *Pope.*

A man who takes his firſt degrees at the univerſity in any profeſſion. A knight of the loweſt order. *This is a ſenſe now little uſed.*

The Roman cenſors frequently impoſed fines on old bachelors. Dion Halicarnaſſus mentions an old conſtitution, by which all perſons of full age were obliged to marry. But the moſt celebrated law of this kind, was that made under Auguſtus, called the *lex Julia de maritandis ordinibus*; by which bachelors were made incapable of legacies or inheritances by will, unleſs from their near relations. This brought many to marry, according to Plutarch's obſervation, not ſo much for the ſake of raiſing heirs to their own eſtates, as to make themſelves capable of inheriting thoſe of other men. The rabbins maintain, that, by the laws of Moſes, every body, except ſome few particulars, is obliged in conſcience to marry at twenty years of age: this makes one of their 613 precepts. Hence thoſe maxims ſo frequent among their caſuiſts, that he who does not take the neceſſary meaſures to leave heirs behind him, is not a man, but ought to be reputed a homicide. Lycurgus was not more favourable: by his laws, bachelors are branded with infamy, excluded from all offices civil and military, and even from the ſhows and public ſports. At certain feaſts they were forced to appear, to be expoſed to the public deriſion, and led round the market-place. At one of their feaſts, the women led them in this condition to the altars, where they obliged them to make *amende honorable* to nature, accompanied with a number of blows and laſhes with a rod at diſcretion. To complete the affront, they forced them to ſing certain ſongs compoſed in their own deriſion. The Chriſtian religion is more indulgent to the bachelor ſtate: the ancient church recommended it in ſome circumſtances as preferable to, and more perfect than, the matrimonial. In the canon law, we find injunctions on bachelors, when arrived at puberty, either to marry or to turn monks and profeſs chaſtity in earneſt. In England, there was a tax on bachelors, after twenty-five years of age, 12l. 10s. for a duke, a common perſon 1s. by 7 Will. III. 1695. In England, they are at preſent taxed by an extra-duty on ſervants.

BACHELOR was a denomination anciently given to thoſe who had attained to knighthood, but had not a number of vaſſals ſufficient to have their banner carried before them in the field of battle; or, if they were not of the order of *bannerets*, were not of age to diſplay their own banner, but obliged to march to battle under another's banner. It was alſo a title given to young cavaliers, who, having made their firſt campaign, received the military girdle accordingly. And it ſerved to denominate him who had overcome another in a tournament the firſt time he ever engaged. Knights-bachelors were the moſt ancient, but the loweſt, order of knights in England, known by the name of *knights* only. They are ſtyled *knights-bachelors*, either as denoting their degree, *quaſi bas chevaliers*; or, according to others, becauſe this title does not deſcend to their poſterity. The cuſtom of the ancient Germans was to give their young men a ſhield and a lance in the great council: this was equivalent to the *toga virilis* of the Romans. Before this, they were not permitted to bear arms, but were accounted as part of the father's houſehold; after it, as part of the public. Hence ſome derive the uſage of knighting, which has prevailed all over the weſtern world, ſince its reduction by colonies, from thoſe northern heroes. This title is now conferred indiſcriminately upon gownſmen, burghers, phyſicians, &c. by the king's lightly touching the perſon, who is then kneeling, on the right ſhoulder with a drawn ſword, and ſaying, *Riſe, Sir.* See the articles Knight, and Nobility.

The degree of bachelor in the univerſities was firſt introduced in the thirteenth century by pope Gregory IX. but it remains ſtill unknown in Italy. See University. We alſo find mention of bachelors of the church, *baccalarii eccleſiæ.* The biſhop with his canons and *baccalarii, cum conſilio et conſenſu omnium canonicorum ſuorum et baccalariorum.*

Bachelors, in the livery companies of London, are thoſe not yet admitted to the livery. Theſe companies generally conſiſt of a maſter, two wardens, the livery, and the bachelors, who are yet but in expectation of dignity in the company, and have their function only in attendance on the maſter and wardens. They are alſo called *yeomen.*

Bachelors, a river of South America, which runs into a bay to which it gives name, on the north ſide of the Straits of Magellan. Lat. 53. 38. N. lon. 73. 52. W. Greenwich.

BA'CHELORSHIP, *ſ.* The condition of a bachelor:

Her mother, living yet, can teſtify,
She was the firſt fruit of my *bachelorſhip.* *Shakeſpeare.*

BA'CHIAN, one of the Molucca iſlands in the Indian Sea, fertile in ſago, fruits, and all neceſſaries of life; the principal town is Sabonga.

BACH'MUT, a town of Ruſſia, in the province of Ekaterinoſlav; 104 miles north-north-weſt of Azoph, and 112 eaſt of Ekaterinoſlav. Lat. 48. 25. N. lon. 55. 30. E. Ferro.

BA'CHO, a river of North Wales, which runs into the Severn, near Lanidios, in Montgomeryſhire.

BA'CHOLKZ, or Von'chotsch, a town of Poland, in the palatinate of Sandomitz; 20 miles ſouth of Radom.

BA'CHU, or Ba'ku, a city of Shirvan in Perſia, and the beſt haven in the Caſpian Sea. It is defended by a double wall, ditch, and redoubts, made by the Ruſſians when they were maſters of the place. It had a ſumptuous caſtle, but was reduced to a ruinous ſtate by the Ruſſians. Formerly it carried on a conſiderable traffic in raw ſilk; but that commerce is now given up. The neighbourhood of this city produces naphtha, brimſtone, rock-ſalt, and ſaffron. Round it are ſeveral very ſteep craggy mountains, on which are ſtrong watch-towers. Lat. 40. 0. N. lon. 49. 5. E.

BACK, *ſ.* [*bac, bæc,* Sax. *bach,* Ger.] The hinder part of the body, from the neck to the thighs. The outer part of the hand when it is ſhut; oppoſed to the *palm:*

Methought love pitying me, when he ſaw this,
Gave me your hands, the *backs* and palms to kiſs. *Donne.*

The outward part of the body; that which requires clothes: oppoſed to the *belly.*—Thoſe who, by their anceſtors, have been ſet free from a conſtant drudgery to their *backs* and their bellies, ſhould beſtow ſome time on their heads. *Locke.*—The rear: oppoſed to the *van.*—He might conclude, that Walter would be upon the king's *back,* as his majeſty was upon his. *Clarendon.*—The place behind.—As the voice goeth round, as well towards the *back* as towards the front of him that ſpeaketh, ſo does the echo: for you have many *back* echoes to the place where you ſtand. *Bacon.*

Antheus, Sergeſtus grave, Cleanthus ſtrong,
And at their *backs* a mighty Trojan throng. *Dryden.*

The part of any thing out of ſight.—Trees ſet upon the *backs* of chimnies do ripen fruit ſooner. *Bacon.*—The thick part of any tool, oppoſed to the edge; as, The *back* of a knife or ſword: whence *backſword,* or ſword with a *back;* as, Bull dreaded not old Lewis either at *backſword,* ſingle faulchion, or cudgel-playing. *Arbuthnot.*—To turn the *back* on one; to forſake him, or neglect him.—At the hour of death, all friendſhips of the world bid him adieu, and the whole creation turns its *back* upon him. *South.*—To turn the *back;* to go away; to be not within the reach of taking cognizance.—His *back* was no ſooner turned, but they returned to their former rebellion. *Sir J. Davies.*

Back, *ſ.* in the cooperage, in the diſtillery, or in the brewing, is a large flat kind of tub or veſſel, wherein the wort or liquor is put to cool, in order to be worked with yeaſt.

Back, or Dutchman's Cap, one of the ſmall iſlands of Scotland, eleven miles ſouth-eaſt of Coll.

Back, *adv.* To the place from which one came.—He ſent many to ſeek the ſhip Argo, threatening that, if they brought not *back* Medea, they ſhould ſuffer in her ſtead. *Raleigh.*—Backward; as retreating from the preſent ſtation:

I've been ſurpris'd in an unguarded hour,
But muſt not now go *back;* the love, that lay
Half ſmother'd in my breaſt, has broke through all
Its weak reſtraints. *Addiſon.*

Behind; not coming forward.—I thought to promote thee unto great honour; but lo the Lord hath kept thee *back* from honour. *Numb.* xxiv. 11.—Towards things paſt.—I had always a curioſity to look *back* unto the ſources of things, and to view in my mind the beginning and progreſs of a riſing world. *Burnet.*—Again; in return:

The lady's mad; yet, if 'twere ſo,
She could not ſway her houſe, command her followers,
Take and give *back* affairs, and their diſpatch,
With ſuch a ſmooth, diſcreet, and ſtable, bearing. *Shakeſp.*

Again; a ſecond time.—The epiſtles being written from ladies forſaken by their lovers, many thoughts came *back* upon us in divers letters. *Dryden.*

To Back, *v. a.* To mount on the back of a horſe. To break a horſe; to train him to bear upon his back:

Direct us how to *back* the winged horſe;
Favour his flight, and moderate his courſe. *Roſcommon.*

To place upon the back:

As I ſlept, methought
Great Jupiter, upon his eagle *back'd,*
Appear'd to me. *Shakeſpeare.*

To maintain; to ſtrengthen; to ſupport; to defend:

Belike he means,
Back'd by the pow'r of Warwick, that falſe peer,
T' aſpire unto the crown. *Shakeſpeare.*

To juſtify; to ſupport.—The patrons of the ternary number of principles, and thoſe that would have five elements, endeavour to *back* their experiments with a ſpecious reaſon. *Boyle.*—To ſecond:

Factious, and fav'ring this or t' other ſide,
Their wagers *back* their wiſhes. *Dryden.*

"What is got over the devil's *back,* is ſpent under his belly."—The French ſay, *Ce qui vient par le flute, s'en retourne par le tombour:* 'What is got by the flute, goes by the drum;' or, 'Lightly come, lightly go.' The Italians ſay, *Bene malamente acquiſtati non fanno pro:* 'Ill gotten goods never thrive.' And ſo the French, *Le bien mal acquis, s'en va comme il eſt venu.* Theſe proverbs explain one another.

BACK-BE'REND, *ſ.* [Sax. bearing upon the back.] In law, is where the thief is apprehended with the things ſtolen in his poſſeſſion, bearing them in a fardel at his back; which was alſo called being taken with the *mainour,* as having the goods in his hand. 2 *Inſt.* 188. It was one of the four circumſtances wherein a foreſter might arreſt the body of a treſpaſſer in the foreſt; viz. *dog-draw*, that is, drawing after a deer that he has hurt; *ſtable-ſtand*, that is, at his ſtanding, with a knife, gun, bow, or greyhound, ready to ſhoot or courſe; *back-berend*, that is, carrying away upon his back the deer which he had killed; *bloody-hand*, that is, when he hath ſhot or courſed, and is imbrued with blood. 4 *Inſt.* 294.

To BACK-BITE, *v. a.* [from *back* and *bite.*] To cenſure or reproach the abſent.—Moſt untruly and maliciouſly do theſe evil tongues *back-bite* and ſlander the ſacred aſhes of that perſonage. *Spenſer.*

BACK-BI'TER, *ſ.* A privy calumniator; a cenſurer of the abſent.—No body is bound to look upon his *back-biter*, or his underminer, his betrayer, or his oppreſſor, as his friend. *South.*

BACK-BONE, *ſ.* [from *back* and *bone.*] The bone of the back.—The *back-bone* ſhould be divided into many vertebres for commodious bending, and not to be one entire rigid bone. *Ray.*

BACK-CAR'RY, Having on the back.

BACK-DOOR, *ſ.* [from *back* and *door.*] The door behind the houſe; privy paſſage.—The proceſſion durſt not return by the way it came; but, after the devotion of the monks, paſſed out at a *back-door* of the convent. *Addiſon.*

BAC'KED, *adj.* Having a back:

Lofty-neck'd,
Sharp-headed, barrel-bellied, broadly *back'd.* *Dryden.*

BACK'ER, or BAK'KER, (Jaques), an hiſtorical painter of Antwerp, was born in 1530, and learned the principles of painting from his father, who was an artiſt of ſome eminence. After the death of his father, he lived in the houſe of Jacopo Palermo, a dealer in pictures, who ſupplied his immediate wants, and avariciouſly kept him inceſſantly employed, and ſent his paintings to Paris to be diſpoſed of, where they happened to be exceedingly admired. The judicious were very eager to purchaſe them; and, though the tranſactor ſold them at a great price, yet the poor artiſt was not proportionably rewarded, but continued in the ſame obſcure and depreſſed condition. His merit was univerſally allowed, but his name, and the narrowneſs of his circumſtances, were as univerſally unknown. He had a clean light manner of pencilling, and a tint of colour that was extremely pleaſing. He died in 1560.

BACKER, or BAKKER, (Jacob), a portrait and hiſtory painter, was born at Harlingen in 1609, but ſpent the greateſt part of his life at Amſterdam. He is mentioned as an extraordinary painter, particularly of portraits, which he executed with ſtrength, ſpirit, and a graceful reſemblance. He was remarkable for an uncommon readineſs of hand and freedom of pencil; and his incredible expedition in his manner of painting, appeared even in one portrait of a lady from Haerlem, which was begun and finiſhed in one day, though he adorned the figure with rich drapery and ſeveral ornamental jewels. He alſo painted hiſtorical ſubjects with good ſucceſs; and in that ſtyle there is a fine picture of Cimon and Iphigenia, which is accounted by the connoiſſeurs an excellent performance. In deſigning academy figures his expreſſion was ſo juſt, and his outline ſo correct, that he obtained the prize from all his competitors; and his works are ſtill bought at very high prices in the Low Countries. In the collection of the elector palatine there is an excellent head of Brouwer, painted by this maſter; and in the Carmelites church at Antwerp is preſerved a capital picture of the Laſt Judgment. He died in 1651.

BACKEREE'L, called BACQUEREL'LI, (William,) an hiſtorical painter, born at Antwerp, and a diſciple of Rubens, at the ſame time that Vandyck was educated in the ſame ſchool. When each of them quitted that maſter, Backereel was very little inferior to Vandyck, if not nearly his equal. And this may be manifeſtly ſeen in the works of the former, which are in the church of the Auguſtin monks at Antwerp; where thoſe two great artiſts painted in competition, and both were praiſed for their merit in their different ways; but the ſuperiority was never determined in favour either of the one or the other. He had likewiſe a good taſte for poetry. Sandrant takes notice, that in his time there were ſeven or eight painters, who were very eminent, of the name of Backereel, in Italy and the Low Countries.

BACK-FRIEND, *ſ.* [from *back* and *friend.*] A friend backwards; that is, an enemy in ſecret.—Far is our church from incroaching upon the civil power; as ſome, who are *back-friends* to both, would maliciouſly inſinuate. *South.*

BACK-GAM'MON, *ſ.* [from *back-gammon*, Welſh, a little battle.] A play or game at tables, with box and dice.—In what eſteem are you with the vicar of the pariſh? can you play with him at *back-gammon?* *Swift.*

Manner of playing the game.—The table is divided into two parts, upon which there are 24 black and white ſpaces, called points. Each adverſary has 15 men, black and white, to diſtinguiſh them; and they are diſpoſed of in the following manner. Suppoſing the game to be played into the right-hand table, two are placed upon the ace point in the adverſary's table, five upon the ſix point in the oppoſite table, three upon the cinque point in the hithermoſt table, and five on the ſix point in the right-hand table. The grand object in this game is for each player to bring the men round into his right-hand table, by throwing with a pair of dice thoſe throws that contribute towards it, and at the ſame time prevent the adverſary doing the like. The firſt beſt throw upon the dice is eſteemed aces, becauſe it ſtops the ſix point in the outer table, and ſecures the cinque in the thrower's table; whereby the adverſary's two men upon the thrower's ace point cannot get out with either quatre, cinque, or ſix. This throw is an advantage often given to the antagoniſt by the ſuperior player.

When he carries his men home in order to loſe no point, he is to carry the moſt diſtant man to his adverſary's bar point, that being the firſt ſtage he is to place it on; the next ſtage is ſix points farther, viz. in the place where the adverſary's five men are firſt placed out of his tables. He muſt go on in this method till all his men are brought home, except two, when, by loſing a point, he may often ſave the gammon, by throwing two fours or two fives. When a hit is only played for, he ſhould endeavour to gain either his own or adverſary's cinque point: and if that fails by his being hit by the adverſary, and he finds him forwarder than himſelf, in that caſe he muſt throw more men into the adverſary's tables; which is done in this manner: he muſt put a man upon his cinque or bar point; and, if the adverſary fails to hit it, he may then gain a forward game inſtead of a back game: but, if the adverſary hits him, he ſhould play for a back game; and then the greater number of men which are taken up makes his game the better, becauſe by theſe means he will preſerve his game at home: and then he ſhould endeavour to gain both his adverſary's ace and trois points, or his ace and deuce points, and take care to keep three men upon the adverſary's ace point, that in caſe he hits him from thence that point may remain ſtill ſecure to himſelf. A back game ſhould not be played for at the beginning of a ſet, becauſe it would be a great diſadvantage, the player running the riſk of a gammon to win a ſingle hit. A variety of inſtructions with regard to this curious game are given by Mr. Hoyle, who calculates the odds of the game with great accuracy. The following particulars, however, may be of uſe to the generality of players.

Directions for the player to bear his men.—If a player has taken up two of the adverſary's men, and happens to have two, three, or more, points made in his own tables, he ſhould ſpread his men, that he may either take a new point in his tables, or be ready to hit the man which the adverſary may happen to enter. If he finds, upon the adverſary's entering, that the game is upon a par, or that the advantage is on his own ſide, he ſhould take the adverſary's man up whenever he can, it being 25 to 11 that he is not hit: except when he is playing for a ſingle hit only; then, if playing the throw otherwiſe gives him a better chance for it, he ought to do it.

It being five to one againſt his being hit with double dice, he ſhould never be deterred from taking up any one man of the adverſary's. If he has taken up one of the adverſary's men, and ſhould happen to have five points in his own tables, and forced to leave a blot out of his tables, he ſhould endeavour to leave it upon doublets preferable to any other chance, becauſe in that caſe the odds are 35 to 1 that he is not hit; whereas it is only 17 to 1 but he is hit upon any other chance.

When the adverſary is very forward, a player ſhould never move a man from his own quatre, trois, or deuce, points, thinking to bear that man from the point where he put it, as nothing but high doublets can give him any chance for the hit. Inſtead of playing an ace or a deuce from any of thoſe points, he ſhould play them from his own ſize or higheſt points, ſo that throwing two fives, or two fours, his ſize and cinque points being eaſed, would be a conſiderable advantage to him; whereas, had they been loaded, he muſt have been obliged to play otherwiſe.

It is the intereſt of the adverſary to take up the player as ſoon as he enters. The blot ſhould be left upon the adverſary's loweſt point; that is to ſay, upon his deuce point rather than upon his trois point; or upon his trois point rather than his quatre point; or upon his quatre point preferably to his cinque point, for a reaſon before-mentioned: all the men the adverſary plays upon his trois or his deuce points, are deemed loſt, being greatly out of play; ſo that thoſe men not having it in their power to make his cinque point, and his game being crowded in one place and open in another, the adverſary muſt be greatly annoyed by the player. If the player has two of the adverſary's men in his tables, he has a better chance for a hit than if he had more, provided his game is forwarder than that of his antagoniſt; for, if he had three or more of his adverſary's men in his tables, he would ſtand a worſe chance to be hit.

When a player is running to ſave the gammon, if he ſhould have two men upon his ace point, and ſeveral men abroad, although he ſhould loſe one point or two in putting his men into his tables, it is his intereſt to leave a man upon the adverſary's ace point, becauſe it will prevent his adverſary from bearing his men to the greateſt advantage, and at the ſame time the player will have a chance of the adverſary's making a blot, which he may chance to hit. However, if a player finds, upon a throw, that he has a probability of ſaving his gammon, he ſhould never wait for a blot, as the odds are greatly againſt his hitting it, but ſhould embrace that opportunity.

How to calculate the odds of ſaving or winning the gammon.—Suppoſe the adverſary has ſo many men abroad as require three throws to put them into his tables, and at the ſame time that the player's tables are made up, and that he has taken up one of the adverſary's men; in this caſe, it is about an equal wager that the adverſary is gammoned. For in all probability the player has borne two men before he opens his tables, and, when he bears the third man, he will be obliged to open his ſize or cinque point. It is then probable, that the adverſary is obliged to throw twice before he enters his men in the player's tables, twice more before he puts that man into his own tables, and three throws more to put the men which are abroad into his own tables, in all ſeven throws. Now the player having twelve men to bear, he may be forced to make an ace or a deuce twice before he can bear all his men, and conſequently will require ſeven throws in bearing them; ſo that, upon the whole, it is about equal whether the adverſary is gammoned or not. Suppoſe a player has three men upon his adverſary's ace point and five points in his own tables, and that the adverſary has all his men in his tables, three upon each of his five higheſt points: has the player a probability of gammoning his adverſary or not?

	POINTS.
For bearing three men from his 6th point is	18
From his 5th point - - - -	15
From his 4th point - - - -	12
From his 3d point - - - -	6
From his 2d point - - - -	9
In all	60
Bringing his three men from the adverſary's ace point to his ſize point in his own tables, being 18 points each, and making together	54
There muſt remain -	6

It is plain from this calculation, that the player has much the beſt of the probability of the gammon, excluſive of one or more blots which the adverſary is liable to make in bearing his men, ſuppoſing at the ſame time the throws to be upon an equality.

Suppoſe two blots are left, either of which cannot be hit but by double dice; one muſt be hit by throwing eight, and the other by throwing nine; ſo that the adverſary has only one die to hit either of them. What are the odds of hitting either of them? The chances of two dice being in all - - - - - 36

The chances to hit 8 are 6 and 2 twice -	2
5 and 3 twice - - - - -	2
2 deuces - - - - - -	1
2 fours - - - - - -	1
The chances to hit 9 are 6 and 3 twice -	2
5 and 4 twice - - - - -	2
2 trois - - - - - -	1
For hitting in all - - - -	11
Chances for not hitting remain - -	25

So that the odds are 25 to 11 againſt hitting either of theſe blots.

This method may be taken to find out the odds of hitting three, four, or five, blots upon double dice; or blots made upon double and ſingle dice at the ſame time. After knowing how many chances there are to hit any of thoſe blots, they muſt be added all together, and then ſubtracted from the number 36, which are the chances of the two dice, and the queſtion is ſolved.

A critical caſe for a back-game.—Suppoſe the fore-game to be played by A, and that all his men are placed as uſual; B has fourteen of his men placed upon his adverſary's ace point and one man upon his adverſary's deuce point, and B is to throw: who has the beſt of the hit?—*Anſwer:* A has the beſt of it, gold to ſilver; becauſe, if B does not throw an ace to take his adverſary's deuce point, which is 25 to 11 againſt him, A will take up B's men in his tables, either ſingly or to make points; and then, if B ſecures either A's deuce or trois point, A will put as many men down as poſſible, in order to hit, and thereby get a back-game. It is evident that the back-game is very powerful; conſequently, whoever practiſes it muſt become a greater proficient at the game than he could by any other means.

Another critical caſe.—Suppoſe A to have five men placed upon his ſize point, as many upon his quatre point, and the ſame number upon his deuce point, all in his own tables. At the ſame time, let us ſuppoſe B to have three men placed upon A's ace point, as many upon A's trois point, and the ſame number upon A's cinque point, in his own tables, and three men placed as uſual out of his tables: who has the beſt of the hit?—*Anſwer:* The game is equal, till B has gained his cinque and quatre points in his own tables; which, if he can effect, and by playing two men from A's cinque point, in order to force his adverſary to blot by throwing a cane; which, ſhould B hit, he will have the beſt of the hit.

A caſe of curioſity and inſtruction; in which is ſhewn the probability of making the hit laſt by one of the players for many hours, although they ſhall both play as faſt as uſual.—Suppoſe B to have borne 13 men, and that A has his 15 men in B's tables, viz. three men upon his ſize point, as many upon the cinque point, three upon his quatre point, the ſame number upon his trois point, two upon his deuce point, and one upon his ace point. A in this ſituation can prolong it, as aforeſaid, by bringing his 15 men home, always ſecuring ſix cloſe points till B has entered his two men, and brought them upon any certain point; as ſoon as B has gained that point, A will open an ace, deuce, or trois, point, or all of them; which done, B hits one of them, and A, taking care to have two or three men in B's tables, is ready to hit that man; and alſo, he being certain of taking up the other man, has it in his power to prolong the hit almoſt to any length, provided he takes care not to open ſuch points as two fours, two fives, or two ſixes, but always to open the ace, deuce, or trois, points, for B to hit him.

The laws of backgammon are, 1. If a man is taken from any point, it muſt be played; if two men are taken from it, they muſt alſo be played. 2. A man is not ſuppoſed to be played till it is placed upon a point and quitted. 3. If a player has only fourteen men in play, there is no penalty inflicted, becauſe, by his playing with a leſs number than he is entitled to, he plays to a diſadvantage for want of the deficient man to make up his tables. 4. If he bears any number of men before he has entered a man taken up, and which of courſe he was obliged to enter, ſuch men ſo borne muſt be entered again in the adverſary's tables as well as the man taken up. 5. If he has miſtaken his throw and played it, and his adverſary has thrown, it is not in the choice of either of the players to alter it, unleſs they both agree ſo to do.

BACK-HOUSE, *ſ.* [from *back* and *houſe.*] The buildings behind the chief part of the houſe.

BACKHUY'SEN (Ludolph), an eminent painter, was born at Embden in 1631, and ſtudied under Albert Van Everdingen; but acquired his principal knowledge by frequenting the painting-rooms of different great maſters, and obſerving their various methods of touching and colouring. His ſubjects were moſtly ſea-pieces, ſhips, and ſea-ports. He had not practiſed long before he became the object of general admiration; ſo that even his drawings were ſought after, and ſeveral of them were bought at one one hundred florins each. It was obſerved of him, that while he was painting, he would not ſuffer even his moſt intimate friends to have acceſs to him, leſt his fancy might be diſturbed, and the ideas he had formed in his mind be interrupted. He ſtudied nature attentively in gales, calms, ſtorms, clouds, rocks, ſkies, lights, and ſhadows; and he expreſſed every ſubject with ſo correct a pencil, and with ſuch tranſparency and luſtre, as placed him above all the artiſts of his time in that ſtyle, except the younger Vandervelde. It was a frequent cuſtom with Backhuyſen to go to ſea in a ſtorm, in order to ſtore his mind with grand images, directly copied from nature, of ſuch ſcenes as would have filled any other head and heart with terror and diſmay; and the moment he landed he ran impatiently to his palette to ſecure thoſe incidents of which the traces might by delay be obliterated. He perfectly underſtood the management of the chiaro-ſcuro, and by his ſkill in that part of his art, he gave uncommon force and beauty to his objects. His works may eaſily be diſtinguiſhed by an obſervant eye, from the freedom and neatneſs of his touch; from the clearneſs and natural agitation or quieſcence of the waters; from a peculiar tint in his clouds and ſkies; and alſo from the exact proportions of his ſhips, and the gracefulneſs of their poſitions. For the burgomaſters of Amſterdam he painted a large picture, with a multitude of veſſels, and a view of the city at a diſtance, for which they gave him thirteen hundred guilders; which picture they afterwards preſented to the king of France, who placed it in the Louvre. No painter was ever more honoured by the viſits of kings and princes than Backhuyſen; the king of Pruſſia, and the czar Peter the Great, were among the number. He was remarkably aſſiduous, and yet it ſeems aſtoniſhing to conſider the number of pictures which he finiſhed. He died in 1709.

BACK'ING THE SAILS, in navigation, to arrange them in a ſituation that will force the ſhip to retreat, or move backwards. This is, however, only done in narrow channels, when a ſhip is carried along ſidewiſe by the tide or current, and wants to avoid any thing that may interrupt her progreſs, as ſhoals, veſſels at anchor, &c. or in the line of battle, when a ſhip requires to be placed oppoſite another with which ſhe is engaged.

BACK-PAIN'TING, a method of painting mezzotinto prints, paſted on glaſs, with oil-colours. The art conſiſts chiefly in laying the print upon a piece of crown-glaſs, of a correſponding ſize. In order to do this, the print muſt be well ſoaked in clean water, after which it muſt be laid between four ſheets of paper, two over and two under it, that ſome of the moiſture may be drawn out of it. In the mean while, let the glaſs upon which the print is to be laid be warmed at the fire; then with a bruſh, dipped in melted Straſburg turpentine, ſpread the turpentine ſmoothly and evenly on the glaſs. Then lay the print upon the glaſs, rubbing it gently from one end to the other, that it may lie cloſe. Laſtly, with the finger, rub off the paper from the back ſide of the print, till nothing can be ſeen but the print, like a thin film left upon the glaſs, and ſet it aſide to dry. When it is dry, varniſh it over with ſome white tranſparent varniſh, that the ſtrokes and ſhades of the print may be ſeen through it; and it will then be fit for painting. The colours neceſſary to be uſed are merely ſuch oil-colours as painters commonly employ. All the caution neceſſary is, to chooſe proper tints, and to take care in laying them on not to paſs beyond the limits of the ſubject you happen to be colouring. This proceſs, though mere daubing, as far as ingenuity is concerned, is of great advantage to mezzotinto prints; their ſhades being, on account of their ſoftneſs, particularly well adapted for this kind of back-painting.

BACK-PIECE, *ſ.* [from *back* and *piece.*] The piece of armour which covers the back.—The morning that he was to join battle, his armourer put on his *back-piece* before and his breaſt-plate behind. *Camden.*

BACK-ROOM, *ſ.* [from *back* and *room.*] A room behind; not in front.—If you have a fair proſpect backwards of gardens, it may be convenient to make *back-rooms* the larger. *Moxon.*

BACKS, *ſ.* among dealers in leather, denote the thickeſt and beſt tanned hides, uſed chiefly for ſoles of ſhoes.

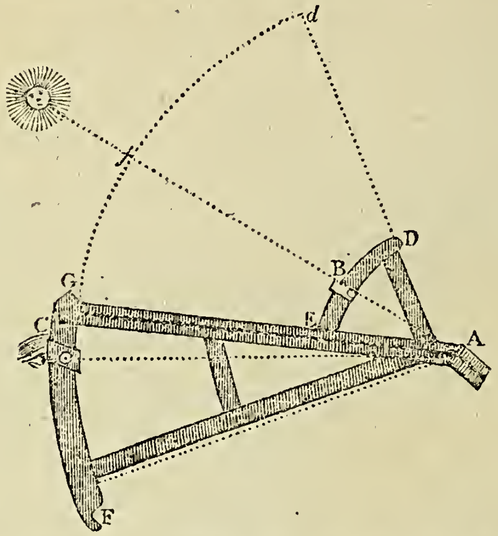
BACKSI'DE, *ſ.* [from *back* and *ſide.*] The hinder part of any thing.—If the quickſilver were rubbed from the *backſide* of the ſpeculum, the glaſs would cauſe the ſame rings of colours, but more faint; the phenomena depend not upon the quickſilver, unleſs ſo far as it increaſes the reflection of the *backſide* of the glaſs. *Newton.*—The hind part of an animal.—A poor ant carries a grain of corn, climbing up a wall with her head downwards and her *backſide* upwards. *Addiſon.*—The yard or ground behind a houſe.—The waſh of paſtures, fields, commons, roads, ſtreets, or *backſides*, are of great advantage to all ſorts of land. *Mortimer.*

To BACKSLI'DE, *v. n.* [from *back* and *ſlide.*] To fall off; to apoſtatize: *a word only uſed by divines.*—Haſt thou ſeen that which *backſliding* Iſrael hath done? She is gone up upon every high mountain, and under every green tree. *Jeremiah.*

BACKSLI'DER, *ſ.* An apoſtate.—The *backſlider* in heart ſhall be filled. *Proverbs.*

BACK-STAFF, *ſ.* [from *back* and *ſtaff*, becauſe, in taking an obſervation, the obſerver's back is turned towards the ſun.] An inſtrument formerly uſed for taking the ſun's altitude at ſea. It was ſometimes called Davis's quadrant, from its inventor, captain John Davis, a Welchman, and a celebrated navigator, who produced it about the year 1590. This inſtrument conſiſts of two concentric arches of box-wood, and three vanes: the arch of the longer radius is of thirty degrees, and the other ſixty degrees, making between them ninety degrees, or a quadrant:

alſo the vane A at the centre is called the *horizon-vane*, that on the arch of ſixty degrees at B the *ſhade-vane*, and that on the other arch at C the *ſight-vane*.



In order to uſe the back-ſtaff, the ſhade-vane is to be ſet upon the ſixty arch, at an even degree of ſome latitude, leſs by ten or fifteen degrees than you judge the complement of the ſun's altitude will be; alſo the horizon-vane being put on at A, and the ſight-vane on the thirty arch F G, the obſerver turns his back to the ſun, lifts up the inſtrument, and looks through the ſight-vane, raiſing or falling the quadrant, till the ſhadow of the upper edge of the ſhade-vane falls on the upper edge of the ſlit in the horizon-vane; and then, if he can ſee the horizon through the ſaid ſlit, the obſervation is exact, and the vanes are right ſet: but, if the ſea appear inſtead of the horizon, the ſight-vane muſt be moved downward towards F; or, if the ſky appear, it muſt be moved upward towards G; thus trying till it comes right. The obſerver then examines how many degrees and minutes are cut by that edge of the ſight-vane that anſwers to the ſight-hole, and to them he adds the degrees cut by the upper edge of the ſhade-vane; then the ſum is the ſun's diſtance from the zenith, or the complement of the altitude; that is, of his upper limb when the upper end of the ſhade-vane is uſed in the obſervation, or of his lower limb when the lower part of that vane is uſed; therefore in the former caſe add ſixteen minutes, the ſun's diameter, and ſubtract ſixteen minutes in the latter caſe, to give the zenith diſtance or co-altitude of the ſun's centre. Mr. Flamſtead contrived a glaſs lens, or double convex, to be placed in the middle of the ſhade-vane, which throws a ſmall bright ſpot on the ſlit of the horizon-vane, inſtead of the ſhade; which is a great improvement, if the glaſs be truly made; for, by this means, the inſtrument may be uſed in hazy weather, and a much more accurate obſervation made at all times.

BACK-STAIRS, *ſ.* [from *back* and *ſtairs.*] The private ſtairs in the houſe.—I condemn the practice which hath lately crept into the court at the *back-ſtairs*, that ſome pricked for ſheriffs get out of the bill. *Bacon.*

BACK-STAYS, *ſ.* [from *back* and *ſtay.*] Ropes or ſtays which keep the maſts of a ſhip from pitching forward or overboard.

BACK-SWORD, *ſ.* [from *back* and *ſword.*] A ſword with one ſharp edge. Uſed figuratively for a cudgel, or the art of defending one's ſelf with a cudgel.

BACK'WARD, or BACK'WARDS, *adv.* [from *back* and *weard*, Sax. that is, towards the back; contrary to forwards.] With the back forwards.—They went *backward*, and their faces were backward. *Geneſis.*—Towards the back.—In leaping with weights, the arms are firſt caſt *backwards*, and then forwards, with ſo much the greater force; for the hands go *backward* before they take their riſe. *Bacon.*—On the back:

Then, darting fire from her malignant eyes,
She caſt him *backward* as he ſtrove to riſe. *Dryden.*

From the preſent ſtation to the place beyond the back. Regreſſively.—Are not the rays of light, in paſſing by the edges and ſides of bodies, bent ſeveral times *backwards* and forwards with a motion like that of an eel? *Newton.*—Towards ſomething paſt.—To prove the poſſibility of a thing, there is no argument to that which looks *backwards*; for what has been done or ſuffered may certainly be done or ſuffered again. *South.*—Reflex:

No, doubtleſs; for the mind can *backward* caſt
Upon herſelf, her underſtanding light. *Sir J. Davies.*

From a better to a worſe ſtate:

The work went *backward*; and, the more he ſtrove
T' advance the ſuit, the farther from her love. *Dryden.*

Paſt; in time paſt.—They have ſpread one of the worſt languages in the world, if we look upon it ſome reigns *backward*. *Locke.*—Perverſely; from the wrong end:

I never yet ſaw man,
But ſhe would ſpell him *backward*; if fair-fac'd,
She'd ſwear the gentleman ſhould be her ſiſter;
If black, why, nature, drawing of an antick,
Made a foul blot; if tall, a launce ill-headed. *Shakeſpeare.*

BACKWARD, *adj.* Unwilling; averſe.—Our mutability makes the friends of our nation *backward* to engage with us in alliances. *Addiſon.*—Heſitating:

All things are ready, if our minds be ſo:
Periſh the man whoſe mind is *backward* now! *Shakeſpeare.*

Sluggiſh; dilatory.—The mind is *backward* to undergo the fatigue of weighing every argument. *Watts.*—Dull; not quick or apprehenſive.—It often falls out, that the *backward* learner makes amends another way. *South.*—Late; coming after ſomething elſe: as, *backward* fruits; *backward* children: fruits long in ripening; children ſlow of growth.

BACKWARD, *ſ.* Things or ſtate behind or paſt; poetical:

What ſeeſt thou elſe
In the dark *backward* or abyſm of time? *Shakeſpeare.*

BACK'WARDLY, *adv.* Unwilling; averſely; with the back forward:

Like Numid lions by the hunters chas'd,
Though they do fly, yet *backwardly* do go
With proud aſpect, diſdaining greater haſte. *Sidney.*

BACK'WARDNESS, *ſ.* Dullneſs; unwillingneſs; ſluggiſhneſs.—The thing by which we are apt to excuſe our *backwardneſs* to good works, is the ill ſucceſs that hath been obſerved to attend well-deſigning charities. *Atterbury.*—Slowneſs of progreſſion; tardineſs.

BACK-WORM. See FILANDERS.

BA'CO, a town of Aſia, and capital of Mindora, one of the Philippine iſlands; the environs are well watered by ſprings from mountains, covered with ſarſaparilla: a Spaniſh judge reſides there.

BACO'FEN, a town of Bohemia, in the circle of Boleſlaw, five miles north-north-eaſt of Jung Buntzlau.

BA'CON, *ſ.* [Menagius derives it from *bake*, becauſe it is dried by ſmoke; others from *beten*, Sax. a beech tree, becauſe hogs are fatted with the maſt of beech.] The fleſh of a hog ſalted and dried:

High o'er the hearth a chine of *bacon* hung,
Good old Philemon ſeiz'd it with a prong. *Dryden.*

'To ſave one's *bacon*,' is a phraſe for preſerving one's ſelf from being hurt; borrowed from the care of houſewives in the country, where they have ſeldom any other proviſion in the houſe than dried bacon, to ſecure it from the marching ſoldiers.

What frightens you thus, my good ſon? ſays the prieſt;
You murder'd, are ſorry, and have been confeſt.
O father! my ſorrow will ſcarce ſave my *bacon*;
For 't was not that I murder'd, but that I was taken. *Prior.*

BACON (Roger), an Engliſh monk of the Franciſcan order, an amazing inſtance of genius and learning, was born near Ilcheſter in Somerſetſhire, in the year 1214. He commenced his ſtudies at Oxford; from whence he removed to the univerſity of Paris, which at that time was eſteemed the centre of literature; and where it ſeems he made ſuch a progreſs in the ſciences, that he was eſteemed the glory of that univerſity, and was there greatly careſſed by ſeveral of his countrymen, particularly by Rob. Groothead or Grouthead, afterwards biſhop of Lincoln, his great friend and patron. Having taken the degree of doctor, he returned to England in 1240, and took the habit of the Franciſcan order, being but about twenty-ſix years of age; but according to ſome he became a monk before he left France. He now purſued his favourite ſtudy of experimental philoſophy with unremitting ardour and aſſiduity. In this purſuit, in experiments, inſtruments, and in ſcarce books, he informs us he ſpent, in the courſe of twenty years, no leſs than 2000l. an amazing ſum in thoſe days; and which ſum it ſeems was generouſly furniſhed to him by ſome of the heads of the univerſity, to enable him the better to purſue his noble reſearches. By ſuch extraordinary talents, and amazing progreſs in the ſciences, which in that ignorant age were ſo little known to the reſt of mankind, while they raiſed the admiration of the more intelligent few, could not fail to excite the envy of his illiterate fraternity, whoſe malice he farther drew upon him by the freedom with which he treated the clergy in his writings, in which he ſpared neither their ignorance nor their want of morals: theſe therefore found no difficulty in poſſeſſing the vulgar with the notion of Bacon's dealing with the devil. Under this pretence he was reſtrained from reading lectures; his writings were confined to his convent; and at length, in 1278, he himſelf was impriſoned in his cell, at ſixty-four years of age. However, being allowed the uſe of his books, he ſtill proceeded in the rational purſuit of knowledge, correcting his former labours, and writing ſeveral curious pieces.

When Bacon had been ten years in confinement, Jerom de Aſcoli, general of his order, who had condemned his doctrine, was choſen pope by the name of Nicholas IV. and being reputed a perſon of great abilities, and one who had turned his thoughts to philoſophical ſtudies, Bacon reſolved to apply to him for his diſcharge; and, to ſhew both the innocence and the uſefulneſs of his ſtudies, addreſſed to him a treatiſe On the Means of avoiding the Infirmities of Old Age. What effect this had on the pope does not appear; it did not at leaſt produce an immediate diſcharge: however, towards the latter end of his reign, by the interpoſition of ſome noblemen, Bacon obtained his liberty; after which he ſpent the remainder of his life in the college of his order, where he died in the year 1294, at eighty years of age, and was buried in the Franciſcan church. Such are the few particulars which the moſt diligent reſearches have been able to diſcover concerning the life of this very extraordinary man. Bacon's printed works are, 1. Epiſtola Fratris Rogeri Baconis de Secretis Operibus Artis et Naturæ, et de Nullitate Magiæ: Paris, 1542, in 4to. Baſil, 1593, in 8vo. 2. Opus Majus: London, 1733, in fol. publiſhed by Dr. Jebb. 3. Theſaurus Chemicus: Francf. 1603 and 1620. Theſe printed works of Bacon contain a conſiderable number of eſſays, which have been conſidered as diſtinct books in the catalogue of his writings by Bale, Pitts, &c. but there remain alſo in different libraries ſeveral manuſcripts not yet publiſhed.

By an attentive peruſal of his works, the reader is aſtoniſhed to find that this great luminary of the 13th century was deeply ſkilled in all the arts and ſciences, and in many of them made the moſt important inventions and diſcoveries. He was, ſays Dr. Peter Shaw, beyond all compariſon the greateſt man of his time, and he might perhaps ſtand in competition with the greateſt that have appeared ſince. It is wonderful, conſidering the ignorant age in which he lived, how he came by ſuch a depth of knowledge on all ſubjects. His writings are compoſed with that elegance, conciſeneſs, and ſtrength, and adorned with ſuch juſt and exquiſite obſervations on nature, that, among all the chemiſts, we do not know his equal. In his chemical writings, he attempts to ſhew how imperfect metals may be ripened into perfect ones; making, with Geber, mercury the common baſis of all metals, and ſulphur the cement. His other phyſical writings ſhew no leſs genius and force of mind. In his treatiſe Of the Secret Works of Art and Nature, he ſhews that a perſon perfectly acquainted with the manner obſerved by nature in her operations, would be able to rival, and even to ſurpaſs, her. In another piece, Of the Nullity of Magic, he ſhews, with great ſagacity and penetration, whence the notion of it ſprang, and how weak all pretences to it are. From a peruſal of his works, adds the ſame author, we find Bacon was no ſtranger to many of the capital diſcoveries of the preſent and paſt ages. Gunpowder he certainly knew; thunder and lightning, he tells us, may be produced by art; for that ſulphur, nitre, and charcoal, which when ſeparate have no ſenſible effect, yet when mixed together in due proportion, and cloſely confined, and fired, they yield a loud report. A more preciſe deſcription of gunpowder cannot be given in words. He alſo mentions a ſort of unextinguiſhable fire prepared by art: which ſhews he was not unacquainted with phoſphorus: and that he had a notion of the rarefaction of the air, and the ſtructure of an air-pump, is paſt contradiction. He was the miracle, ſays Dr. Freind, of the age he lived in, and the greateſt genius, perhaps, for mechanical knowledge, that ever appeared in the world ſince Archimedes. He appears likewiſe to have been maſter of the whole ſcience of optics: he has accurately deſcribed the uſes of reading-glaſſes, and ſhewn the way of making them. Dr. Freind adds, that he alſo deſcribes the camera obſcura, and all ſorts of glaſſes, which magnify or diminiſh any object, or bring it nearer to the eye, or remove it farther off. Bacon ſays himſelf, that he had great numbers of burning-glaſſes: and that there were none ever in uſe among the Latins, till his friend Peter de Mahara Curia applied himſelf to the making of them. That the teleſcope was not unknown to him, appears from a paſſage where he ſays, that he was able to form glaſſes in ſuch a manner, with reſpect to our ſight and the objects, that the rays ſhall be refracted and reflected wherever we pleaſe, ſo that we may ſee a thing under what angle we think proper, either near or at a diſtance, and be able to read the ſmalleſt letters at an incredible diſtance, and to count the duſt and ſand, on account of the greatneſs of the angle under which we ſee the objects; and alſo that we ſhall ſcarcely ſee the greateſt bodies near us, on account of the ſmallneſs of the angle under which we view them. His ſkill in aſtronomy was amazing: he diſcovered that error which occaſioned the reformation of the calendar; one of the greateſt efforts, according to Dr. Jebb, of human induſtry: and his plan for correcting it was followed by pope Gregory XIII. with this variation, that Bacon would have had the correction to begin from the birth of our Saviour, whereas Gregory's amendment reaches no higher than the Nicene council.

BACON (Sir Nicholas), lord keeper of the great ſeal in the reign of queen Elizabeth, was born at Chiſlehurſt, in Kent, in 1510, and educated at the univerſity of Cambridge; after which he travelled into France, and made ſome ſtay at Paris. On his return, he ſettled in Gray's Inn, and applied himſelf with ſuch aſſiduity to the ſtudy of the law, that he quickly diſtinguiſhed himſelf; ſo that on the diſſolution of the monaſtery of St. Edmund's Bury, in Suffolk, he had a grant from Henry VIII. of ſeveral manors. In the thirty-eighth year of the ſame king, he was promoted to the office of attorney in the court of Wards, which was a place both of honour and profit. In this office he was continued by Edward VI. and in 1552 he was elected treaſurer of Gray's Inn. His great moderation and conſummate prudence preſerved him through the dangerous reign of queen Mary. In the very dawn of that of Elizabeth he was knighted; and, on the 22d of December, 1558, the great ſeal of England, being taken from Nicholas Heath archbiſhop of York, was delivered to him with the title of *lord keeper*, and he was alſo made one of the queen's privy council. As a ſtateſman, he was remarkable for a clear head and deep counſels: but his great parts and high preferment were far from raiſing him in his own opinion, as appears from the modeſt anſwer he gave to queen Elizabeth, when ſhe told him his houſe at Redgrave was too little for him: "Not ſo, madam (he replied); but your majeſty has made me too great for my houſe." After having had the great ſeal more than twenty years, this able ſtateſman and faithful counſellor was ſuddenly removed from this life, as Mr. Mallet informs us, by ordering a window before him to be thrown open, when he fell aſleep; and, as the current of freſh air was blowing in upon him, he awakened ſome time after diſtempered all over. He was immediately removed into his bed-chamber, where he died, on the 26th of February, 1578-9, equally lamented by the queen and her ſubjects. He was buried in St. Paul's, where a monument was erected to him, which was deſtroyed by the fire of London in 1666. Mr. Granger obſerves, that he was the firſt lord keeper that ranked as lord chancellor; and that he had much of that penetrating genius, ſolidity, and judgment, perſuaſive eloquence, and comprehenſive knowledge of law and equity, which afterwards ſhone forth with ſo great a luſtre in his ſon.

BACON (Francis), baron of Verulam, viſcount of St. Alban's, and lord high chancellor of England, under king James I. He was born in 1560, being the ſon of the laſt-mentioned gentleman, by Anne, daughter of Sir Anthony Cook, eminent for her ſkill in the Latin and Greek languages. He gave even in his infancy tokens of what he would one day become; and queen Elizabeth had many times occaſion to admire his wit and talents, and uſed to call him her young lord keeper. He ſtudied the philoſophy of Ariſtotle at Cambridge; where he made ſuch progreſs in his ſtudies, that at ſixteen years of age he had run through the whole circle of the liberal arts as they were then taught, and even began to perceive thoſe imperfections in the reigning philoſophy, which he afterwards ſo effectually expoſed, and thence not only overturned that tyranny which prevented the progreſs of true knowledge, but laid the foundation of that free and uſeful philoſophy which has ſince opened a way to ſo many glorious diſcoveries. On his leaving the univerſity, his father ſent him to France: where, before he was nineteen years of age, he wrote a general view of the ſtate of Europe: but, his father dying, he was obliged ſuddenly to return to England; where he applied himſelf to the ſtudy of the common law, at Gray's Inn. His merit at length raiſed him to the higheſt dignities in his profeſſion, attorney-general, and lord high chancellor. But, being of an eaſy and liberal diſpoſition, his ſervants took advantage of that temper, and their ſituation under him, by accepting preſents in the line of his profeſſion. Being abandoned by the king, he was tried by the houſe of lords, for bribery and corruption, and by them ſentenced to pay a fine of 40,000l. and to remain priſoner in the Tower during the king's pleaſure. The king however ſoon after remitted the fine and puniſhment: but his misfortunes had given him a diſtaſte for public affairs, and he afterwards moſtly lived a retired life, cloſely purſuing his philoſophical ſtudies and amuſements, in which time he compoſed the greateſt part of his Engliſh and Latin works. Though even in the midſt of his honours and employments he forgot not his philoſophy, but in 1620 publiſhed his great work Novum Organum. After ſome years ſpent in his philoſophical retirement, he died in 1626, being ſixty-ſix years of age.

The chancellor Bacon is one of thoſe extraordinary geniuſes who have contributed the moſt to the advancement of the ſciences. He clearly perceived the imperfection of the ſchool philoſophy, and he pointed out the only means of reforming it, by proceeding in the oppoſite way, from experiments to the diſcovery of the laws of nature. Addiſon has ſaid of him, That he had the ſound, diſtinct, comprehenſive, knowledge of Ariſtotle, with all the beautiful light graces and embelliſhments of Cicero. Mr. Walpole calls him the *prophet of arts*, which Newton was afterwards to reveal; and adds, that his genius and his works will be univerſally admired as long as ſcience exiſts. He did not yet, ſaid another great man, underſtand nature, but he knew and pointed out all the ways that lead to her. He very early deſpiſed all that the univerſities called philoſophy; and he did every thing in his power that they ſhould not diſgrace her by their quiddities, their horrors of a vacuum, their ſubſtantial forms, and ſuch-like impertinences. He compoſed two works for perfecting the ſciences: the former On the Dignity and Augmentation of the Sciences. He here ſhews the ſtate in which they then were, and points out what remains to be diſcovered for perfecting them; condemning the unnatural way of Ariſtotle, in reverſing the natural order of things. He here alſo propoſes his celebrated diviſion of the ſciences. To remedy the faults of the common logic, Bacon compoſed his ſecond work, the New Organ of Sciences abovementioned. He here teaches a new logic, the chief end of which is to ſhew how to make a good inference, as that of Ariſtotle's is to make a ſyllogiſm. Bacon was eighteen years in compoſing this work, and he always eſteemed it as the chief of his compoſitions.

The pains which Bacon beſtowed upon all the ſciences in general, prevented him from making any conſiderable application to any one in particular: and, as he knew that natural philoſophy is the foundation of all the other ſciences, he chiefly endeavoured to give perfection to it. He therefore propoſed to eſtabliſh a new ſyſtem of phyſics, rejecting the doubtful principles of the ancients. For this purpoſe he took the reſolution of compoſing every month a treatiſe on ſome branch of phyſics: he accordingly began with that of the winds; then he gave that of heat; next that of motion; and laſtly that of life and death. But, as it was impoſſible that one man alone could ſo compoſe the whole circle of the ſciences with the ſame preciſion, after having given theſe patterns, to ſerve as a model to thoſe who might chooſe to labour upon his principles, he contented himſelf with tracing in a few words the deſign of four other tracts, and with furniſhing the materials, in his Silva Silvarum, where he has amaſſed a vaſt number of experiments, to ſerve as a foundation for his new phyſics. In fact, no one before Bacon underſtood any thing of the experimental philoſophy; and, of all the phyſical experiments which have been made ſince his time, there is ſcarcely one that is not pointed out in his works.

This great precurſor of philoſophy was alſo an elegant writer, an hiſtorian, and a wit. His moral eſſays are valuable, but are formed more to inſtruct than than to pleaſe. There are excellent things too in his work On the Wiſdom of the Ancients, in which he has moralized the fables which formed the theology of the Greeks and Romans. He wrote alſo The Hiſtory of Henry VII. King of England, by which it appears that he was not leſs a great politician than a great philoſopher. Bacon had alſo ſome other writings, publiſhed at different times; the whole of which were collected together, and publiſhed at Frankfort, in the year 1665, in folio, with an introduction concerning his life and writings. Another edition of his works was publiſhed at London in 1740; the enumeration of which is as below: 1. De Dignitate et Augmentis Scientiarum. 2. Novum Organum Scientiarum, ſive Judicia vera de Interpretatione Naturæ; cum Paraſceve ad Hiſtoriam Naturalem & Experimentalem. 3. Phænomena Univerſi, ſive Hiſtoria Naturalis & Experimentalis de Ventis; Hiſtoria Denſi & Rari; Hiſtoria Gravis & Levis; Hiſtoria Sympathiæ & Antipathiæ Rerum; Hiſtoria Sulphuris, Mercurii, & Salis; Hiſtoria Vitæ & Mortis; Hiſtoria Naturalis

J.Chapman sculpsit

FRANCIS LORD BACON, VISCOUNT S^{T}. ALBANS.

London, Publish'd as the Act directs, Feb.10.1798, by J.Wilkes.

turalis & Experimentalis de Forma Calidi; De Motus, ſive Virtutis activæ variis ſpeciebus; Ratio inveniendi cauſas Fluxus & Refluxus Maris, &c. &c. 4. Silva Silvarum, ſive Hiſtoria Naturalis. 5. Novus Atlas. 6. Hiſtoria Regni Henrici VII. Angliæ Regis. 7. Sermones Fideles, Ethici, Politici, Oeconomici. 8. De Sapientia Veterum.

The following notices of this great man are copied from Mr. Aubrey's MS. in the Aſhmolean library at Oxford: "Mr. Thomas Hobbes (*Malmſburienſis*) was beloved by lord Bacon. He was wont to have him walke with him in his delicate groves, when he did meditate; and, when a notion darted into his head, Mr. H. was preſently to write it down; and his lordſhip was wont to ſay, that he did it better than any one elſe about him, for that, many times when he read their notes, he ſcarce underſtood what they writ, becauſe they underſtood it not clearly themſelves. In ſhort, all that were great and good loved and honoured him. Sir Ed. Coke, lord chief juſtice, always envied him, and undervalued his law, and I knew lawyers that remembered it. Lord Bacon was lord protector duringe king James's progreſſe into Scotland, and gave audience in great ſtate to ambaſſadors at Whitehall, in the Banqueting-houſe. He would many times have muſicke in the next roome where he meditated. The aviary at Yorke Houſe was built by his lordſhip: it coſt three hundred pounds. At every meale, according to the ſeaſon of the yeere, he had his table ſtrewed with ſweet herbs and flowers, which he ſaid did refreſh his ſpirits. When he was at his country-houſe at Gorhambury, St. Alban's ſeemed as if the court had been there, ſo nobly did he live; his ſervants had liveries with his creſt. His watermen were more employed by gentlemen than any other, except the king's.

"His lordſhip being in Yorke Houſe garden looking on fiſhers as they were throwing their nett, aſked them what they would take for their draught; they anſwered, *So much.* But his lordſhip would offer them no more but *ſo much.* They drew up their netts, and it were onley two or three little fiſhes. His lordſhip then told them it had been better for them to have taken his offer. They replyed, they hoped to have had a better draught; but, ſay'd his lordſhip, hope is a good breakfaſt, but an ill ſupper.

"When his lordſhip was in disfavour, his neighbours, hearing how much he was indebted, came to him with a motion to buy oake wood of him; his lordſhip told them he would not ſell his feathers.

"The earle of Mancheſter being removed from his place of lord chiefe juſtice of the Comon Pleas to be lord preſident of the councell, told my lord (upon his fall) that he was ſorry to ſee him made ſuch an example. Lord Bacon replied, it did not trouble him, ſince he was made a preſident.

"The biſhop of London did cutt down a noble clow'd of trees at Fulham; the lord chancellor told him that he was a good expounder of darke places.

"Upon his being in dis-favour, his ſervants ſuddenly went away: he compared them to the flying of the vermin, when the houſe was falling.

"One told his lordſhip, it was now time to looke about him. He replied, 'I doe not looke *about*, I looke *above* me.'

"His lordſhip would often drinke a good draught of ſtrong beer (March beer) to bedwards, to lay his working fancy aſleep, which otherwiſe would keepe him from ſleeping great part of the night. He had a delicate lively hazel eie. Dr. Harvey ſayd, 'it was like the eie of a viper.'

"Mr. Hobbes told Mr. Aubrey, that "the cauſe of his lordſhip's death was trying an experiment, viz. As he was taking the aire in a coach with Dr. Witherborne towards Highgate, ſnow lay on the ground, and it came into my lord's thoughts why fleſh might not be preſerved in ſnow as in ſalt. They were reſolved to try the experiment, and ſtaid ſo long in doing it, that lord Bacon got a ſhivering fit. He went to lord Arundel's houſe at Highgate, where he was put into a damp bed, and died a few days afterwards."

Lord Bacon ſays finely of Chriſtianity, "There hath not been diſcovered in any age, any philoſophy, opinion, religion, law, or diſcipline, which ſo greatly exalts the common, and leſſens the individual, intereſt, as the Chriſtian religion doth. His rule reſpecting ſtudy, and the application of the powers of the mind, is excellent: "Practiſe them chiefly at two ſeveral times; the one when the mind is well diſpoſed, the other when it is worſt diſpoſed; that by the one you may gain a great ſtep, by the other you may work out the knots and ſtondes of the mind, and make the middle times more eaſy and pleaſant."

Not long before lord Bacon's death, he was viſited by the marquis d'Effiat, a Frenchman of rank and learning. Lord Bacon was ill, and received him in his bed-chamber with the curtains drawn. The marquis, on entering the room, paid him this very elegant compliment: "Your lordſhip reſembles the angels. We have all heard of them; we are all deſirous to ſee them; and we never have that ſatisfaction."

Lord Bacon inſcribed the ſeat in Gray's Inn gardens, which he had put up to the memory of his friend Mr. Bettenham, as follows: "Franciſcus Bacon Regis Sollicitor Generalis Executor Teſtamenti Jeremiæ Bettenham nuper Lectoris hujus Hoſpitij Viri innocentis abſtinentis & contemplativi Hanc Sedem in Memoriam ejuſdem Jeremiæ exſtruxit. Anno Dom. 1609."

Wilſon, in ſpeaking of the ſentence paſſed upon the lord treaſurer Eſſex, obſerves, "Which ſentence was pronounced by the lord chancellor Bacon, who, though he were of tranſcendent parts, yet he was tainted with the ſame infection, and not many years after periſhed in his own corruption; which ſhews, that neither example nor precept (he having ſeen ſo many, and been made capable of ſo much) can be a pilot ſufficient to any port of happineſs (though reaſon be never ſo able to direct) if grace doth not give the gale."

Bacon (Sir Nathaniel), knight of the bath, and an excellent painter, was a younger ſon of the lord keeper, and half brother to the great Sir Francis. He travelled into Italy, and ſtudied painting there; but his manner and colouring approach nearer to the ſtyle of the Flemiſh ſchool. Mr. Walpole obſerves, that at Culford, where he lived, are preſerved ſome of his works; and at Gorhambury, his father's ſeat, is a large picture by him in oil, of a cook-maid with a dead fowl, admirably painted.

Bacon, a town of Perſia, in the province of Segeſtan, eighty miles north-north-eaſt of Zareng.

BACO'NE, a town of Italy, in the duchy of Tuſcany, twenty-eight miles north-eaſt of Florence.

BA'CONTHORP (John), called the *reſolute doctor*, a learned monk, was born in the 13th century, at Baconthorp, a village in Norfolk. He ſpent the early part of his life in the convent of Blackney, near Walſingham, whence he removed to Oxford, and from thence to Paris; where, being diſtinguiſhed for his learning, he obtained degrees in divinity and laws, and was eſteemed the principal of the Averroiſts. In 1329 he returned to England, and was immediately choſen twelfth provincial of the Engliſh Carmelites. In 1333 he was ſent for to Rome; where, we are told, he firſt maintained the pope's ſovereign authority in caſes of divorce, but that he afterwards retracted his opinion. He died in London in 1346. He wrote, 1. Commentaria ſeu quæſtiones ſuper quatuor libros ſententiarum; and, 2. Compendium legis Chriſti, et quodlibeta; both which underwent ſeveral editions at Paris, Milan, and Cremona. Leland, Bale, and Pits, mention a number of his works never publiſhed.

BACO'PA, *ſ.* in botany, a genus of the claſs pentandria, order monogynia, natural order of ſucculentæ. The generic characters are—Calyx: perianthium one-leafed, five-parted; two of the parts oblong, concave, acute; the two inferior deflex, ovate, acute; the ſingle ſuperior one broader, roundiſh, undulated. Corolla: one-petalled; tube ſhort, towards the orifice a little enlarged; border five-parted; parts ovate-oblong, obtuſe, equal, ſpreading. Stamina: filaments five, inſerted into the tube of the corolla; antheræ ſagittate. Piſtillum: germ ovate, compreſſed, below incruſted by the calyx growing to it; ſtyle ſhort; ſtigma headed. Pericarpium: capſule one-celled. Seeds: very many, extremely ſmall.—*Eſſential Character.* Corolla with a ſhort tube, ſpreading at top; ſtamina inſerted into the tube of the corolla; ſtigma headed; capſule one-celled.

There is only one ſpecies, called bacopa aquatica. This plant puts forth ſeveral cylindric, ſucculent, knotty, ſtems. Leaves oppoſite, ſtem-claſping, or rather connate, thick, oblong, concave, ſharp, ſmooth. Flowers ſolitary, peduncled, alternate from the axils. Below the calyx there is a pair of fleſhy bractes on the long peduncle. Corolla blue. It puts forth roots from the knots, both as it runs along the ground, and as it lies on the ſurface of the water. Native of the iſland of Cayenne, on the borders of rivulets, flowering and fruiting in December. The French inhabitants call it *herbe-aux-brulures*, on account of its efficacy in curing burns.

BAC'TRIA, or BACTRIA'NA, now *Choraſſan*, or *Khoraſan*, an ancient kingdom of Aſia, bounded on the weſt by Margiana, on the north by the river Oxus, on the ſouth by mount Paropiſmus, and on the eaſt by Aſiatic Scythia and the country of the Maſſagetæ. It was a large, fruitful, and well-peopled, country, containing according to Ammianus Marcellinus 1000 cities, though only a few are mentioned by hiſtorians, of which that called *Maracanda*, now *Sarmacand*, is the moſt conſiderable. Of the hiſtory of this country we know but little. Authors agree that it was ſubdued firſt by the Aſſyrians, afterwards by Cyrus, and then by Alexander the Great. Afterwards it remained ſubject to Seleucus Nicator and his ſucceſſors till the time of Antiochus Theos; when Theodorus, from governor of that province, became king, and ſtrengthened himſelf ſo effectually in his kingdom, while Antiochus was engaged in a war with Ptolomy Philadelphus king of Egypt, that he could never afterwards diſpoſſeſs him of his acquiſitions. His poſterity continued to enjoy the kingdom for ſome time, till they were driven out by the Scythians, who reigned in Bactria at the time of Adrian, Antoninus Pius, &c. The Scythians were in their turn driven out by the Huns or Turks, and theſe often conquered by the Saracens and Tartars; nevertheleſs they continued in poſſeſſion of this country in the time of Ladiſlaus IV. king of Hungary.

In early times the Bactrians differed little in their manners from the Nomades; and being near neighbours of the Scythians, who were a very warlike people, the Bactrian ſoldiers were reckoned the beſt in the world. Their appearance was very ſavage; being of an enormous ſtature, having a terrible aſpect, rough beards, and long hair hanging down their ſhoulders. Some authors aſſert that they kept dogs on purpoſe to devour ſuch as arrived at extreme old age, or who were exhauſted by long ſickneſs. They add, that, for all their fierceneſs, the Bactrian huſbands were ſuch dupes to their wives, that they durſt not complain of them even for conjugal infidelity, to which it ſeems they were very much addicted.

BACTRIA'NI, a town of Aſia, in the country of Georgia, ſixty miles north of Teflis.

BAC'TRIS, *ſ.* [from *βακτρον*, a ſtaff; canes being made of the ſtem.] In botany, a genus of the claſs monoecia, order hexandria, natural order of palms. The generic characters are—I. Male flowers. Calyx: ſpathe univerſal, one-leafed; ſpadix branched; perianthium one-leafed, three-parted, ſmall; parts lanceolate, concave, coloured. Corolla: one-petalled, three-cleft; tube ſhort; clefts ovate, acute, erect. Stamina: filaments ſix, ſubulate, erect, of the length of the corolla, inſerted into the middle of the tube; antheræ oblong, incumbent. II. Female flowers few in the ſame ſpadix, intermixed with the male ones. Calyx: ſpathe the ſame as in the males; perianthium one-leafed, bell-ſhaped, three-toothed, ſharp-pointed, coloured, very ſmall, permanent. Corolla: one-petalled, erect, three-toothed, permanent. Piſtillum: germ ovate, large; ſtyle very ſhort; ſtigma headed, obſcurely three-cleft. Pericarpium: drupe coriaceous, roundiſh, fibrous-ſucculent, ſharp-pointed with the ſtyle. Seed: nut roundiſh, depreſſed on each ſide, marked on the ſides with three holes; kernel ſolid.—*Eſſential Character.* Male. Calyx three-parted; corolla one-petalled, three-cleft; ſtamina ſix. Female. Calyx one-leafed, three-toothed; corolla one-petalled, three-toothed; ſtigma obſcurely three-cleft; drupe coriaceous.

Species. 1. Bactris minor: fruit roundiſh. Root creeping. Trunk upright, armed with very numerous prickles about an inch in diameter, ſeldom more than twelve feet high in open ſituations, but in woods ſomewhat higher, covered with a browniſh bark. It begins to flower as ſoon as it has attained the height of about four feet. Leaves few, ſtem-claſping at the baſe; the rib prickly; the leaflets enſiform, acuminate, ſhining, flat, very ſlightly folded back at the baſe, with very fine prickles, to be known only by drawing the finger from the tip towards the baſe, unarmed, or with very few prickles on each ſurface, uſually alternate, but ſometimes oppoſite, uncertain in number. Flowers without ſcent, very ſlightly tinged with yellow. Fruit dark purple, the ſize of a common cherry, containing an acid juice, of which the Americans make a ſort of wine. They are alſo eaten raw, but are not pleaſant. Canes are made of the ſtem: they are dark-coloured, ſhining, jointed, and very light; the French call them *cannes de Tobago.*

2. Bactris major: fruit ovate. In habit and manner of growth this is very like the foregoing, but it commonly grows to the height of twenty-five feet, and the trunk is two inches and more in diameter. The leaves are ſix feet long, the leaflets near two feet, with the marginal prickles brown, and more conſpicuous. Fruit the form and ſize of an egg, ſucculent, covered with a dark-purple coriaceous coat, of which the natives make a vinous liquor. The nut is large, of a dark colour, ovate-oblong. Kernel oblong, blunt at both ends, cartilaginous, ſolid. The fruits are ſold in the market, and are called *cocorotes.* Both theſe palms are natives of Carthagena in South America.

BACTROPERA'TA, *ſ.* an ancient appellation given to philoſophers by way of contempt, denoting a man with a ſtaff and a budget. We ſuppoſe it is of the ſame people that Pauchaſias Radbertus ſpeaks, under the corrupt name of *Bacoperitæ*, or *Bacchionitæ*, whom he deſcribes as philoſophers who had ſo great a contempt for all earthly things, that they kept nothing but a diſh to drink out of; and that one of this order, ſeeing a peaſant ſcooping up the water in his hand, threw away his cup as a ſuperfluity: which is nothing but the old ſtory of Diogenes the Cynic.

BACUA'CHI, a town of North America, in New Navarre, 135 miles ſouth of Caſa Grand.

BACULA'RIUS, *ſ.* in writers of the middle age, an eccleſiaſtical apparitor, or verger; who carries a ſtaff, *baculus*, in his hand, as an enſign of his office.

BACU'LE, *ſ.* in fortification, a kind of portcullis, or gate, made like a pit-fall with a counterpoiſe, and ſupported by two great ſtakes. It is uſually made before the corps de garde, not far from the gate of a place.

BACULO'METRY, *ſ.* [of *baculus*, Lat. or *βακτρον*, a ſtaff, and *μετρεω*, Gr. to meaſure.] The art of meaſuring acceſſible or inacceſſible diſtances or lines, by one or more ſtaves. Schwenter has explained this art in his Geometria Practica; and the rules of it are delivered by Wolfius, in his Elements. Ozanam alſo gives an illuſtration of the principles of baculometry.

BA'CULUS DIVINATO'RIUS, a branch of hazel, uſed for the diſcovery of mines, ſprings, &c.

BACU'RIUS, or BATURIUS, king of the Iberians, a people on the ſide of the Caſpian Sea. One day being a hunting, he loſt ſight of his company, through a great ſtorm and ſudden darkneſs; upon which he vowed to the god of his Chriſtian ſlave, that if he were delivered he would worſhip him alone: the day breaking up immediately, ly, he made good his promiſe, and became the apoſtle of his country.

BAD, *adj.* [*quaad*, Dutch; comparative, *worſe*; ſuperlative, *worſt*.] Ill; not good: a general word uſed in regard to phyſical or moral faults, either of men or things.—Moſt men have politics enough to make, through violence, the beſt ſcheme of government a *bad* one. *Pope.*—Vicious; corrupt:

Thus will the latter, as the former, world,
Still tend from *bad* to worſe. *Milton.*

Unfortunate; unhappy:

The ſun his annual courſe obliquely made,
Good days contracted, and enlarg'd the *bad*. *Dryden.*

Hurtful; unwholeſome; miſchievous; pernicious: with *for*.—Reading was *bad for* his eyes, writing made his head ake. *Addiſon.*—Sick: with *of*; as, *Bad of* a fever.

BAD, or BADE. The preterite of BID:

And, for an earneſt of greater honour,
He *bade* me, from him, call thee Thane of Cawder. *Shakeſ.*

BADAGRY', a town of Africa, in the country of Benin.

BADAGSHAN', a very ancient city of Great Bukharia, in the province of Balkh, ſituated at the foot of thoſe high mountains which ſeparate Hindoſtan from Great Tartary. The city is exceedingly ſtrong by its ſituation; and belongs to the khan of Proper Bukharia, who uſes it as a kind of ſtate-priſon to ſecure thoſe he is jealous of. The town is not large, but well-built, and populous. It ſtands on the north ſide of the river Amu, about 100 miles from its ſource, and is a great thoroughfare for the caravans deſigned for Little Bukharia. The inhabitants are enriched by mines of gold, ſilver, and rubies, which are in the neighbourhood; and thoſe who live at the foot of the mountains gather a great quantity of gold and ſilver duſt brought down in the ſpring by torrents occaſioned by the melting of the ſnow on the top.

BADAJOS', or BADAJOX, a town of Spain, and capital of Eſtremadura, ſituated on the Guadiana, on the frontiers of Portugal, and ſee of a biſhop. The fortifications are not very ſtrong, yet it ſtood two ſieges, one againſt the Portugueſe in 1658, and another againſt the Engliſh and Dutch, ſupported by a conſiderable corps of Portugueſe, in 1705. It is eighty-two miles north-north-weſt of Seville, and forty-nine ſouth of Alcantara. Lat. 38. 43. N. lon. 11. 58. E. Ferro.

BADAS'KA, a town of Siberia, on the weſt ſide of the Angara, eighty miles north-north-weſt of Tekutſch.

BAD'BURY, [*badden, byrig*, Sax. of *bad*, a pledge, and *byrig*, a city, q. d. the town of hoſtage; perhaps becauſe the Vice-Saxon kings had the hoſtages of ſubdued countries there in cuſtody.] A town in the county of Dorſet, once the court of the Vice-Saxon kings.

BAD'COCK (Samuel), an eminent critic and controverſial writer, was born in the year 1750, and deſtined to the clerical character. We find him in very early life, at about the age of nineteen, at the head of a conſiderable Preſbyterian congregation, at Barnſtaple in Devonſhire. From this ſituation, however, he removed, and was elected miniſter of South Molton, about twelve miles from his firſt ſituation; and in this retirement his active mind turned its views to the more public departments of literature. During the progreſs of the London Review, he occaſionally correſponded with Dr. Kenrick, and contended with that acute and intelligent ſceptic on different points of Chriſtianity. He occaſionally wrote ſome articles in his Review, which are yet diſtinguiſhable by their ſpirit and intelligence. In private circles, few were more eagerly ſought after than Mr. Badcock; few more generally admired for ſprightly ſallies of wit, for the brilliant effuſions of genius, or the collected ſtore of many ſtudious hours of retirement and deep inveſtigation. His vivacity could enliven the dulleſt ſubjects of controverſy, and his ſpirit dart a vivid ray over points of real obſcurity. His memory made many parts of hiſtory familiar to him; and in antiquities, which he had begun to glance at, his rapid progreſs raiſed the higheſt expectations of future excellence. His friendſhips were warm and animated; nor did he ever decline aſſiſting thoſe who, from his character and reputation, were led to requeſt his aid. Many admired publications received their beſt embelliſhments from his hand. About three years before his death, which happened on the 19th of May, 1788, he conformed to the eſtabliſhed church.

BAD'DAMY, a town of Hindoſtan, in the country of Viſiapour, eighty miles ſouth of Viſiapour. Lat. 16. 10. N. lon. 75. 40. E. Greenwich.

BAD'DELEY (Robert), an excellent low comedian, many years attached to Drury-lane theatre, died November 20, 1794. By his will he left to the theatrical fund his cottage at Hampton in truſt, that they ſhould elect to reſide in it ſuch four of the fund penſioners as might not object to living ſociably under the ſame roof. In this houſe are two parlours for their joint indulgence, and four ſeparate bedchambers. This bequeſt is an inſtance of his benevolence, and of his reſpect for his profeſſion; but the manner in which it was done is even more honourable to him than the donation itſelf: that the decayed actors who are to be choſen by the fund committee as tenants for this houſe might not appear like dependents on charity in the eyes of the neighbourhood, he left alſo a certain ſum to be diſtributed by thoſe tenants to the poor of the vicinity. There is alſo a little ſummer-houſe for thoſe tenants to regale in; and it is ſo ſituated as to command a view of the temple of Shakeſpeare, erected by Mr. Garrick. The ſingularity of Mr. B's mind is farther obſervable, in his leaving 3l. annually for a twelfth-cake to be diſtributed in the green-room. The origin of this fancy was as follows: On this feſtival it was cuſtomary to eat cake in the theatre, and Baddeley uſually preſided at the table. The deſire of fame is as univerſal as the means of attaining it are various: the caprices of men are unaccountable; and, if Dogget ſecured his memory by a *coat and badge*, [ſee DOGGET,] why ſhould not Baddeley enſure his by the more ſolid properties of a Chriſtmas cake, bequeathed expreſsly to make the future ſons and daughters of Theſpis remember an old friend and member of the profeſſion over an annual repaſt?

BADELO'NA, a town of Catalonia in Spain, ſeated on the Mediterranean. Lord Peterborough landed here in 1704, when, with Charles king of Spain, he laid ſiege to Barcelona, from which it is ten miles diſtant. Lat. 41, 17. N. lon. 2. 20. E.

BADELU', or BADIBOU, a country of Africa, on the borders of the river Gambia.

BADELUND'SABS, a long narrow ſandy tract of land, in Sweden, in the province of Weſtmannland, where the Danes were totally defeated in 1521.

BA'DEN, a margraviate and ſovereignty of Germany, in the circle of Suabia. It is divided into two principalities, that of Baden-Baden and Baden-Durlach. Baden-Baden is bounded on the weſt by the Rhine, though a ſmall part lies on the weſt ſide of that river; on the north by Baden-Durlach; on the eaſt by the duchy of Wurtemberg; and on the ſouth by the Briſgaw. The principal towns are Raſtadt, Baden, Ettingen, Steinback, and Stolhofen. The margrave of Baden-Baden is a ſovereign prince, and has a vote in the college of princes. The eſtabliſhed religion is Roman Catholic. Baden-Durlach is bounded on the north by the Palatinate and the biſhopric of Spire, on the eaſt by the duchy of Wurtemberg, on the ſouth by Baden-Baden, and on the weſt by the Rhine. The principal towns are Durlach, Pforzheim, Muhlberg, and Emmendingen. This prince enjoys two votes in the college of princes of the empire, viz. one for Baden-Durlach, the other for Hochberg. The reigning prince and his ſubjects profeſs Lutheraniſm.

BADEN, a town of Germany, in the circle of Suabia, and capital of the marquiſate of Baden-Baden, celebrated for its hot baths, whence its name. In the year 1688, the town was burned down by the French. It is twenty-two miles north-eaſt of Straſburg, thirty-ſix weſt of Stutgart, and forty ſouth-ſouth-weſt of Heidelberg. Lat. 48. 46. N. lon. 25. 53. E. Ferro.

Baden, a county and bailiwick of Swiſſerland, in Argow, formerly an independent county, but now ſubject to the cantons, lying on both ſides the Limmat, bounded on the weſt by the river Aar, on the north by the Rhine, and on the ſouth by the Reuſz, about ſeven leagues long, and three wide. The ſoil is fertile, and in general abounds in grain and fruit. The mountains yield excellent free-ſtone, marble, and iron-ore. The greater part of the inhabitants are Roman Catholics; and the principal town is Baden.

Baden, or Upper Baden, a town of Swiſſerland, and capital of the county ſo called, ſituated on the Limmat. It is the reſidence of the bailiff, who is appointed by the cantons of Zurich, Berne, and Glaris, alternately; the two former appoint for ſeven years, but Glaris only for two. Divers monuments teſtify the antiquity of this town; and the virtues of its mineral waters have been long known. The dukes of Auſtria had formerly a caſtle here, where they reſided when they viſited their eſtates in Helvetia, till it was taken with the whole country from duke Frederic, in the year 1415. The baths are conſtructed on both ſides of the Limmat, and form a ſeparate town half a mile below the other. The waters are warm and abundant, ſupplying two large public reſervoirs for the uſe of the poor, beſides two hundred private baths. It is twenty-ſeven miles ſouth-eaſt of Baſle, and fourteen north-weſt of Zurich. Lat. 47. 28. N. lon. 25. 53. E. Ferro.

Baden, a town of Germany, in the archduchy of Auſtria, on the river Schwocha, celebrated for its warm baths, of which they reckon nine different in number: the town is walled, contains three churches, and is twelve miles S. S. W. of Vienna. Lat. 48. 3. N. lon. 33. 58. E. Ferro.

BA'DENOCH, a diſtrict of Scotland, in the eaſt part of the county of Inverneſs, very barren and hilly, and deſtitute of any town or village worthy of notice.

BADNU'CHI, a town of North America, in the province of New Navarre, 125 miles ſouth of Caſa Grand.

BA'DENS (Francis), an hiſtorical and portrait painter, was born at Antwerp in 1571; and the firſt rudiments of the art were communicated to him by his father, who was but an indifferent artiſt. However, he viſited Rome, and ſeveral parts of Italy, and acquired a taſte and manner exceedingly pleaſing. On returning to his own country his merit procured him great employment, and ſtill greater reputation, and he was uſually diſtinguiſhed by the name of the Italian painter. His touch was light and ſpirited, and his colouring warm. While his acknowledged merit was rewarded with every public teſtimony of eſteem and applauſe, he received an account of the death of his brother, who had been aſſaſſinated on his journey; and the intelligence affected him ſo violently, that it occaſioned his own death, to the inexpreſſible regret of every lover of the art, in 1603.

BADENWEI'LER, a town of Germany, in the circle of Suabia, and margraviate of Baden-Baden, two miles ſouth of Sultzburg.

BA'DEW (Richard de), the firſt founder of Clare-hall in Cambridge, was deſcended from a good family at Great Badew, or Badow, near Chelmsford, in Eſſex. From this place they took their ſurname; and here, probably, Rd. de Badew was born. In 1326 he was chancellor of the univerſity of Cambridge; and having purchaſed to tenements in Miln-ſtreet, of Nigel Thornton, a phyſician, he laid there, in the year above-mentioned, the foundation of a building, to which was given the name of Univerſity-hall. In it he placed a principal, who was to take care of the penſioners that came to live there. It continued for the ſpace of ſixteen years, and then by an accidental fire was burnt down. Richard de Badew being unable to rebuild it, it lay for ſome years in ruins; but one of the penſioners having a great intereſt with Elizabeth, daughter of Sir Gilbert de Clare, earl of Glouceſter, he prevailed upon her to undertake what de Badew was not able to perform. Whereupon this benevolent lady, with the conſent of Richard de Badew, new-built the hall, and endowed it, in the year 1347, with revenues for one maſter, ten fellows, and ten ſcholars. At the ſame time ſhe named it Clare-hall, from her own family ſurname.

BA'DEY, a town of Perſia, in the province of Khoraſan, 140 miles north-weſt of Herat.

BADGE, *ſ.* [a word of uncertain etymology; derived by Junius from *bode* or *bade*, a meſſenger, and ſuppoſed to be corrupted from *badage*, the credential of a meſſenger; but taken by Skinner and Minſhew from *bagghe*, Dut. a jewel, or *bague*, Fr. a ring. It ſeems to come from *bajulo*, Lat. to carry.] A mark or cognizance worn to ſhew the relation of the wearer to any perſon or thing.—The outward ſplendour of his office is the *badge* and token of that ſacred character which he inwardly bears. *Atterbury.*—A token by which one is known:

A ſavage tygreſs on her helmet lies;
The famous *badge* Clarinda us'd to bear. *Fairfax.*

The mark or token of any thing.—Sweet mercy is nobility's true *badge*. *Shakeſpeare.*

Badge, in naval architecture, ſignifies a ſort of ornament placed on the outſide of ſmall ſhips, very near the ſtern, containing either a window for the convenience of the cabin, or a repreſentation of it. It is commonly decorated with marine figures, martial inſtruments, or ſuch-like emblems.

To Badge, *v. a.* To mark as with a badge:

Your royal father's murder'd———
Thoſe of his chamber, as it ſeem'd, had done 't:
Their hands and faces were all *badg'd* with blood. *Shakeſ.*

BAD'GER, *ſ.* [perhaps from *bajulus*, Lat. a carrier; but by Junius derived from the *badger*, a creature who ſtows up his proviſion.] One that buys corn and victuals in one place, and carries it unto another to ſell.

Badger, in zoology, the Engliſh name of a ſpecies of urſus. See Ursus.

Badger-legged, *adj.* [from *badger* and *legged*.] Having legs of an unequal length, as the badger is ſuppoſed to have.

BA'DIA, an ancient town of Bætica on the Anas; now ſuppoſed to be Badajos on the Guadiana.

Badia, a town of Italy, in the duchy of Tuſcany, ſeventeen miles north of Florence.

BADIA'GA, *ſ.* in the materia medica, the name of a ſort of ſpongy plant, common in the ſhops in Moſcow, and ſome other northern kingdoms. It is uſed to take away livid marks ariſing from blows or bruiſes, which the powder of this plant is ſaid to do in a night's time.

BADIA'NE, or Bandian, *ſ.* the ſeed of a tree which grows in China, and ſmells like aniſe-ſeed. The Chineſe, and the Dutch in imitation of them, ſometimes uſe the badiane to give their tea an aromatic taſte.

BADIGE'ON, *ſ.* a mixture of plaſter and free-ſtone, ground together, and ſifted; uſed by ſtatuaries to fill up the little holes, and repair the defects, in ſtones whereof they make their ſtatues and other work. The ſame term is alſo uſed by joiners for ſaw-duſt mixed with ſtrong blue, wherewith they fill up the chaps and other defects in wood after it is wrought.

BA'DILE (Antonio), an hiſtorical and portrait painter, was born at Verona in 1480, and by great ſtudy and application acquired a more extenſive knowledge of the true principles of painting than any of his predeceſſors. He was confeſſedly a moſt eminent artiſt; but he derived greater honour from having two ſuch diſciples as Paolo Veroneſe and Baptiſta Zelotti, than he did even from the excellence of his own compoſitions. He died in 1560. His colouring was admirably good; his carnations beautiful; and his portraits preſerved the perfect reſemblance of fleſh and real life; nor had he any cauſe to envy the acknowledged merit of Titian, Giorgione, or the beſt of his cotemporaries.

BADIN'GEN, a town of Germany, in the circle of Upper Saxony, and Old Mark of Brandenburg, ſeven miles weſt of Stendal.

BA'DIS, a fortreſs of Livonia, ſubject to Ruſſia. Lat. 59. 15. N. lon. 23. 10. E.

BADI'SIS, *ſ.* [from βαδιζω, to walk.] Walking; any motion of the legs.

BA'DIUS (Conrad), and (Stephen Robert), his brother, French refugees; celebrated as painters at Geneva, and Conrad as an author. The latter died in 1566.

BAD'KIS, a town of Perſia, in the province of Khoraſan, thirty-ſix miles north of Herat.

BAD'LY, *adv.* In a bad manner; not well:

How goes the day with us? O tell me, Hubert.—
Badly, I fear. How fares your majeſty? *Shakeſpeare.*

BAD'NESS, *ſ.* Want of good qualities, either natural or moral; deſert; depravity.—It was not your brother's evil diſpoſition made him ſeek his death; but a provoking merit ſet awork by a reproveable *badneſs* in himſelf. *Shakeſpeare.*—I did not ſee how the *badneſs* of the weather could be the king's fault. *Addiſon.*

BADO'GI, a town of Ruſſia, on the north coaſt of lake Bielo, in the government of Novgorod, 196 miles north-eaſt of Novgorod.

BADRACHIL'LUM, a town of Hindoſtan, in the Moodajee Boomſla country, ſeventy-two miles north-weſt of Rajamundry, and fifty eaſt of Byarem.

BADRA'I, a town of European Turkey, in Moldavia, ten miles north of Stephanowze.

BADULA'TO, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra: fourteen miles ſouth-ſouth-eaſt of Squillace.

BAE'CKIA, *ſ.* [ſo named in honour of Abraham *Baeck*, a much-eſteemed friend of Linnæus's, who received this plant from him, among others, in his Herbarium.] In botany, a genus of the claſs octandria, order monogynia, natural order of calycanthemæ. The generic characters are —Calyx: perianthium one-leafed, funnel-form, five-toothed, permanent. Corolla: petals five, roundiſh, patulous, inſerted into the calyx. Stamina: filaments eight, of which ſix are equal, two ſolitary, very ſhort, bent in; antheræ ſubovate, ſmall. Piſtillum: germ roundiſh; ſtyle filiform, ſhorter than the corolla; ſtigma capitate. Pericarpium: capſule globular, crowned, four-celled, four-valved. Seeds: ſome, roundiſh, angular on one ſide.—*Eſſential Character.* Calyx funnel-form, five-toothed; corolla five-petalled; capſule globular, four-celled, crowned.

Only one ſpecies, baeckia fruteſcens. This is a ſhrub which has the habit of ſouthernwood, with wand-like branches, and oppoſite, ſhort, ſimple, twigs. Leaves oppoſite, linear, ſharp, ſmooth, quite entire. Flowers axillary, ſolitary, on a naked peduncle, the length of the flower, much ſhorter than the leaves. Native of China, and called there *tiongina.*

BA'EN, a town of European Turkey, in Moldavia, ſixteen miles north-north-weſt of Niemecz.

BÆOBO'TRYS, *ſ.* [βαιος, ſmall, and βοτρυς, a raceme, the fructifications being in thin racemes.] In botany, a genus of the claſs pentandria, order monogynia. The generic characters are—Calyx: perianthium double, exterior three-leaved; leaflets roundiſh, concave, ſmaller; inferior one-leafed, bell-ſhaped, ſhort, inferior, growing to the germ, five-cleft; clefts ovate, permanent, converging after flowering, and crowning the fruit. Corolla: one-petalled, tubular; tube very ſhort; border five-cleft, erect; clefts roundiſh, very ſhort. Stamina: filaments five, very ſhort, in the middle of the tube; antheræ heart-ſhaped. Piſtillum: germ globoſe, half-ſuperior; ſtyle cylindric, very ſhort, permanent; ſtigma obtuſe, tuberculated. Pericarpium: berry globoſe, ſomewhat dry, one-celled, growing to the calyx. Seeds: ſeveral, angular, affixed to a columnar receptacle in the bottom of the berry.—*Eſſential Character.* Corolla: tubular, with a five-cleft border. Calyx: double; outer two-leafed; inner one-leafed, bell-ſhaped; berry globoſe, one-celled, growing to the calyx, many-ſeeded.

There is only one ſpecies, called bæobotrys nemorialis. Native of the iſle of Tanna, in the South Seas.

BÆTER'RE, an ancient town of the Tertoſages in Gallia Narbonenſis; now *Beſiers*, on the eaſt bank of the Obris, now *Orbis* or *Orbe*, in Lower Languedoc.

BÆ'TICA, a province of ancient Spain, ſo called from the famed river Bætis, afterwards Tarteſſus, now Guadalquiver, or the great river. It was bounded on the weſt by Luſitania; on the ſouth, by the Mediterranean, and Sinus Guaditanus; on the north, by the Cantabric Sea, now the bay of Biſcay. The province was divided in two by the river Bætis, on one ſide of which, towards the Anas, were ſituated the Turdetani, from whence the kingdom was called *Turdetania*, though more generally known by the name of *Bæturia.* On the other ſide were ſituated the Baſtuli, Baſtetani, and Conteſtani, along the Mediterranean coaſts. The Baſtuli were ſuppoſed to be of Phœnician extract, and dwelt along the coaſts of the Mediterranean, till, driven from thence by the Moors, they fled into the mountainous parts of Gallicia, which they then called from their own name *Baſtulia.* The Baſtetani were ſeated higher up, on the ſame coaſts. The territories of both theſe made part of what has ſince become the kingdom of Granada; in which there is a ridge of very high mountains, called, from the above-mentioned people, the Baſtetanian mountains. Mention is alſo made of their capital *Baſtetana*; a place of ſuch ſtrength, that king Ferdinand was ſix months beſieging it before he could take it from the Moors. The whole province of Bætica, according to the moſt probable account, contained what is now called *Andaluſia*, part of the kingdom of Granada, and the outward boundaries of Eſtremadura.

BÆ'TIS, a river of Spain, now the *Guadalquiver.*

BÆTU'LO, a town of ancient Spain, in the Terraconenſis; now *Badelona* in Catalonia.

BÆTY'LIA, *ſ.* anointed ſtones, worſhipped by the Phœnicians, by the Greeks before the time of Cecrops, and by other barbarous nations. They were commonly of a black colour, and conſecrated to ſome god, as Saturn, Jupiter, &c. Some are of opinion that the true origin of theſe idols is to be derived from the pillar of ſtone which Jacob erected at Bethel, and which was afterwards worſhipped by the Jews. Theſe bætylia were much the object of the veneration of the ancient heathens. Many of their idols were no other. In reality, no ſort of idol was more common in the eaſtern countries, than that of oblong ſtones erected, and hence termed by the Greeks, κιονες, 'pillars.' In ſome parts of Egypt they were planted on both ſides of the highways. In the temple of Heliogabulus, in Syria, there was one pretended to have fallen from heaven. There was alſo a famous black ſtone in Phrygia, ſaid to have fallen from heaven. The Romans ſent for it and the prieſts belonging to it with much ceremony, Scipio Naſika being at the head of the embaſſy.

BÆ'ZA, a city of Andaluſia, in Spain, ſeated on a high hill three miles from the Guadalquiver; it is the ſee of a biſhop, and has an univerſity founded by John d'Avila. It was taken from the Moors about the end of the 15th century.

BÆZA, a town of South America, in the country of Peru, built in the year 1559, by Gilles Ramira d'Avalos: eight leagues ſouth-eaſt of Quito.

BÆZIL'LO, a town of Spain, in Old Caſtile, three leagues from Valladolid.

BAF'FETAS, or BASTAS, *ſ.* a cloth made of coarſe white cotton-thread, which comes from the Eaſt Indies. That of Surat is the beſt.

BAF'FIN's BAY, a gulph of North America, ſo called from *Baffin*, an Engliſhman, who diſcovered it in 1616; extending about 250 leagues from eaſt to weſt, and 180 from north to ſouth. Lat. 70. to 79. N. nearly. lon. 45. to 85. W. Greenwich.

To BAF'FLE, *v. a.* [*baffler*, Fr.] To elude; to make ineffectual.—They made a ſhift to think themſelves guiltleſs, in ſpite of all their ſins; to break the precept, and at the ſame time to *baffle* the curſe. *South.*—To confound; to defeat with ſome confuſion, as by perplexing or amuſing: to *baffle* is ſometimes leſs than to *conquer.*—When the mind has brought itſelf to cloſe thinking, it may go on roundly. Every abſtruſe problem, every intricate queſtion, will not *baffle*, diſcourage, or break, it. *Locke.*—A foreign potentate trembles at a war with the Engliſh nation, ready to employ againſt him ſuch revenues as ſhall *baffle* his deſigns upon their country. *Addiſon.*

BAFFLE, *ſ.* A defeat.—It is the ſkill of the diſputant that keeps off a *baffle*. *South.*

BAF'FLER, *ſ.* He that puts to confuſion, or defeats.—Experience, that great *baffler* of ſpeculation, aſſures us the thing is too poſſible, and brings in all ages matter of fact to confute our ſuppoſition. *Government of the Tongue.*

BAF'FO, a conſiderable town in the iſland of Cyprus, with a fort built near ancient Paphos, of which ſome conſiderable ruins yet remain, particularly ſome broken columns, which probably belonged to the temple of Venus.

BAG, *ſ.* [*belge*, Sax. from whence perhaps, by dropping, as is uſual, the harſh conſonant, came *bege*, *bage*, *bag*.] A ſack, or pouch, to put any thing in, as money, corn, &c.—What is it that opens thy mouth in praiſes? Is it that thy *bags* and thy barns are full? *South.*—That part of animals in which ſome particular juices are contained, as the poiſon of vipers:

The ſwelling poiſon of the ſeveral ſects,
Which, wanting vent, the nation's health infects,
Shall burſt its *bag*. *Dryden.*

An ornamental purſe of ſilk tied to ſome men's hair.—We ſaw a young fellow riding towards us full gallop, with a bob wig and black ſilken *bag* tied to it. *Addiſon.*—A term uſed to ſignify different quantities of certain commodities; as, A *bag* of pepper, A *bag* of hops.

BAG, among farriers, is when, in order to retrieve a horſe's loſt appetite, they put in an ounce of aſafœtida, and as much powder of ſavin, into a bag, to be tied to the bit, keeping him bridled for two hours, ſeveral times a-day; as ſoon as the bag is taken off, he begins eating. This practice is alſo uſeful in diſeaſes of the mouth and throat.

To BAG, *v. a.* To put into a bag.—Hops ought not to be *bagged* up hot. *Mortimer.*—To load with a bag:

Like a bee, *bagg'd* with his honey'd venom,
He brings it to your hive. *Dryden.*

To BAG, *v. n.* To ſwell like a full bag.—The ſkin ſeemed much contracted, yet it *bagged*, and had a porringer full of matter in it. *Wiſeman.*

BAGAMA'DER, or BAGAMEDRI, a province of the kingdom of Abyſſinia, in Africa. It is ſaid to receive its name from the great number of ſheep bred in it; *meder* ſignifying 'land or earth,' and *bag*, a 'ſheep.' Its length is eſtimated at about ſixty leagues, and its breadth twenty: but formerly it was much more extenſive; ſeveral of its provinces having been diſmembered from it, and joined to that of Tigre. It is inhabited chiefly by wandering Gallas and Caffres.

BAGAN', a town of Servia, twenty miles N. of Niſſa.

BAGAN'ZA, a river of Italy, which joins the river Parma, at the city of Parma.

BAGANZO'LA, a town of Italy, four miles north of Parma.

BA'GAT, a town of France, one league weſt of Paris.

BAGATEL'LE, *ſ.* [*bagatelle*, Fr.] A trifle; a thing of no importance:

Heaps of hair-rings and cipher'd ſeals;
Rich trifles, ſerious *bagatelles*. *Prior.*

BAGAU'DÆ, or BACAUDÆ, an ancient faction of peaſants, or malcontents, who ravaged Gaul. The Gauls, being oppreſſed with taxes, roſe about the year of Chriſt 290, under the command of Amand and Elian; and aſſumed the name *bagaudæ*, which, according to ſome authors, ſignified in the Gallic language 'forced rebels;' according to others, 'tribute;' according to others, 'robbers;' which laſt ſignification others allow the word had, but then it was only after the time of the bagaudæ, and doubtleſs took its riſe from them.

BAG'DAD, a celebrated city of Aſia, in Irak Arabi, ſeated on the eaſtern bank of the Tigris, in lat. 33. 15. N. lon. 63. 15. E. Ferro. By many authors this city is very improperly called *Babylon.* The latter ſtood on the Euphrates, at a conſiderable diſtance. This city, for many years the capital of the Saracen empire, was founded by the khalif Al Manſur, the ſecond of the houſe of Al Abbas, after an attempt by the Rawandians to aſſaſſinate him, as mentioned under the article ARABIA, p. 21, of this volume.

The reaſons aſſigned by the Arabian hiſtorians for building the city of Bagdad are, That the attempt to aſſaſſinate the khalif had diſguſted him with his Arabian ſubjects in general, and that the ſpot where Bagdad ſtood was at a conſiderable diſtance from the city of Cufa particularly; the inhabitants of which were remarkable for their treachery and inconſtancy, Al Manſur himſelf having felt ſeveral inſtances of it. Beſides, the people of Irak, who had always continued faithful to him, repreſented, that by building his capital near the confluence of the Euphrates and Tigris, it would be in a great meaſure ſecured from the attacks of thoſe who ſhould have an inclination to diſpute the khalifate with him; and that, by being ſituated as it were in the middle of the tract comprehending the diſtricts of Baſrah, Cufa, Waſet, Mawſel, and Swada, at no great diſtance from thoſe cities, it would be plentifully ſupplied with proviſions by means of the above-mentioned rivers.

Concerning the origin of the name *Bagdad*, there are various accounts, which, being equally uncertain and trifling, merit no attention. The firſt city that went by this name was ſituated on the weſtern bank of the Tigris; from whence Al Manſur diſpatched his ſon Al Mohdi with a body of Moſlem troops to the oppoſite bank. Here the young prince took poſt, and fortified the place on which he had encamped with a wall, in order to cover his troops, as well as the workmen employed by his father on the other ſide of the river, from the incurſions of the Perſians, who ſeemed to have taken umbrage at the erection of a new metropolis ſo near the frontiers of their dominions. Hence that part of the city ſoon afterwards built on the eaſtern bank of the Tigris, received the name of the *Camp*, or *Fortreſs, of Al Mohdi.* The khalif had a ſuperb and magnificent palace both in the eaſtern and weſtern part of the town. The eaſtern palace was ſurrounded on the land ſide by a ſemicircular wall that had ſix gates; the principal of which ſeems to have been called the *gate of prefects*, whoſe entrance was generally kiſſed by the princes and ambaſſadors that came to the khalif's court. The weſtern part of the city was entirely round, with the khalif's palace in the centre, and having the great moſque annexed to it. The eaſtern part conſiſted of an interior and exterior town, each of which was ſurrounded by a wall. For ſome time the building of the city went but ſlowly on, owing to a ſcarcity of materials; for which reaſon the khalif was ſometimes inclined to remove the materials of Al Madayen the ancient metropolis of the Perſian empire. But, upon trial, he found the ſtones to be of ſuch an immenſe ſize, that the removal of them to Bagdad would be attended with great difficulty and expence; beſides, he conſidered that it would be a reflection upon himſelf to have it ſaid that he could not finiſh his metropolis without deſtroying ſuch a pile of building as perhaps could not be paralleled in the whole world; for which reaſons he at length gave over his deſign, and erected the city of Bagdad moſt probably out of the ruins of the ancient cities of Seleucia and Cteſiphon,

ſiphon, putting an end to his undertaking in the 149th year of the Hegira, or four years after the city was begun.

From the building of the city of Bagdad to the death of Al Manſur nothing remarkable happened, except ſome irruptions made into the territories of the Greeks, and by the Arabs into ſome of the khalif's other territories. In the 157th year of the Hegira alſo, a grievous famine was felt in Meſopotamia, which was followed by a plague that deſtroyed great numbers. This year likewiſe, the Chriſtians, who had been very ſeverely dealt with by Al Manſur, were treated with the utmoſt rigour by Muſa Ebn Moſab, the khalif's governor; every one who was unable to pay the enormous tribute exacted of them being thrown into priſon without diſtinction. The next year, being the 158th of the Hegira, the khalif ſet out from Bagdad, to perform the pilgrimage to Mecca: but, being taken ill on the road, he expired at Bir Maimun, and his body was carried to Mecca; where, after 100 graves had been dug, that his ſepulchre might be concealed, he was interred, having lived, according to ſome ſixty-three, according to others ſixty-eight, years, and reigned twenty-two. He is ſaid to have been extremely covetous, and to have left in his treaſury 600,000,000 dirhems, and 24,000,000 dinars. He is reported to have paid his cook by aſſigning him the heads and legs of the animals dreſſed in his kitchen, and to have obliged him to procure at his own expence all the fuel and veſſels he had occaſion for.

When Al Manſur expired at Bir Maimun, he had only his domeſtics, and Rabi his freedman, with him. The latter of theſe, for ſome time, kept his death concealed, and pretended to have a conference with him; in which, as he gave out, the khalif commanded him to exact an oath of allegiance to Al Mohdi his ſon, as his immediate ſucceſſor, and to Iſa Ebn Muſa his couſin-german, as the next apparent heir to the crown. He then diſpatched a courier to Bagdad with the news of Al Manſur's death; upon which Al Mohdi was unanimouſly proclaimed khalif. Iſa Ebn Muſa, however, no ſooner heard this news, than he began to entertain thoughts of ſetting up for himſelf at Cufa, where he then reſided; and, in order to facilitate the execution of his ſcheme, he fortified himſelf in that city. But Al Mohdi, being appriſed of his defection, ſent a detachment of 1000 horſe to bring him to Bagdad; which being done, Al Mohdi not only prevailed upon him to own his allegiance, but alſo to give up his right to the ſucceſſion for 10,000 according to ſome, or according to others for 10,000,000, dinars.

From the acceſſion of Al Mohdi, to the 164th year of the Hegira, the moſt remarkable event was the rebellion of Al Mokanna. This impoſtor, whoſe true name was *Hakem Ebn Heſham*, came originally from Khoraſan, and had been an under ſecretary to Abu Moſlem, governor of that province. He afterwards turned ſoldier, and paſſed thence into Mawaralnahr, where he gave himſelf out for a prophet. The name of Al Mokanna, as alſo that of Al Borkai, that is, the 'veiled,' he took from his cuſtom of covering his face with a veil or girdle maſk, to conceal his deformity; having loſt an eye, and being otherwiſe of a deſpicable appearance; though his followers pretended he did this for the ſame reaſon that Moſes did, viz. leſt the ſplendour of his countenance ſhould dazzle the eyes of his beholders! In ſome places he made many proſelytes, by deluding the people with a number of juggling tricks, and particularly by cauſing the appearance of a moon to riſe out of a well for many nights together; whence he was called, in the Perſian tongue, *Sazendeh mah*, or the 'moon-maker.' Not content with being reckoned a prophet, he arrogated to himſelf divine honours; pretending that the Deity reſided in his perſon, having proceeded to him from Abu Moſlem, in whom he had taken up his reſidence before. At laſt he ventured into open rebellion againſt the khalif, and made himſelf maſter of ſeveral fortified places in Khoraſan, ſo that Al Mohdi was obliged to ſend an army againſt him. Upon the approach of the khalif's troops, Al Mokanna retired into one of his ſtrong fortreſſes, and ſent his emiſſaries abroad to perſuade the people that he raiſed the dead to life, and foretold future events. But, being cloſely beſieged by the khalif's forces, and ſeeing no poſſibility of eſcaping, he gave poiſon in wine to his whole family and all that were with him in the caſtle; when they were dead, he burnt their bodies, with all their furniture, proviſions, and cattle; and laſtly, he threw himſelf into the flames, or, as others ſay, into a tub of aquafortis, which conſumed every part of him except the hair. When the beſiegers therefore entered the place, they found no living creature in it, except one of Al Mokanna's concubines, who, ſuſpecting his deſign, had hid herſelf, and now diſcovered the whole matter. All this time war had been carried on with the Greeks, but without any remarkable ſucceſs on either ſide. In the 164th year of the Hegira, however, Al Mohdi ordered his ſon Harun Al Raſhid to penetrate into the Greek territories with an army of 95,000 men. Harun, having entered the dominions of the empreſs Irene, defeated her armies, and laid waſte ſeveral of the imperial provinces with fire and ſword, and even threatened the city of Conſtantinople. By this the empreſs was ſo terrified, that ſhe purchaſed a peace with the khalif by paying him an annual tribute of 70,000 pieces of gold. After ſigning the treaty, Harun returned home laden with ſpoils and glory.

In the 169th year of the Hegira, Al Mohdi was poiſoned, though undeſignedly, by one of his concubines named Haſanah. She had deſigned to deſtroy one of her rivals, whom ſhe imagined to have too great an aſcendant over the khalif, by giving her a poiſoned pear. This the latter, not ſuſpecting any thing, gave to the khalif; who had no ſooner eaten it than he felt himſelf in exquiſite torture, and ſoon after expired. On the death of Al Mohdi, he was ſucceeded by his eldeſt ſon Al Hadi; who having formed a deſign to deprive his younger brother Harun Al Raſhid of his right of ſucceſſion, and even to aſſaſſinate him, was poiſoned by his vizir in the 170th year of the Hegira; and on his death the celebrated khalif Harun Al Raſhid aſcended the throne. This was one of the beſt and wiſeſt princes that ever ſat on the throne of Bagdad. He was extremely fortunate in all his undertakings, and in his time the Moſlem empire may be ſaid to have been in its moſt flouriſhing ſtate. He poſſeſſed the provinces of Syria, Paleſtine, Arabia, Perſia, Armenia, Natolia, Media or Aderbijan, Babylonia, Aſſyria, Sindia, Sijiſtan, Khoraſan, Tabreſtan, Jorjan, Zableſtan or Sableſtan, Mawaralnahr or Great Bukharia, Egypt, Libya, Mauritania, &c. ſo that his empire was at that time by far the moſt powerful of any in the world.

In the 186th year of the Hegira, beginning January 10th, 802, the khalif divided the government of his extenſive dominions among his three ſons in the following manner: To Al Amin the eldeſt, he aſſigned the provinces of Syria, Irak, the three Arabias, Meſopotamia, Aſſyria, Media, Paleſtine, Egypt, and all that part of Africa extending from the confines of Egypt and Ethiopia to the ſtraits of Gibraltar, with the dignity of khalif; to Al Mamun the ſecond, he aſſigned Perſia, Kerman, the Indies, Khoraſan, Taberſtan, Cableſtan, and Zableſtan, together with the province of Mawaralnahar; and to his third ſon Al Kaſem, he gave Armenia, Natolia, Jorjan, Georgia, Circaſſia, and all the Moſlem territories bordering upon the Euxine ſea. As to the order of ſucceſſion, Al Amin was to aſcend the throne immediately after his father's deceaſe; after him, Al Mamun; and then Al Kaſem, whom he had ſurnamed *Al Mutaman*.

The moſt conſiderable exploits performed by this khalif were in his wars againſt the Greeks, who by their perfidy provoked him to make war upon them, and whom he always overcame. In the 187th year of the Hegira, the khalif received a letter from the Greek emperor Nicephorus, commanding him to return all the money he had extorted from the empreſs Irene, though that had been ſecured to him by the treaty concluded with that princeſs, or expect ſoon to ſee an imperial army in the heart of his dominions. This inſolent letter ſo exaſperated Harun, that he immediately aſſembled his forces and advanced to Heraclea, laying the country waſte with fire and ſword. For ſome time alſo he kept that city ſtraitly beſieged; which ſo terrified the Greek emperor, that he ſubmitted to pay an annual tribute. Upon this Harun granted him a peace, and returned with his army. But a hard froſt ſoon after happening, Nicephorus took for granted that Al Raſhid would not pay him another viſit, and therefore broke the treaty he had concluded. Of this the khalif receiving advice, he inſtantly put himſelf in motion; and, notwithſtanding the inclemency of the weather, forced the emperor to fulfil the terms propoſed. According to a Perſian hiſtorian, before the hoſtilities at this time commenced, Nicephorus made the khalif a preſent of ſeveral fine ſwords, giving him thereby to underſtand, that he was more inclinable to come to blows than to make peace with him. All theſe ſwords, it is ſaid, Harun cut aſunder with his famous ſword *ſamſamah*, as if they had been ſo many radiſhes, after which ſevere proof there did not appear the leaſt flaw in the blade. This ſword had fallen into Al Raſhid's hands among the ſpoils of Ebn Dakikan, one of the laſt Hamyaritic princes of Yaman; but it belonged originally to a valiant Arab named Amru Ebn Maadi Carb, by whoſe name it generally went among the Moſlems. This man is ſaid to have performed very extraordinary feats with this ſword, which induced a certain prince to borrow it from him; but he not being able to perform any thing remarkable with it, complained to Amru that it had not the deſired effect: upon which that brave man ironically replied, that he had not ſent him his arm along with his ſword.

In the 188th year of the Hegira, war was renewed with the Greeks, and Nicephorus attacked the khalif's forces with the utmoſt fury. He was, however, defeated with the loſs of 40,000 men, and received three wounds in the action; after which the Moſlems committed terrible ravages in his territories, and returned home laden with ſpoils. The next year Harun invaded Phrygia; defeated an imperial army ſent to oppoſe him; and, having ravaged the country, returned without any conſiderable loſs. In the 190th year of the Hegira, commencing November 27th, 805, the khalif marched into the imperial territories with an army of 135,000 men, beſides a number of volunteers and others who were not inrolled among his troops. He firſt took the city of Heraclea, from whence he is ſaid to have carried 16,000 priſoners; after which he made himſelf maſter of ſeveral other places; and, in the concluſion of the campaign, he made a deſcent on the iſland of Cyprus, which he plundered in a terrible manner. This ſucceſs ſo intimidated Nicephorus, that he immediately ſent the tribute due to Harun, and a peace was concluded. This perhaps Harun would not have ſo readily granted, had not one Rafe Ebn Al Leith revolted againſt him at Samarcand, and aſſembled a conſiderable force to ſupport him in his defection.

The next year, being the 191ſt of the Hegira, the khalif removed the governor of Khoraſan from his employment, becauſe he had not been ſufficiently attentive to the motions of the rebel Rafe Ebn Al Leith. As this governor had alſo tyrannized over his ſubjects in the moſt cruel manner, his ſucceſſor no ſooner arrived than he ſent him in chains to the khalif: but, notwithſtanding all Harun's care, the rebels made great progreſs in the conqueſt of Khoraſan. Next year the khalif found it neceſſary to march in perſon againſt the rebels, and he advanced to the frontiers of Jordan, where he was ſeized with an illneſs, which growing more violent, and being unable to purſue his journey, he reſigned the command of the army to his ſon Al Mamun, retiring himſelf to Tus in Khoraſan. We are told by Khondemir, that, before the khalif departed from Rakka, he had a dream wherein he ſaw a hand over his head full of red earth, and at the ſame time heard a perſon pronouncing theſe words, "See the earth where Harun is to be buried." Upon this he demanded where he was to be buried; and was anſwered, "At Tus." This dream greatly diſcompoſing him, he communicated it to his chief phyſician, who rallied him on the folly of putting confidence in dreams, and adviſed him to purſue ſome favourite diverſion that might draw his attention another way. The khalif accordingly prepared a magnificent regale, which laſted ſeveral days. After this, he put himſelf at the head of his army, and advanced to the confines of Jorjan, where he was attacked by the bloody flux. As his diſorder increaſed, he found himſelf obliged to retire to Tus; where being arrived, he ſent for his phyſician, and ſaid to him, "Gabriel, do you remember my dream at Rakka? we are now arrived at Tus, the place of my interment. Send one of my eunuchs to fetch me a handful of earth in the neighbourhood of this city." Upon this, Maſrur, one of his eunuchs, was diſpatched to fetch a little of the ſoil of the place. He ſoon returned, and brought a handful of red earth, which he preſented to the khalif with his arm half bare. At the ſight of this, Harun cried out, "In truth this is the earth, and this the very arm, that I ſaw in my dream." His ſpirits immediately failing, and his malady being greatly increaſed, he died three days after, and was buried in the ſame place. According to Abul Faraj, Baſhir Ebn Al Leith the arch-rebel's brother was brought in chains to the khalif, when at the point of death. At the ſight of whom Harun declared, that if he could ſpeak only two words he would ſay *kill him*; and immediately ordered him to be cut to pieces in his preſence. This being done, the khalif ſoon after expired, in the year of the Hegira 193, having reigned twenty-three years.

Upon the arrival of a courier from Tus, with the news of Al Raſhid's death, his ſon Al Amin was proclaimed khalif; and was no ſooner ſeated on the throne, than he formed a deſign of excluding his brother Al Mamun from the ſucceſſion. Accordingly he deprived him of the furniture of the imperial palace of Khoraſan; and in open violation of his father's will, who had beſtowed on Al Mamun the perpetual government of Khoraſan, and of all the troops in that province, he ordered thoſe forces to march directly to Bagdad. Upon the arrival of this order, Al Mamun expoſtulated with the general Al Fadl Ebn Rabi who commanded his troops, and endeavoured to prevent his marching to Bagdad; but without effect, for he punctually obeyed the orders ſent by the khalif. Al Mamun, however, took care not to be wanting in fidelity to his brother. He obliged the people of Khoraſan to take an oath of fidelity to Al Amin, and reduced ſome who had actually excited a revolt, while the general Al Fadl, having ingratiated himſelf with the khalif by his ready compliance with his orders, was choſen prime vizir, and governed with an abſolute ſway; Al Amin abandoning himſelf entirely to inebriety.

Al Fadl was a very able miniſter; though, fearing Al Mamun's reſentment if ever he ſhould aſcend the throne, he gave Al Amin ſuch advice as proved in the end the ruin of them both. He told him that his brother had gained the affection of the people of Khoraſan by the good order and police he had eſtabliſhed among them; that his unwearied application to the adminiſtration of juſtice had ſo attracted their eſteem, that the whole province was entirely at his devotion; that his own conduct was by no means approved by his ſubjects, whoſe minds were almoſt totally alienated from him; and therefore he had but one part to act, which was to deprive Al Mamun of the right of ſucceſſion that had been given him by his father, and transfer it to his own ſon Muſa, though then but an infant. Agreeable to this advice, the khalif ſent for his brother Al Kaſen from Meſopotamia, and recalled Al Mamun from Khoraſan, pretending he had occaſion for him as an aſſiſtant in his councils. By this treatment Al Mamun was ſo provoked, that he reſolved to come to an open rupture with his brother. Inſtead therefore of going to Bagdad, he cut off all communication between his own province and that capital; pretending, that, as his father

ther Harun had aſſigned him the lieutenancy of Khoraſan, he was reſponſible for all the diſorders that might happen there during his abſence. He alſo coined money, and would not ſuffer Al Amin's name to be impreſſed upon any of the dirhems or dinars ſtruck in that province. He alſo prevailed upon Rafe Ebn al Leith, who had been for ſome time in rebellion, to join him with a body of troops; whoſe example was ſoon after followed by Harthema Ebn Aaſan; which put him in poſſeſſion of all the territory of Khoraſan. Here he governed with an abſolute ſway, officiated in the moſque as Imam, and from the pulpit conſtantly harangued the people.

The following year, being the 195th of the Hegira, the khalif Al Amin, finding that his brother ſet him at defiance, declared war againſt him, and ſent his general Ali Ebn Iſa with an army of 60,000 men to invade Khoraſan. Al Mamun, being informed that Ali was advancing againſt him, collected all the troops he could raiſe, and gave the command to Thaher Ebn Hoſein, one of the greateſt generals of his age. Thaher choſe out only 4000 men, whom he led againſt Al Amin's army. Ali, ſeeing ſo ſmall a number of troops advancing againſt him, was tranſported with joy, and promiſed himſelf an eaſy victory. Deſpiſing his enemies, he acted in a ſecure and careleſs manner; the conſequence of which was, that his army was attacked by ſurpriſe, and entirely defeated, himſelf killed, and his head ſent as a preſent to Al Mamun. Upon this victory, Al Mamun aſſumed the title of khalif, ordered Al Amin's name to be omitted in the public prayers, and made preparations for carrying the war into the heart of his brother's dominions. For this purpoſe he divided his army into two bodies, and commanded them to march into Irak by different routes; one of them commanded by Thaher, the other by Harthema. The firſt directed his march towards Ahwas, and the other towards Holwan, both of them propoſing to meet in the neighbourhood of Bagdad, and after their junction to beſiege that city.

In the 196th year of the Hegira, Thaher made a moſt rapid progreſs with the troops under his command. Having advanced towards Ahwas, he defeated a body of the khalif's forces; and, though the victory was by no means deciſive, it ſo intimidated the commander of Ahwas, that he thought fit to ſurrender that fortreſs to him. This opened a way to Waſet upon the Tigris, and facilitated the conqueſt of that place. After this he marched with his army to Al Madayan; the inhabitants of which immediately opened their gates to him. The rapidity of theſe conqueſts, and the infamous conduct of Al Amin, excited the people of Egypt, Syria, Hejaz, and Yaman, unanimouſly to declare for Al Mamun; who was accordingly proclaimed khalif in all thoſe provinces. The next year, Al Mamun's forces under Thaher and Harthema laid ſiege to Bagdad. As the khalif was ſhut up in that place, and it had a numerous garriſon, the beſieged made a vigorous defence, and deſtroyed a great number of their enemies. The beſiegers, however, inceſſantly played upon the town with their catapultas, and other engines, though they were in their turn not a little annoyed by the garriſon with ſimilar military machines. The latter likewiſe made continual ſallies, and fought like men in deſpair, though they were generally beaten back with conſiderable loſs. In ſhort, the ſiege continued during the whole year, and the greateſt part of the eaſtern city, called the *Camp of Al Mohdi*, was demoliſhed or reduced to aſhes. The citizens, as well as the ſoldiers, were reduced to the laſt extremity by the length and violence of the ſiege.

In the beginning of the 198th year of the Hegira, Al Amin finding himſelf deſerted by his troops, as well as by the principal men of Bagdad, was obliged to retire to the old town on the weſt bank of the Tigris. He did not however, take this ſtep, before the inhabitants of the new town had formally depoſed him, and proclaimed his brother Al Mamun khalif. Thaher, receiving advice of this, cauſed the old town to be immediately inveſted, planted his engines againſt it, and obliged it to ſurrender. Al Amin, being thus reduced to the neceſſity of putting himſelf into the hands of one of the generals, choſe to implore the protection of Harthema. Thaher being informed of his deſign, which, if put in execution, he thought would eclipſe the glory he had acquired, laid an ambuſh for him, which he had not the good fortune to eſcape. Upon his arrival in the neighbourhood of Harthema's tent, Thaher's ſoldiers ruſhed upon him, killed his attendants, and put him in priſon. Here he was maſſacred by Thaher's ſervants, who carried his head in triumph to their maſter, by whoſe order it was afterwards expoſed to public view in the ſtreets of Bagdad. Thaher then ſent it to Al Mamun in Khoraſan, together with the ring or ſeal of the khalifat, the ſceptre, and the imperial robe. At the ſight of theſe, Al Mamun fell upon his knees, and returned thanks to God for his ſucceſs; making the courier a preſent of a million of dirhems, in value about 100,000l. ſterling.

The ſame day that Al Amin was aſſaſſinated, his brother Al Mamun was proclaimed khalif at Bagdad. He had not been long ſeated on the throne before he was alarmed by rebellions in different parts of the empire. Theſe, however, were happily extinguiſhed; after which, Thaher Ebn Hoſein had the government of Khoraſan conferred upon him and his deſcendants with almoſt abſolute and unlimited power. This took place in the 205th year of the Hegira, from which time we may date the diſmemberment of that province from the empire. During the reign of this khalif, nothing remarkable happened. He died of a ſurfeit in the 218th year of the Hegira, having reigned twenty and lived forty-nine years.

On the death of Al Mamun, his brother Al Motaſem, ſurnamed *Billah*, was made khalif. He ſucceeded by virtue of Al Mamun's expreſs nomination, in excluſion of his own ſon Al Abbas, and his brother Al Kaſem, who had been appointed by Harun Al Raſhid. In the beginning of his reign he was obliged to employ the whole forces of his empire againſt one Babec, who had been for a conſiderable time in rebellion in Perſia and Perſian Irak. This Babec firſt appeared in the year of the Hegira 201, when he began to take upon him the title of a *prophet*. What his particular doctrine was, is not known; but his religion is ſaid to have differed from all others in Aſia. He gained a great number of proſelytes in Aderbijan and the Perſian Irak, where he ſoon grew powerful enough to wage war with the khalif Al Mamun, whoſe troops he often beat, ſo that he was become extremely formidable. The general ſent againſt him by Al Motaſem, was Haider Ebn Kaus, ſurnamed *Afſhin*, a Turk, who had been brought a ſlave to the khalif's court, and, having been employed in diſciplining the Turkiſh militia, had acquired great reputation. By him Babec was defeated with prodigious ſlaughter, no fewer than 60,000 men being killed in the firſt engagement. The next year, being the 220th of the Hegira, he received a ſtill greater overthrow, loſing 100,000 men either killed or taken priſoners. By this defeat he was obliged to retire into the Gordyæan mountains; and at laſt ſhut himſelf up in a ſtrong fortreſs called *Cuſhabad*, which was his laſt reſource. Here he defended himſelf with great bravery for ſeveral months; but, finding he ſhould be obliged to ſurrender, he made his eſcape into a neighbouring wood, from whence he came and ſubmitted to Afſhin, upon that general's promiſing him pardon. But Afſhin no ſooner had him in his power, than he cauſed his head to be ſtruck off. Babec had ſupported himſelf againſt the power of the khalifs for upwards of twenty years, during which time he had cruelly maſſacred 250,000 people; it being his cuſtom to ſpare neither man, woman, nor child, of the Mahometans or their allies.

In the 223d year of the Hegira, the Greek emperor Theophilus invaded the khalif's territories, where he behaved with the greateſt cruelty, and by deſtroying Sozopetra the place of Al Motaſem's nativity, occaſioned the deſtruction of AMORIUM, mentioned under that article. The remainder of this khalif's reign is remarkable for nothing but the execution of Afſhin, who was accuſed of holding correſpondence with the khalif's enemies. After his death a great number of idols were found in his houſe, which were immediately burned, as were alſo ſeveral books, ſaid to contain impious and deteſtable opinions.

In the 227th year of the Hegira died the khalif Al Motaſem, in the forty-ninth year of his age. He reigned eight years, eight months, and eight days, was born in the eighth month of the year, fought eight battles, employed 8000 ſlaves, and had 8,000,000 dinars and 80,000 dirhems in his treaſury at his death, whence the oriental hiſtorians gave him the name of *Al Mothamen*, or the *Octonary*. He is ſaid to have been ſo robuſt, that he carried a burden of 1000 pounds weight ſeveral paces. As the people of Bagdad diſturbed him with frequent revolts and commotions, he reſolved to abandon that city, and built another for his own reſidence. The new city was firſt called *Samarra*, and afterwards *Sarra Manray*, and ſtood in the Arabian Irak. He was attached to the opinion of the Motazalites, who maintain the creation of the Koran; and both he and his predeceſſor cruelly perſecuted thoſe who believed it to be eternal.

Al Motaſem was ſucceeded by Al Wathek Bilah, who the following year, being the 228th of the Hegira, invaded and conquered Sicily. Nothing remarkable happened during the reſt of his reign; he died in the 232d year of the Hegira, and was ſucceeded by his brother Al Motawakkel. This khalif began his reign with an act of the greateſt cruelty. The late khalif's vizir having treated Al Motawakkel ill in his brother's life-time, and oppoſed his election to the khalifat, was on that account now ſent to priſon. Here the khalif ordered him to be kept awake for ſeveral days and nights together: after this, he was thrown into an iron furnace lined with ſpikes heated red-hot, where he was miſerably burnt to death. During this reign the ſprings at Mecca failed to ſuch a degree, that the celebrated well Zemzem was almoſt dried up, and the water ſold for 100 dirhems a bottle. In the 247th year of the Hegira, the khalif was aſſaſſinated at the inſtance of his ſon Al Montaſer; who ſucceeded him, and died in ſix months. He was ſucceeded by Al Moſtain, who in the year of the Hegira 252 was forced to abdicate the throne by his brother Al Motazz, who afterwards cauſed him to be privately murdered. He did not long enjoy the dignity of which he had ſo iniquitouſly poſſeſſed himſelf; being depoſed by the Turkiſh militia (who now began to ſet up and depoſe khalifs as they pleaſed) in the 255th year of the Hegira. After his depoſition, he was ſent under an eſcort from Sarra Manray to Bagdad, where he died of thirſt or hunger, after a reign of four years and ſeven months. The fate of this khalif was peculiarly hard: the Turkiſh troops had mutinied for their pay; and Al Motazz, not having money to ſatiſfy their demands, applied to his mother Kabiha for 50,000 dinars. This ſhe refuſed, telling him ſhe had no money at all, although ſhe was poſſeſſed of immenſe treaſures. After his depoſition, however, ſhe was obglied to diſcover her riches, and even depoſit them in the hands of the new khalif Al Mokhtadi. They conſiſted of 1,000,000 dinars, a buſhel of emeralds, and another of pearls, and three pounds and three quarters of rubies.

Al Mokhtadi, the new khalif, was the ſon of one of Al Wathek's concubines named Korb, or Karb, who is ſuppoſed to have been a Chriſtian. The beginning of his reign is remarkable for the irruption of the Zenjians, a people of Numidia, Ethiopia, and the country of the Caffres, into Arabia, where they penetrated to the neighbourhood of Baſra and Cufa. The chief of this banditti was Ali Ebn Mohammed Ebn Abdalrahman, who pretended to be of the family of Ali Ebn Abu Taleb. This made ſuch an impreſſion upon the Shiites in thoſe parts, that they flocked to him in great numbers; which enabled him to ſeize upon the cities of Baſra and Ramla, and even to paſs the Tigris at the the head of a formidable army. He then took the title of *Prince of the Zenjians*, in order to ingratiate himſelf with thoſe barbarians, of whom his army was principally compoſed.

In the 256th year of the Hegira, Al Mokhtadi was murdered by the Turks who had raiſed him to the throne, and was ſucceeded by Al Montamed the ſon of Al Motawakkel. This year the prince of the Zenjians, Ali, or as he is called *Al Habib*, made incurſions to the very gates of Bagdad, doing prodigious miſchief wherever he paſſed. The khalif therefore ſent againſt him one Jolan with a conſiderable army; but he was overthrown with very great ſlaughter, by the Zenjian, who made himſelf maſter of twenty-four of the khalif's largeſt ſhips in the bay of Baſra, put a vaſt number of the inhabitants of Obolla to the ſword, ſeized upon the town, and ſoon reduced it to aſhes. From thence he marched to Abadan, which likewiſe ſurrendered to him. Here he found an immenſe treaſure, which enabled him to poſſeſs himſelf of the whole diſtrict of Ahwaz. In ſhort, his army being now increaſed to 80,000 men, moſt of the adjacent territories, and even the khalif's court itſelf, was ſtruck with terror.

In the 257th year of the Hegira, Al Habib ſtill continued victorious, defeated ſeveral armies ſent againſt him by the khalif, reduced the city of Baſra, and put 20,000 of the inhabitants to the ſword. The following year, the khalif, ſupported by his brother Al Mowaffek, formed a deſign of circumſcribing the power of the Turkiſh ſoldiery, who had, as it were, given law to the khalifs themſelves. But the Zenjians made ſo rapid a progreſs in Perſia, Arabia, and Irak, that he was obliged to ſuſpend the execution of his deſign, and even to employ the Turkiſh troops to aſſiſt his brother Al Mowaffek in oppoſing thoſe invaders. The firſt of the khalif's generals who encountered Al Habib this year, was defeated in ſeveral engagements, and had his army entirely deſtroyed. After this, Al Mowaffek, and another general named *Moſleh*, advanced againſt him. In the firſt engagement Moſleh being killed by an arrow, the khalif's troops retired; but Al Mowaffek put them afterwards in ſuch a poſture of defence, that the enemy durſt not renew the attack. Several other ſharp encounters happened this year, in which neither party gained great advantage; but, a contagious diſtemper breaking out in Al Mowaffek's army, he was obliged to conclude a truce, and retire to Waſet to refreſh his troops.

In the 259th year of the Hegira, Al Mowaffek ſent Mahammed, ſurnamed *Al Mowalled*, with a powerful army againſt the Zenjians; but he could not prevent them from ravaging the province of Ahwaz, nor from cutting off about 50,000 of the khalif's ſubjects, and diſmantling the city of Ahwaz; and, notwithſtanding the utmoſt efforts of all the khalif's generals, no conſiderable advantages were gained either this or the following year. In the 261ſt year of the Hegira, Mohammed Ebn Waſel, who had killed the khalif's governor of Fars, and made himſelf maſter of that province, had ſeveral engagements with Al Habib, but with what ſucceſs is not known. The khalif, having been apprized of the ſtate of affairs on that ſide, annexed the government of Fars, Ahwaz, and Baſra, to the prefecture he had given to Muſa Ebn Boga, one of the beſt generals he had. Muſa, ſoon after his preferment, ſent Abdalrahman Ebn Moſſeh as his deputy to Ahwaz, giving him as a colleague and aſſiſtant one Tiſam, a Turk. Mohammed Ebn Wafel, however, refuſing to obey the orders of Abdalrahman and Tiſam, a fierce conflict enſued, in which the latter were defeated, and Abdalrahman taken priſoner. After this victory, Mohammed advanced againſt Muſa Ebn Boga himſelf; but that general, finding he could not take poſſeſſion of his new government without a vaſt effuſion of blood, recalled the deputies from their provinces, and made the beſt of his way to Sarra Manray. After this, Yakub Ebn Al Leit, having taken Khoraſan from the deſcendants of Thaher, attacked and defeated Mohammed Ebn Waſel, ſeizing on his palace and money, amounting to 40,000,000 dirhems. The next year, Yakub Ebn Leit, grown formidable by theſe acquiſitions, declared war againſt the khalif. Againſt him Al Motamed diſpatched Al Mowaffek; who, having defeated him with prodigious ſlaughter, plundered his camp, and purſued him into Khoraſan; where, meeting with no oppoſition, he entered Niſabur, and releaſed Mahomet the Thaherian, whom Yakub had detained in priſon three years. Yakub made his eſcape with great difficulty, tho' he continued ſeveral years in poſſeſſion of many of the conqueſts he had made. This war with Yakub proved a ſeaſonable diverſion in favour of Al Habid, who this year defeated all the forces ſent againſt him, and ravaged the diſtrict of Waſet. The following year, being the 263d of the Hegira, the khalif's forces, under the command of Ahmed Ebn Lebuna, gained two conſiderable advantages over Al Habib; but, being drawn into an ambuſcade, they were almoſt totally deſtroyed, their general making his eſcape with the utmoſt difficulty; nor were the khalif's forces able, during the courſe of the next year, to make head againſt theſe rebels.

In the 265th year of the Hegira, beginning September 3d, 878, Ahmed Ebn Tolun alſo rebelled againſt the khalif, and ſet up for himſelf in Egypt. Having aſſembled a conſiderable force, he marched to Antioch, and beſieged Sima the governor of Aleppo, and all the provinces known among the Arabs by the name of *Al Awaſem*. As the beſieged found that he was reſolved to carry the place by aſſault, they thought fit, after a ſhort defence, to ſubmit, and to put Sima into his hands. Ahmed no ſooner had that officer in his power, than he cauſed him to be beheaded; after which he advanced to Aleppo, the gates of which were immediately opened to him. He then reduced Damaſcus, Hems, Hamath, Kinniſrin, and Al Rakka. This rebellion ſo exaſperated Al Motamed, that he cauſed Ahmed to be publicly proſcribed in all the moſques belonging to Bagdad and Irak; and Ahmed on his part ordered the ſame malediction to be poured out againſt the khalif in all the moſques within his juriſdiction. This year alſo a detachment of Al Habib's troops penetrated into Irak, and made themſelves maſters of four of the khalif's ſhips laden with corn; then they advanced to Al Nomanic, laid the greateſt part of it in aſhes, and carried off ſeveral of the inhabitants priſoners. After this they poſſeſſed themſelves of Jarjaraya, and deſtroyed all the adjacent territory with fire and ſword. This year there were four independent powers in the Moſlem dominions, beſides the houſe of Ommiyah in Spain, viz. the African Moſlems, or Aglabites, who had for a long time acted independently; Ahmed in Syria and Egypt; Al Leit in Khoraſan; and Al Habib in Arabia and Irak.

In the 266th year of the Hegira, beginning Auguſt 23d, 879, Al Habib reduced Ramhormoz, burnt its ſtately moſque to the ground, put a number of the inhabitants to the ſword, and carried away a vaſt quantity of ſpoil. This was his laſt ſucceſsful campaign; for the year following, Al Mowaffek, attended by his ſon Abul Abbas, having attacked him with a body of 10,000 horſe and a few infantry, notwithſtanding the vaſt diſparity of numbers (Al Habib's army amounting to 100,000 men), he defeated him in ſeveral battles, recovered moſt of the towns he had taken, together with an immenſe quantity of ſpoil, and releaſed 5000 women, who had been thrown into priſon by the barbarians. After theſe victories, Al Mowaffek took poſt before the city of Al Mabiya', built by Al Habib, and the place of his reſidence; burnt all the ſhips in the harbour; thoroughly pillaged the town, and diſmantled it. After the reduction of this place, in which he found immenſe treaſures, Al Mowaffek purſued the flying Zenjians, put ſeveral of their chiefs to the ſword, and advanced to Al Mokhtara, a city built by Al Habib. As the place was ſtrongly fortified, and Al Habib was poſted in its neighbourhood, with an army, according to Abu Jaafer Al Tabari, of 300,000 men, Al Mowaffek perceived that the reduction of it would be a matter of ſome difficulty. He therefore built a fortreſs oppoſite to it, where he erected a moſque, and coined money. The new city, from its founder, was called by the Arabs *Al Mowaffekkia*, and ſoon rendered conſiderable by the ſettlement of ſeveral wealthy merchants there. The city of Al Mokhtara being reduced to great ſtraits was at laſt taken by ſtorm, and given up to be plundered by the khalif's troops; after which Al Mowaffek defeated the forces of Al Habib ſo completely, that they could no more be rallied during that campaign.

The following year, being the 268th of the Hegira, Al Mowaffek penetrated again into Al Mabiya', and demoliſhed the fortifications which had been raiſed ſince its former reduction, though the rebels diſputed every inch of ground. Next year he again attacked Al Habib with great bravery; and would have entirely defeated him, had he not been wounded in the breaſt with an arrow, which obliged him to retreat. But, as ſoon as he was cured of his wound, Al Mowaffek advanced a third time to Al Mabiya', made himſelf maſter of that metropolis, threw down the walls, put many of the inhabitants to the ſword, and carried a vaſt number of them into captivity.

The 270th year of the Hegira, commencing July 11th, 883, proved fatal to the rebel Al Habib. Al Mowaffek made himſelf a fourth time maſter of Al Mabiya', burnt Al Habib's palace, ſeized upon his family, and ſent them to Sarra Manray. As for the uſurper himſelf, he had the good fortune to eſcape at this time; but, being cloſely purſued into the province of Ahwaz, he at laſt fell into the hands of the victor, who ordered his head to be cut off, and carried through a great part of that region which he had ſo long diſturbed. By this complete victory, Al Mowaffek obtained the title of *Al Naſir Lidmilbah*, that is, the protector of Mahometaniſm. This year alſo died Ahmed Ebn Tolun, who had ſeized upon Egypt and Syria; and he was ſucceeded by his ſon Khamarawiyah. The next year, a bloody engagement happened between the khalif's forces commanded by Al Mowaffek's ſon, and thoſe of Khamarawiyah. The battle was fought between Al Ramla and Damaſcus. In the beginning, Khamarawiyah found himſelf ſo hard preſſed, that his men were obliged to give way; upon which, taking for granted that all was loſt, he fled with great precipitation; but, in the mean time, his troops being ignorant of the flight of their general, returned to the charge, and gained a complete victory. After this, Khamarawiyah, by his mild adminiſtration, gained ſo entirely the affections of his ſubjects, that the khalif found it impoſſible to diſplace him. In the 276th year of the Hegira, he overthrew one of the khalif's generals, named Abul Saj, at Al Bathnia, near the city of Damaſcus; after which he advanced to Al Rakka on the Euphrates, and made himſelf maſter of that place. Having annexed ſeveral large provinces to his former dominions, and left ſome of his friends in whom he could confide to govern them, he returned into Egypt, the principal part of his empire, which now extended from the Euphrates to the borders of Nubia and Ethiopia.

The following year, being the 278th of the Hegira, was remarkable for the death of Al Mowaffek. He died of the elephantiaſis or leproſy; and, while in his laſt illneſs, could not help obſerving, that, of 100,000 men whom he commanded, there was not one ſo miſerable as himſelf. This year is alſo remarkable for the firſt riſe in the Moſlem empire of the Karmatians. The origin of this ſect is not certainly known; but the received opinion is, that a poor fellow, by ſome called *Karmata*, came from Khuzeſtan to the villages near Cufa, and pretended great ſanctity and ſtrictneſs of life, and that God had enjoined him to pray fifty times a-day; pretending alſo to invite people to the obedience of a certain imam of the family of Mahomet; and by this means he acquired a very great party, out of whom he choſe twelve as his apoſtles to govern the reſt, and to propagate his doctrines. He then aſſumed the title of *prince*, and obliged every one of his followers to pay him a dinar a-year. But Al Haidam, governor of that province, finding his men neglected their work, and their huſbandry in particular, to ſay thoſe fifty prayers a-day, he ſeized the fellow, and having put him in priſon, ſwore he ſhould die. This being overheard by a girl belonging to the governor, ſhe, out of compaſſion, took the key of the dungeon at night from under her maſter's head, releaſed the man, and reſtored the key to its place while her maſter ſlept. The next morning the governor found his priſoner gone; which, being publicly known, raiſed great admiration; Karmata's adherents giving out that God had taken him into heaven. After this he appeared in another province, and declared, that it was not in the power of any perſon to do him hurt; notwithſtanding which, his courage failing him, he retired into Syria, and was never heard of more. After his diſappearance, the ſect continued and increaſed; his diſciples pretending that their maſter had manifeſted himſelf to be a true prophet, and had left them a new law, wherein he had changed the ceremonies and form of prayer uſed by the Moſlems, &c. From this year, 278, theſe ſectaries gave almoſt continual diſturbance to the khalifs and their ſubjects, committing great diſorders in Chaldæa, Arabia, and Meſopotamia, and at length eſtabliſhed a conſiderable principality.

In the 279th year of the Hegira died the khalif Al Motamed; and was ſucceeded by Al Motaded, who was ſon to Al Mowaffek. He carried on a war with the Karmatians, but very unſucceſsfully, his forces being defeated with great ſlaughter, and his general Al Abbas taken priſoner. This khalif alſo granted to Harun, ſon to Khamarawiyah, the perpetual prefecture of Awaſam and Kinniſrin, which he annexed to that of Egypt and Syria, upon condition that he paid him an annual tribute of 45,000 dinars. He died in the year of the Hegira 289, and was ſucceeded by his ſon Al Moctaſi.

This khalif proved a warlike and ſucceſsful prince. He gained ſeveral advantages over the Karmatians, but was not able to reduce them. The Turks, however, having invaded the province of Mawarnalnahr, were defeated with great ſlaughter; after which, Al Moctaſi carried on a ſucceſsful war againſt the Greeks, from whom he took Seleucia. After this he invaded Syria and Egypt, which provinces he recovered from the houſe of Ahmed Ebn Tolun. The reduction of Egypt happened in the 292d year of the Hegira, after which the war was renewed with ſucceſs againſt the Greeks and Karmatians. The khalif died in the 295th year of the Hegira, after a reign of about ſix years and a half. He was the laſt of the khalifs who made any figure by their warlike exploits. His ſucceſſors, Al Moktader, Al Kaher, and Al Radi, were ſo depreſſed by the Karmatians and other uſurpers, who were every day ſtarting up, that, by the 325th year of the Hegira, they had nothing left but the city of Bagdad. In the 324th year of the Hegira, commencing November 30th, 935, the khalif Al Radi, finding himſelf diſtreſſed on all ſides by uſurpers, and having a vizir of no capacity, inſtituted a new office ſuperior to that of vizir, which he intitled *emir al-omra*, or commandant of commandants. This great officer was truſted with the management of all military affairs, and had the entire management of the finances in a much more abſolute and unlimited manner than any of the vizirs ever had. Nay, he officiated for the khalif in the great moſque at Bagdad, and had his name mentioned in the public prayers throughout the kingdom. In ſhort, the khalif was ſo much under the power of this officer, that he could not apply a ſingle dinar to his own uſe without the leave of the emir al-omra. Finally, in the year 325, the Moſlem empire, once ſo great and powerful, was ſhared among the following uſurpers.

The cities of Waſet, Baſra, and Cufa, with the reſt of the Arabian Irak, were conſidered as the property of the emir al-omra, though they had been in the beginning of the year ſeized upon by a rebel called *Al Baridi*, who could not be driven out of them. The country of Fars, Farſeſtan, or *Perſia* properly ſo called, was poſſeſſed by Amado'ddawla Ali Ebn Buiya, who reſided in the city of Shiraz. Part of the tract, denominated *Al Jebal*, together Perſian Irak, which is the mountainous part of Perſia, and the country of the ancient Parthians, obeyed Rucno'ddowla, the brother of Amado'ddawla, who reſided at Iſpahan. The other part of that country was poſſeſſed by Waſhmakin the Deylamite. Diyar Rabia, Diyar Becr, Diyar Modar, and the city of Al Mawſel, or Moſul, acknowledged for their ſovereign a race of princes called *Hamdanites*. Egypt and Syria no longer obeyed the khalifs, but Mahomet Ebn Taj, who had formerly been appointed governor of thoſe provinces. Africa and Spain had long been independent. Sicily and Crete were governed by princes of their own chooſing. The provinces of Khoraſan and Mawaralnahr, were under the dominion of Al Naſr Ebn Ahmed, of the dynaſty of the Sammarians. The provinces of Tabreſtan, Jorjan, or Georgiana, and Mazanderan, had kings of the firſt dynaſty of the Deylamites. The province of Kerman was occupied by Abu Ali Mahomet Ebn Eylia Al Sammani, who had made himſelf maſter of it a ſhort time before. And the provinces of Yamama and Bahrein, including the diſtrict of Hajr, were in the poſſeſſion of Abu Thaher the Karmatian. Thus the khalifs were inſenſibly deprived of all their dominions, and reduced to the rank of ſovereign pontiffs; in which light, though they continued for ſome time to be regarded by the neighbouring princes, yet their power never arrived at any height. In this abject ſtate the khalifs continued till the year of the Hegira 656, commencing January 8th, 1258. This year was remarkable for the taking of Bagdad by Hulaku the Mogul or Tartar; who aboliſhed the khalifate, putting the reigning khalif, Al Moſtaſem Bilah, to a moſt cruel death. Theſe conquerors, after they had taken the city, maſſacred, according to cuſtom, a vaſt number of the inhabitants; and, after they had plundered it, ſet it on fire. The ſpoil they took was prodigiouſly great, Bagdad being then accounted the firſt city in the world.

Bagdad remained in the hands of the Tartars or Moguls till the year of the Hegira 795, or of Chriſt 1392, when it was taken by Tamerlane, from Sultan Ahmed Ebn Weis; who, being incapable of making head againſt Tamerlane's numerous forces, ſent his baggage over the Tigris, and abandoned his capital to the conqueror. He was purſued to the plain of Karbella, where ſeveral ſkirmiſhes happened, and a conſiderable number of men were loſt on both ſides. Notwithſtanding this diſaſter, he found means to eſcape the fury of his purſuers, took refuge in the territories of the Greek emperor, and afterwards repoſſeſſed himſelf of the city of Bagdad. There he remained till the year of the Hegira 803, when the city was taken a ſecond time by Tamerlane; who, nevertheleſs, reſtored it to him, and he continued ſovereign of the place till driven from thence by Miram Shaw. Still, however, he found means to return; but, in the 815th year of the Hegira, he was finally expelled by Kara Yuſef the Turkman. The deſcendants of Kara Yuſef continued maſters of Bagdad till the year of the Hegira 875, of Chriſt 1470, when they were driven out by Uſun Caſſan. The family of this prince continued till the year of the Hegira 914, A. D. 1508, when Iſhmael, ſurnamed *Sufi* or *Sofi*, the firſt prince of the royal family reigning in Iran or Perſia, till the dethroning of the late Shah Hoſein, made himſelf maſter of it. From that time to the preſent, Bagdad has continued to be a bone of contention between the Turks and Perſians. It was taken by Soliman, ſurnamed the *magnificent*, and retaken by Shah Abbas the Great, king of Perſia: but being at length beſieged by Amruth or Morad IV. it was finally obliged to ſurrender to him in the year 1638; ſince which time the Perſians have never been able to make themſelves maſters of it for any length of time.

The city, in its preſent ſtate, is large and populous; and the advantage of the Tigris is ſo conſiderable, with regard to commerce, that, although the climate is exceſſive hot, and in other reſpects far from being agreeable, yet the number of its inhabitants is computed at 300,000; but, before the plague had ſo much ravaged there, they were ſuppoſed to be four times that number. It is governed by a baſhaw, whoſe authority extends as far as Courdiſtan. The revenues would be immenſe were the government mild: but oppreſſion rules with the moſt deſpotic ſway. The baſhaw is continually extorting money from the inhabitants, and none ſuffer more than the mercantile Jews and Chriſtians, many of whom are put to the moſt cruel tortures in order to force their property from them. This ſeries of oppreſſion has almoſt entirely driven them out of the city, in conſequence of which the trade muſt ſuffer conſiderably, they being generally the principal merchants in the place. In the months of June, July, and Auguſt, the weather is ſo extremely hot, as to oblige the inhabitants to live in ſubterranean apartments, which are arched over, to admit a freer circulation of air. The houſes are generally large, built of brick and cement, and and many of the windows are made of elegant Venetian glaſs; the ceilings are moſtly ornamented with a kind of chequered work, which has a noble appearance; moſt of the houſes have a court-yard, in the middle of which is a plantation of orange-trees, which has a pleaſing effect. The ſoil, which would produce not only every neceſſary of life, but almoſt every luxury, is, through the natural indolence of the Turks, and the many faults in the government, in a great meaſure uncultivated and neglected. The revenues are computed at 125 lacks of piaſtres, or 1,562,500l. ſterling; but a quarter part of this is not collected, owing to the ſlothfulneſs of the Turks, who ſuffer the Arabs to plunder them of the remainder. This in ſome meaſure accounts for the cruelties and extortions that are continually practiſed here. As the baſhaw lives in all the ſplendour of a ſovereign prince, and maintains a large army, he could not be able to defray his expences, were he not to have recourſe to oppreſſion and injuſtice. By his extenſive power, he acts almoſt independent of the Porte, and only acknowledges it, to draw a balance annually in his favour.

The bazars or markets are large and extenſive, covered with arches built of maſonry, and divided into different ſtreets, filled with ſhops of all kinds of merchandize, to the number of 12,000. Every thing a perſon can have occaſion for may be had here, being annually ſupplied by the Smyrna, Aleppo, and weſtern, caravans. The number of houſes in the city is computed at near 80,000; and each houſe and ſhop pay an annual tribute to the baſhaw, which is calculated to produce the ſum of 300,000l. ſterling. On the north ſide of the town ſtands the caſtle, which commands the river; and conſiſts of curtains and baſtions, on which ſome very long cannon are mounted, with two mortars in each baſtion.

The city, which is fortified by lofty walls of brick covered with earth, and ſtrengthened by towers and baſtions, ſurrounded by a deep ditch, is in the form of an irregular ſquare; but the walls in many places are broken down, occaſioned by the diſputes which happened on the death of Abdulla baſhaw a few years ago, when two competitors aroſe in Bagdad for the baſhawic, who fought ſeveral times in the town and citadel, and laid great part of it in ruins. In the interim, the governor of Muſſool and Nineveh, being appointed baſhaw by the Porte, came hither with a conſiderable army, and took poſſeſſion of the ſovereignty, vanquiſhing his two opponents. There is a communication between the city and ſuburbs by a bridge of boats; the only kind of bridge which that river will admit of, as it is broad and deep, and in its ordinary courſe very rapid. At certain ſeaſons it ſwells to a prodigious height, and overflowing the country occaſions many moraſſes on that ſide oppoſite the city. Among theſe are ſeveral towns and villages, whoſe inhabitants are ſaid to be the ancient Chaldeans: they are of a particular religion, which they pretend is that of Seth. The inhabitants of Bagdad are compoſed chiefly of Perſians, Armenians, Turks, Arabs, and Jews, which laſt act in the capacity of ſchroffs, or bankers, to the merchants. The Jews, notwithſtanding the ſevere treatment they meet with from the government, are induced to live here from a reverence to the prophet Ezekiel, whoſe mauſoleum they pretend is a day's journey from the city. Beſides the Jews who reſide here, there are many that come annually to viſit the prophet's tomb. Two chapels are permitted, for the uſe of the Romiſh and Greek perſuaſions. In the city are ſeveral large beautiful moſques; but into which Chriſtians are never ſuffered to enter, if known to be ſuch, for fear it ſhould defile them. The Mahometan women are very richly dreſſed, wearing bracelets on their arms and jewels in their ears: the Arabian women have the partition between their noſtrils bored, wherein they wear rings. There are alſo a number of antique buildings. At the diſtance of about ten miles, ſtand the ruins of the *Tower of Nimrod.* Whether this tower was at firſt of a ſquare or round form, is now difficult to determine. The height of the ruin is 126 feet; the diameter of the largeſt and middle part about 1000 feet. It would appear to be ſolid to the centre, yet near the top there is a regular opening of an oval form. The circumference of that part of the tower which remains, and is above the rubbiſh, is about 300 feet; but probably, could the foundation be ſeen, it would be found of far greater extent. The preſent Turks, Jews, and Arabians, are fond of believing this to be the identical ruin of the ancient tower of Babel; for which they aſſign a variety of reaſons; but all ſo void of probability, no confidence can be placed in them. It appears to have been a beacon or watch-tower, to give notice of the approach of an enemy: or perhaps was uſed as an obſervatory to inſpect the motions of the heavenly bodies; which ſcience was ſo much cultivated among the ancient inhabitants of this country, that even the Grecians, though deſirous of being eſteemed the inventors of all arts and ſciences, could never deny the Babylonians the honour of having laid the foundations of aſtronomy.

BA'GENBON HEAD, a cape of Ireland, in the Atlantic Ocean, on the ſouth coaſt of the county of Wexford. Lat. 52. 9. N. lon. 6. 48. W. Greenwich.

BA'GENDON, or BAG'GENTON, a village of the county of Glouceſter, near which a battle is ſaid to have been fought between the Britons and Saxons, in the year 556; it is three miles north of Cirenceſter.

BAG'FORD (John), a celebrated antiquary, and collector of curious old books, prints, &c. was originally a ſhoemaker, afterwards a bookſeller; and laſtly, for the many curioſities wherewith he enriched the famous library of Dr. John Moore, biſhop of Ely, his lordſhip got him admitted into the Charter-houſe. He was ſeveral times in Holland, and other foreign parts, where he procured many valuable books, prints, &c. for the earl of Oxford, who, after his death, purchaſed all his collections, papers, &c. for his library. In 1707 were publiſhed, in the Philoſophical Tranſactions, his propoſals for a general hiſtory of printing. He died at Iſlington, May 15, 1716, aged ſixty-five years. An account of his entries for a general hiſtory of printing, is in the catalogue of the Harleian collection of MSS. A number of his letters to Humphry Wanley may be ſeen in the Britiſh Muſeum; and a large part of his collections is in the public library at Cambridge.

BAG'GAGE, *ſ.* [from *bag*; *baggage*, Fr.] The furniture and utenſils of an army.—The army was an hundred and ſeventy thouſand footmen, and twelve thouſand horſemen, beſide the *baggage*. *Judith.*—Riches are the *baggage* of virtue, they cannot be ſpared, nor left behind, but they hinder the march. *Bacon.*—The goods that are to be carried away, as *bag* and *baggage*.—Dolabella deſigned, when his affairs grew deſperate in Egypt, to pack up *bag* and *baggage*, and ſail for Italy. *Arbuthnot.*—A worthleſs woman; in French *bagaſſe*; becauſe ſuch women follow camps.—A ſpark of indignation did riſe in her, not to ſuffer ſuch a *baggage* to win any thing of hers. *Sidney.*

PACKING UP THE BAGGAGE, *vaſa colligere*, was a term among the Romans, for preparing to go to war, or to be ready for an expedition. The Romans diſtinguiſhed two ſorts of baggage; a *greater* and *leſs*. The leſs was carried by the ſoldier on his back, and called *ſarcina*; conſiſting of the things moſt neceſſary to life, and which he could not do without. Hence *colligere ſarcinas*, packing up the baggage, is uſed for decamping, *caſtra movere*. The greater and heavier was carried on horſes and vehicles, and called *onera*. Hence *onera vehiculorum*, *ſarcinæ hominum*. The baggage-horſes were denominated *ſagmentarii equi*. The Roman ſoldiers in their marches were heavy laden; inſomuch, that they were called, by way of jeſt, *muli mariani*, and *ærumnæ*. They had four ſorts of luggage, which they never went without, viz. corn, or *bucellatum*, utenſils, valli, and arms. Cicero obſerves, that they uſed to carry with them above half a month's proviſions; and we have inſtances in Livy, where they carried proviſions for a whole month. Their utenſils comprehended thoſe proper for gathering fuel, dreſſing their meat, and even for fortification and intrenchment; and, what is more, a chain for binding captives. For arms, the foot carried a ſpear, ſhield, ſaw, baſket, rutrum, hatchet, lorum, falx, &c. Alſo ſtakes or pales, *valli*, for the ſudden fortifying a camp; ſometimes ſeven, or even twelve, of theſe pales were carried by each man; though generally, as Polybius tells us, only three or four. On the Trajan column we ſee ſoldiers repreſented with this fardle of corn, utenſils, pales, &c. gathered into a bundle and laid on their ſhoulders. Thus inured to labour, they grew ſtrong, and able to undergo any fatigue in battle; the greateſt heat of which never tired them, or put them out of breath. In after-times, when diſcipline grew ſlack, this luggage was thrown on carriages and porters ſhoulders. The Macedonians were not leſs inured to hardſhip than the Romans: when Philip firſt formed an army, he forbad all uſe of carriages; yet, with all their load, they would march, in a ſummer's day, twenty miles in rank and file.

To BAGGE, *v. n.* To ſwell, to diſdain. *Chaucer.*

BAG'GENLY, *adv.* Swellingly, proudly.

BA'GIA, a town of Perſia, in the province of Farſiſtan, 120 miles north-eaſt of Schiras.

BAGITAN', a town of Perſia, in the province of Segeſtan, 110 miles north of Zareng.

BAGIU'RA, a town of Egypt, twenty-five miles ſouth of Girgé.

BAGLA'NA, or BUGLA'NA, a province of the kingdom of Dekkan in the Mogul's empire. It is bounded on the north and eaſt by Guzerat and Ballagat; and on the ſouth and weſt by that part of Viziapur called *Konhan*, belonging to the Mahrattas. It ends in a point at the ſea-coaſt between Daman and Balſora, and is the leaſt province in the kingdom. The Portugueſe territories begin in this province at the port Daman, twenty-one leagues ſouth of Surat; and run along the coaſt by Baſſaim, Bombay, and Chawl, to Dabul, almoſt fifty leagues to the north of Goa.

BAGLI'VI (George), an illuſtrious phyſician of Italy, was a native of Apulia, and born about the year 1668. He firſt ſtudied at Padua, and then went to Rome, where he was choſen profeſſor of anatomy. He was a man of uncommon force of underſtanding, of which he gave ample proofs in many curious and accurate productions, philoſophical as well as medicinal. He died at Rome, in 1706, in the flower of his age, being no more than thirty-eight. His Praxis Medica, and De Fibra Matrices, are his principal works. He wrote a Diſſertation upon the Anatomy, Bite, and Effects, of the Tarantula; and he gave a particular account of the earthquake at Rome, and the adjacent cities, in 1703.

BAG'NA, a town of Servia, 20 miles N. E. of Parakin.

BAGNACAVAL'LO, a town of Italy, in the ſtate of the Church, and duchy of Ferrara, on the river Seno, forty miles weſt of Ravenna.

BAGNAGAR'. See HYDRABAD.

BAGNALET', a town of France, one league E. of Paris.

BAGNA'RA, a ſea-port town of Italy, in the kingdom of Naples, and province of Calabria Ultra, deſtroyed by an earthquake in 1783; fourteen miles weſt of Oppido.

BAGNAREI'A, a town of Italy, in the ſtate of the Church, and province of Patrimonio, the ſee of a biſhop, held immediately under the pope; ſix miles S. of Orvieto.

BAGNE'RES DE LUCHON, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of St. Gaudens, near the ſource of the river Garonne, at the foot of the Pyrenees. It has ſome medicinal ſprings; is twenty leagues ſouth-weſt of Thoulouſe, and ſeven ſouth of St. Gaudens.

BAGNE'RES EN BIGOR'RE, a town of France, and principal place of a diſtrict, in the department of the Higher Pyrennees, ſituated on the Adour, celebrated for its baths and mineral waters, which are much frequented in ſpring and autumn; is ten miles ſouth of Tarbes, and twenty-five ſouth-eaſt of Pau. Lat. 45. 3. N. lon. 17. 48. E. Ferro.

BAGNEU'X, a town of France, one league and a half ſouth-ſouth-weſt of Paris.

BA'GNI, a town of European Turkey, in Romania; forty miles weſt of Filippopoli.

BAGNI, a town of Italy, in the kingdom of Naples, and country of Lavora; eight miles ſouth of Sezza.

BAGNI, or AQUA, a town of Italy, in the duchy of Tuſcany; fifteen miles eaſt of Leghorn.

BAGNI, a town of European Turkey, in the province of Macedonia, on the river Vardar; forty-four miles north-north-eaſt of Akrida.

BAG'NIGGE-WELLS-WATERS. Theſe wells are ſituated at the bottom of a hill on the ſouth-weſt ſide of Iſlington; the water is clear, and taſtes ſlightly brackiſh, like a weak ſolution of Epſom ſalt. From a gallon of this water evaporated were got by Dr. Bevis, 135 grains of inſoluble earth, 257 of bitter purging ſalt, mixed with a marine ſalt, from whence they derive their purging quality. Dr. Monro thinks, that it is probable that the ſalt of this water is moſtly an Epſom ſalt, mixed with a good deal of bittern; becauſe it runs eaſily per deliquium, and is very difficult to cryſtallize. In moſt conſtitutions three half-pints is conſidered a full doſe for purging.

BA'GNIO, *ſ.* [from *bagno*, Ital. a bath.] A houſe for bathing, ſweating, and otherwiſe cleanſing the body. Vulgarly, a brothel.—I have known two inſtances of malignant fevers produced by the hot air of a *bagnio*. *Arbuthnot.*

Bagnios, in all the Mahometan countries, are wonderfully well conſtructed for bathing. Sometimes they are ſquare, but moſtly circular, built of well-poliſhed ſtone or marble. Each bagnio contains three rooms; the firſt for dreſſing and undreſſing; the ſecond contains the water, and the third the bath; all of them paved with black and white marble. The operation is very curious, but wholeſome; though, to thoſe not accuſtomed to it, it is painful. The attendant rubs the bather with great vigour, then ſtretches the limbs, as if he were diſlocating every bone in the body; all which exerciſes are, in thoſe inert warm countries, very conducive to health. In public bagnios the men bathe from morning to four in the afternoon; at which time, all male attendants being removed, the ladies ſucceed, and when coming out of the bath diſplay their fineſt clothes. In Turkey, the word *bagnio* is a general name for the priſons where the ſlaves are incloſed, becauſe in all ſuch places it is uſual to have baths.

BAGNO'LIANS, or BAGNOLAN'SES, a ſect of heretics, who in reality were Manichees, though they ſomewhat diſguiſed their errors. They rejected the Old Teſtament and part of the New; held the world to be eternal; and affirmed that God did not create the ſoul when he infuſed it into the body.

BAGNOL'S, a town of France, in the department of the Gard, and chief place of a canton, in the diſtrict of Pont St. Eſprit; two leagues ſouth of Pont St. Eſprit.

BAGNOLS LES BAINS, a town of France, in the department of the Lozerre, and chief place of a canton, in the diſtrict of Mende; eight miles eaſt of Mende.

BAGNUO'LO, a town of Italy, in the kingdom of Naples, and Principato Ultra; twelve miles weſt of Conza.

BAGO'I, *ſ.* among the Perſians, were the ſame with thoſe called by the Latins *ſpadones*, viz. a ſpecies of eunuchs, in whom the canal of the penis was ſo contorted by a tight vinculum, that they could not emit the ſemen.

BAG'PIPE, *ſ.* [from *bag* and *pipe*; the wind being received in a bag.] A muſical inſtrument, conſiſting of a leathern bag, which blows up like a foot-ball, by means of a port-vent or little tube fixed to it, and ſtopped by a valve and three pipes or flutes, the firſt called the great pipe or drone, and the ſecond the little one, which paſs the wind out only at the bottom; the third, called the chanter, has a reed, and is played on by compreſſing the bag under the arm, when full; and opening and ſtopping the holes, which are eight, with the fingers.—The *bagpipe* takes in the compaſs of three octaves. *Chambers.*

The following are the ſpecies of bagpipes moſt commonly known in this country. 1. The *Iriſh pipe.* This is the ſofteſt and moſt melodious of any, ſo that muſic-books have been publiſhed with directions how to play on it. The chanter has eight holes like the Engliſh flute, and the baſs conſiſts of two ſhort drones and a long one. The loweſt note of the chanter is D on the German flute, being the open note on the counter-ſtring of a violin. 2. The *Highland bagpipe.* This conſiſts of a chanter and two ſhort drones, which ſound in uniſon the loweſt note of the chanter, except one. This is exceedingly loud, and is therefore moſtly uſed in the field, for marches, &c. It requires a prodigious blaſt to ſound it; ſo that thoſe unaccuſtomed to it cannot imagine how Highland pipers can continue tō play for hours together, as they are often known to do. For the ſame reaſon, thoſe who uſe the inſtrument are obliged either to ſtand on their feet or walk when they play. Thoſe who are beſt acquainted with it, affirm that it plays only the natural notes, without being capable of variation by flats or ſharps. 3. The *Scots Lowland pipe.* This is alſo a very loud inſtrument. It is blown with bellows, and hath a baſs like the Iriſh pipe. This ſpecies is different from all the reſt, as it cannot play the natural notes, but hath F and C ſharp. The loweſt note of a good bagpipe of this kind, is uniſon with C ſharp on the tenor of a violin tuned concert-pitch; and, as it hath but nine notes, the higheſt is D in alt. From this peculiar conſtruction, the Highland and Lowland bagpipes play two kinds of muſic, eſſentially different from one another, as each of them alſo is from every other ſpecies of muſic in the world. 4. The *ſmall pipe.* This is remarkable for its ſmallneſs, the chanter not exceeding eight inches in length; for which reaſon, the holes are ſo near each other, that it is with difficulty they can be cloſed. This hath only eight notes, the lower end of the chanter being commonly ſtopped. Some of this ſpecies, inſtead of having drones like the others, have their baſs parts conſiſting of a winding cavity in a kind of ſhort caſe, and are turned by opening theſe to a certain degree by means of ſliding covers; from which contrivance they are called *ſhuttle-pipes.* Beſides theſe, there are a variety of others, called *Italian*, *German*, *Organ*, &c. bagpipes, which have nothing different in their conſtruction from thoſe above deſcribed, nor any good quality to recommend them.

As to the origin of bagpipe muſic, ſome are of opinion that it is to be derived from the Danes; but Mr. Pennant thinks differently, and gives the following reaſons for deriving it from Italy. "Neither of theſe inſtruments (the Highland and Lowland bagpipes above deſcribed) were the invention of the Danes, or, as is commonly ſuppoſed, of any of the northern nations; for their ancient writers prove them to have been animated by the *clangor tubarum.* Notwithſtanding they have had their ſœck pipe long amongſt them, as their old ſongs prove, yet we cannot allow them the honour of inventing this melodious inſtrument; but muſt aſſert, that they borrowed it from the invaded Caledonians. We muſt ſtill go farther, and deprive even that ancient race of the credit; and derive its origin from the mild climate of Italy, perhaps from Greece. There is now in Rome a moſt beautiful bas relievo, a Grecian ſculpture of the higheſt antiquity, of a bagpiper playing on his inſtrument, exactly like a modern Highlander. The Greeks had their ασκαυλης, or inſtrument compoſed of a pipe and blown-up ſkin: the Romans in all probability borrowed it from them, and introduced it among their ſwains, who ſtill uſe it under the names of *piva* and *cornumuſa.* That maſter of muſic, Nero, uſed one; and, had not the empire been ſo ſuddenly deprived of that great artiſt, he would (as he graciouſly declared his intention) have treated the people with a concert, and, among other curious inſtruments, would have introduced the *utricularius*, or bagpipe. Nero periſhed; but the figure of the inſtrument is preſerved on one of his coins, but highly improved by that great maſter: it has the bag and two of the vulgar pipes; but was blown with a bellows like an organ, and had on one ſide a row of nine unequal pipes reſembling the ſyrinx of the god Pan. The bagpipe, in the unimproved ſtate, is alſo repreſented in an ancient ſculpture; and appears to have had two long pipes or drones, and a ſingle ſhort pipe for the fingers. Tradition ſays, that the kind played on by the mouth was introduced by the Danes; as theirs was wind-muſic, we will admit that they might have made improvement, but more we cannot allow: they were ſkilled in the uſe of the trumpet; the Highlanders in the piohb, or bagpipe.

> *Non tuba in uſu illis, conjecta at tibia in utrum*
> *Dat belli ſignum, et martem vocat horrida in arma.*"

The bagpipe appears to have been an inſtrument of great antiquity in Ireland, though it is uncertain whence they derived it. Mr. Pennant, by means of an antique found at Richborough in Kent, ſhews that the bagpipe was introduced at a very early period into Britain; whence it is probable that both Iriſh and Danes might borrow the inſtrument from the Caledonians, with whom they had ſuch frequent intercourſe. Ariſtides Quintilianus informs us, that it prevailed in the Highlands in very early ages; and indeed the genius of the people ſeems to render the opinion highly probable. The attachment of that people to this muſic is almoſt incredible. At the battle of Quebec, in 1760, while the Britiſh troops were retreating in great diſorder, the general complained to a field officer in Fraſer's regiment of the bad behaviour of his corps. "Sir, (ſaid he with ſome warmth,) you did very wrong in forbidding the pipers to play this morning: nothing encourages the Highlanders ſo much in the day of action. Nay, even now they would be of uſe."—"Let them blow like the devil, then, (replies the general,) if it will bring back the men." The pipers were then ordered to play a favourite martial air; and the Highlanders, the moment they heard the muſic, returned and formed with alacrity in the rear. In the late war in India, Sir Eyre Coote, aware of the attachment of the Highlanders to their favourite inſtrument, gave them 50l. to buy a pair of bagpipes after the battle of Porto Nuovo.

BAGPI'PER, *ſ.* One that plays on a bag-pipe.

BAGSZELAR', a town of European Turkey, in the province of Bulgaria, twenty miles north-eaſt of Ternova.

BAGUET'TE, *ſ.* [Fr. a term of architecture.] A little round moulding, leſs than an aſtragal; ſometimes carved and enriched.

BAHA'MA, or LUÇAY'A, ISLANDS, are the eaſtermoſt of the Antilles, lying in the Atlantic ocean. They are ſituated to the ſouth of Carolina, between 22° and 27° N. lat. and 73° and 81° W. lon. They extend along the coaſt of Florida quite down to the iſle of Cuba, and are ſaid to be 500 in number, ſome of them only mere rocks; but twelve of them are large, fertile, and in nothing different from the ſoil of Carolina: the principal of theſe are, Bahama, Eleuthera, Lucayonequa, Yuma or Exuma, Providence, and Guanahani. All are, however, uninhabited except Providence, which is 200 miles eaſt of the Floridas; though ſome others are larger and more fertile, on which the Engliſh have plantations. Between them and the continent of Florida is the gulf of Bahama, or Florida, through which the Spaniſh galleons ſail in their paſſage to Europe. Theſe iſlands are the firſt-fruits of Columbus's diſcoveries; but they were not known to the Engliſh till 1667, when captain Seyle, being driven among them in his paſſage to Carolina, gave his name to one of them; and, being a ſecond time driven upon it, gave it the name of *Providence.* The Engliſh, obſerving the advantageous ſituation of theſe iſlands for being a check on the French and Spaniards, attempted to ſettle them in the reign of Charles II. Some unlucky accidents prevented this ſettlement from being of any advantage; and the iſle of Providence became an harbour for the buccaneers or pirates, who for a long time infeſted the American navigation. This obliged the government in 1718 to ſend out captain Woodes Rogers with a fleet to diſlodge the pirates, and for making a ſettlement. This the captain effected; a fort was erected, and an independent company was ſtationed in the iſland. Ever ſince this laſt ſettlement theſe iſlands have been improving, though they advance but ſlowly. In time of war, people gain conſiderably by the prizes condemned there; and at all times by the wrecks, which are frequent in this labyrinth of rocks and ſhelves. The Spaniards and Americans captured theſe iſlands in 1782; but they were retaken by a detachment from St. Auguſtine April 7, 1783.

BA'HAR, or Barr'e, *ſ.* in commerce, weights uſed in ſeveral places in the Eaſt Indies. There are two of theſe weights; one the great bahar, with which they weigh pepper, cloves, nutmegs, ginger, &c. and contains 550lb. of Portugal, or about 524lb. 9 oz. avoirdupois-weight. With the little bahar, they weigh quickſilver, vermillion, ivory, ſilk, &c. It contains about 437lb. 9 oz. avoirdupois-weight.

Bahar, a country of Hindoſtan, bounded on the eaſt by Bengal, on the north by Nepal and Morung, on the ſouth by Oriſſa, and on the weſt by Oude and Benares. It is 250 miles from north to ſouth, and 200 from eaſt to weſt; and produces wheat, rice, peaſe, &c. but the principal article of export is ſaltpetre. Patna is the capital.

Bahar, a town of Hindoſtan, and once the capital of a country, to which it gives name; remarkable for the number of magnificent funeral monuments. It is thirty miles ſouth-eaſt of Patna, and 220 north-weſt of Calcutta. Lat. 25. 14. N. lon. 85. 45. E. Greenwich.

Bahar, a town of Perſia, in the province of Kerman, forty miles ſouth-eaſt of Sirgian.

BAHA'REN, an iſland in the Perſian gulf, ſituated in lat. 26. 0. N. lon. 50. 0. E. This iſland is chiefly remarkable for its pearl-fiſhery, and has often changed its maſters. It fell with Ormus under the dominion of the Portugueſe, was again reſtored to Perſia by Thamas Kouli Khan; and after his death the confuſion into which his empire was thrown, gave an opportunity to an enterpriſing and ambitious Arab of taking poſſeſſion of the iſland, where he ſtill maintains his authority. Baharen was famous for its pearl-fiſhery even at the time when pearls were found at Ormus, Karek, Kaſhy, and other places in the Perſian gulf: but it is now become of much greater conſequence; all the other banks having been exhauſted, while this has ſuffered no ſenſible diminution. The time of fiſhing begins in April, and ends in October. It is confined to a tract four or five leagues in breadth. The pearls taken at Baharen, though not ſo white as thoſe of Ceylon or Japan, are much larger than thoſe of the former place, and more regularly ſhaped than thoſe of the latter. They have a yellowiſh colour; but have alſo this good quality, that they preſerve their golden hue, whereas the whiter kind loſe much of their luſtre by keeping, eſpecially in hot countries. The annual revenue from the Baharen pearl-fiſhery is computed at about 157,500l. The greateſt part of the pearls that are uneven are carried to Conſtantinople and other ports of Turkey, where the larger go to compoſe ornaments for head-dreſſes, and the ſmaller are uſed in embroideries. The perfect pearls muſt be reſerved for Surat, whence they are diſtributed through all Hindoſtan.

BA'HAS, a town of Arabia, ſixteen miles north-north-weſt of Loheia.

BAHAU'DER, *ſ.* A military title, ſimilar to that of knight. The word is Indian, and ſignifies 'great, grand, noble.' In the Eaſt Indies, *nabob bahauder* ſignifies 'noble or incomparable knight,' the bahauders in Hindoſtan being what the knights were in Europe. The ſultaun or ſovereign, among the Moguls, gives the title of bahauder to any officer after a battle who has diſtinguiſhed himſelf by an extraordinary exploit, or uncommon example of fortitude and courage. There is no ceremony annexed to the creation; the ſultaun or commander in chief applauds his conduct, and calls him *bahauder*; which title is afterwards given him indiſcriminately by every body. A bahauder hath great dignity; he may go every where completely armed, cauſing a gilded mace to be carried before him; and may appear thus even in the preſence of his ſovereign.

BAH'BELGONG, a town of Hindoſtan, in the Baglana country, ſixty miles eaſt of Naſſuck, and ſixty-five weſt of Aurungabad.

BA'HI, a province of Lucon or Manilla, one of the Philippine iſlands, in the Eaſt Indies, belonging to the Spaniards. It is remarkable for producing excellent betel, which the inhabitants of the place chew from morning till night.

BA'HIA (De Todos los Sanctos), a province of Braſil in South America, belonging to the Portugueſe, and the richeſt in the whole country; but unhappily the air and climate do not correſpond with the other natural advantages: yet ſo fertile is the province in ſugar and other commercial articles, that the Portugueſe flock hither, not only as it is the ſeat of affluence, but alſo of pleaſure and grandeur. The capital is called *St. Salvador*, or *Cividad de Bachia.*

BA'HIR, *ſ.* a Hebrew term ſignifying 'famous' or 'illuſtrious;' but particularly uſed for a book of the Jews, treating of the profound myſteries of the cabbâla, being the moſt ancient of the rabbinical works.

BAHI'RA, or Rif, the northern diſtrict of Egypt, which extends from the diviſion of the Nile to the eaſt and weſt branches, on both ſides to the Mediterranean. The principal towns are Alexandria, Roſetta, Damietta, Menuf, Manſoura, Tineh, Catieh, and Foua.

BARAITCH', a town of Hindoſtan, in the province of Oude, fifty-two miles north-north-weſt of Fyzabad, and fifty-five north-north-eaſt of Lucknow. Lat. 27. 30. N. lon. 81. 57. E. Ferro.

BAH'RENBURG, a town of Germany, in the circle of Weſtphalia, and county of Hoya, on the river Suhlingen, fourteen miles ſouth-ſouth-weſt of Hoya.

BA'HUS, a river of France, which runs into the Adour, about a league above St. Sever.

Bahus, or Bohus, a ſtrong town of Sweden, and capital of a juriſdiction to which it gives name, built in the year 1309, by Hacquin IV. king of Norway, and paſſed with that country to the kings of Denmark, who fortified it in the modern manner; but, in 1658, was ceded to Sweden by the treaty of Roſchild. It is ten miles north of Gottenburg. Lat. 57. 52. N. lon. 29. 19. E. Ferro.

Bahus, or Bohus, a diſtrict of Sweden, in Weſt Gothland. The land is fertile, and much interſected by rivers and lakes, which yield great quantities of excellent fiſh. The principal commodities for exportation are fiſh, wood, pitch, lime, tallow, and hides.

BA'JA, Bay'jah, or Be'gia, a town of the kingdom of Tunis in Africa, ſuppoſed to be the ancient *Vacca* of Salluſt, and *Oppidum Vaggenſe* of Pliny. It is a place of great trade, and the chief market of the kingdom for corn; of which the adjacent territories produce ſuch abundance, that they can ſupply more than the whole kingdom with it. Here is alſo a great annual fair, to which the moſt diſtant Arabian tribes reſort with their families and flocks. The town ſtands on the declivity of a hill on the road to Conſtantina, about ten leagues from the northern coaſt, and thirty-ſix ſouth-weſt from Tunis.

Baja, a town of Hungary, on the river Danube, fifty miles north-north-weſt of Peter Waradin.

BAI'A, a town of Italy, in the kingdom of Naples, and country of Lavora, eleven miles weſt of Naples.

BAI-ABAD', a town of Aſiatic Turkey, in the province of Caramania, 28 miles ſouth-eaſt of Kaſtamoni.

BAI'Æ, an ancient village of Campania in Italy, on the Sinus Baianus; famous for its hot baths, which ſerved the wealthier Romans for the purpoſes both of medicine and pleaſure. The variety of theſe baths, the ſoftneſs of the climate, and the beauty of the landſcape, captivated the minds of opulent nobles, whoſe paſſion for bathing knew no bounds. Abundance of linen, and diſuſe of ointments, render the practice leſs neceſſary in modern life; but the ancients performed no exerciſe, engaged in no ſtudy, without previous ablutions, which at Rome occaſioned an enormous expence in aqueducts, ſtoves, and attendants: a place therefore, where waters naturally heated bubbled ſpontaneouſly out of the ground, in the pleaſanteſt of all ſituations, was ſuch a treaſure as could not be overlooked. Baiæ was this place in the higheſt perfection; its eaſy communication with Rome was alſo a point of great weight. Hither at firſt retired for a temporary relaxation the mighty rulers of the world, to ſtring anew their nerves and revive their ſpirits, fatigued with bloody campaigns and civil conteſts. Their habitations were at firſt ſmall and modeſt: but ſoon increaſing luxury added palace to palace with ſuch expedition and ſumptuoſity, that ground was wanting for the vaſt demand: enterpriſing architects, ſupported by infinite wealth, carried their foundations into the ſea, and drove that element back from its ancient limits. From being a place of reſort for a ſeaſon, Baiæ ſoon grew up to a permanent city: whoever found himſelf diſqualified by age, or infirmity, for ſuſtaining any longer an active part on the political theatre; whoever, from an indolent diſpoſition, ſought a place where the pleaſures of a town were combined with the ſweets of a rural life; whoever wiſhed to withdraw from the dangerous neighbourhood of a court, and the baneful eye of informers; flocked hither to enjoy life untainted with fear and trouble. Such a flow of wealthy inhabitants rendered Baiæ as much a miracle of art as it was before of nature; its ſplendour may be inferred from its innumerable ruins, heaps of marbles, moſaics, ſtucco, and other precious fragments of taſte. It flouriſhed in full glory to the days of Theodoric the Goth; but the deſtruction of theſe enchanted palaces followed quickly upon the irruption of the northern conquerors, who overturned the Roman ſyſtem, ſacked and burnt all before them, and deſtroyed or diſperſed the whole race of nobility. Loſs of fortune left the Romans neither the means, nor indeed the thought, of ſupporting ſuch expenſive eſtabliſhments, which can only be enjoyed during peace and proſperity. No ſooner had opulence withdrawn her hand, than the unbridled ſea ruſhed back upon its old domain; moles and buttreſſes were torn aſunder and waſhed away; whole promontories, with the proud towers that once crowned their brows, were undermined and tumbled headlong into the deep, where, many feet below the ſurface, pavements of ſtreets, foundations of houſes, and maſſes of walls, may ſtill be diſcerned. Internal commotions of the earth contributed alſo to this general devaſtation; mephitic vapours and ſtagnated waters have converted this favourite ſeat of health into a ſource of peſtilence, at leaſt during the eſtival heats: yet Baiæ in its ruined ſtate, and ſtripped of all its ornaments, ſtill preſents many beautiful and ſtriking ſubjects for the pencil.

BAJADOR', a cape on the weſt coaſt of Africa, ſouth of the Canary iſlands.

BAJADOUR', *ſ.* in old records, a carrier or bearer of burdens.

BAIA'NUS SI'NUS, a bay ſo called from *Baiæ*, or *Portus Baiarum. Pliny.* It was enlarged by Auguſtus, by giving entrance to the ſea into the Lacus Lucrinus, and Averni, ordering it to be called Portus Julius apud Baias. *Suetonius.* We alſo read Baianus Lacus in Tacitus, which ſome interpret Lucrinus. The modern name is *Golfo di Pozzuolo.* From the higheſt point that forms the bay, a large caſtle commands the road, where ſhips of war uſually ride at anchor, the harbour of Naples not being ſpacious enough for the reception of a fleet: here they enjoy good ſhelter, watering, and victualling; but in ſummer riſk the health of their crews, on account of the unwholeſomeneſs of the air.

BA'JAZET I. ſultan of the Turks, a renowned warrior, but a tyrant, was conquered by Tamerlane, and expoſed by him in an iron cage; the fate he had deſtined (it is ſaid) for his adverſary if he had been the victor. The iron cage, however, ſo long and ſo often repeated as a moral leſſon, has been rejected as a fable by modern writers, who ſmile at the vulgar credulity. They appeal to the Perſian hiſtory of Sherefeddin Ali, of which a French verſion has been given, and from which the late Mr. Gibbon has collected the following more ſpecious narrative of this memorable tranſaction. "No ſooner was Timour informed that the captive Ottoman was at the door of his tent, than he graciouſly ſtepped forwards to receive him, ſeated him by his ſide, and mingled with juſt reproaches a ſoothing pity for his rank and misfortune. 'Alas!' ſaid the emperor, 'the decree of fate is now accompliſhed by your own fault: it is the web which you have woven, the thorns of the tree which yourſelf have planted. I wiſhed to ſpare, and even to aſſiſt, the champion of the Moſlems: you braved our threats, you deſpiſed our friendſhip; you forced us to enter your kingdom with our invincible armies. Behold the event. Had you vanquiſhed, I am not ignorant of the fate which you reſerved for myſelf and my troops. But I diſdain to retaliate: your life and honour are ſecure; and I ſhall expreſs my gratitude to God by my clemency to man.' The royal captive ſhewed ſome ſigns of repentance, accepted the humiliation of a robe of honour, and embraced with tears his ſon Mouſa, who, at his requeſt, was ſought and found among the captives of the field. The Ottoman princes were lodged in a ſplendid pavilion; and the reſpect of the guards could be ſurpaſſed only by their vigilance. On the arrival of the haram from Bourſa, Timour reſtored the queen Deſpina and her daughter to their father and huſband; but he piouſly required, that the Servian princeſs, who had hitherto been indulged in the profeſſion of Chriſtianity, ſhould embrace without delay the religion of the prophet. In the feaſt of victory, to which Bajazet was invited, the Mogul emperor placed a crown on his head and a ſceptre in his hand, with a ſolemn aſſurance of reſtoring him with an increaſe of glory to the throne of his anceſtors. But the effect of this promiſe was diſappointed by the ſultan's untimely death: amidſt the care of the moſt ſkilful phyſicians, he expired of an apoplexy at Akſhehr, the Antioch of Piſidia, about nine months after his defeat. The victor dropped a tear over his grave; his body, with royal pomp, was conveyed to the mauſoleum which he had erected at Bourſa; and his ſon Mouſa, after receiving a rich preſent of gold and jewels, of horſes and arms, was inveſted by a patent in red ink with the kingdom of Anatolia.

Such is the portrait of a generous conqueror, which has been extracted from his own memorials, and dedicated to his ſon and grandſon, nineteen years after his deceaſe; and, at a time when the truth was remembered by thouſands, a manifeſt falſehood would have implied a ſatire on his real conduct. On the other hand, of the harſh and ignominious treatment of Bajazet there is alſo a variety of evidence. The Turkiſh annals in particular, which have been conſulted or tranſcribed by Leunclavius, Pocock, and Cantemir, unanimouſly deplore the captivity of the iron cage; and ſome credit may be allowed to national hiſtorians, who cannot ſtigmatiſe the Tartar without uncovering the ſhame of their king and country." From theſe oppoſite premiſes, Mr. Gibbon thinks a fair and moderate concluſion may be deduced. He is ſatisfied that Sherefeddin Ali has faithfully deſcribed the firſt oſtentatious interview, in which the conqueror, whoſe ſpirits were harmoniſed by ſucceſs, affected the character of generoſity. But his mind was inſenſibly alienated by the unſeaſonable arrogance of Bajazet; the complaints of his enemies, the Anatolian princes, were juſt and vehement; and Timour betrayed a deſign of leading his royal captive in triumph to Sarmacand. An attempt to facilitate his eſcape by digging a mine under the tent, provoked the Mogul emperor to impoſe a harſher reſtraint; and, in his perpetual marches, an iron cage on a waggon might be invented, not as a wanton inſult, but as a rigorous precaution. Timour had read in ſome fabulous hiſtory a ſimilar treatment of one of his predeceſſors, a king of Perſia; and Bajazet was condemned to repreſent the perſon and expiate the guilt of the Roman Cæſar. But the ſtrength of his mind and body fainted under the trial, and his premature death might without injuſtice be aſcribed to the ſeverity of Timour. He warred not, however, with the dead; a tear and a ſepulchre were all that he could beſtow on a captive who was delivered from his power; and if Mouſa, the ſon of Bajazet, was permitted to reign over the ruins of Bourſa, the greateſt part of the province of Anatolia had been reſtored by the conqueror to their lawful ſovereigns.

BAIBACH'TA, a town of Siberia, on the river Irtiſch, ſeventy-two miles north-weſt of Tara.

BAIBAZAR', a town of Aſiatic-Turkey, in the province of Caramania, forty-eight miles weſt of Angura.

BAIBOUL', a town of Armenia, forty-five miles ſouth of Trebiſond.

BAI'CHA, two rivers of Siberia, ſo called, which run into the Turuchan; one thirty-two, the other fifty-ſix, miles north-weſt of Turuchanſk.

BAID'SCHEN, a town of Pruſſia, in the province of Lithuania, on the north ſide of the Piſſa: four miles eaſt of Gumbinnen.

To BAI'GNE, *v. a.* [*bagner*, Fr.] To drench; to ſoak: *a word out of uſe.*—The women forſlow not to *baigne* them, unleſs they plead their heels, with a worſe perfume than Jugurth found in the dungeon. *Carew.*

BAI'KAL, a lake of Siberia, or inland ſea, 320 miles in length, and twenty in breadth. It is environed on all ſides by high mountains. In one part of it, which lies near the river Barguſin, it throws up an inflammable ſulphureous kind of pitch, called *maltha*, which the people of the adjacent country purify, and burn in their lamps. There are likewiſe ſeveral ſulphureous ſprings near this lake. Its water at a diſtance appears of a ſea-green colour: it is freſh; and ſo clear, that objects may be ſeen in it ſeveral fathoms deep. It begins to freeze the latter end of December, and thaws again about the beginning of May. When it is frozen over, people travel upon it in the road to China; but they muſt be very ſharp ſhod, otherwiſe they cannot ſtand upon the ice, which is exceedingly ſmooth. Notwithſtanding the ice on this lake is ſometimes two ells thick, there are ſome open places in it, to which tempeſtuous winds will often drive thoſe who are croſſing it, in which caſe they are irrecoverably loſt. The camels that paſs along have a particular kind of ſhoes ſharp at bottom, and the oxen have ſharp irons driven through their hoofs, without which it would be impoſſible for them to ſtand. Here are plenty of large ſturgeon and pike; with many ſeals of the black kind. It contains ſeveral iſlands; and the borders are frequented by ſables and civet-cats. Lat. 51. 20. to 55. 20. N. lon. 121. 40. to 127. 30. E. Ferro.

BAIKALO'VA, a town of Siberia, 112 miles ſouth-ſouth-eaſt of Abakanſk.

BAIL, *ſ.* [*ballium*, Lat. *bailler*, Fr. of βαλλειν, Gr. to deliver into hands.] Is uſed in our common law for the freeing or ſetting at liberty of one arreſted or impriſoned upon any action, either civil or criminal, on ſurety taken for his appearance at a day and place certain. The reaſon why it is called *bail*, is becauſe by this means the party reſtrained is delivered into the hands of thoſe that bind themſelves for his forth-coming, in order to a ſafe keeping or protection from priſon: and the end of bail is to ſatisfy the condemnation and coſts, or render the defendant to priſon. With reſpect to bail in civil caſes it is to be obſerved, that there is both common and ſpecial bail: common bail is in actions of ſmall concernment, being called *common*, becauſe any ſureties in that caſe are taken; whereas in cauſes of greater weight, and value, ſpecial bail or ſurety muſt be taken, according to the value. 4 *Inſt.* 179. By ſtat. 23 Hen. VI. c. 9, Sheriffs, &c. are to let to bail perſons by them arreſted by force of any writ, in any perſonal action, &c. upon reaſonable ſureties, having ſufficient within the county to keep their days in ſuch place, &c. as the writs require.

Bail and mainprize are often uſed promiſcuouſly in our law books, as ſignifying one and the ſame thing, and agree in this notion, that they ſave a man from impriſonment in the common gaol; his friends undertaking for him, before certain perſons for that purpoſe authorized, that he ſhall appear at a certain day, and anſwer whatever ſhall be objected to him, in a legal way. 2 *Hawk. P. C.* c. 15. 4 *Inſt.* 180. The chief difference is, that a man's mainpernors are barely his ſureties, and cannot impriſon him themſelves to ſecure his appearance, as his bail may, who are looked upon as his gaolers, to whoſe cuſtody he is committed, and therefore may take him upon a Sunday, and confine until the next day, and then render him. 6 *Mod.* 231. *Ld. Raym.* 706.

Special bail, are two or more perſons who undertake generally or in a ſum certain, that, if the defendant be convicted, he ſhall ſatisfy the plaintiff, or render himſelf to the cuſtody of the marſhal; generally there are but two perſons who become bail for a defendant. Where the defendant has been arreſted or diſcharged out of cuſtody, upon giving a bail-bond to the ſheriff, he muſt at the return of the writ, to diſcharge ſuch bond, appear thereto, namely, by putting in ſpecial bail, or, as it is termed, bail above, ſo called, in contradiſtinction to the ſheriff's bail, or bail below; nor can he render himſelf in diſcharge of ſuch bond, without firſt putting in bail above. 5 *Burr.* 2683. By rule *M.* 1654, no attorney ſhall be bail for a defendant in any action; nor his clerk. *Cowp.* 228 *n. Vide Dougl. Rep.* 466, that an attorney may be admitted as bail in a criminal caſe. No ſheriff's officer, bailiff, or other perſons concerned in the execution of proceſs, ſhall be permitted to be bail in any action or ſuit depending in K. B. nor perſons outlawed after judgment. *R. M.* 14 Geo. II. The keeper of the Poultry Compter was rejected. *Dougl.* 466.

Of Bail in Civil Caſes.

In actions of battery, treſpaſs, ſlander, &c. though the plaintiff is likely to recover large damages, ſpecial bail is not to be had, unleſs by order of court, and the proceſs is marked for ſpecial bail: nor is it required in actions of account, or of covenant, except it be to pay money; nor againſt heirs or executors, &c. for the debt of the teſtator, unleſs they have waſted the teſtator's goods. 1 *Danv. Abr.* 681. If baron and feme are ſued, the huſband muſt put in bail for both; but, if the huſband does not appear upon the arreſt, the wife muſt file common bail before ſhe can be diſcharged; for otherwiſe the plaintiff could not proceed to obtain judgment. *Goldſ.* 127. *Cro. Eliz.* 370. *Cro. Jac.* 445. 1 *Mod.* 8. A feme covert was diſcharged out of cuſtody, becauſe ſhe was arreſted without her huſband; though the writ was ſued againſt both, and *non eſt inventus* returned as to the huſband. 1. *Term Rep.* 486. See ARREST.

In all actions brought in B. R. upon any penal law, the defendant is to put in but common bail. *Yelv.* 53. In actions where damages are uncertain, bail is to be at the diſcretion of the court: on a dangerous aſſault and battery, upon affidavit of ſpecial damages, a judge's hand may be procured for allowance of an *ac etiam* in the writ: and in action of *ſcandalum magnatum* the court on motion ordered ſpecial bail. *Raym.* 74. When bail is taken by the chief juſtice, or other judge on a habeas corpus, the bail taken in the inferior court is diſmiſſed; though the laſt bail be not filed preſently, nor till the next term. *Yelv.* 120, 121. Yet it has been held, where a cauſe is removed out of an inferior court by habeas corpus, if the bail below offer themſelves to be bail above, they ſhall be taken, not being excepted againſt below, unleſs the cauſe comes out of London. For the ſufficiency of the bail there is at the peril of the clerk, and he is reſponſible to the plaintiff: ſo that the plaintiff had not the liberty of excepting againſt them, and the clerk is not reſponſible for their deficiency in the court above, though he was in London. 1 *Salk.* 97. In London it is ſaid, ſpecial bail is to be given in action of account, &c. But on removal by habeas corpus into B. R. that court will accept common bail. 2 *Keb.* 404. There is not only bail to appear, &c. on writs of error; but alſo in *audita querela*, a recognizance of bail muſt be acknowledged; and upon a writ of attaint, to proſecute, &c. *Jenk. Cent.* 129.

By the ſtat. 3 Jac. I. c. 8, No execution ſhall be delayed by any writ of error or ſuperſedeas thereupon, unleſs bail ſhall be given, in double the ſum adjudged, to proſecute the writ of error with effect; and alſo to ſatisfy the debt, damages, and coſts, adjudged, &c. If a cauſe, removed from an inferior court, be remanded back by *procedendo* the ſame term, the original bail in the inferior court are chargeable, but not if remanded in another term. *Cro. Jac.* 363. One taken on a writ of execution is not bailable by law; except an *audita querela* be brought; but where a writ of error is brought and allowed, if the defendant be not in execution, there ſhall not be an execution awarded againſt him, at the requeſt of the bail, though he be preſent in court. 1 *Nelſ. Abr.* 331. The bail ought not to join with the principal, nor the principal with the bail, in a writ of error to reverſe the judgment againſt either. *Cro. Jac.* 384.

On *capis ad ſatisfaciendum* againſt the defendant returned *non eſt inventus*, *ſcire facias* is to iſſue againſt the bail, or an action may be brought. Where a defendant renders his body in diſcharge of the bail, the plaintiff is by the rules of the court to make his choice of proceeding in execution, whether he will charge body, goods, or lands. 1 *Lill.* 183. And, if the principal after judgment renders not himſelf in diſcharge of his bail, it is at the election of the plaintiff to take out execution either againſt him or proceed againſt his bail: but, if he takes the bail in execution, though he hath not full ſatisfaction, he ſhall never after take the principal; and, if the principal be taken, he may not after meddle with the bail. Where two are bail, although one be in execution, the plaintiff may take the other. *Cro. Jac.* 320. 2 *Bulſt.* 68. If a principal render himſelf, and there is none to require his commitment, the court is *ex officio* to commit him; and, if the plaintiff refuſe him, he ſhall be diſcharged, and an entry made of it upon the record. *Moor, Caſ.* 1249. 1 *Leon.* 59. There muſt be an *exonerctur* entered, to diſcharge the bail. If the defendant dies before a *capis ad ſatisfac.* againſt him returned and filed, the bail will be diſcharged. 1. *Lill.* 177.

The bail upon a writ of error cannot render the party in their diſcharge; becauſe they are bound in a recogniſance that the party ſhall proſecute the writ of error with effect, or pay the money if judgment be affirmed. 2 *Cro.* 402. 3 *Mod.* 87. Nor can the bail in ſuch caſe ſurrender the principal, though he become a bankrupt pending the writ of error. 1 *Term Rep.* 624. Before a *ſcire facias* taken out againſt bail, the principal may render his body in diſcharge of the bail: and, if the bail bring in the principal before the return of the ſecond *ſci. fac.* againſt them, they ſhall be diſcharged. 1 *Rol. Abr.* 250. 1 *Lill.* 471. Anciently the bail were to bring in the principal upon the firſt *ſcire fac.* or it would not be allowed. 3 *Bulſt.* 182.

If the bail mean to acquit themſelves of their recogniſance entirely, and run no hazard of the death of the defendant, then they muſt render him in their diſcharge, before the return of the *ca. ſa.* as the death of the principal afterwards will not diſcharge them. 2 *Wilſ.* 67. 2 *Cro.* 165. *Jon.* 139. *Str.* 511. But, if they do not, then they have until the return day (if the proceedings be by bill) *ſedente curia*, of the firſt *ſcire facias*, if it be returned *ſcire feci*, but if a *nihil* is returned thereon, then until the return day, *ſedente curia* of the ſecond *ſci. fa.* And, if the proceedings be by original, they have till the *quarto die poſt* of the return of the firſt *ſci. fa.* if returned *ſcire feci*; if not, then till the *quarto die poſt* of the return-day of the ſecond. 4 *Burr.* 2134. 1 *Wilſ.* 270. If an action be brought, then eight days in full term after the return. *R. Trin.* 1 *An.* If bail ſurrender the principal at or before the return of the ſecond *ſcire facias*, it is good, although there be not immediate notice of it to the plaintiff; and if, through want of notice, he is at further charge againſt the bail, that ſhall not vitiate the ſurrender, but the bail ſhall not be delivered till they pay ſuch charges: if at any time, after the return of the *capias*, the bail ſurrender the principal at a judge's chamber, and he thereupon is committed to the tipſtaff, from whom he eſcapes, &c. this will not be a good ſurrender: but if it be before, or on a *capias* returned, it is otherwiſe, the one being an indulgence, and the other matter of right. *Mod.* caſ. 238. When a perſon makes his eſcape out of priſon, and is retaken and bailed; the bail ſhall be diſcharged on writ to the ſheriff commanding him to keep the priſoner in diſcharge of the bail. 1 Anne, ſt. 2, c. 6.

The judges of the courts at Weſtminſter have power by ſtatute to appoint commiſſioners in every county to take recognizances of bail, in cauſes depending in their courts; and to make ſuch rules for juſtifying the bail as they ſhall think fit, &c. Stat. 4 & 5 Will. and Mary, c. 4. The commiſſioners are to take bail, but are obliged by rule of court to keep a book wherein are the names of the plaintiff, defendant, and bail, and the perſon who tranſmits the ſame, and who makes affidavit that the recogniſance was duly acknowledged in his preſence: on ſuch affidavit the judges make a conditional *allocatur*, and the bail are to ſtand abſolute, unleſs the plaintiff excepts againſt them within twenty days, and, if he excepts, the bail may juſtify by affidavit before the commiſſioners in the country. *Gilb.* 32.

If a defendant puts in bail by a wrong name, the proceedings ſhall nevertheleſs be good; for otherwiſe every man impleaded may give a falſe name to his attorney by which he will be bailed, and then plead it in arreſt of judgment. *Goldſb.* 138. But it hath been held, that if the bail be entered in one name, and the declaration and all the proceedings are by a contrary name, it will be erroneous. *Cro. Eliz.* 223. So if there is bail, and the bail be taken off the file, the plaintiff is without remedy: though, where a *habeas corpus* and *bail-piece* were loſt in B. R. new ones were ordered to be made out. *Style* 261. Statute 21 Jac. I. c. 26, enacts, That it is felony without benefit of clergy to acknowledge, or procure to be acknowledged, any bail in the name of another perſon not privy or conſenting thereto; provided that it ſhall not corrupt the blood, nor take away the dower. Stat. 4 & 5 Will. and Mary, c. 4, ſ. 4, enacts, That any perſon, repreſenting or perſonating another before commiſſioners appointed to take bail, ſhall be adjudged guilty of felony.

Special bail, which is taken before a judge, or by commiſſioners in the country, when accepted, is to be filed; after twenty days notice given of putting in ſpecial bail before a judge, on a *cepi corpus*, if there be no exception, the bail ſhall be filed in four days. 1 *Lill. Abr.* 174. Upon a *cepi corpus* twenty days are allowed to except againſt the bail: ſo on a writ of error; and you need not give notice; but you cannot take out execution without giving a four-days rule to put in better bail: in all other caſes notice muſt be given. Upon a *habeas corpus*, eight-and-twenty days are appointed to except againſt the bail, and after that, if it be not excepted againſt, it ſhall be filed in four days. 1 *Salk.* 98. *R. M.* 8 *An.*

The exception to bail put in before a judge, muſt be entered in the bail-book, at the judge's chambers at the ſide of the bail there put in, after this manner: *I do except againſt this bail*, A. B. *attorn. for the plaintiff.* And, if there be no ſuch exception, the defendant's attorney may take the *bail-piece* from the judge's chamber, and file it. Bail is not properly ſuch until it is filed, when it is of record: but it ſhall be accounted good, till the ſame is queſtioned and diſallowed.

Bail cannot be juſtified before a judge in his chamber, except it be by conſent, or for neceſſity in vacation; but in the latter caſe they ought to be juſtified again in term, and upon that the defendant is compelled to accept a declaration to go to trial at the aſſiſes, if it be an iſſuable term; and, upon putting in bail, it is not enough to give notice of their being put in, but it ought to be of their names, places of abode, and trade or vocation, that the plaintiff may know how to enquire after them. 6 *Mod.* 24.

It being doubtful whether Sunday ſhould be reckoned as one day in notice to juſtify bail, it was determined *per cur.* that for the future Sunday ſhould not be accounted one, (it not being a proper day to enquire after bail;) but two days notice muſt be given, of which Sunday ſhall not be one; upon motion for defendant to juſtify bail, notice was ſerved Saturday June 23, to juſtify bail Monday 25; the notice being inſufficient, the bail was not ſuffered to juſtify. *Notes in C. B.* 220.

After the plaintiff has entered his exception, and given notice thereof to the defendant, the bail (to diſcharge the bond) muſt perſonally appear in court within the time limited by the rules thereof, and juſtify themſelves, (or by affidavit, if taken before commiſſioners in the country,) and the plaintiff may oppoſe them by his counſel; if it appear they are inſufficient, the court will reject them, and leave the plaintiff at liberty to proceed upon the bail-bond, or againſt the ſheriff. Bail coming to juſtify, and not being preſent at the ſitting of the court, muſt wait until the riſing.

Generally, bail are oppoſed on five grounds with effect. 1ſt, That there is ſome miſtake in the notice to juſtify; namely, that it ſhould have been given two days previous, inſtead of one. 2dly, That the bail have aſſumed names that are either feigned, or belong to other perſons, contrary to the ſtatutes 21 Jac. I. and 4 & 5 Will. and Mary. But the court will not vacate the proceedings againſt the party perſonated, until the offender be convicted (1 *Vent.* 301); nor can a conviction take place, until the bail-piece be filed. 2 *Sid.* 90. 3d. A third ground of oppoſing bail is, that they are not houſekeepers; if they be, the rent paid is immaterial, though under 10l. (*Loft.* 148); nor is it neceſſary they ſhould have been aſſeſſed to the poor's rate. 4thly, They may be oppoſed on the ground of their not being worth double the ſum ſworn to, after payment of all their debts. Under this head may be ranked bankrupts, who have not obtained their certificates; or ſuch as have been twice bankrupts, and not paid 15s. in the pound. *M.* 24 Geo. III. Laſtly, after the expiration of the rule to bring in the body. *Loft* 438. *M.* 20 Geo. III. If the bail do not juſtify at the day given (being the laſt day they have), they are out of court. Nor can they juſtify after the rule upon the ſheriff, to bring in the body, is expired, without leave of the court. *Loft.* 88.

In caſe the defendant by neglect has ſuffered the plaintiff to take an aſſignment of the bond, and he has loſt a trial; if he would wiſh to try the cauſe, he muſt move the court for that purpoſe on a ſpecial affidavit containing merits, if it be in term time; if in vacation, he may apply and obtain a judge's order, which will be granted, upon putting in and perfecting bail, paying the coſts incurred, receiving a declaration in the original action, pleading iſſuably, and taking ſhort notice of trial, ſo as not to delay the plaintiff, and conſenting that the bond ſtand as a ſecurity. But the court of K. B. has not yet ſaid, that the plaintiff ſhall take judgment on the actions upon the bond, although the practice in the Common Pleas is ſo.

If the bond be irregularly aſſigned, defendant may move the court to ſet the proceedings aſide for irregularity, upon an affidavit, ſtating the particular facts. If the court ſtay the proceedings on the bond, the defendant is not at liberty to plead in abatement, but in chief. *Salk.* 519; nor will the court order the bond to be delivered up to be cancelled, on the ground of a *miſnomer*. 3 *Term Rep.* 572.

Pending a rule to ſet aſide proceedings for irregularity, and to ſtay proceedings, plaintiff took an aſſignment of the bond in the mean time; the court agreed that the proceedings were totally ſuſpended, by an act of the court, and made the rule abſolute to ſet aſide the aſſignment of the bond, as having been made too ſoon. 4 *Term Rep.* 176.

The court may adjudge bail ſufficient, when the plaintiff will not accept of it. Alſo the court on motion, or a judge at his chamber, will order a common appearance to be taken, when ſpecial bail is not required, on affidavit made by the defendant of the ſmallneſs of the debt due, &c. The putting in of a declaration, and the acceptance of it by the defendant's attorney with the privity of the plaintiff's attorney, is an acceptance of the bail.

When a ſheriff hath taken good bail of the defendant, he will on a rule return a *cepi*, and aſſign the bail-bond to plaintiff, which may be done by indorſement without ſtamp, ſo as it be ſtamped before action brought thereupon; and then the defendant and bail may be ſued on the bond, by the plaintiff in his own name, i. e. as aſſignee of the ſheriff. Stat. 4 & 5 Anne, c. 16. The action muſt be brought in the ſame court, where the original writ was ſued out. 3 *Burr.* 1923. The *venue* may be laid in any county. *Str.* 727. 2 *Ld. Raym.* 1455. But, if the plaintiff takes an aſſignment of the bail-bond, though the bail is inſufficient, the court will not amerce the ſheriff. 1 *Salk.* 99. In caſe the defendant doth not put in bail, the attorney for the plaintiff is to call on the ſheriff for his return of the writ; and ſo proceed to an attachment againſt the ſheriff. If on a *cepi corpus* no bail is returned, a rule will be made out to bring in the defendant's body. Though a defendant, with leave of the court, may depoſit money in court inſtead of bail; and in ſuch caſe the plaintiff ſhall be ordered to wave other bail. *Lill. Abr. Trin.* 23 Car. B. R. If more damages, &c. are recovered than mentioned in the plaint, or than the ſum wherein the bail is bound, the bail will not be liable for the ſurplus. 1 *Salk.* 102. A bail cannot be witneſs for the defendant at the trial; but the court, on motion, will diſcharge the bail, upon giving other ſufficient bail. *Wood's Inſt.* 582. Bail-pieces are written on a ſmall ſquare piece of parchment, with the corners cut off at the bottom.

Of Bail in Criminal Cases.

At common law bail was allowed for all offences except murder. 2 *Inſt.* 109. And, if the party accuſed could find ſufficient ſureties, he was not to be committed to priſon; for all perſons might be bailed till convicted of the offence. 2 *Inſt.* 186. But by ſtatute it was after enacted, that in caſe of homicide the offender ſhould not be bailed: and, by our ſtatutes, murderers, out-laws, houſe-burners, thieves openly defamed, &c. are not bailable; but, where perſons are accuſed of larceny, as acceſſories to felony, or under light ſuſpicion, they may be admitted to bail. Stat. 3 Edw. I. c. 15.

One indicted and found guilty of the death of a man by miſadventure, as by caſting a ſtone over a houſe, and by chance killing a man, woman, or child, is not bailable. 3 Edw. III. *Corone* 354. One indicted of conſpiracy, viz. that he with others conſpired falſely to indict another of murder or felony, by means whereof he was indicted, and afterwards convicted, ſhall not be bailed. The reſolution of all the judges, upon the queſtion demanded by Edward III. himſelf, as appears 27 *Aſſ.* 1. One indicted for burglary may be bailed. 29 *Aſſ.* 44. One indicted on ſuſpicion of robbery was outlawed, and taken on the outlawry, and brought writ of error, and, being brought to B.R. by *habeas corpus*, prayed to be bailed, and took two exceptions to the indictment: 1ſt, That he was in priſon, and knew nothing of the outlawry. 2dly, That the charge is too general, and nobody proſecutes; but per *Roll* Ch. J.

he cannot be bailed. *Sty.* 418. But ſtat. 4 & 5 Will. and Mary, c. 18, enacts, that perſons outlawed, except for treaſon or felony, may appear by attorney and reverſe the ſame without bail; except ſpecial bail ſhall be ordered by the court: and that perſons arreſted upon any *capias utlagatum*, except for treaſon or felony, may be diſcharged by an attorney's engagement to appear: and, in caſes where ſpecial bail is required, the ſheriff may take bond with ſureties.

By the common law the ſheriff might bail perſons arreſted on ſuſpicion of felony, or for other offence bailable; but he hath loſt this power by the ſtat. 1 Edw. IV. c. 2. Juſtices of peace may let to bail perſons ſuſpected of felony, or others bailable, until the next ſeſſions: tho' where perſons are arreſted for manſlaughter or felony, being bailable by law, they are not to be let to bail by juſtices of peace but in open ſeſſions, or where two juſtices *(quorum unus)* are preſent; and the ſame is to be certified with the examination of the offender, and the accuſers bound over to proſecute, &c. 3 Hen. VII. c. 3; not to reſtrain juſtices in London and Middleſex, and towns corporate. 1 and 2 Phil. and Mary, c. 13. If a perſon be dangerouſly wounded, the offender may be bailed till the perſon is dead; but it is uſual to have aſſurance from ſome ſkilful ſurgeon, that the party is likely to do well. 2 *Inſt.* 186. A man arreſted and impriſoned for felony, being bailable, ſhall be bailed before it appears whether he is guilty or not; but when convicted, or if on examination he confeſſeth the felony, he cannot be bailed. 4 *Inſt.* 178.

It is to be obſerved, that the ſtat. Weſt. 1, 3 Edw. I. c. 15, above-mentioned, doth not extend to the judges of B. R. *&c.* only to ſheriffs and other inferior officers. *H. P. C.* 98, 99. Likewiſe juſtices of gaol delivery, not being within the reſtraint of the ſtatute of Weſtm. 1. may bail perſons convicted before them of homicide by miſadventure or ſelf-defence, the better to enable them to purchaſe their pardon. *Cromp.* 154 *a.* *H. P. C.* 101. Alſo it ſeems that in diſcretion they may bail a perſon convicted before them of manſlaughter, upon ſpecial circumſtances; as if the evidence againſt him were ſlight, or if he had purchaſed his pardon. *H. P.C.* 101. *Cromp.* 153.

The court of B. R. has power to bail in all caſes whatſoever, and will exerciſe their diſcretion in all caſes not capital; in capital caſes, where innocence may be fairly preſumed; and in every caſe where the charge is not alleged with ſufficient certainty. *Leach's Hawk. P. C.* ii. c. 15, where ſeveral caſes are enumerated. It is to be obſerved, that, with reſpect to the nature of the offence, although this court is not tied down by the rules preſcribed by the ſtat. of Weſtm. 1; yet it will in diſcretion pay a due regard to thoſe rules, and not admit a perſon to bail who is expreſsly declared to be irreplevisable, without ſome particular circumſtances in his favour. 2 *Inſt.* 185. *H. C. P.* 104. 1 *Salk.* 61. 3 *Bulſt.* 113. 2 *Hawk. P. C.* c. 15. And therefore, if a perſon be attainted of felony, or convicted thereof by verdict general or ſpecial, or notoriouſly guilty of treaſon or manſlaughter, &c. by his own confeſſion or otherwiſe, he is not to be admitted to bail; without ſome ſpecial motive to induce the court to grant it. *Kelynge* 90. *Dyer* 79. 1 *Bulſt.* 87.

Upon a commitment of either houſe of parliament, when it ſtands indifferent on the return of the *habeas corpus*, whether it be legal or not, the court of B. R. ought not to bail a priſoner. *Leach's Hawk. P. C.* ii. c. 15. But, if it be demanded in caſe a ſubject ſhould be committed by either of the houſes for a matter manifeſtly out of their juriſdiction, what remedy can he have? "I anſwer (ſays the learned and cautious ſerjeant Hawkins), as this is a caſe which I am perſuaded will never happen, it ſeems needleſs overnicely to examine it." See Leach's notes, 2 *Hawk. P. C.* c. 15, from the caſes cited there (viz. the Hon. Alex. Murray's, 1 *Wilſ.* 299; John Wilkes's, 2 *Wilſ.* 158; Entick *v.* Carrington, 11 *St. Tr.* 317; Braſs Croſby's, 3 *Wilſ.* 188, 2 *Blackſt.* 755), it appears that the courts in Weſtminſter-hall have been poſitively of opinion, "that they have no power to decide on the privileges of parliament; that the rights of the houſe of commons are paramount to the juriſdiction of thoſe courts; that the commons are the excluſive arbiters of their own peculiar privileges; that their power of commitment is inherent in the very nature of their conſtitution; and finally, that their adjudication is tantamount to a conviction, and their commitment equal to an execution; and that no court can diſcharge a priſoner committed in execution by another court."

However, a perſon committed for a contempt, by order of either houſe of parliament, may be diſcharged by B. R. after a diſſolution or prorogation, which determines all orders of parliament: alſo it is ſaid, on an impeachment, when the parliament is not ſitting, and the party has been long in priſon, B. R. may bail him. The court of B. R. hath bailed perſons committed to the Fleet Priſon by the lord chancellor; when the crime of commitment was not mentioned, or only in general terms, &c. 2 *Hawk. P. C.* c. 15. And B. R. having the controul of all inferior courts, may at their diſcretion bail any perſon unjuſtly committed by any of thoſe courts. In admitting a perſon to bail in the court of B. R. for felony, &c. a ſeveral recogniſance is entered into to the king in a certain ſum from each of the bail, that the priſoner ſhall appear at a certain day. And alſo that the bail ſhall be liable for the default of ſuch appearance, body for body. And it is at the diſcretion of juſtices of the peace, in admitting any perſon to bail for felony, to take the recogniſance in a certain ſum, or body for body: but where a perſon is bailed by any court, &c. for a crime of an inferior nature, the recogniſance ought to be only in a certain ſum of money, and not body for body. 2 *Hawk.* c. 15. And the bail are to be bound in double the ſum of the criminal. Where perſons are bound body for body, if the offender doth not appear, whereby the recogniſance is forfeited, the bail are not liable to ſuch puniſhment to which the principal would be adjudged if found guilty, but only to be fined, &c. *Wood's Inſt.* 618. If bail ſuſpect the priſoner will fly, they may carry him before a juſtice to find new ſureties; or to be committed in their diſcharge. 1 *Rep.* 99. The courts of King's Bench, Common Pleas, and Exchequer, in term time, and the Chancery in term or vacation, may bail perſons by the *habeas corpus* act: ſee HABEAS CORPUS. To refuſe bail when any one is bailable on the one hand; or on the other to admit any to bail who ought not by law to be admitted, or to take ſlender bail, is puniſhable by fine, &c. 2 *Inſt.* 291. *H. P. C.* 97. 3 Edw. I. c. 15. 27 Edw. I. c. 3. 4 Edw. III. c. 2. 1 & 2 Will. and Mary, c. 13. 31 Car. II. c. 2.

No perſon ſhall be bailed for felony by leſs than two; and it is ſaid not to be uſual for the King's Bench to bail a man on a *habeas corpus*, on a commitment for treaſon or felony, without four ſureties; the ſum, in which the ſureties are to be bound, ought to be never leſs than 40l. for a capital crime; but it may be higher in diſcretion, on conſideration of the ability and quality of the priſoner, and the nature of the offence; and the ſureties may be examined on oath concerning their ſufficiency, by him that takes the bail; and, if a perſon be bailed by inſufficient ſureties, he may be required either by him who took the bail, or by any other who hath power to bail him, to find better ſureties, and on his refuſal may be committed; for inſufficient ſureties are as none. 2 *Hawk. P. C.* c. 15. But juſtices muſt take care, that, under pretence of demanding ſufficient ſurety, they do not make ſo exceſſive a demand, as in effect amounts to a denial of bail; for this is looked upon as a great grievance, and is complained of as ſuch by 1 Will. and Mary, ſt. 2. (the bill of rights); by which it is declared, that exceſſive bail ought not to be required. 2 *Hawk. P. C.* c. 15.

If, where a felony is committed, one is brought before a juſtice on ſuſpicion, the perſon ſuſpected is to be bailed, or committed to priſon; but, if there is no felony done, he may be diſcharged. *H. P. C.* 98, 106. Perſons committed for treaſon or felony, and not indicted the next term, are to be bailed. 31 Car. II. c. 2. Where bail may have writ of detainer againſt the priſoner, ſee 1 Anne, ſt. 2. c. 6. Juſtices of peace are required to bail officers of cuſtoms and exciſe, who kill perſons reſiſting. 9 Geo. II. c. 35. The court of King's Bench and Juſticiary in Scotland, are not reſtrained from bailing perſons committed for felonies, againſt the laws of cuſtoms or exciſe. 9 Geo. II. c. 35. 19 Geo. II. c. 34.

Bail, or Bale, in the ſea-language: the throwing the water by hand out of the ſhip's or boat's hold is called *bailing*. They alſo call thoſe hoops that bear up the tilt of a boat its *bails*.

To Bail, *v. a.* To give bail for another. To admit to bail.—When they had *bailed* the twelve biſhops who were in the Tower, the houſe of commons, in great indignation, cauſed them immediately to be recommitted to the Tower. *Clarendon.*

BAIL'ABLE, *adj.* That may be ſet at liberty by bail or ſureties.

BAILACAN', a town of Armenia, 180 miles eaſt of Erivan.

BAILAN', a town of Syria, ten miles ſouth of Alexandretta.

BAI'LIFF, *ſ.* [*ballivus*, Lat. *bayliff*, Fr.] that is, *præfectus provinciæ*; and, as the name, ſo the office itſelf was anſwerable to that of France; where, before the revolution, there were eight parliaments, which were high courts from whence there lay no appeal, and within the precincts of the ſeveral parts of that kingdom which belonged to each parliament there were ſeveral provinces to which juſtice was adminiſtered by certain officers called *bailiffs*; and in England we have ſeveral counties in which juſtice hath been, and ſtill is, in ſmall ſuits, adminiſtered to the inhabitants, by the officer whom we now call *ſheriff* or *viſcount*, (one of which names deſcends from the Saxons, the other from the Normans;) and, though the ſheriff is not called bailiff, yet it is probable that was one of his names alſo, becauſe the county is often called *balliva:* as, in the return of a writ, where the perſon is not arreſted, the ſheriff ſaith, *Infra-nominatus* A. B. *non eſt inventus in* balliva *mea*, &c. *Kitch. Ret. Brev.* fol. 285. And, in the ſtatute of Magna Charta, c. 28, and 14 Edw. III. c. 9, the word bailiff ſeems to compriſe as well ſheriffs, as bailiffs of hundreds. As the realm is divided into counties, ſo every county is divided into hundreds; within which in ancient times the people had juſtice adminiſtered to them by the ſeveral officers of every hundred, which were the bailiffs. And it appears by *Bracton*, lib. iii. tract. 2, cap. 34, that bailiffs of hundreds might anciently hold plea of appeal and approvers: but ſince that time the hundred courts, except certain franchiſes, are ſwallowed in the county-courts; and now the bailiff's name and office is grown into contempt, they being generally officers to ſerve writs, &c. within their liberties. Though, in other reſpects, the name is ſtill in good eſteem; for the chief magiſtrates in divers towns are called bailiffs: and ſometimes the perſons to whom the king's caſtles are committed are termed bailiffs, as the *bailiff of Dover caſtle*, &c

Of the ordinary bailiffs there are ſeveral ſorts, viz. bailiffs of liberties, ſheriff's bailiffs, bailiffs of lords of manors, bailiffs of huſbandry, &c. Bailiffs of liberties are thoſe bailiffs who are appointed by every lord within his liberty, to execute proceſs and do ſuch offices therein as the bailiff-errant doth at large in the county; but bailiffs errant or itinerant, to go up and down the country to ſerve proceſs, are out of uſe. Bailiffs of liberties and franchiſes, are to be ſworn to take diſtreſſes, truly impannel jurors, make returns by indenture between them and ſheriffs, &c. and ſhall be puniſhed for malicious diſtreſſes, by fine and treble damages, by ancient ſtatutes. 12 Edw. II. ſt. 1. c. 5. 14 Edw. III. ſt. 1. c. 9. 20 Edw. III. c. 6. 11 Hen. VII. c. 15. 27 Hen. VIII. c. 24. 3 Geo. I. c. 15.

The bailiff of a liberty may make an inquiſition and extent upon an *elegit*. The ſheriff returned on a writ of *elegit*, that the party had not any lands but within the liberty of St. Edmund's Bury, and that J. S. bailiff there had the execution and return of all writs, and that he inquired and returned an extent by inquiſition, and the bailiff delivered the moiety of the lands extended to the plaintiff, who by virtue thereof entered, &c. This was held a good return. *Cro. Car.* 319. Theſe bailiffs of liberties cannot arreſt a man without a warrant from the ſheriff of the county: and yet the ſheriff may not enter the liberty himſelf, at the ſuit of a ſubject (unleſs it be on a *quo minus*, or *capias utlagatum)* without clauſe in his writ, *Non omittas propter aliquam libertatem*, &c. If the ſheriff, &c. enters the liberty without ſuch power, the lord of the liberty may have an action againſt him; though the execution of the writ may ſtand good. 1 *Vent.* 406. 2 *Inſt.* 453.

Sheriffs' bailiffs are thoſe who are ſervants to ſheriffs of counties to execute writs, warrants, &c. Formerly bailiffs of hundreds were the officers to execute writs; but now it is done by ſpecial bailiffs, put in with them by the ſheriff. A bailiff of a liberty is an officer which the court takes notice of; though a ſheriff's bailiff is not an officer of the court, but only the ſheriff himſelf. *Paſch.* 23 Carolus I. B. R. The arreſt of the ſheriff's bailiff is the arreſt of the ſheriff; and, if any reſcous be made of the perſon arreſted, it ſhall be adjudged done to the ſheriff: alſo, if the bailiff permit a priſoner to eſcape, action may be brought againſt the ſheriff. *Co. Lit.* 61, 168. Sheriffs are anſwerable for miſdemeanors of their bailiffs; and are to have remedy over againſt them. 2 *Inſt.* 19. The latter are therefore uſually bound in an obligation for the due execution of their offices, and thence are called *bound* bailiffs; which the common people have corrupted to a more humble appellation. There are thirty-ſix ſerjeants at mace in London who may be termed bailiffs, and they each give ſecurity to the ſheriffs. By ſtat. 14 Edw. III. c. 9, ſheriffs ſhall appoint ſuch bailiffs for whom they will anſwer; and by ſtat. 1 Hen. V. c. 4, no ſheriff's bailiff ſhall be attorney in the king's court. *R. M.* 1654.

Bailiffs of lords of manors are thoſe that collect their rents, and levy their fines and amercements: but ſuch a bailiff cannot diſtrain for an amercement without a ſpecial warrant from the lord or his ſteward. *Cro. Eliz.* 698. He cannot give licence to commit a treſpaſs, as to cut down trees, &c. though he may licence one to go over land, being a treſpaſs to the poſſeſſion only, the profits whereof are at his diſpoſal. *Cro. Jac.* 337. A bailiff may by himſelf, or by command of another, take cattle damage-feaſant upon the land. 1 *Danv. Abr.* 685. Yet amends cannot be tendered to the bailiff, for he may not accept of amends, nor deliver the diſtreſs when once taken. 5 *Rep.* 76. Theſe bailiffs may do any thing for the benefit of their maſters, and it ſhall ſtand good till the maſter diſagrees; but they can do nothing to the prejudice of their maſters.

Bailiffs of courts-baron ſummon thoſe courts, and execute the proceſs thereof; they preſent all pound breaches, cattle ſtrayed, &c.

Bailiffs of huſbandry are belonging to private men of good eſtates, and have the diſpoſal of the under-ſervants, every man to his labour; they alſo fell trees, repair houſes, hedges, &c. and collect the profits of the land for their lord and maſter, for which they render account yearly, &c.

Bailiffs of manors not having a power to act without ſpecial appointment, the following is the legal form: "Know all men by theſe preſents, that I, W. B. of, &c. Eſq. lord of the manor of D. in the county of G. have made, ordained, deputed, and appointed, and by theſe preſents do make, ordain, depute, and appoint, J. G. of, &c. my *bailiff*, for me and in my name, and to my uſe, to collect and gather, and to aſk, require, demand, and receive, of all and every my tenants, that have held or enjoyed, or now do, or hereafter ſhall, hold or enjoy, any meſſuages, lands, or tenements, from, by, or under, me, within my ſaid manor of D. all rents, and arrears of rent, heriots, and other profits, that now are or hereafter ſhall become payable, due, owing, or belonging, to me, within the ſaid manor; and, in default of payment thereof, to diſtrain for the ſame from time to time, and ſuch diſtreſs or diſtreſſes to impound, detain, and keep, until payment be made of the ſaid rents and profits, and the arrears thereof. And I do alſo further impower and authoriſe the ſaid J. G. to take care of and inſpect into all and every my meſſuages, lands, and woods, within the ſaid manor; and to take an account of all defects, decays, waſtes, ſpoils, treſpaſſes, or other miſdemeanors, committed or permitted within my ſaid manor, or in any meſſuages, lands, or woods, there; and from time to time to give me a juſt and true account in writing thereof: and further to act and do all other things that to the office of a bailiff of the ſaid manor belongs and appertains, during my will and pleaſure. In witneſs, &c."

Water-Bailiff, an officer appointed in all port-towns, for the ſearching of ſhips, gathering the toll for anchorage, &c. and arreſting perſons for debt, &c. on the water.

BAIL'II (David), painter of perſpective views and portraits, was the ſon of Peter Bailii, an artiſt of ſome note; and was born at Leyden in 1584. From his father he learned to draw and deſign: but he was afterwards placed under the care of Adrian Verburg; and, when he quitted that maſter, he ſtudied to much greater advantage with Cornelius Vandervoort, an excellent portrait painter. As Vandervoort poſſeſſed many capital paintings, Bailii, for his own improvement, copied them with critical care and obſervation; and particularly a perſpective view of the inſide of a church, originally painted by Stenwyck, which he finiſhed with ſuch accuracy, that even Stenwyck himſelf could ſcarcely determine which was the original, or which the copy, when both were placed before him. He travelled through Italy to ſee the works of the celebrated maſters of that country, and for a few years reſided at Rome; and abroad, as well as in his own country, the correctneſs of his drawing, and the delicate finiſhing of his pictures, procured him employment, admirers, and friends. He died in 1638.

BAI'LIWICK, *ſ.* [of *baillie*, Fr. and *wic*, Sax.] Is not only taken for the county, but ſignifies generally that liberty which is exempted from the ſheriff of the county, over which the lord of the liberty appointeth a bailiff with ſuch powers within his precinct, as an under-ſheriff exerciſeth under the ſheriff of the county; ſuch as the bailiff of Weſtminſter, &c. Stat. 27 Eliz. c. 12. *Wood's Inſt.* 206.

BAILLEAU' L'EVEQUE, a town of France, in the department of the Eure and Loire, and chief place of a canton, in the diſtrict of Chartres, one league and a half north-weſt of Chartres.

BAILLE'E, a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Chateaugontier, 4½ leagues N. E. of Chateaugontier.

BAILLET' (Adrian), a learned French writer and critic, born in 1649, at the village of Neuville, near Beauvais, in Picardy. His parents were too poor to give him a proper education, which he obtained by the favour of the biſhop of Beauvais, who afterwards preſented him with a ſmall vicarage. In 1680, he was appointed librarian to M. de Lamoignon, advocate-general to the parliament of Paris; of whoſe library he made a copious index in thirty-five volumes folio, all written with his own hand. He died in 1706, after writing many works; the principal of which are, A Hiſtory of Holland, from 1609 to the Peace of Nimeguen in 1679, four vols. 12mo; Lives of the Saints, three vols. folio, which he profeſſed to have purged from fables; Jugemens des Savans, nine vols. 12mo; and the Life of Des Cartes, two vols. quarto.

BAILLEUL', a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Hazenbrouck; it was formerly fortified, but is now without defence; three leagues eaſt-ſouth-eaſt of Caſſel, and four and a half weſt-north-weſt of Lille.

Bailleul, a town of France, in the department of the Sarte, two leagues from La Fleche.

BAIL'LIE (John), an Engliſh phyſician, and dramatic author of conſiderable merit. He died in 1743.

Baillie (Robert), a diſſenting miniſter of great eminence, and much eſteemed for his theological and miſcellaneous writings. He was born in 1599, and died in 1662.

BAILLY' (Jean Sylvain), a celebrated French aſtronomer, hiſtoriographer, and politician, was born at Paris, 15th September, 1736, and became one of the greateſt men of the age, having been a member of ſeveral academies, and an excellent ſcholar and writer. He enjoyed for ſeveral years the office of keeper of the king's pictures at Paris. He publiſhed, in 1766, An Eſſay on the Theory of Jupiter's Satellites. In the Journal Encyclopédique for May and July 1773, he addreſſed a letter to M. Bernouilli, aſtronomer royal at Berlin, upon ſome diſcoveries relative to theſe ſatellites, which he had diſputed. In 1768, he publiſhed the Eulogy of Leibnitz, which obtained the prize at the academy of Berlin, where it was printed. In 1770, he printed at Paris, in octavo, the Eulogies of Charles the Vth, of de la Caille, of Leibnitz, and of Corneille. This laſt had the ſecond prize at the academy of Rouen, and that of Moliere had the ſame honour at the French academy. M. Bailly was admitted into the academy as adjunct the 29th of January, 1763, and as aſſociate the 14th of July, 1770. In 1775 came out at Paris, in quarto, his Hiſtory of the Ancient Aſtronomy. In 1779, the Hiſtory of Modern Aſtronomy, two vols. and in 1787, the Hiſtory of the Indian and Oriental Aſtronomy. He alſo publiſhed a number of eſſays on aſtronomical ſubjects, in the Memoirs of the Royal Academy of Paris.

In the beginning of the revolution in France, in 1789, M. Bailly took an active part in that buſineſs, and was ſo popular and generally eſteemed, that he was choſen the firſt preſident of the ſtates general, and of the national aſſembly, and was afterwards for two years together the mayor of Paris; in both which offices he conducted himſelf with great ſpirit, and gave general ſatisfaction. He ſoon afterwards, however, experienced a ſad reverſe of fortune; being accuſed by the ruling party of favouring the king, he was condemned for inciviſm and wanting to overturn the republic, and died by the guillotine at Paris the 11th November, 1793, at fifty-ſeven years of age. He ſuſtained all the ferocity of a populace, whoſe idol he had been, and he was ſhamefully abandoned by a people whom he never ceaſed to eſteem. He died, like the juſt man deſcribed by Plato, overwhelmed with ignominy. They ſpat upon him, they burned a flag before his eyes: ſome hired ruffians even approached to ſtrike him, in ſpite of his executioners, who themſelves were aſhamed of ſuch brutality. He was covered with mud; he was detained three hours at the place of execution, and the ſcaffold of the preſident of the Tennis-court was erected in the midſt of filth and ordure. A chilling rain, which fell in torrents, added to the horrors of his ſituation. With his hands bound behind his back, he ſometimes begged for an end to his ſufferings; but theſe words were uttered with a calmneſs worthy of one of the firſt philoſophers in Europe. To a man, who ſaid to him, "Bailly, you tremble!" he replied, "My friend, it is with cold." He left a memorial behind him, in his own hand, which contains a complete refutation of every charge that was made againſt him by his malicious perſecutors.

BAIL'MENT, *ſ.* [*bailler*, Fr. to deliver.] "A delivery of goods in truſt, upon a contract expreſſed or implied that the truſt ſhall be faithfully executed on the part of the bailee:" the perſon to whom they are delivered. 2 *Comm.* 451. to which Sir W. Jones adds, "and the goods re-delivered as ſoon as the time or uſe, for which they were bailed, ſhall have elapſed or be performed." *Law of Bailments*, p. 117.

It is to be known that there are ſix ſorts of bailments which lay a care and obligation on the party to whom goods are bailed; and which conſequently ſubject him to an action, if he miſbehave in the truſt repoſed in him. 1. A bare and naked bailment, to keep for the uſe of the bailor, which is called *depoſitum*; and ſuch bailee is not chargeable for a common neglect, but it muſt be a groſs one to make him liable. 2 *Str.* 1099. 2. A delivery of goods which are uſeful to keep, and they are to be returned again in ſpecie, which is called *accommodatum*, which is a lending *gratis*; and in ſuch caſe the borrower is ſtrictly bound to keep them: for, if he be guilty of the leaſt neglect, he ſhall be anſwerable, but he ſhall not be charged where there is no default in him. 3. A delivery of goods for hire, which is called *locatio* or *conductio*; and the hirer is to take all imaginable care, and reſtore them at the time; which care if he ſo uſe, he ſhall not be bound. 4. A delivery by way of pledge, which is called *vadium*; and in ſuch goods the pawnee has a ſpecial property; and if the goods will be the worſe for uſing, the pawnee muſt not uſe them; otherwiſe he may uſe them at his peril: as jewels pawned to a lady, if ſhe keep them in a bag, and they are ſtolen, ſhe ſhall not be charged; but if ſhe go with them to a play, and they are ſtolen, ſhe ſhall be anſwerable. So if the pawnee be at a charge in keeping them, he may uſe them for his reaſonable charge; and, if notwithſtanding all his diligence he loſe the pledge, yet he ſhall recover the debt. But, if he loſe it after the money tendered, he ſhall be chargeable, for he is a wrong doer; after money paid (and tender and refuſal is the ſame) it ceaſes to be a pledge, and therefore the pawnor may either bring an action of aſſumpſit, and declare that the defendant promiſed to return the goods upon requeſt; or trover, the property being veſted in him by the tender. 5. A delivery of goods to be carried for a reward, for which ſee the article CARRIER. It may here be added, that the plaintiff ought to prove the defendant uſed to carry goods, and that the goods were delivered to him or his ſervant to be carried. And, if a price be alleged in the declaration, it ought to be proved the uſual price for ſuch a ſtage; and if the price be proved there need no proof, the defendant being a common carrier: but there need not be a proof of a price certain. 6. A delivery of goods to do ſome act about them (as to carry) without a reward, which is called by Bracton *mandatum*; in Engliſh, an acting by commiſſion: and, though he be to have nothing for his pains, yet, if there were any neglect in him, he will be anſwerable, for his having undertaken a truſt is a ſufficient conſideration; but if the goods be miſuſed by a third perſon, in the way, without any neglect of his, he would not be liable, being to have no reward. See lord chief juſtice Holt's opinion, in the caſe of Coggs *v.* Bernard, 2 *Ld. Raym.* 909. *Sir W. Jones's Eſſay on the Law of Bailment*, p. 35. *Com. Rep.* 133, with Mr. Roſe's notes. 2 *Inſt.* 89. 4 *Rep.* 83. 1 *Rol. Ab.* 338. 1 *Inſt.* 89 *b. Doct. & St.* 129. 1 *New Ab.* 243.

Having mentioned Sir W. Jones's Eſſay on the Law of Bailment, we cannot help recommending it to the attention of the rational ſtudent; and for the uſe of ſuch, extracting the following analyſis, which will in general be found to be conſonant with the determinations in the books, and convey much knowledge in a ſhort compaſs. Sir W. Jones differs in a few points from Lord Holt and Lord Coke, and his reaſons are deſerving of much attention.

"I. DEFINITIONS. 1. *Bailment*, as before, at the beginning of this article. 2. *Depoſit* is a bailment of goods to be kept for the bailor without recompence. 3. *Mandate* is a bailment of goods, without reward, to be carried from place to place, or to have ſome act performed about them. 4. *Lending for uſe* is a bailment of a thing for a certain time to be uſed by the borrower without paying for it. 5. *Pledging*, is a bailment of goods by a debtor to his creditor, to be kept till the debt be diſcharged. 6. *Letting to hire* is, (1) a bailment of a thing to be uſed by the hirer for a compenſation in money; or (2) a letting out of work and labour to be done, or care and attention to be beſtowed, by the bailee on the goods bailed, and that for a pecuniary recompence; or (3) of care and pains in carrying the things delivered from one place to another, for a ſtipulated or implied reward. 7. *Innominate bailments* are thoſe where the compenſation for the uſe of a thing, or for labour and attention, is not pecuniary; but either (1) the reciprocal uſe or the gift of ſome other thing; or (2) work and pains reciprocally undertaken; or (3) the uſe or gift of another thing in conſideration of care and labour; and converſely. 8. *Ordinary neglect*, is the omiſſion of that care which every man of common prudence, and capable of governing a family, takes of his own concerns. 9. *Groſs neglect*, is the want of that care which every man of common ſenſe, how inattentive ſoever, takes of his own property. See *Poſt.* ii. 8. 10. *Slight neglect*, is the omiſſion of that diligence which very circumſpect and thoughtful perſons uſe in ſecuring their own goods and chattels. 11. *A naked contract*, is a contract made without conſideration or recompence.

"II. The RULES, which may be conſidered as axioms flowing from natural reaſon, good morals, and ſound policy, are theſe. 1. A bailee who derives no benefit from his undertaking, is reſponſible only for groſs neglect. 2. A bailee who alone receives benefit from the bailment, is reſponſible for ſlight neglect. 3. When the bailment is beneficial to both parties, the bailee muſt anſwer for ordinary neglect. 4. A ſpecial agreement of any bailee to anſwer for more or leſs, is in general valid. 5. All bailees are anſwerable for actual fraud, even though the contrary be ſtipulated. 6. No bailee ſhall be charged for a loſs by inevitable accident or irreſiſtible force, except by ſpecial agreement. 7. Robbery by force is conſidered as irreſiſtible; but a loſs by private ſtealth is preſumptive evidence of ordinary neglect. 8. Groſs neglect is a violation of good faith. 9. No action lies to compel performance of a naked contract. 10. A reparation may be obtained by ſuit for every damage occaſioned by an injury. 11. The negligence of a ſervant acting by his maſter's expreſs or implied order, is the negligence of the maſter.

"III. From theſe rules the following PROPOSITIONS are evidently deducible. 1. A depoſitary is reſponſible only for groſs neglect; or in other words for a violation of good faith. 2. A depoſitary whoſe character is known to his depoſitor, ſhall not anſwer for mere neglect, if he take no better care of his own goods, and they alſo be ſpoiled or deſtroyed. 3. A mandatary to carry is reſponſible only for groſs neglect, or a breach of good faith. 4. A mandatary to perform a work is bound to uſe a degree of diligence adequate to the performance of it. 5. A man cannot be compelled by action to perform his promiſe of engaging in a depoſit or a mandate; but, 6. A reparation may be obtained by ſuit for damage occaſioned by the non-performance of a promiſe to become a depoſitary, or a mandatary. 7. A borrower for uſe is reſponſible for ſlight negligence. 8. A pawnee is anſwerable for ordinary neglect. 9. The hirer of a thing is anſwerable for ordinary neglect. 10. A workman for hire muſt anſwer for ordinary neglect of the goods bailed, and muſt apply a degree of ſkill equal to his undertaking. 11. A letter to hire of his care and attention, is reſponſible for ordinary negligence. 12. A carrier for hire, by land or by water, is anſwerable for ordinary neglect.

"IV. EXCEPTIONS to the above rules and propoſitions. 1. A man who ſpontaneouſly and officiouſly engages to keep or to carry the goods of another, though without reward, muſt anſwer for ſlight neglect. 2. If a man through ſtrong perſuaſion and with reluctance undertake the execution of a mandate, no more can be required of him than a fair exertion of his ability. 3. All bailees become reſponſible for loſſes by caſualty or violence, after their refuſal to return the things bailed, on a lawful demand. 4. A borrower and a hirer are anſwerable in all events, if they keep the things borrowed or hired after the ſtipulated time, or uſe them differently from their agreement. 5. A depoſitary and a pawnee are anſwerable in all events if they uſe the things depoſited or pawned. 6. An innkeeper is chargeable for the goods of his gueſt within his inn, if the gueſts be robbed by the ſervants or inmates of the keeper. 7. A common carrier by land or by water, muſt indemnify the owner of the goods carried if he be robbed of them.

"V. It is no exception but a COROLLARY from the rules that every bailee is reſponſible for a loſs by accident or force, however inevitable or irreſiſtible; if it be occaſioned by that degree of negligence for which the nature of his contract makes him generally anſwerable."

The following caſes may ſerve to illuſtrate this ſubject. A man leaves a cheſt locked up with another to be kept, and doth not make known to him what is therein; if the cheſt and goods in it are ſtolen, the perſon who received them ſhall not be charged for the ſame, for he was not truſted with them. And what is ſaid as to ſtealing is to be underſtood of all other inevitable accidents; but it is neceſſary for a man that receives goods to be kept, to receive them in a ſpecial manner, viz. to be kept as his own, or at the peril of the owner. 1 *Lill. Abr.* 193. 1 *Rol. Abr.* 338. 2 *Show. pl.* 166.

If I deliver 100l. to A. to buy cattle, and he beſtows 50l. of it in cattle, and I bring an action of debt for all, I ſhall be barred in that action for the money beſtowed and charges, &c. but for the reſt I ſhall recover. *Hob.* 207. If one deliver his goods to another perſon, to deliver over to a ſtranger; the deliverer may countermand his power, and require the goods again; and, if the bailee refuſe to deliver them, he may have an action of account for them. *Co. Litt.* 286. If A. delivers goods to B. to be delivered over to C. C. hath the property, and C. hath the action againſt B. for B. undertakes for the ſafe delivery to C. and hath no property or intereſt but in order to that purpoſe. 1 *Rol. Abr.* 606. 1 *Bulſt.* 68. where it is ſaid that in caſe of converſion to his own uſe the bailee ſhall be anſwerable to both. But if the bailment were not on valuable conſideration, the delivery is countermandable; and in that caſe, if A. the bailor bring trover, he reduces the property again in himſelf, for the action amounts to a countermand; but, if the delivery was on a valuable conſideration, then A. cannot have trover, becauſe the property is altered; and in trover the property muſt be proved in the plaintiff. And where a man delivers goods to another to be re-delivered to the deliverer at ſuch a day, and before that day the bailee doth ſell the goods in market overt; the bailor may at the day ſeize and take his goods, for the property is not altered. *Godb.* 160.

If A. borrows a horſe to ride to Dover, and he rides out of his way, and the owner of the horſe meets him, he cannot take the horſe from him; for A. has a ſpecial property in the horſe till the journey is determined; and, being in lawful poſſeſſion of the horſe, the owner cannot violently ſeize it and take it away; for the continuance of all property is to be taken from the form of the original bargain, which in this caſe was limited till the appointed journey was finiſhed. *Yelv.* 172. But the owner may have an action on the caſe againſt the bailee for exceeding the purpoſes of the loan; for ſo far it is a ſecret and fallacious abuſe of his property; but no general action of treſpaſs, becauſe it is not an open and violent invaſion of it. 1 *Rol. Rep.* 128.

As to borrowing a thing periſhable, as corn, wine, or money, or the like, a man muſt, from the nature of the thing, have an abſolute property in them; otherwiſe it could not ſupply the uſes for which it was lent; and therefore he is obliged to return ſomething of the ſame ſort, the ſame in quantity and quality with what is borrowed. But if one lend a horſe, &c. he muſt have the ſame reſtored. If a thing lent for uſe be uſed to any other end or purpoſe than that for which it was borrowed, the party may have his action on the caſe for it, though the thing be never the worſe; and if what is borrowed be loſt, although it be not by any negligence of the borrower, as if he be robbed of it; or where the thing is impaired or deſtroyed by his neglect, admitting that he put it to no more ſervice than that for which borrowed; he muſt make it good: ſo where one borrows a horſe, and puts him in an old rotten houſe ready to fall, which falls on and kills him, the borrower muſt anſwer for the horſe. But if ſuch goods borrowed periſh by the act of God, (or rather, as Sir William Jones ſays it ought more reverentially to be termed, by inevitable accident,) in the right uſe of them; as where the borrower puts the horſe, &c. in a ſtrong houſe, and it falls and kills him, or it dies by diſeaſe, or by default of the owner; the borrower ſhall not be charged. 1 *Inſt.* 89. 2 Hen. VII. c. 11.

If one delivers a ring to another to keep, and he breaks and converts the ſame to his own uſe; or if I deliver my ſheep to another to be kept, and he ſuffers them to be drowned by his negligence; or if the bailee of a horſe, or goods, &c. kill or ſpoil them; in theſe caſes action will lie. 5 *Rep.* 13. 15 Edw. IV. 20 *b.* 12 Edw. IV. c. 13. If a man deliver goods to another, the bailee ſhall have a general action of treſpaſs againſt a ſtranger, becauſe he is anſwerable over to the bailor; for a man ought not to be charged with an injury to another, without being able to retire to the original cauſe of that injury, and in amends there to do himſelf right. 13 *Co.* 69. 14 Hen. IV. c. 28. 25 Hen. VII. c. 14. In the caſe Elſee *v.* Gatward, B. R. H. 33 Geo. III. 5 T. R. 143. which was in the nature of a naked bailment; it was decided that, if a party voluntarily, and without a conſideration, undertakes to perform work, and proceeds on the employment, he makes himſelf liable for any misfeazance in the courſe of that work: but if he undertakes, and does not proceed on the work, no action will lie againſt him for the nonfeazance.

BAI'LO, *ſ.* thus they ſtyled at Conſtantinople the ambaſſador of the republic of Venice, who reſided at the Porte. This miniſter, beſides his political charge, acted there the part of a conſul of Venice.

BAIL'YBURG, a town of Sweden, in the province of Weſtmannland.

BAIN, Lithe, limber-jointed, that can bend eaſily.

Bain, a town of France, and principal place of a diſtrict, in the department of the Ille and Villaine, eight leagues ſouth-weſt of Vitré; and five and a half ſouth of Rennes. Lat. 47. 50. N. lon. 15. 59. E. Ferro.

Bain Gonga, a river of Hindoſtan, which runs into the Godavery, in the Nizams country. Lat. 18. 48. N. lon. 80. 15. E. Greenwich.

BAI'NARD's CAS'TLE, in Thames-ſtreet, in London, ſo called from William Bainard, baron of Dunmow, the builder of it.

BAIN'BRIDGE (John), an eminent phyſician and aſtronomer, born at Aſhby-de-la-Zouch, in Leiceſterſhire, in 1582. He taught a grammar-ſchool for ſome years, and practiſed phyſic, employing his leiſure hours in aſtronomy, which was his favourite ſtudy: at length he removed to London, was admitted a fellow of the college of phyſicians, and raiſed his character by his deſcription of the comet in 1618. The next year Sir Henry Savile appointed him firſt profeſſor of aſtronomy at Oxford; and the maſter and fellows of Merton-college made him firſt junior, and then ſuperior, reader of Linacre's lecture. He died in 1643, having written many works, ſome of which have never been publiſhed; but the MSS. are preſerved in the library of Trinity-college, Dublin.

BAIN'DER, a town of Aſiatic Turkey, in the province of Natolia, forty-four miles eaſt of Boli.

BAINDT, a town of Germany, in the circle of Swabia, ſix miles north-north-eaſt of Ravenſpurg. Lat. 27. 20. N. lon. 47. 53. E. Ferro.

BAINE, a river in Lincolnſhire, which paſſes by the towns of Horncaſtle, Tatterſal, &c. and joins the Welham near the laſt-mentioned town.

BAINET'TA, a town of Piedmont, in the province of Coni, on the Orobio, ſix miles ſouth-eaſt of Coni, and eight weſt-ſouth-weſt of Mondovi.

BAINS, a town of France, in the department of the Voſges, and chief place of a canton, in the diſtrict of Darney; two leagues and a half weſt of Plombieres, and three and a quarter ſouth-eaſt of Darney.

BAIOCA'O, *ſ.* a copper coin, current at Rome, and throughout the whole ſtate of the church, ten of which make a julio, and an hundred a Roman crown.

BAI'PIA, a town of North America, in New Navarre, 165 miles ſouth-weſt of Caſa Grand.

BAI'RAM, or Bei'ram, *ſ.* a Turkiſh word which ſignifies a ſolemn feaſt. The Mahometans have two bairams, the great and the little. The little bairam is properly that held at the cloſe of the faſt Ramazan, beginning with the firſt full moon in the following month Shawal. This is called in Arabic *Id al Fetz*, or the feaſt of breaking the faſt; by European writers, *the Turkiſh Eaſter*, becauſe it ſucceeds Ramazan, which is their Lent, more uſually the great bairam, becauſe obſerved with great ceremony and rejoicing at Conſtantinople, and through Turkey, for three days, and in Perſia for five or ſix days, at leaſt by the common people, to make themſelves amends for the mortification of the preceding month. The great bairam is properly that held by the pilgrims at Mecca, commencing on the tenth of Dhu Ihajia, when the victims are ſlain, and laſting three days. This is called by the Arabs, *Id al adha*, that is, the feaſt of ſacrifice, as being celebrated in memory of the ſacrifice of Abram, whoſe ſon God redeemed with a great victim. By European writers it was called the *leſſer bairam*, as being leſs taken notice of by the generality of the people, who are not ſtruck with it, becauſe the ceremonies are performed at Mecca, the only ſcene of the ſolemnity.

BAIR'MAN, *ſ.* A poor inſolvent debtor, left bare and naked, who was obliged to ſwear in court, that he was not worth more than five ſhillings and five pence.

BAISE, or Baize, a river of France, which runs into the Garonne, near Aiguillon.

To BAIT, *v. a.* [*batan*, Sax. *baitzen*, Ger.] To put meat upon a hook, in ſome place, to tempt fiſh, or other animals.—Many ſorts of fiſhes feed upon inſects, as is well known to anglers, who bait their hooks with them. *Ray.*

How are the ſex improv'd in am'rous arts?
What new-found ſnares they *bait* for human hearts! *Gay.*

To give meat to one's ſelf, or horſes, on the road:

What ſo ſtrong,
But, wanting reſt, will alſo want of might?
The ſun, that meaſures heaven all day long,
At night doth *bait* his ſteeds the ocean waves among. *Spenſer.*

To Bait, *v. a.* [from *battre*, Fr. to beat.] To attack with violence. To haraſs by the help of others; as, we *bait* a boar with maſtiffs, or a bull with bull-dogs:

I will not yield
To kiſs the ground before young Malcolm's feet;
And to be *baited* with the rabble's curſe. *Shakeſpeare.*

Utility is pleaded in juſtification of *bull-baiting*; and this animal, till lately, was rarely killed without being firſt baited; the chaffing and exerciſe thereof makes his fleſh tenderer and more digeſtible. In truth, it diſpoſes it for putrefaction; ſo that, unleſs taken in time, baited fleſh is ſoon loſt. But a ſpirit of barbariſm had the greateſt ſhare in ſupporting this ſport: bulls were kept on purpoſe, and exhibited as ſtanding ſpectacles for the public entertainment. The poor beaſts, in this encounter, have not fair play: they are not only tied down to a ſtake, with a collar about their necks, and a ſhort rope, which gives them not above four or five yards play; but they are diſarmed too, the tips of their horns being uſually cut off, or covered with leather, to prevent their hurting the dogs. In this ſport, the chief aim of the dog is to catch the bull by the noſe, and hold him down; to which end he will even creep on his belly: the bull's aim, on the contrary, is, with equal induſtry, to defend his noſe; in order to which, he thruſts it cloſe to the ground, where his horns are alſo in readineſs to toſs the dog. Bull-baiting was firſt introduced into England as an amuſement, in the reign of King John, about the year 1209.

To Bait, *v. n.* To ſtop at any place for refreſhment: perhaps this word is more properly *bate*, to *abate* ſpeed:

As one who on his journey *baits* at noon,
Tho' bent on ſpeed: ſo here th' archangel paus'd. *Milton.*

To Bait, *v. n.* [*as an hawk.*] To clap the wings; to make an offer of flying; to flutter:

All plum'd like eſtridges, that with the wind
Baited like eagles having lately bath'd;
Glittering in golden coats like images. *Shakeſpeare.*

Bait, *ſ.* Meat ſet to allure fiſh, or other animals, to a ſnare:

The pleaſant'ſt angling is to ſee the fiſh
Cut with her golden oars the ſilver ſtream,
And greedily devour the treacherous *bait*. *Shakeſpeare.*

A refreſhment on a journey. A temptation; an enticement; allurement:

Sweet words, I grant, *baits* and allurements ſweet,
But greateſt hopes with greateſt croſſes meet. *Fairfax.*
Fruit, like that
Which grew in Paradiſe, the *bait* of Eve. *Milton.*

BA'JULUS, *ſ.* An ancient officer in the court of the Greek emperors. There were ſeveral degrees of bajuli; as, the grand *bajulus*, who was preceptor to the emperor; and the ſimple *bajuli*, who were ſub-preceptors. The word is derived from the Latin word *bajulare*, to carry or bear a thing on the arms or ſhoulders; and the origin of the office is thus traced by antiquaries. Children, and eſpecially thoſe of condition, had anciently, beſide their nurſe, a woman called *gerula*, as appears from ſeveral paſſages of Tertullian; when weaned, or ready to be weaned, they had men to carry them about and take care of them, who were called *geruli* and *bajuli*, *a gerendo et bajulendo*. Hence it is, that governors of princes and great lords were ſtill denominated *bajuli*, and their charge or government *bajulatio*, even after their pupils were grown too big to be carried about. The word paſſed in the ſame ſenſe into Greece. Bajulus is alſo uſed by Latin writers in the ſeveral other ſenſes wherein *bailiff* is uſed among us. Bajulus was alſo the name of a conventual officer in the ancient monaſteries, to whom belonged the charge of gathering and diſtributing the money and legacies left for maſſes and obits; whence he was alſo denominated *bajulus obituum novorum.*

BAIX', a town of France, in the department of the Ardeche, two leagues and a half ſouth-eaſt of Privas.

BAIZE, *ſ.* A coarſe woollen cloth, the manufacture of which was brought into England by ſome Flemings or Dutch, who ſettled at Colcheſter in Eſſex, where it has flouriſhed ever ſince. Theſe Flemings had peculiar privileges granted them by an act of parliament, 12 Charles II. 1660, which the baize-makers there ſtill enjoy.

Baize, a town of Germany, in the county of Tyrol, eight miles ſouth of Trent.

BA'KAL, a town of Ruſſia, in the government of Upha, ninety-ſix miles weſt-north-weſt of Upha.

BA'KAN, a large town of Aſia, in the kingdom of Burman, or Ava, ſituated on the river Ava.

To BAKE, *v. a.* participle paſſive, *baked* or *baken*. [*bæcan*, Sax. *becken*, Ger. ſuppoſed by Wachter to come from *bec*, which, in the Phrygian language, ſignified *bread*.] To heat any thing in a cloſe place; generally in an oven.—He will take thereof, and warm himſelf; yea he kindleth it, and *baketh* bread. *Iſaiah.*—To harden in the fire.—The work of the fire is a kind of *baking*; and whatſoever the fire *baketh*, time doth in ſome degree diſſolve. *Bacon.*—To harden with heat:

With vehement ſuns
When duſty ſummer *bakes* the crumbling clods,
How pleaſant is 't, beneath the twiſted arch,
To ply the ſweet carouſe! *Philips.*

To Bake, *v. n.* To do the work of baking.—I keep his houſe, and I waſh, wring, brew, *bake*, ſcour, dreſs meat, and make the beds, and do all myſelf. *Shakeſpeare.*—To be heated or baked:

Fillet of a fenny ſnake,
In the cauldron boil and *bake*. *Shakeſpeare.*

“ As you brew, ſo you ſhall *bake*.” This proverb is applicable to ſuch as act hand-over head, in matters of moment, without the precaution of good counſel and advice; and all the ſlips, miſmanagements, and afflictions, of both old or young, through raſhneſs or overſight, are expoſed to this bitter taunt.

BA'KED MEATS. Meats dreſſed by the oven.—There be ſome houſes, wherein ſweetmeats will relent, and *baked meats* will mould, more than others. *Bacon.*

BAKE'HOUSE, *ſ.* [from *bake* and *houſe*.] A place for baking bread.—I have marked a willingneſs in the Italian artizans, to diſtribute the kitchen, pantry, and *bakehouſe*, under ground. *Wotton.*

BA'KEN, the *participle* from *to bake*.—There was a cake *baken* on the coals, and a cruſe of water at his head. 1 *Kings*.

BA'KER, *ſ.* He whoſe trade is to bake.—In life and health, every man muſt proceed upon truſt, there being no knowing the intention of the cook or *baker*. *South.*

The learned are in great doubt about the time when bakers were profeſſionally introduced. It is however generally agreed, that they had their riſe in the eaſt, and paſſed from Greece into Italy after the war with Pyrrhus, about the year of Rome 583; till which time, every houſewife was her own baker; for the word *piſtor*, which we find in Roman authors before that time, ſignified a perſon who ground or pounded the grain in a mill or mortar to prepare it for baking. According to Athenæus, the Cappadocians were the moſt approved bakers, after them the Lydians, then the Phœnicians. To the foreign bakers brought into Rome, were added a number of freed-men, who were incorporated into a body, or, as they called it, a *college*; from which neither they nor their children were allowed to withdraw. They held their effects in common, and could not diſpoſe of any part of them. Each bakehouſe had a patronus, who had the ſuperintendancy thereof; and theſe patroni elected one out of their number each year, who had ſuperintendance over all the reſt, and the care of the college. Out of the body of the bakers were every now and then one admitted among the ſenators. To preſerve honour and honeſty in the college of bakers, they were expreſsly prohibited all alliance with comedians and gladiators; each had his bakehouſe, and they were diſtributed into fourteen regions of the city. They were excuſed from guardianſhips and other offices, which might divert them from their employment. By our own ſtatutes bakers are declared not to be handicrafts. No man for uſing the myſteries or ſciences of baking, brewing, ſurgery, or writing, ſhall be interpreted a handicraft. The bakers were a brotherhood in England before the year 1155, in the reign of Henry II. though the white bakers were not incorporated till 1407, by Edward III. and the brown bakers not till 1621, by James I. The London company of bakers have their hall in Harp-lane, Thames-ſtreet; and their court-day is on the firſt Monday of the month. They make the nineteenth company; and conſiſt of a warden, four maſters, thirty aſſiſtants, and 140 men on the livery, beſides the commonalty. The French had formerly a great baker, *grand panetier de France*, who had the ſuperintendency of all the bakers of Paris; but ſince the revolution they have been put under the juriſdiction of the police.

BAKER (Sir Richard), author of the Chronicle of the Kings of England, was born at Seſſingherſt, in Kent, about the year 1568. After going through the uſual courſe of academical learning at Hart-hall, in Oxford, he travelled into foreign parts; and upon his return was created maſter of arts, and ſoon after, in 1603, received from king James I. the honour of knighthood. In 1620, he was high ſheriff of Oxfordſhire; but, engaging to pay ſome of the debts of his wife's family, he was reduced to poverty, and was thrown into the Fleet priſon, where he compoſed ſeveral books; among which are, 1. Meditations and Diſquiſitions on the Lord's Prayer. 2. Meditations on the Pſalms of David. 3. Meditations upon the ſeven Days of the Week. 4. Cato Variegatus, or Cato's Moral Diſtichs varied, &c. It has been obſerved, that his Chronicle of the Kings of England was ever more eſteemed by readers of a lower claſs than by ſuch as had a critical knowledge of hiſtory. The language of it was called polite; and it long maintained its reputation. It has been ſeveral times reprinted, and is now carried as low as the reign of George I. Sir Richard alſo tranſlated ſeveral works from the French and Italian; and died very poor, in the Fleet priſon, on the 18th of February, 1645.

BAKER (Thomas), an eminent mathematician, was born at Ilton, in Somerſetſhire, about the year 1625, and entered at Magdalen-hall, Oxford, in 1640; after which he was vicar of Biſhop's Nymmet, in Devonſhire, where he wrote The Geometrical Key, or the Gate of Equations unlocked; by which he gained a conſiderable reputation. A little before his death, the members of the Royal Society ſent him ſome mathematical queries, to which he returned ſo ſatisfactory an anſwer, that they preſented him a medal with an inſcription full of honour and reſpect. He died at Biſhop's Nymmet the 5th of June, 1690.

BAKER (Thomas), an ingenious and learned antiquary, was born at Crook, in 1656. He was educated at the free-ſchool at Durham, and thence removed to St. John's college, Cambridge, in 1674. He proceeded B. A. 1677; M. A. 1681; was elected fellow March 1679; ordained deacon by biſhop Compton, of London, Dec. 20, 1685; prieſt by biſhop Barlow, of Lincoln, Dec. 19, 1686. He was made chaplain to lord Crew, biſhop of Durham; and his lordſhip collated him to the rectory of Long-Newton, June 1687; and intended to have given him that of Sedgefield, worth 700l. a-year, had he not incurred his diſpleaſure, by refuſing to read James II.'s declaration for liberty of conſcience. The biſhop, who diſgraced him for this refuſal, and was excepted out of king William's pardon, took the oaths to that king, and kept his biſhopric till his death. Mr. Baker reſigned Long-Newton, Aug. 1, 1690, refuſing to take the oaths; and retired to his fellowſhip at St. John's, in which he was protected till Jan. 20, 1717, when he was diſpoſſeſſed of it. He retained a lively reſentment of his deprivations; and wrote himſelf in all his books, as well as in thoſe which he gave to the college library, *ſocius ejectus*, and in ſome *ejectus rector*. He continued to reſide in the college as commoner-maſter till his death, which happened July 2, 1740, of a paralytic ſtroke, being found on the floor of his chamber. Being appointed one of the executors of his elder brother's will, by which a large ſum was bequeathed to pious uſes, he prevailed on the other two executors to lay out 1310l. of the money upon an eſtate to be ſettled upon St. John's college for ſix exhibitioners. He likewiſe gave to the library ſeveral choice books, both printed and MS. medals, and coins. All that Mr. Baker printed was, 1. Reflections on Learning; London, 1710; (which went thro' eight editions: and Mr. Boſwell, in his “ Method of Study,” ranks it among the Engliſh claſſics for purity of ſtyle.) And, 2. The Preface to Biſhop Fiſher's Funeral Sermon for Margaret Counteſs of Richmond and Derby, 1708. It is much to be regretted that he did not live to publiſh his Hiſtory of St. John's College, from the Foundation of old St. John's; collected principally from MSS. and carried on through a Succeſſion of Maſters to the end of Biſhop Gunning's Maſterſhip, 1670. The original, fit for the preſs, is among the Harleian MSS. No. 7028. His MS. collections relative to the hiſtory and antiquities of the univerſity of Cambridge, amounting to forty-nine volumes in folio and three in quarto, are divided between the Britiſh Muſeum and the public library at Cambridge: the former poſſeſſes twenty-three volumes, which he bequeathed to the earl of Oxford, his friend and patron; the latter ſixteen in folio and three in quarto, which he bequeathed to the univerſity.

BAKER (Henry), an ingenious and diligent naturaliſt, was born in London about the beginning of the eighteenth century. He was brought up under an eminent bookſeller, but, being of a philoſophical turn of mind, he quitted that line of buſineſs ſoon after the expiration of his apprenticeſhip, and took to the employment of teaching deaf and dumb perſons to ſpeak and write, &c. in which occupation, in the courſe of his life, he acquired a handſome fortune. For his amuſement he cultivated various natural and philoſophical ſciences, particularly botany, natural hiſtory, and microſcopical ſubjects, in which he eſpecially excelled, having, in the year 1744, obtained the Royal Society's gold medal, for his microſcopical experiments on the cryſtallizations and configurations of ſaline particles. He had various papers publiſhed in the Philoſophical Tranſactions of the Royal Society, of which he was a worthy member, as well as of the ſocieties of antiquaries and of arts. He was author of many pieces, on various ſubjects, the principal of which were, his Treatiſe on the Water Polype, and two treatiſes on the microſcope, viz. The Microſcope made eaſy, and Employment for the Microſcope, which have gone through ſeveral editions. Mr. Baker married Sophia, youngeſt daughter of the celebrated Daniel Defoe, by whom he had two ſons, who both died before him. He terminated an honourable and uſeful life, at his apartments in the Strand, on the 25th of November, 1774, being then upwards of 70 years of age.

BAKER (William), a learned printer, (ſon of Mr. Wm. Baker, a man of moſt amiable character and manners, and of great claſſical and mathematical learning, and more than forty years maſter of an academy at Reading, Berks,) was born in the above town in the year 1742. He was from his infancy a boy of a very grave turn; ſeldom, if ever, joining in the uſual juvenile ſports of his ſchoolfellows, but ſpending the hours allotted to amuſement, as well as the vacations, in his father's library. His applications were ſuch, in the mathematics, and afterwards in claſſical purſuits, as greatly to injure his health, and even to endanger his life. The great progreſs he had made determined his father (who was himſelf originally intended for the church) to wiſh to get him into holy orders, to which alſo his own inclinations led him, eſpecially as they were at that time flattered by a dignitary of the church, whoſe encouragement and intereſt gave him hopes of ſucceſs in the very moderate views he had entertained; but the friendſhip of this great man ended, as too frequently happens, in empty promiſes and diſappointments. He was then put apprentice to Mr. Kippax, printer, in Cullum-ſtreet, London; a buſineſs which, as it had ſo cloſe a connection with literature, ſeemed to meet his approbation; and his even and contented diſpoſition made him eaſier than perhaps many young men would have been under the diſappointment he had met with. In his new way of life, the ſame indefatigable induſtry was purſued in the attainment of learning; his leiſure hours were employed, as formerly, with the beſt of the ancients; and this was frequently his employment while others were aſleep. To enable himſelf to encreaſe the ſmall collection of books he poſſeſſed, he uſed, while an apprentice, to work over-hours at his buſineſs, for which he was allowed certain perquiſites, which he chiefly applied in the purchaſe of the beſt editions of the claſſics; which collection at his death, although not very numerous, was very choice, and was purchaſed by Dr. Lettſom. Before he had attained his twenty-firſt year, the great exertion to which this way of life ſubjected him had again ſo undermined his health, that a very eminent phyſician and friend of his gave very little hopes of his reſtoration. Emaciated and reduced by ſpontaneous hemorrhages, hectic fever, cough, &c. his life was moſt ſeverely threatened: by the aid of country air, medicine, &c. he once more recovered. On the death of Mr. Kippax, he took up his buſineſs, which he carried on till his death, firſt in Cullum-ſtreet, and afterwards in Ingram-court, in partnerſhip with Mr. Galabin, who was many years in the common-council of Langbourne-ward, and afterwards bridgemaſter of the city of London. Amongſt his acquaintance may be mentioned ſome men of the firſt eminence in letters, viz. Dr. Oliver Goldſmith; Dr. Edmund Barker; the Rev. James Merrick, tranſlator of Tryphiodorus and author of many other pieces; Mr. Robert Robinſon; the Rev. Hugh Farmer; the Rev. Cæſar De Miſſy, one of the French chaplains to the king; James Elphinſton, Eſq. &c. &c. An elegant correſpondence in the Latin language, between him and Mr. Robinſon, and ſome letters of enquiry into difficulties in the Greek language, which ſtill exiſt, are at once ſo many proofs of his great erudition and the opinion entertained of him by ſome of the firſt ſcholars. Such was his extreme modeſty, that many among his oldeſt and moſt familiar acquaintance, whoſe inclinations had not led them to the ſame purſuits, were perfectly ignorant of his great learning; and, even in companies where it was the topic of diſcuſſion, his opinion could never be known without an abſolute appeal to his judgment, and ſuch companies he has many times quitted a ſilent hearer only. This was probably a loſs to the public, as it prevented the communication of ſome of the fruits of his intenſe ſtudies; and it is to be lamented, that the ſame diffidence made him very backward in appearing before the public as a writer: we have but two little works known to be his. Many ſmart jeux-d'eſprit, publiſhed in ſome fugitive works, are now loſt to the world in the loſs of their author. The two ſmall works above alluded to are, "Peregrinations of the Mind through the moſt general and intereſting Subjects which are uſually agitated in Life, by the Rationaliſt," 12mo, 1770, in eſſays, after the manner of the Rambler. "Theſes Græcæ Latinæ ſelectæ," 8vo, in 1780, a ſelection from the Greek and Latin writers, every one of which from he had taken a paſſage he had read with critical attention throughout. He left behind him ſome manuſcript remarks, intended chiefly to point out the frequent abuſe of grammatical propriety in the Engliſh language in common converſation, and even among reputable writers, and among people of the firſt rank in education and manners. He had alſo a good talent for poetry, and wrote ſeveral detached poems, publiſhed in magazines; as well as a very correct taſte in compoſitions for the pulpit, and he actually compoſed ſeveral excellent ſermons for ſome of his clerical friends, which were accepted and uſed, one particularly, as the firſt ever preached by an old and intimate aſſociate. Of the Greek, Latin, French, and Italian, languages, he was completely and critically maſter; the Hebrew he had ſome knowledge of; and to his own he had paid much judicious attention. But he was truly Gray's flower, "born to bluſh unſeen." After great exertion in walking, about Chriſtmas, 1784, (of which he was always very fond when he could indulge,) againſt approaching night he felt violent pain in his ſide, which however he did not complain of till aſſiſtance probably came too late; and after the moſt excruciating ſufferings, for near nine months, which he bore with uncommon fortitude and patience, exerting his ſocial diſpoſition to the laſt, even with facetious pleaſantry when free from pain, he finiſhed his truly amiable life on the 29th of September, 1785, in the forty-fourth year of his age. He was kindly attended by men of the firſt eminence, whoſe ſkill availed nothing, as his diſeaſe was of ſuch an unmanageable nature, that all the efforts of the greateſt profeſſional ſkill and judgment were unavailing, viz. a prodigious diſeaſed enlargement of the omentum, which weighed upwards of twelve pounds inſtead of as many ounces. He was interred in the vault of St. Dionis Backchurch, the pariſh in which he had reſided ever ſince his firſt arrival in London; and an elegant Latin epitaph to his memory is placed on the tomb of his family, in the church-yard of St. Mary, Reading.

BAKER's CENTRAL RULE, for the conſtruction of equations, is a method of conſtructing all equations, not exceeding the fourth degree, by means of a given parabola and a circle, without any previous reduction of them, or firſt taking away their ſecond term. See CENTRAL RULE.

BAKER-LEGGED, ſtraddling with the legs bowing outward.

BAKEU', a town of European Turkey, in the province of Moldavia, ſixty miles ſouth-weſt of Jaſſy.

BAKE'WELL, a town in the county of Derby, ſituated near the river Wye. It has a weekly market on Friday; is twenty-five miles north of Derby, and 151 north of London. It ſtands in what is called the High Peak, and in a healthy ſituation, well ſupplied with proviſions; coals are plentiful, and of a good quality. Here was formerly a chalybeate bath, 58°, which has been ſome time converted into a dwelling-houſe. It is a place of great reſort for anglers, the river Wye producing plenty of trout, grayling, &c. The church is elegant, with a lofty ſpire of great antiquity. A Sunday ſchool is eſtabliſhed here, ſupported by ſubſcription. Near the town are ſeveral quarries of ſtone, as argillaceous grit, petrolex, lime-ſtone, and rotten-ſtone. The mines of lead and zinc are numerous in this neighbourhood, and very rich at this time. There is a large manufactory of cotton here, belonging to Richard Arkwright, Eſq.

Near Bakewell is Chatſworth.—Chatſworth-houſe may be ſaid to have had two or three different founders, who have all improved upon one another in the completion of this great deſign. The houſe was begun on a much narrower plan than it now takes up, by Sir William Cavendiſh, of Cavendiſh in Suffolk, who, by marriage with Elizabeth Hardwicke, relict of Robert Barley, Eſq. became intitled to a noble fortune in this county. This lady, after the death of Sir William, married Sir William St. Loe, captain of the guard to queen Elizabeth; and, fourthly, George Talbot, earl of Shrewſbury. Sir William died, after having done little more than building one end of the fabric, and laying out the plan of the whole. But his lady finiſhed it in the magnificent manner in which it appeared when it was firſt ranked among the wonders of the Peak. One thing is obſervable, that the very diſadvantages of ſituation contribute to the beauty of the place, and, by the moſt exquiſite management, are made ſubſervient to the builder's deſign. On the eaſt ſide, not far diſtant, riſes a prodigious high mountain, which is ſo thick planted with beautiful trees, that you only ſee a riſing wood gradually aſcending, as if the trees crouded one above the other to admire the ſtately pile before them. Upon the top of this mountain they dig mill-ſtones; and here begins a vaſt extended moor, which, for fifteen or ſixteen miles together due north, has neither hedge, houſe, nor tree, but a waſte and howling wilderneſs, over which, when ſtrangers travel, it is impoſſible to find their way without a guide. Nothing can be more ſurpriſing of its kind to a traveller, who comes from the north, when, after a tedious progreſs thro' ſuch a diſmal deſert, on a ſudden the guide brings him to this precipice, where he looks down from a comfortleſs, barren, and, as he thought, endleſs, moor, into the moſt delightful valley, and ſees a beautiful palace, adorned with fine gardens. If contraries illuſtrate each other, here they are ſeen in the ſtrongeſt oppoſition. On the plain, which extends from the top of this mountain, is a large body of water, which takes up near thirty acres, and, from the aſcents round it, receives, as into a ciſtern, all the water that falls; which, through pipes, ſupplies the caſcades, water-works, ponds, and canals, in the gardens. Before the weſt front of the houſe, which is the moſt beautiful, and where the firſt foundreſs built a very auguſt portal, runs the river Derwent, which, though not many miles here from its ſource, yet is a rapid river, when, by haſty rains, or the melting of ſnows, the hills pour down their waters into its channel. Over this river is a ſtately ſtone bridge, with an ancient tower upon it, and in an iſland in the river an ancient fabric all of ſtone, and built like a caſtle; which are the works of the aforeſaid foundreſs, and ſhew the greatneſs of the original deſign; but are all, except the bridge, eclipſed, as it were, by the modern glories of the edifice. The front to the garden is a regular piece of architecture. The frize under the cornice has the motto of the family under it in gilt letters, ſo large as to take up the whole front, though the words are only two, CAVENDO TVTVS; which is no leſs applicable to the ſituation of the houſe than to the name and creſt of the family. The ſaſhes of the ſecond ſtory are ſeventeen feet high, of poliſhed plate-glaſs, each glaſs two feet wide; and the wood-work double gilt. Under this front lie the gardens, exquiſitely fine; and, to make a clear viſta or proſpect beyond into a flat country, towards Hardwick, another ſeat of the duke of Devonſhire, the late duke (to whom thoſe things, which others thought impoſſible, were practicable) removed a great mountain that ſtood in the way, and which interrupted the proſpect. In the uſual approach to this noble fabric, it preſents itſelf thus: firſt, the river, which, in calm weather, glides gently by; then a venerable walk of trees, where the famous Hobbes uſed often to contemplate; a noble piece of iron-work gates and baluſters expoſes the front of the houſe and court, terminated at the corners next the road with two large ſtone pedeſtals of Attic work, curiouſly adorned with trophies of war, and utenſils of all the ſciences, in baſſo relievo. This part of the building is Ionic, the whole being a ſquare of a ſingle order, but every ſide of a different model: a court in the middle, with a piazza of Doric columns of one ſtone each, overlaid with prodigious architraves. The ſtone is of an excellent ſort, veined like marble, hewn out of the neighbouring quarries, and tumbled down the adjacent hill. In the anti-room to the hall are flat ſtones of fourteen feet ſquare, laid upon the heads of four pillars, and ſo throughout. In the hall-ſtairs, the landing-ſteps are of the ſame dimenſions; the doors, chimnies, window-caſes, ſtairs, &c. all of marble; the ceilings and walls of the apartments charged with paintings of Varrio, and other famous hands; the bath-room all of marble, curiouſly wrought. The chapel is a fine place; the altar-end and floor marble; the ſeats and gallery, cedar; the reſt of the wall and ceiling, painted. The gardens abound with green-houſes, ſummer-houſes, walks, wilderneſſes, orangeries, with all the proper furniture of ſtatues, urns, greens, &c. with canals, baſons, and water-works, of various forms and contrivances; as ſea-horſes, drakes, dolphins, and other fountains, that throw up the water. An artificial willow-tree of copper ſpouts dropping water from every leaf. A wonderful caſcade, where from a neat houſe of ſtone, like a temple, out of the mouths of beaſts, pipes, urns, &c. a whole river deſcends the ſlope of a hill a quarter of a mile in length, over ſteps, with a terrible noiſe, and broken appearance, till it is loſt under-ground; ſome diſtance beyond this, are concealed water-pipes, which, by the guide's turning a cock, are ſo contrived as to wet you pretty handſomely before you are aware, and this trick they ſeldom fail to play off upon ſtrangers to make them remember Chatſworth; and it is ſaid that a lady once loſt her life by the fright ſhe was thrown into at the water's being let off in the place called the Temple, before ſhe had got out of it. Beyond the garden, upon the hills, is a park, that over-looked a high and rocky mountain. Here are ſome ſtatues, and other antiquities. We ſhould never have done, were we to ſay all that might be ſaid of this auguſt palace. But two hiſtorical circumſtances in its honour muſt not be forgotten, viz. That Mary queen of Scots was for ſome time in cuſtody in this houſe, under the care of the celebrated foundreſs of it. In memory of this royal captive, the new lodgings that are built inſtead of the old are ſtill called the queen of Scots apartment. Mr. Colley Cibber, equally noted for his dramatic pieces and his inimitable action on the ſtage, left upon the walls of the bowling-green houſe a memorandum of his having viſited this ſuperb palace; and humanely deplored the fate of this unfortunate queen, in a handſome compliment upon the princely edifice in the following lines:

When Scotland's queen, her native realm expell'd,
In ancient Chatſworth was a captive held,
Had there the pile to ſuch new charms arriv'd,
Happier the captive, than the queen, had liv'd.
What tears, in pity of her fate, could riſe,
That found the fugitive in paradiſe!

Of the modern improvements at Chatſworth, we ſhall only ſay, that the alterations were made by the command of the late duke of Devonſhire, under the direction of Mr. Brown: the whole of which do no leſs honour to his taſte, who formed and executed the plan, than to the judgment of the noble perſon who employed a man ſo well qualified for the arduous taſk of improving Chatſworth. The park, under this gentleman's direction, has been very much altered and moderniſed, the water greatly improved, a new and elegant bridge erected, trees removed, plantations made, and many of the formalities annihilated. The water-works ſtill remain; but, to the man of taſte, theſe are conſidered as mere matters of curious expence, and the remains of that ſpecies of garden magnificence, which has long ſince been exploded by a happy attention to the powers and beauties of nature.

Bakewell (Robert), the moſt ſucceſsful experimental farmer and cattle-breeder ever known in England, was born at Diſhley in Leiceſterſhire, in 1726. Having remarked, that domeſtic animals in general produce others poſſeſſing qualities nearly ſimilar to their own, he conceived he had only to ſelect from all the moſt valuable breeds ſuch as promiſed to return the greateſt poſſible emolument to the breeder, and that he ſhould then be able, by careful attention to progreſſive improvements, to produce a race of ſheep, horſes, horned cattle, or other animals, poſſeſſing a maximum of advantage. A ſelection on this principle from different parts of England, was the original ſtock from which he afterwards propagated his own. About 1760, Mr. Bakewell ſold his ſheep by private contract, at not more than two or three guineas each. Some time afterwards, he began to let ſome of his rams, and for a few ſeaſons received only fifteen ſhillings and a guinea a-piece for them; but, as the fame of his breed extended itſelf, he advanced his prices, and by the year 1770 was enabled to let ſome of his rams for the ſeaſon for twenty-five guineas. After that time, the prices and credit of his ſtock progreſſively encreaſed; and at laſt, ſingle rams have been let for the ſeaſon at the enormous price of four hundred guineas, and upwards. It is a fact that has no other example, that one ram, called the *Two-pounder*, produced, in one ſeaſon, the ſum of eight hundred guineas, independent of ewes of Mr. Bakewell's own ſtock; which, at the ſame rate, would have made a total, the produce of a ſingle ram, of twelve hundred guineas. The race of Diſhley ſheep are known by the fineneſs of their bones and fleſh, the lightneſs of the offal, their diſpoſition to quietneſs, and conſequently to mature and fatten with leſs food than other ſheep of equal weight and value. Mr. Bakewell improved his black horſes by an attention to the form which is beſt adapted to their uſe. His ſtallions have been let for the ſeaſon for one hundred guineas, and upwards. Many anecdotes are related of his humanity towards the various orders of animals. He continually deprecated the atrocious barbarities practiſed by the butchers and drovers; ſhewing, by examples on his own farm, the moſt pleaſing inſtances of docility of the animals under his care. This extraordinary man, more deſerving, in our opinion, of the civic wreath, than the warrior or the ſtateſman, died Oct. 1, 1795, on the ſpot where he firſt drew breath.

BA'KING, *ſ.* The art of preparing bread, or reducing meal of any kind, whether ſimple or compound, into bread. See the article Bread. The various forms of baking may be reduced into two, the one for unleavened, the other for leavened, bread. For the firſt, the chief is manchet-baking; the proceſs whereof is as follows: the meal, ground and boulted, is put into a trough; and to every buſhel are poured three pints of warm ale, with barm and ſalt to ſeaſon it. This is kneaded well together; after which, having lain an hour to ſwell, it is moulded into manchets; which, ſcorched in the middle, and pricked up at top, to give room to riſe, are baked in the oven by a gentle fire. For the ſecond, ſometimes called *cheat-bread baking*, it is thus: ſome leaven (ſaved from a former batch) filled with ſalt, laid up to ſour, and at length diſſolved in water, is ſtrained through a cloth into a hole made in the middle of the heap of meal in the trough; then it is worked with ſome of the flour into a moderate conſiſtence: this is covered up with meal, where it lies all night; and in the morning the whole heap is ſtirred up, and mixed with a little warm water, barm, and ſalt, by which it is ſeaſoned, ſoftened, and brought to an even leaven; it is then kneaded, moulded, and baked, as before.

To raiſe a buſhel of flour with a tea-ſpoonful of yeaſt.— Suppoſe you want to bake a buſhel of flour, and have but one tea-ſpoonful of barm. Put your flour into the kneading-trough; then take about three quarters of a pint of warm water, and the tea-ſpoonful of barm, and put it into the water, with a little Liſbon ſugar; ſtir it until it is thoroughly mixed with the water: then make a hole in the middle of the flour large enough to contain two gallons of water; pour in your ſmall quantity; then take a ſtick about two feet long, and ſtir in ſome of the flour, until it is as thick as batter for a pudding; then ſtrew ſome of the dry flour over it, and leave it for about an hour: then take a quart of warm water more, and pour in; for in one hour it will be raiſed ſo, that it will break through the dry flour which you ſhook over it. When you have poured in the quart of warm water, ſtir in ſome more flour, until it is as thick as before; then ſhake ſome more dry flour over it, and leave it for two hours more, and then you will find it riſe and break through the dry flour again; then you may add three quarts or a gallon of water more, and ſtir in the flour and make it as thick as at firſt, and cover it with dry flour again; in about three hours after mix up your dough, and cover it up warm; and in four or five hours more put it into the oven, and you will have as good and light bread as though you had put a pint of barm. It does not take above a quarter of an hour more than the uſual way of baking, for there is no time loſt but merely that of adding the water. The author of this method obſerves, that the reaſon why people make heavy bread is, not becauſe they have not barm enough, but becauſe they do not know that barm is the ſame to flour as fire is to fuel; that, as a ſpark of fire will kindle a large body by only blowing of it up, ſo will a thimble-full of barm, by adding warm water, raiſe or ſpunge any body of flour; for warm water gives freſh life to that which is before at work: ſo that the reaſon of making bread heavy is, becauſe the body ſpunged is not large enough, but was made up and put into the oven before it was ripe.

BAKOLARZ', a town of Lithuania, in the palatinate of Troki, forty-four miles north-weſt of Grodno.

BAKON', a large foreſt of Hungary, near Veſprin, where Andrew, king of Hungary, in a battle againſt his brother, was forſaken by his followers, thrown down and trodden to death by his enemies.

BAKOU', or Baku. See Bachu.

BAKSAISKAI'A, a fortreſs of Ruſſian Tartary, in the government of Caucaſus, on the weſt ſide of the Ural, thirty-two miles north of Gurieu.

BA'LA, a town of North Wales, in the county of Merioneth, ſituated near a lake or pool called *Pemble Meer*, or *Pool of Bala*, and by the natives *Lhin Tegid*. It is a town of good trade for ſtockings, flannels, and corn, with a weekly market on Saturdays. The aſſizes are held here and at Dolgelly alternately. It is a place of great antiquity, as appears from the remains of three Roman camps which ſeem to have been uſed as exploratory ſtations before the Ordovices were totally ſubdued. It is endowed with many valuable privileges; but there are no public ſtructures that merit particular deſcription. It is an ancient borough by preſcription, and has been many years incorporated, the government being veſted in two bailiffs and a common-council. Here is a ſchool which is endowed for teaching and clothing thirty boys. The biſhops of St. Aſaph and Bangor, for the time being, are the truſtees. There is a ſeat called Glanayn near the ſide of the Pool; and another called Caer Gai, about a mile higher, both in the pariſh of Llaniwllyn, belonging to Sir W. W. Wynne.

Rhiwlas, the ſeat of Richard Tav. Prie, Eſq. Rhiwaidoy, the ſeat of William Doulben, Eſq. Bala is twenty-ſix miles north-weſt of Welſh-Pool, thirty-five ſouth of Holywell, and 195 north-weſt of London.

BA'LAAM, [בלעם of בלי without, and עם people, or בלע the ſwallowing up or deſtruction, and עם of the people, Heb.] A prophet of the city of Pethor upon the Euphrates, mentioned in the book of Numbers, chap. xxii. It is a queſtion much debated among divines, whether Balaam was a prophet of God or not. The Jews are of opinion, that he was a profeſſed aſtrologer, who, obſerving when men were under a bad aſpect of the ſtars, pronounced a curſe upon them; which, ſometimes coming to paſs, gained him great reputation in his way. Several of the ancient fathers ſuppoſe him to be no more than a common ſoothſayer, who undertook to tell future events, and diſcover ſecrets, by no very juſtifiable means. Origen will have it, that he was no prophet, but only one of Satan's ſorcerers, and that of him he went to inquire; but that God was pleaſed to prevent him, and put what anſwers he pleaſed into his mouth. It cannot be denied, however, that the ſcripture expreſsly calls him a prophet, Pet. ii. 5. and therefore ſome later writers have imagined that he had once been a good man and true prophet, till loving the wages of iniquity, and proſtituting the honour of his office to covetouſneſs, he apoſtatized from God, and, betaking himſelf to idolatrous practices, fell under the deluſion of evil ſpirits, of whom he learnt all his magical enchantments, though at this juncture, when the preſervation of his people were concerned, it might be conſiſtent with the divine wiſdom to vouchſafe his revelations. As to what paſſed between Balaam and his aſs, when that animal was miraculouſly enabled to ſpeak, commentators are much divided, whether it really and literally happened as Moſes relates it, or whether it be an allegory only, or the mere imagination or viſion of Balaam. This indeed is ſo wonderful an inſtance, that ſeveral of the Jewiſh doctors, who upon other occaſions are fond enough of miracles, will not believe this. Philo, in his Life of Moſes, paſſes it over in ſilence; and Maimonides contends, that it happened to Balaam in a prophetic viſion only. But St. Peter, ii. 16. ſpeaks of this fact as literal and certain, and ſo all interpreters explain it. St. Auſtin, who underſtands it exactly according to the letter, finds nothing in the whole account more ſurpriſing than the ſtupidity of Balaam, who heard his aſs ſpeak, yet ſhewed no ſurpriſe, but anſwered as if he talked with a reaſonable perſon. He is of opinion, that this diviner was accuſtomed to prodigies like this, or that he was ſtrangely blinded by his avarice, not to be ſtopped by an event of ſo extraordinary a nature. Le Clerc thinks, that Balaam might have imbibed the doctrine of tranſmigration, which was certainly very common in the eaſt; and from thence he might be the leſs aſtoniſhed at hearing a brute ſpeak. And Dr. Patrick thinks that Balaam was in ſuch a rage at the ſuppoſed perverſeneſs of his beaſt cruſhing his foot, that he could then think of nothing elſe; though the conciſeneſs of Moſes's relation, who muſt be preſumed to have omitted many circumſtances, which if rightly known would diſpel all the difficulties in this tranſaction, does certainly furniſh us with a better and more ſatisfactory anſwer. St. Auſtin is of opinion, that God had not given the aſs a reaſonable ſoul; but permitted it to pronounce certain words, in order to reprove the prophet's covetouſneſs. Gregory of Nyſſa ſeems to think that the aſs did not utter any word articulately or diſtinctly; but that, having brayed as uſual, the diviner, whoſe practice it had been to draw preſages from the cries of beaſts and ſinging of birds, comprehended eaſily the aſs's meaning by its noiſe; Moſes deſigning to ridicule this ſuperſtitious art of augurers and ſoothſayers, as if the aſs really ſpoke in words articulate. We muſt own, ſays Calmet, that this is a miraculous fact, related by an inſpired writer, whoſe authority we are not allowed to call in queſtion in the leaſt particular: but we ſhould ſtudy ſuch ways of explaining it as are moſt conformable to reaſon, and moſt proper to ſolve the difficulties of it, without attacking the truth of divine revelation.

BA'LABA, one of the ſmaller Philippine iſlands.

BALACH'NA, a town of Ruſſia, in the province of Nizegorod, on the weſt ſide of the Volga, 120 miles E.S.E. of Peterſburg. Lat. 56. 30. N. lon. 61. 15. E. Ferro.

BA'LAD, a town of Aſia, in the country of Diarbekir, twenty miles north-weſt of Moſul.

BA'LADAN, the ſcripture name for a king of Babylon, (Iſaiah xxxix. 1. 2 Kings xx. 12.) called by profane authors *Beleſus* or *Beleſes*, *Nabonaſſar* or *Nanybrus*. Baladan at firſt was no more than governor of Babylon; but entering into a confederacy with Arbaces governor of Media, and rebelling againſt Sardanapalus king of Aſſyria, theſe two generals marched againſt him with an army of 400,000 men, and were beaten in three different battles. But the Bactrians deſerting the king, and coming over to Baladan and Arbaces, the rebels attacked him in the night, and made themſelves maſters of his camp. After this misfortune, Sardanapalus retreated to Nineveh, and left the command of his army to his brother-in-law Salamenes. The conſpirators attacked Salamenes and defeated him in two battles; after which they laid ſiege to Nineveh. Sardanapalus ſuſtained the ſiege for three years; but the Tigris, in the third year, overflowing its banks, beat down twenty furlongs of the walls; whereupon the conſpirators entered the city and took poſſeſſion of it, after Sardanapalus had burnt himſelf and his moſt valuable effects upon a funeral pile, erected for that purpoſe in his palace. Baladan was acknowledged king of Babylon, as Arbaces was of Media. Berodach-baladan, who ſent ambaſſadors to Hezekiah, (2 Kings xx.) was the ſon of Baladan.

BALÆ'NA, *ſ.* [ϐαλαινα, from ϐαλλω, to caſt, from its power in caſting up water. Iſid. Becman thinks it comes from בלע to devour, from its voracity.] The WHALE. In zoology, a genus of the mammalia claſs, belonging to the order of cete. The characters of this genus are theſe: the balæna, in place of teeth, has a horny plate on the upper jaw, and a double fiſtula or pipe for throwing out water. The ſpecies are five, viz. the myſticetus, the phyſalus or fin-fiſh, the pike-headed, the round-lipped, and the muſculus; all which differ from each other in ſize and figure.

The myſticetus, or common whale, which has many turnings and windings in its noſtrils, and has no fin on the back. This is the largeſt of all animals; it is even at preſent ſometimes found in the northern ſeas ninety feet in length; but formerly they were taken of a much greater ſize, when the captures were leſs frequent, and the fiſh had time to grow. Such is their bulk within the arctic circle; but in thoſe of the torrid zone, where they are unmoleſted, whales are ſtill ſeen 160 feet long. The head is very much diſproportioned to the body, being one-third the ſize of the fiſh: the under lip is much broader than the upper. The tongue is compoſed of a ſoft ſpongy fat, capable of yielding five or ſix barrels of oil. The gullet is very ſmall for ſo vaſt a fiſh, not exceeding four inches in width. In the middle of the head are two orifices, through which it ſpouts water to a vaſt height, and with a great noiſe, eſpecially when diſturbed or wounded. The eyes are not larger than thoſe of an ox, and when the cryſtalline humour is dried, it does not appear larger than a pea. They are placed towards the back of the head, being the moſt convenient ſituation for enabling them to ſee both before and behind; as alſo to ſee over them, where their food is principally found. They are guarded by eyelids and eye-laſhes, as in quadrupeds; and they ſeem to be very quick-ſighted. Nor is their ſenſe of hearing in leſs perfection: for they are warned at great diſtances of any danger preparing againſt them. It would ſeem as if nature had deſignedly given them theſe advantages, as they multiply little, in order to continue their kind. It is true, indeed, that the external organ of hearing is not perceptible, for this might only embarraſs them in their natural element; but, when the thin ſcarf-ſkin is removed, a black ſpot is diſcovered behind the eye, and under that is the auditory canal, that leads to a regular apparatus for hearing. In ſhort, the animal hears the ſmalleſt ſounds at very great diſtances, and at all times, except when it is ſpouting water; which is the time that the fiſhers approach to ſtrike it. What is called *whalebone*, adheres to the upper jaw; and is formed of thin parallel laminæ, ſome of the longeſt four yards in length; of theſe there are commonly 350 on each ſide, but in very old fiſh more; about 500 of them are of a length fit for uſe, the others being too ſhort. They are ſurrounded with ſtrong hair, not only that they may not hurt the tongue, but as ſtrainers to prevent the return of their food when they diſcharge the water out of their mouths. The real bones of the whale are hard, porous, and full of marrow. Two large bones ſuſtain the upper lip, lying againſt each other in the ſhape of an half-moon. The tail is broad and ſemilunar; and, when the fiſh lies on one ſide, its blow is tremendous. The tail alone it makes uſe of to advance itſelf forward in the water; and it is ſurpriſing to ſee with what force and celerity its enormous bulk cuts through the ocean. The fins are only made uſe of for turning in the water, and giving a direction to the velocity impreſſed by the tail. The female alſo makes uſe of them, when purſued, to bear off her young, clapping them on her back, and ſupporting them by the fins on each ſide from falling. The whale varies in colour; the back of ſome being red, the belly generally white. Others are black, ſome mottled, others quite white; according to the obſervation of Martin, who ſays, that their colours in the water are extremely beautiful, and that their ſkin is very ſmooth and ſlippery. The outward or ſcarf-ſkin of the whale is no thicker than parchment; but, this removed, the real ſkin appears, of about an inch thick, and covering the fat or blubber that lies beneath; this is from eight to twelve inches in thickneſs; and is, when the fiſh is in health, of a beautiful yellow. The muſcles lie beneath; and theſe, like the fleſh of quadrupeds, are very red and tough. The penis is eight feet in length, incloſed in a ſtrong ſheath. The teats in the female are placed in the lower part of the belly. In copulation, the female joins with the male, as is aſſerted, *more humano*; and once in two years feels the acceſſes of deſire. Their fidelity to each other exceeds whatever we are told of, even the conſtancy of birds. Anderſon, a celebrated whale-fiſher, informs us, that having ſtruck one of two whales, a male and a female, that were in company together, the wounded fiſh made a long and terrible reſiſtance: it ſtruck down a boat with three men in it with a ſingle blow of its tail, by which all went to the bottom. The other ſtill attended its companion, and lent it every aſſiſtance; till, at laſt, the fiſh that was ſtruck ſunk under the number of its wounds; while its faithful aſſociate, diſdaining to ſurvive the loſs, with great bellowing, ſtretched itſelf upon the dead fiſh, and ſhared his fate. The whale goes with young nine or ten months, and is then fatter than uſual, particularly when near the time of bringing forth. It is ſaid that the embryo, when firſt perceptible, is about ſeventeen inches long, and white; but the cub, when excluded, is black, and about ten feet long. She generally produces one young one, and never more than two. When ſhe ſuckles her young, ſhe throws herſelf on one ſide on the ſurface of the ſea, and the young one attaches itſelf to the teat. Nothing can exceed the tenderneſs of the female for her offspring; ſhe carries it with her wherever ſhe goes, and, when purſued, keeps it ſupported between her fins. Even when wounded, ſhe ſtill claſps her young one; and, when ſhe plunges to avoid danger, takes it to the bottom; but riſes ſooner than uſual, to give it breath again. The young ones continue at the breaſt for a year; during which time they are called by the ſailors *ſhort-heads*. They are then extremely fat, and yield above fifty barrels of blubber. The mother at the ſame time is equally lean and emaciated. At the age of two years they are called *ſtunts*, as they do not thrive much immediately after quitting the breaſt; they then yield ſcarcely above twenty or twenty-four barrels of blubber: from that time forward they are called *ſkull-fiſh*, and their age is wholly unknown.

Every ſpecies of whale propagates only with thoſe of its own kind, and does not mingle at all with the reſt: however, they are generally ſeen in ſhoals, of different kinds together, and make their migrations in large companies from one ocean to another. They are gregarious animals; which implies their want of mutual defence againſt the invaſions of ſmaller, but more powerful, fiſhes. It ſeems aſtoniſhing, therefore, how a ſhoal of theſe enormous animals find ſubſiſtence together, when it would ſeem that the ſupplying even one with food would require greater plenty than the ocean could furniſh. To increaſe our wonder, we not only ſee them herding together, but uſually find them fatter than any other animals of whatſoever element. We likewiſe know that they cannot ſwallow large fiſhes, as their throat is ſo narrow, that an animal larger than a herring could not enter. How then do they ſubſiſt and grow ſo fat? A certain ſort of ſmall ſnail, or (as Linnæus ſays) the *meduſa*, or ſea-blubber, is ſufficient for this ſupply. Content with this ſimple food, it purſues no other animal, leads an inoffenſive life in its element, and is harmleſs in proportion to its ſtrength to do miſchief.

As the whale is an inoffenſive animal, it is not to be wondered that it has many enemies, willing to take advantage of its diſpoſition and inaptitude for combat. There is a ſmall animal, of the ſhell-fiſh kind, called the *whale-louſe*, that ſticks to its body, as we ſee ſhells ſticking to the bottom of a foul ſhip. This inſinuates itſelf chiefly under the fins; and, whatever efforts the great animal makes, it ſtill keeps its hold, and lives upon the fat. But the ſword-fiſh is the whale's moſt formidable enemy. "At the ſight of this little animal," ſays Anderſon, "the whale ſeems agitated in an extraordinary manner; leaping from the water as if with affright: wherever it appears, the whale perceives it at a diſtance, and flies from it in the oppoſite direction. I have been myſelf," continues he, "a ſpectator of their terrible encounter. The whale has no inſtrument of defence except the tail; with that it endeavours to ſtrike the enemy; and a ſingle blow taking place would effectually deſtroy its adverſary: but the ſword-fiſh is as active as the other is ſtrong, and eaſily avoids the ſtroke; then, bounding into the air, it falls upon its great ſubjacent enemy, and endeavours not to pierce it with its pointed beak, but to cut it with its toothed edges. The ſea all about it is ſeen dyed with blood, proceeding from the wounds of the whale; while the enormous animal vainly endeavours to reach its invader, and ſtrikes with its tail againſt the ſurface of the water, making a report at each blow louder than the noiſe of a cannon." In calm weather, the fiſhermen lie upon their oars as ſpectators of this combat, until they perceive the whale at the laſt gaſp: then they row towards him; and, his enemy retiring at their approach, they enjoy the fruits of the victory. This account, however, is different in ſeveral reſpects from that commonly given by ſeamen; who report, that a fiſh called the *threſher* (a ſpecies of SQUALUS) is in league with the ſword-fiſh; and that the former keeps on the back of the whale, while the latter wounds it underneath in the belly, which occaſions him to riſe to the ſurface of the water, and to give the threſher an opportunity of aſſiſting in the combat. This he does by throwing himſelf into an erect poſture; and, like a boy tumbling neck over heels, falls down with aſtoniſhing force on the back of his prey: and thus they go on till the poor whale is deſtroyed. The grampus, and other large fiſhes of the cetaceous order, are attacked and deſtroyed in a ſimilar manner. The whale has another deſperate enemy, a kind of ſhark, in ſize from one to three fathoms; ſo voracious, that it tears large pieces of fleſh from the whale, as if they had been dug with ſhovels.

To view theſe animals in a commercial light, we muſt obſerve, that the Engliſh were late before they engaged in the whale-fiſhery: it appears that, in the year 1575, we were totally ignorant of that trade, being obliged to ſend to "Biſkaie for men ſkilful in the catching of the whale, and ordering of the oil, and one cooper ſkilful to ſet up the ſtaved caſk." This ſeems very ſtrange; for, by the account Octher gives to king Alfred of his travels, near 700 years before that period, he made that monarch acquainted with the Norwegian practice of the whale-fiſhery; but it ſeems all memory of that advantageous employ, as well as of Octher, and all his important diſcoveries in the north, were loſt for near ſeven centuries. It was carried on by the Biſcayeners long before we attempted the trade; and that for the ſake not only of the oil, but alſo of the whalebone, which they ſeem to have long dealt in. The earlieſt notice we find of that article in our trade is by Hackluyt, who ſays it was brought from the Bay of St. Lawrence by an Engliſh ſhip that went there "for the barbes and fynnes of whales and train-oil, A. D. 1594, and who found there 700 or 800 whale-fynnes, part of the cargo of two great Biſkaine ſhips, that had been wrecked there three years before." Previous to that, the ladies ſtays muſt have been made of ſplit cane, or ſome tough wood, as Mr. Anderſon obſerves in his Dictionary of Commerce; it being certain that the whale-fiſhery was carried on, for the ſake of the oil, long before the diſcovery of the uſe of whale-bone.

The great reſort of theſe animals was found to be on the inhoſpitable ſhores of Spitzbergen, and the European ſhips made that place their principal fiſhery, and for numbers of years were very ſucceſsful: the Engliſh commenced that buſineſs about the year 1598, and the town of Hull had the honour of firſt attempting that profitable branch of trade. At preſent it ſeems to be on the decline, the quantity of fiſh being greatly reduced by the conſtant capture for ſuch a vaſt length of time: ſome recent accounts inform us, that the fiſhers, from a defect of whales, apply themſelves to ſeal-fiſhery, from which animals they extract an oil. This we fear will not be of very long continuance; for theſe ſhy and timid creatures will ſoon be induced to quit thoſe ſhores by being perpetually harraſſed, as the walrus hath in a great meaſure already done. We are alſo told, that the poor natives of Greenland begin even now to ſuffer from the decreaſe of the ſeal in their ſeas, it being their principal ſubſiſtence; ſo that, ſhould it totally deſert the coaſt, the whole nation would be in danger of periſhing through want. In ancient times the whale ſeems never to have been taken on our coaſts, but when it was accidentally flung aſhore by ſome violent ſtorm or tempeſt: it was then deemed a royal fiſh, and the king and queen divided the ſpoil; the king aſſerting his right to the head, her majeſty to the tail. For the manner of taking whales, ſee the article FISHERY.

The phyſalus, or fin-fiſh, is diſtinguiſhed from the common whale by a fin on the back, placed very low and near the tail. The length is equal to that of the common kind, but much more ſlender. It is furniſhed with whalebone in the upper jaw, mixed with hairs, but ſhort and knotty, and of little value. The blubber alſo on the body of this kind is very inconſiderable. Theſe circumſtances, added to its extreme fierceneſs and agility, which renders the capture very dangerous, cauſe the fiſhers to neglect it. The natives of Greenland, however, hold it in great eſteem, as it affords a quantity of fleſh which to their palate is very agreeable. The lips are brown, and like a twiſted rope: the ſpout-hole is as it were ſplit in the top of its head, through which it blows water with much more violence, and to a greater height, than the common whale. The fiſhers are not very fond of ſeeing it, for on its appearance the others retire out of thoſe ſeas. Some writers conjecture this ſpecies to have been the φυσαλος, and *phyſcter*, or blowing-whale, of Oppian, Ælian, and Pliny: but, ſince thoſe writers have not left the leaſt deſcription of it, it is impoſſible to judge which kind they meant; for, in reſpect to the faculty of ſpouting out water or blowing, it is common to all the whale kind. The phyſalus inhabits the European and American oceans: it feeds upon herrings and other ſmall fiſh.

The boops, or pike-headed whale, has a double pipe in its ſnout, three fins like the former, and a hard horny ridge on its back. The belly is full of longitudinal folds or rugæ. It frequents the northern ocean. The length of one taken on the coaſt of Scotland, as remarked by Sir Robert Sibbald, was forty-ſix feet, and its greateſt circumference twenty. This ſpecies takes its name from the ſhape of its noſe, which is narrower and ſharper-pointed than that of other whales.

The muſculus has a double pipe in its front, and three fins; the under jaw is much wider than the upper one. It frequents the Scottiſh coaſts, and feeds upon herrings. Linnæus makes the NARWHAL, PHYSETER, and DELPHINUS, which are ranked among the whales by ſome writers, three diſtinct genera. See thoſe articles.

BALAGAN'SKOI, a town of Siberia, on the Angara, thirty miles north-north-weſt of Irkutſk. Lat. 53. 45. N. lon. 121. 0. E. Ferro.

BALAGAT', a province of the Mogul empire, and the largeſt of the three that compoſe the kingdom of Decan. It has Kandiſh and Barar to the north, Tillinga to the eaſt, Baglana with part of Guzerat to the weſt, and Viſiapour to the ſouth. It is a fruitful and pleaſant country, abounding with cotton and ſugar. Its preſent capital is Aurengabad, but formerly was Dowlet Abad; and from the latter the whole province is ſometimes called *Dowlet Abad.*

BALAGAT MOUNTAINS, a chain of mountains which divides the coaſt of Malabar from that of Coromandel, running almoſt the whole length of the peninſula on this ſide the Ganges. Some parts of them are covered with fine red earth, which is blown by the ſtrong weſt winds as far as the iſland of Ceylon; and, when the rays of the ſun are reflected from theſe mountains, they ſeem to be all on fire. They make ſurpriſing alterations in the ſeaſons; for, on the north ſide of cape Comorin, it is winter in May, June, July, Auguſt, and September, in which months it is ſummer on the ſouth ſide of the cape; on one ſide there are continual tempeſts, thunder, and lightning, while the other enjoys a conſtant ſerenity. When black clouds are gathered about the mountains, they are followed by ſudden rain, which cauſes the overflowing of the rivers, and chokes them up with ſand, inſomuch that they are unnavigable for ſome time afterwards. The buildings and clothes of the inhabitants are ſcarcely ſufficient to defend them from the weather. They live upon rice, milk, roots, and herbs, with very little meat: they have likewiſe a ſort of ſmall arrack, but are not given to drunkenneſs, though they are little better than in a ſtate of nature.

BALAGUER', a town of Spain, in Catalonia, on the Segra, at the foot of a ſharp hill, in a fertile country. It contains one pariſh, and four convents: ſixty-three miles weſt-north-weſt of Barcelona, and 219 north-eaſt of Madrid.

BA'LAK, [בלק Heb. he emptied or deſtroyed.] A king of the Moabites.

BALAKLAVAL', a town of Ruſſia, in the Crimea, on the Black Sea, ninety miles ſouth-ſouth-weſt Perekop, and 940 ſouth-ſouth-eaſt of Peterſburg. Lat. 44. 35. N. lon. 51. 0. E. Ferro.

BALAMBU'AN, or BALAMBOA'NY, or PALAMBUAN, a country on the eaſt part of the iſland of Java, governed by a king, who is deſpotic. It produces pepper, cotton, rice, Indian corn, and fruit, in great plenty. There are excellent paſtures which feed a great number of horſes, antelopes, buffaloes, and oxen. The principal town is of the ſame name.

BALANBAN'GAN, a ſmall iſland in the eaſtern Pacific Ocean, between Borneo and Mindanao.

BA'LANCE, *ſ.* [*balance*, Fr. *bilanx*, Lat.] A pair of ſcales. A metaphorical balance, or the mind employed in comparing one thing with another:

I have in equal *balance* juſtly weigh'd
What wrong our arms may do, what wrongs we ſuffer:
Griefs heavier than our offences. *Shakeſpeare.*

The act of comparing two things, as by the balance.—Comfort ariſes not from others being miſerable, but from this inference upon the balance, that we ſuffer only the lot of nature. *L'Eſtrange.*—The overplus of weight; that quantity by which, of two things weighed together, one exceeds the other. That which is wanting to make two parts of an account even; as, He ſtated the account with his correſpondent, and paid the *balance.* Equipoiſe; as *balance* of power.—A balance of power, either without or within a ſtate, is beſt conceived by conſidering what the nature of a *balance* is. It ſuppoſes three things; firſt, the part which is held, together with the hand that holds it; and then the two ſcales, with whatever is weighed therein. *Swift.*

Love, hope, and joy, fair pleaſure's ſmiling train;
Hate, fear, and grief, the family of pain;
Theſe mix'd with art, and to due bounds confin'd,
Make and maintain the *balance* of the mind. *Pope.*

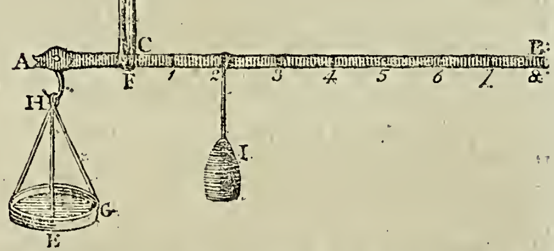
In aſtronomy, one of the twelve ſigns of the zodiac, commonly called LIBRA:

Or wilt thou warm our ſummers with thy rays,
And ſeated near the *balance* poiſe the days? *Dryden.*

BALANCE, in mechanics, one of the ſix ſimple powers, chiefly uſed for determining the equality or difference of weight in heavy bodies, and conſequently their maſſes or quantities of matter. The balance is of two kinds, the *ancient* and *modern.* The ancient or Roman, called alſo *ſtatera Romana*, or *ſteelyard*, conſiſts of a lever or beam, moveable on a centre, and ſuſpended near one of its extremities. The bodies to be weighed are ſuſpended from the ſhorter end, and their weight is ſhewn by the diviſion marked on the beam, where the power, or conſtant weight, which is moveable along the lever, keeps the ſteelyard in equilibrio. This balance is ſtill in common uſe for weighing heavy bodies. The modern balance, now commonly uſed, conſiſts of a lever or beam ſuſpended exactly in the middle, and having ſcales ſuſpended from the two extremities, to receive the weights to be weighed. In either caſe the lever is called the *jugum* or *beam*, and its two halves on each ſide the axis, the *brachia* or *arms*; alſo the line on which the beam turns, or which divides it in two, is called the *axis*; and, when conſidered with regard to the length of the brachia, is eſteemed only a point, and called the *centre* of the balance, or *centre of motion*: the extremities, where the weights are applied, are the *points of application* or *ſuſpenſion*; the handle by which the balance is held, or by which the whole apparatus is ſuſpended, is called *trutina*; and the ſlender part perpendicular to the beam, by which is determined either the equilibrium or preponderancy of bodies, is called the *tongue of the balance.* From theſe deſcriptions we eaſily gather the characteriſtic diſtinction between the Roman balance and the common one, viz. that, in the Roman balance, there is one conſtant weight uſed as a counterpoiſe, the point where it is ſuſpended being varied; but, on the contrary, in the common balance, or ſcales, the points of ſuſpenſion remain the ſame, and the counterpoiſe is varied. The principle of both of them may be eaſily underſtood from the general properties of the LEVER, which ſee.

The beam of the balance is a lever; but, inſtead of reſting on a fulcrum, it is ſuſpended by a handle, &c. faſtened to its centre of motion; and hence the mechaniſm of the balance depends on the ſame theorems as that of the lever. Conſequently, as the diſtance between the centre of motion and the place of the unknown weight, is to the diſtance between the ſame centre and the place of the known weight, ſo is the latter weight to the former. So that the unknown weight is diſcovered by means of the known one, and their diſtances from the common centre of motion, viz. if the diſtances from the centre be equal, then the two weights will be equal alſo, as in the common balance; but, if the diſtances be unequal, then the weights alſo will be unequal, and in the very ſame proportion, alternately, the leſs weight having ſo much the greater diſtance, as in the ſteelyard. In the *common balance*, or *ſcales*, the two brachia or arms ſhould be exactly equal in length, and in weight alſo when their ſcales are fixed on their ends; the beam ſhould hang exactly level or horizontal in the caſe of an equipoiſe; and for this purpoſe the centre of gravity of the whole ſhould fall a little below the centre of motion, and but little, that the balance be ſufficiently ſenſible to the leaſt variation of weight: the friction on the centre ſhould alſo be as ſmall as poſſible.

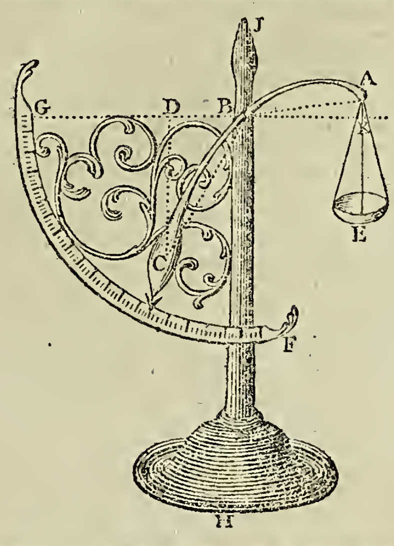
To conſtruct the Steelyard. Having made a proper bar of ſteel, as A B, in the figure, tapering at the longer end, and very ſtrong at the other, ſuſpend it by a centre C, near the ſhorter or thicker end, ſo that it may exactly balance itſelf in equilibrio; and prepare a conſtant weight, as at I, to weigh with: then hang on any weight, as one pound for inſtance, at the ſhorter arm, and ſlide the conſtant weight backwards and forwards upon the longer arm, till it be juſt in equilibrio with the former, and there make a notch and number 1, for the place of one pound: take off the 1lb. and hang a two-pound weight in its ſtead at the ſhorter arm; then ſlide the conſtant weight back on the longer arm, till the whole come again into equilibrio, making a notch at the place of the conſtant weight and the number 2, for the place of two pound. Proceed in the ſame manner for all other weights, 3, 4, 5, &c. as alſo for the intermediate halves and quarters, &c. if it be neceſſary; always ſuſpending the variable weights at the end of the ſhorter arm, ſhifting the conſtant weight ſo as to balance them, and marking and numbering the places on the longer arm where the conſtant weight always makes a counterpoiſe. The uſe of the ſteelyard is hence very evident: the thing whoſe weight is required being ſuſpended by a hook at the ſhort end, move the conſtant weight backwards and forwards on the longer arm, till the beam is balanced horizontally: then look what notch the conſtant weight is placed at, and its number will ſhew the weight of the body required. D C is the handle and tongue; F the centre of motion; E G a ſcale ſometimes hung on at the end by the hook H.



The deceitful Balance. This operates in the ſame manner as the ſteelyard, and cheats or deceives by having one arm a little longer than the other; though the deception is not perceived, becauſe the ſhorter arm is made ſomewhat heavier, ſo as to compenſate for its ſhortneſs, by which means the beam of the balance, when no weights are in the ſcales, hangs horizontal in equilibrio. The conſequence of this conſtruction is, that any commodity put in the ſcale of the longer arm, requires a greater weight in the other ſcale to balance it; and ſo the body is fallaciouſly accounted heavier than it really is. But the trick will eaſily be detected by making the body and the weight change places, removing them to the oppoſite ſcales, when the weight will immediately be ſeen to preponderate.

The *bent-lever Balance* is alſo an inſtrument which operates by a fixed weight, as at C, in the following figure;

which weight, increaſing in power as it aſcends along the arc F G of a circle, and pointing by an index to the number or diviſion of the arc which denotes the weight of any body put into the ſcale at E. And thus one conſtant weight ſerves to weigh all others, by only varying the poſition of the arms of the balance, inſtead of varying the places or points of ſuſpenſion in the arms themſelves.



Aſſay-Balance. This is a very nice balance, uſed in determining the exact weights of very ſmall bodies. Its ſtructure is but little different from the common ſort; except that it is made of the beſt and hardeſt ſteel, and made to turn with the ſmalleſt weight. For the conſtruction of balances, on principles of great nicety and truth, Mr. Nicholſon, in his excellent Dictionary of Chemiſtry, gives the following rules and obſervations: "The balance is a lever whoſe axis of motion is formed with an edge like that of a knife; and the two diſhes at its extremities are hung upon edges of the ſame kind. Theſe edges are firſt made ſharp, and then rounded with a fine hone, or a piece of buff leather. The excellence of the inſtrument depends, in a great meaſure, on the regular form of this rounded part. When the lever is conſidered as a mere line, the two outer edges are called *points of ſuſpenſion*, and the inner the *fulcrum*. The points of ſuſpenſion are ſuppoſed to be at equal diſtances from the fulcrum, and to be preſſed with equal weights when loaded; its action will then be determined by the following rules:

"1. If the fulcrum be placed in the centre of gravity of the beam, and the three edges lie all in the ſame right line, the balance will have no tendency to one poſition more than another, but will reſt in any poſition it may be placed in, whether the ſcales be on or off, empty or loaded.

"2. If the centre of gravity of the beam, when level, be immediately above the fulcrum, it will overſet by the ſmalleſt action; that is, the end which is loweſt will deſcend; and it will do this with more ſwiftneſs, the higher the centre of gravity, and the leſs the points of ſuſpenſion are loaded.

"3. But, if the centre of gravity of the beam be immediately below the fulcrum, the beam will not reſt in any poſition but when level; and, if diſturbed from that poſition, and then left at liberty, it will vibrate, and at laſt come to reſt on the level. Its vibrations will be quicker, and its horizontal tendency ſtronger, the lower the centre of gravity, and the leſs the weight upon the points of ſuſpenſion.

"4. If the fulcrum be below the line joining the points of ſuſpenſion, and theſe be loaded, the beam will overſet, unleſs prevented by the weight of the beam tending to produce an horizontal poſition, as in rule 3. In this laſt caſe, ſmall weights will equilibriate, as in rule 3; a certain exact weight will reſt in any poſition of the beam, as in rule 1; and all greater weights will cauſe the beam to overſet, as in rule 2. Many ſcales are often made this way, and will overſet with any conſiderable load.

"5. If the fulcrum be above the line joining the points of ſuſpenſion, the beam will come to the horizontal poſition, unleſs prevented by its own weight, as in rule 2. If the centre of gravity of the beam be nearly in the fulcrum, all the vibrations of the loaded beam will be made in times nearly equal, unleſs the weights be very ſmall, when they will be ſlower. The vibrations of balances are quicker, and the horizontal tendency ſtronger, the higher the fulcrum.

"6. If the arms of a balance be unequal, the weights in equipoiſe will be unequal in the ſame proportion. It is a ſevere check upon a workman to keep the arms equal, while he is making the other adjuſtments in a ſtrong and inflexible beam.

"7. The equality of the arms of a balance is of uſe, in ſcientific purſuits, chiefly in making of weights by biſection. A balance with unequal arms will weigh as accurately as another of the ſame workmanſhip with equal arms, provided the ſtandard weight itſelf be firſt counterpoiſed, then taken out of the ſcale, and the thing to be weighed be put into the ſcale, and adjuſted againſt the counterpoiſe; or when proportional quantities only are conſidered, as in chemical and other philoſophical experiments, the bodies and products under examination may be weighed againſt the weights, taking care always to put the weights into the ſame ſcale. For then, though the bodies may not be really equal to the weights, yet their proportions amongſt each other may be the ſame as if they had been accurately ſo.

"8. But, though the equality of the arms may be well diſpenſed with, yet it is indiſpenſibly neceſſary that their relative lengths, whatever they may be, ſhould continue invariable. For this purpoſe, it is neceſſary, either that the three edges be all truly parallel, or that the points of ſuſpenſion and ſupport ſhould be always in the ſame part of the edge. This laſt requiſite is the moſt eaſily obtained. The balances made in London are uſually conſtructed in ſuch a manner, that the bearing parts form notches in the other parts of the edges; ſo that, the ſcales being ſet to vibrate, all the parts naturally fall into the ſame bearing. The balances made in the country have the fulcrum-edge ſtraight, and confined to one conſtant bearing by two ſide-plates. But the points of ſuſpenſion are referred to notches in the edges, like the London balances. The balances here mentioned, which come from the country, are incloſed in a ſmall iron japanned box, and are to be met with at the Birmingham and Sheffield warehouſes. They are, in general, well made and adjuſted, turn with the twentieth of a grain when empty, and will ſenſibly ſhew the tenth of a grain with an ounce in each ſcale. Their price is from 5s. to half-a-guinea; but thoſe which are under 7s. have not their edges hardened, and conſequently are not durable. This may be aſcertained by the purchaſer, by paſſing the point of a pen-knife acroſs the ſmall piece which goes through one of the end-boxes; if it makes any mark, or impreſſion, the part is ſoft.

"9. If a beam be adjuſted ſo as to have no tendency to any one poſition, as in rule 1, and the ſcales be equally loaded; then, if a ſmall weight be added in one of the ſcales, that balance will turn, and the points of ſuſpenſion will move with an accelerated motion, ſimilar to that of falling bodies, but as much ſlower, in proportion, very nearly, as the added weight is leſs than the whole weight borne by the fulcrum.

"10. The ſtronger the tendency to an horizontal poſition in any balance, or the quicker its vibrations, as in rules 3 and 5, the greater additional weight will be required to cauſe it to turn, or incline to any given angle. No balance therefore can turn ſo quick as the motion deduced in rule 9. Such a balance as is there deſcribed, if it were to turn with the ten-thouſandth part of the weight, would move at quickeſt ten thouſand times ſlower than falling bodies; that is, the diſh containing the weight, inſtead of falling through ſixteen feet in a ſecond of time, would fall through only two hundred parts of an inch, and it would require four ſeconds to move through one-third part of an inch: conſequently, all accurate weighing muſt be ſlow. If the indexes of two balances be of equal lengths, that index which is connected with the ſhorter balance will move proportionally quicker than the other. Long beams are the moſt in requeſt, becauſe they are thought to have leſs friction; this is doubtful: but the quicker angular motion, greater ſtrength, and leſs weight, of a ſhort balance, are certainly advantages.

"11. Very delicate balances are not only uſeful in nice experiments, but are likewiſe much more expeditious than others in common weighing. If a pair of ſcales with a certain load be barely ſenſible to one-tenth of a grain, it will require a conſiderable time to aſcertain the weight to that degree of accuracy, becauſe the turn muſt be obſerved ſeveral times over, and is very ſmall. But if no greater accuracy were required, and ſcales were uſed which would turn with the hundredth of a grain, a tenth of a grain, more or leſs, would make ſo great a difference in the turn, that it would be ſeen immediately.

"12. If a balance be found to turn with a certain addition, and is not moved by any ſmaller weight, a greater ſenſibility may be given to that balance, by producing a tremulous motion in its parts. Thus, if the edge of a blunt ſaw, a file, or other ſimilar inſtrument, be drawn along any part of the caſe or ſupport of a balance, it will produce a jarring, which will diminiſh the friction on the moving parts ſo much, that the turn will be evident with one-third or one-fourth of the addition that would elſe have been required. In this way, a beam, which would barely turn by the addition of one-tenth of a grain, will turn with the one thirtieth or fortieth of a grain.

"13. A balance, whoſe horizontal tendency depends only on its own weight, as in rule 3, will turn with the ſame addition, whatever may be the load; except ſo far as a greater load will produce a greater friction.

"14. But a balance whoſe horizontal tendency depends only on the elevation of the fulcrum, as in rule 5, will be leſs ſenſible the greater the load; and the addition requiſite to produce an equal turn will be in proportion to the load itſelf.

"15. In order to regulate the horizontal tendency in ſome beams, the fulcrum is placed below the points of ſuſpenſion, as in rule 4, and a ſliding weight is put upon the cock or index, by means of which the centre of gravity may be raiſed or depreſſed. This is a uſeful contrivance.

"16. Weights are made by a ſubdiviſion of a ſtandard weight. If the weight be continually halved, it will produce the common pile, which is the ſmalleſt number for weighing between its extremes, without placing any weight in the ſcale with the body under examination. Granulated lead is a very convenient ſubſtance to be uſed in this operation of halving, which however is very tedious. The readieſt way to ſubdivide ſmall weights, conſiſts in weighing a certain quantity of ſmall wire, and afterwards cutting it into ſuch parts, by meaſure, as are deſired; or the wire may be wrapped cloſe round two pins, and then cut aſunder with a knife. By this means it will be divided into a great number of equal lengths, or ſmall rings. The wire ought to be ſo thin, as that one of theſe rings may barely produce a ſenſible effect on the beam. If any quantity (as, for example, a grain) of theſe rings be weighed, and the number then reckoned, the grain may be ſubdivided in any proportion, by dividing that number, and making the weights equal to as many of the rings as the quotient of the diviſion denotes. Then, if 750 of the rings amounted to a grain, and it were required to divide the grain decimally, downwards, $\frac{9}{10}$ would be equal to 675 rings, $\frac{8}{10}$ would be equal to 600 rings, $\frac{7}{10}$ to 525 rings, &c. Small weights may be made of thin leaf-braſs. Jewellers foil is a good material for weights below the $\frac{1}{10}$ of a grain, as low as to $\frac{1}{100}$ grain, and all lower quantities may be either eſtimated by the poſition of the index, or ſhewn by actually counting the rings of wire, whoſe value has been determined.

"17. In philoſophical experiments, it will be found very convenient to admit no more than one dimenſion of weight. The grain is of that magnitude as to deſerve the preference. With regard to the number of weights we ought to be provided with, for nice experiments, writers have differed according to their habits and views. Mathematicians have computed the leaſt poſſible number with which all weights within certain limits might be aſcertained; but their determination is of little uſe. Becauſe, with ſo ſmall a number, it muſt often happen that the ſcales will be heavily loaded with weights, on one ſide, put in with a view only to determine the difference between them. It is not the leaſt poſſible number of weights which it is neceſſary an operator ſhould buy to effect his purpoſe, that we ought to enquire after, but the moſt convenient number for aſcertaining his enquiries with accuracy and expedition. The error of adjuſtment is the leaſt poſſible, when only one weight is in the ſcale; that is, a ſingle weight of five grains is twice as likely to be true, as two weights, one of three and the other of two grains, put into the diſh to ſupply the place of the ſingle five; becauſe each of theſe laſt has its own probability of error in adjuſtment. But, ſince it is as inconſiſtent with convenience to provide a ſingle weight, as it would be to have a ſingle character for every number; and as we have nine characters, which we uſe in rotation, to expreſs higher values according to their poſition; it will be found very ſerviceable to make the ſet of weights correſpond with our numerical ſyſtem. This directs us to the ſet of weights as follows: 1000 grains, 900g. 800g. 700g. 600g. 500g. 400g. 300g. 200g. 100g. 90g. 80g. 70g. 60g. 50g. 40g. 30g. 20g. 10g. 9g. 8g. 7g. 6g. 5g. 4g. 3g. 2g. 1g. $\frac{9}{10}$g. $\frac{8}{10}$g. $\frac{7}{10}$g. $\frac{6}{10}$g. $\frac{5}{10}$g. $\frac{4}{10}$g. $\frac{3}{10}$g. $\frac{2}{10}$g. $\frac{1}{10}$g. $\frac{9}{1000}$g. $\frac{8}{1000}$g. $\frac{7}{1000}$g. $\frac{6}{1000}$g. $\frac{5}{1000}$g. $\frac{4}{1000}$g. $\frac{3}{1000}$g. $\frac{2}{1000}$g. $\frac{1}{1000}$g. With theſe the philoſopher will always have the ſame number of weights in his ſcales as there are figures in the number expreſſing the weights in grains. Thus 742·5 grains will be weighed by the weights 700, 40, 2, and $\frac{5}{10}$."

With reſpect to accurate balances, Muſchenbroek, in his Cours de Phyſique, tom. ii. p. 247, ſays, he uſed an ocular balance of great accuracy, which turned with $\frac{1}{40}$ of a grain. The ſubſtances he weighed were between 200 and 300 grains. His balance therefore weighed to the $\frac{1}{12000}$ part of the whole; and would aſcertain ſuch weights truly to four places of figures. In the Phil. Tranſ. vol. lxvi. p. 509, mention is made of two accurate balances of Mr. Bolton; and it is ſaid that one would weigh a pound, and turn with the $\frac{1}{10}$ of a grain. This, if the pound be avoirdupois, is $\frac{1}{70000}$ of the weight; and ſhews that the balance could be well depended on to four places of figures, and probably to five. The other weighed half an ounce, and turned with the $\frac{1}{100}$ of a grain. This is the $\frac{1}{24000}$ of the weight. In the ſame volume, p. 511, a balance of Mr. Read's is mentioned, which readily turned with leſs than one pennyweight, when loaded with 55lb. before the Royal Society; but very diſtinctly turned with four grains, when tried more patiently. This is about the $\frac{1}{96000}$ part of the weight; and therefore this balance may be depended on to five places of figures. Alſo, p. 576, a balance of Mr. Whitehurſt's weighs one pennyweight, and is ſenſibly affected with the $\frac{1}{2000}$ of a grain. This is the $\frac{1}{48000}$ part of the weight. Mr. Nicholſon's ſcales of the common conſtruction, made by a ſkilful workman in London from rule 8, with 1200 grains in each ſcale, turns with the $\frac{1}{70}$ of a grain. This is the $\frac{1}{84000}$ of the whole; and therefore about this weight may be known to five places of figures. The proportional delicacy is leſs in greater weights. The beam will be near a pound troy; and, when the ſcales are empty, it is affected by the $\frac{1}{1000}$ of a grain. On the whole, it may be uſefully applied to determine all weights between 100 grains and 4000 grains to four places of figures.

A balance belonging to Mr. Alchorne of the Mint, in London, is mentioned, vol. lxxvii. p. 205, of the Philoſ. Tranſ. It is true to 3 grains with 15lb. an end. If theſe were avoirdupois pounds, the weight is known to the $\frac{1}{35000}$ part, or to four places of figures, or barely five. A balance made by Mr. Ramſden, and turning on points inſtead of edges, is mentioned in vol. lxxv. of the Philoſ. Tranſ. With a load of four or five ounces, a difference of one diviſion in the index was made by the $\frac{1}{1000}$ of a grain. This is the $\frac{1}{384000}$ part of the weight, and conſequently this beam will aſcertain ſuch weights to five places of figures, beſides an eſtimate figure. A balance in the poſſeſſion of Mr. Magellan, of the kind mentioned in rule 15, would bear ſeveral pounds, and ſhewed the $\frac{1}{10}$ of a grain, with one pound an end. This is the $\frac{1}{70000}$ of the weight, and anſwers to five figures. The Royal Society's balance, which was lately made by Mr. Ramſden, turns on ſteel edges, upon planes of poliſhed cryſtal; and it aſcertains a weight to the ſeven-millionth part. From this account of balances, the ſtudent may form a proper eſtimate of the value of thoſe tables of ſpecific gravities, which are carried to five, ſix, and even ſeven, places of figures, and likewiſe of the theoretical deductions that depend on a ſuppoſed accuracy in weighing, which practice does not authoriſe. In general, where weights are given to five places of figures, the laſt figure is an eſtimate or gueſs figure; and, where they are carried farther, it may be taken for granted that the author deceives either intentionally, or from want of ſkill in reducing his weights to fractional expreſſions, or otherwiſe. See WEIGHT.

Hydroſtatical Balance. This is an inſtrument for determining the ſpecific gravity of bodies, both ſolid and fluid. See HYDROSTATICS.

BALANCE of a WATCH, is that part which, by its motion, regulates and determines the beats. The circular part of it is called the *rim*, and its ſpindle the *verge*; there belong to it alſo two pallets, that play in the teeth of the balance-wheel: in pocket watches, that ſtrong ſtud in which the lower pivot of the verge plays, and in the middle of which one pivot of the balance-wheel runs, is called the *potence*; the wrought piece which covers the balance, and in which the upper pivot of the verge plays, is called the *cock*; and the ſmall ſpring is called the *balance-ſpring*, or *regulating-ſpring*.

BALANCE of TRADE denotes an equality between the value of commodities bought of foreigners, and the value of the native productions tranſported into other nations. It is neceſſary that this balance be kept in trading nations; and, if it cannot be made in commodities, it muſt in ſpecie. By this it is, that we know whether a nation gains or loſes by foreign trade, or any branch thereof; and conſequently, whether that nation grows richer or poorer. There are various methods of arriving at this knowledge:

1. By taking a ſtrict ſurvey of what proportion the value of the commodities *exported* bears to thoſe *imported*. If the exports exceed the imports, it is concluded that nation is in a gaining way; it being ſuppoſed that the overplus is imported in bullion, and ſo increaſes the treaſure of the nation. But this method is very uncertain, on account of the difficulty of obtaining a true ſtatement either of the exports or imports. For, in the firſt place, cuſtom-houſe books are no rule in this caſe; becauſe of the ſmuggling of goods, eſpecially many fine commodities of ſmall bulk, but great value; as point-lace, ribbands, ſilk, jewels, fine linens, &c. alſo wines, brandies, teas, &c. To this may be added, various accidents which affect the value of the ſtock either ſent out or brought in; as loſſes at ſea, markets, bankrupts, ſeizures, &c. Then, as to particular trades, there are ſeveral countries to which the manufactures we ſend out are inconſiderable; yet the goods we import are neceſſary to the carrying on our trade in general; as the trade to Norway, &c. for timber and naval ſtores. So of the Eaſt-India company, whoſe imports much exceed their exports; yet is their trade highly advantageous to the nation; as we ſell many of theſe imports to foreigners, and wear others, e. g. callicoes and ſilks, in lieu of linens and ſilks from other countries, which would coſt us more. 2. The ſecond method is, by obſerving the courſe of exchange, which, if generally above the intrinſic value or par of the coins of foreign countries, ſhews that we not only loſe by ſuch exchanges, but that we loſe by the general courſe of our trade. But this method is imperfect; ſince we trade to many countries, with which there is no ſettled courſe of exchange. 3. A third way is, by obſerving the increaſe and diminution of our coin and bullion. But this is the leaſt obvious and palpable of any; for the money ſeems to vulgar eyes moſt plentiful when there is the leaſt occaſion for it; and more ſcarce as the occaſions for employing it are more numerous and advantageous: by which means we ſeem to have moſt money when we have leaſt trade. Thus, e. g. when the Eaſt-India company have a great ſale to make, money is generally found to be ſcarce in London; becauſe the occaſion engages people to employ quantities which they had provided for that purpoſe. So, a high rate of intereſt will make money ſeem ſcarce, becauſe every man, as ſoon as he makes up a ſmall ſum, employs it in the purchaſe of ſtock. 4. The next method (which is Sir Joſ. Child's) is derived from the increaſe, or the diminution, of our trade and ſhipping in general; for, if theſe diminiſh, whatever profit particular men may make, the nation loſes; and *vice verſa*. He lays it down as an infallible rule, that in all parts of the world wherever trade is great, and continues ſo, and grows daily greater, and the ſhipping increaſes for a ſucceſſion of ages, that trade muſt be nationally profitable. Even in the caſe of a merchant, who, by driving a great trade, ruins himſelf; though he loſe, what a multitude are gainers by him, as the king, and cuſtom-houſe officers; beſides ſhipwrights, butchers, brewers, bakers, ropemakers, porters, carmen, manufacturers, mariners, &c.

To BALANCE, *v. a.* [*balancer*, Fr.] To weigh in a balance, either real or figurative; to compare by the balance.—If men would but *balance* the good and the evil of things, they would not venture ſoul and body for dirty intereſt. *L'Eſtrange.*—To regulate the weight in a balance; to keep in a ſtate of juſt proportion:

Heav'n that hath plac'd this iſland to give law,
To *balance* Europe, and her ſtates to awe. *Waller.*

To counterpoiſe; to weigh equal to; to be equipollent; to counteract.—The attraction of the glaſs is *balanced*, and rendered ineffectual, by the contrary attraction of the liquor. *Newton.*—To regulate an account, by ſtating it on both ſides.—Judging is *balancing* an account, and determining on which ſide the odds lie. *Locke.*—To pay that which is wanting to make the two parts of an account equal.—Though I am very well ſatisfied, that it is not in my power to *balance* accounts with my Maker, I am reſolved, however, to turn all my endeavours that way. *Addiſon.*

To BALANCE, *v. n.* To heſitate; to fluctuate between equal motives, as a balance plays when charged with equal weights.—Were the ſatisfaction of luſt, and the joys of heaven, offered to any one's preſent poſſeſſion, he would not *balance*, or err, in the determination of his choice. *Locke.*

BA'LANCER, *ſ.* The perſon that weighs any thing.

BALANCER, in entymology, a ſtyle, or oblong body, ending in a protuberance or head, found under each wing of the two-winged flies; theſe ſerve to poiſe the body of the fly.

BA'LANCING, *ſ.* among ſeamen, the contracting a ſail into a narrower compaſs, in a ſtorm, by retrenching or folding up a part of it at one corner: this method is uſed in contradiſtinction to reefing, which is common to all the principal ſails; whereas balancing is peculiar to few, ſuch as the mizen of a ſhip, and the main ſail of thoſe veſſels wherein it is extended by a boom. See BOOM and REEF. The balance of the mizen is thus performed: the mizen yard is lowered a little, then a ſmall portion of the ſail is rolled up at the peck or upper corner, and faſtened to the yard about one-fifth inward from the outer end or yard-arm toward the maſt. See Mizen. A boom main-ſail is balanced, after all its reefs are taken in, by rolling up a ſimilar portion of the hindmoſt or aftmoſt lower corner called the *clue*, and faſtening it ſtrongly to the boom, having previouſly wrapped a piece of old canvas round the part, to prevent the ſail from being fretted by the cord which faſtens it.

BALA'NI, *ſ.* in natural hiſtory, the name of a genus of ſhell-fiſh, belonging to the claſs of multivalves, approaching to the ſhape of an acorn (βαλανος), and uſually growing to the ſhells of the larger ſort of ſea ſhell-fiſh: they are commonly called in Engliſh *centre-ſhells.* It is a common error to miſtake the names of the multivalve ſhells ſo far as to confound the *balani* and *conchæ anatiferæ*, as they are called, together; though they be extremely different. The balani are found affixed in cluſters to a thouſand different ſubmarine bodies, ſuch as the harder ſea-plants, all ſorts of teſtaceous and cruſtaceous ſea-animals, rocks, and timber. They may be arranged under the two ſub-diſtinctions of wide and narrow mouthed, including ſeveral ſpecies. The ſmall fiſh which nature has covered with this ſhell, is of a very admirable ſtructure. Leuwenhoek acknowledges, that he never met with any animal, in which ſo many objects of wonder lay open to the naked eye as in this. It has twelve legs or arms which are crooked, and garniſhed with a great number of hairs: theſe twelve they elevate on all occaſions; and, beſides theſe, they have eight others, which are much ſmaller, and ſtand lower. Their body is, in all reſpects, like that of the concha anatifera. It is cartilaginous and mucous, and of an ill taſte. The ſhell ſhapes itſelf, at the baſe, to the figure of the ſurface of whatever it grows to, and ſticks very firmly to it. The *balanus*, in the Linnæan ſyſtem, is a ſpecies of the Lepas.

BALANI'NUS, *ſ.* [from βαλανος, an acorn.] Belonging to or expreſſed from a nut or kernel. *Oleum balaninum* means the oil of ben.

BA'LANITES, *ſ.* in natural hiſtory, a name given by the ancients to a ſtone, ſeeming to have been of the ſemi-pellucid gems. They deſcribe two ſpecies of it; the one of which was yellow, and the other green, but each having veins of a flame-colour. Their deſcriptions are too ſhort for us to be able to aſcertain what ſtones, among thoſe known at this time, they meant. Some think the balanites to have been the *lapis Judaicus*, on account of its acorn-like figure and ſize.

BALANO'PHORA, *ſ.* in botany. See Cynomorium.

BA'LANOS, *ſ.* [from βαλλω, Gr. to caſt; becauſe it ſheds its fruit upon the ground. More probably from באלון Heb. proceeding from the oak.] An acorn; or any glandiferous tree. A peſſary or ſuppoſitory made like an acorn. Alſo the glans penis, from its ſhape.

BALAN'TE, a town of the iſland of Celebes, in the country of Bancala.

BALA'NUS MYREP'SICA. See Guilandina.

BALARUC', a town of France, celebrated for its mineral ſprings, in the department of the Herault, four leagues from Montpellier.

BALASCHEV', a town of Ruſſia, in the government of Saratov, on the river Koper: ninety miles weſt of Saratov, and 664 ſouth-eaſt of Peterſburgh. Lat. 51. 55. N. lon. 61. 0. E. Ferro.

BALASO'RE, a ſea-port town of Hindoſtan, in the country of Oriſſa, and a place of conſiderable trade, ſituated on the river Gongahar, about twenty miles from its mouth, in the bay of Bengal. Ships generally take pilots here to conduct them up the Ganges. It is 104 miles ſouth-weſt of Calcutta. Lat. 21. 30. N. lon. 87. 5. E. Greenwich.

BA'LASS RUBY, *ſ.* [*balas*, Fr. ſuppoſed to be an Indian term.] A kind of ruby.—*Balaſs ruby* is of a crimſon colour, with a caſt of purple, and ſeems beſt to anſwer the deſcription of the ancients. *Woodward.*

BALATAM', a volcanic mountain, in the iſland of Sumatra.

BALAYAN, a province of the iſland of Lucon, or Manilla, in the Eaſt Indies, belonging to the Spaniards. It lies next to the city of Manilla, and extends along the coaſt on the eaſt ſide of the iſland, a little beyond the bay of Batangas. There were formerly gold-mines in it, but they have been long ſince abandoned. It is inhabited by about 2500 tributary Indians, and abounds in cotton, rice, and palm-trees.

BALBAS'TRO, a town of Spain, in Arragon, ſituated on the Vero, near its conflux with the Cinca, the ſee of a biſhop, whoſe dioceſe extends over 170 pariſhes, eight convents, fourteen hermitages, and nineteen hoſpitals. It is forty-ſeven miles north-weſt of Barcelona, and forty eaſt-north-eaſt of Saragoſſa.

BALBEC', a city of Aſia, ſituated on a riſing plain, between Tripoli in Syria, and Damaſcus, at the foot of mount Libanus, anciently called *Heliopolis*, or the 'City of the Sun;' and, by the Arabians, the *Wonder of Syria.* As we approach from the ſouth we diſcover the city only at the diſtance of a league and a half, behind a plantation of trees, over the verdant tops of which appears a white edging of domes and minarets. But what principally attracts our attention is a large edifice on the left, which, by its lofty walls and rich columns, manifeſtly appears to have been one of thoſe magnificent temples, which antiquity has left for our admiration. Theſe ruins, which are ſome of the moſt beautiful and beſt preſerved of any in Aſia, merit a particular deſcription.

To give a juſt idea of them, we muſt ſuppoſe ourſelves deſcending from the interior of the town. After having croſſed the rubbiſh and huts with which it is filled, we arrive at a vacant place which appears to have been a ſquare; there, in front, towards the weſt, we perceive a grand ruin, which conſiſts of two pavilions ornamented with pilaſters, joined at their bottom angle by a wall 160 feet in length. This front commands the open country from a terrace, on the edge of which we diſtinguiſh the baſes of twelve columns, which formerly extended from one pavilion to the other, and formed a portico. The principal gate is obſtructed by heaps of ſtones; but, that obſtacle ſurmounted, we enter an empty ſpace, which is an hexagonal court of 180 feet diameter. This court is ſtrewed with broken columns, mutilated capitals, and the remains of pilaſters, entablatures, and cornices; around it is a row of ruined edifices, which diſplay all the ornaments of the richeſt architecture. At the end of this court, oppoſite the weſt, is an outlet, which formerly was a gate, through which we perceive a ſtill more extenſive range of ruins, whoſe magnificence ſtrongly excites curioſity. To have a full proſpect of theſe, we muſt aſcend a ſlope, up which were the ſteps to this gate; and we then arrive at the entrance of a ſquare court, much more ſpacious than the former, being 350 feet wide and 336 in length. The eye is firſt attracted by the end of this court, where ſix enormous and majeſtic columns render the ſcene aſtoniſhingly grand and pictureſque. Another object not leſs intereſting is a ſecond range of columns to the left, which appear to have been part of the periſtyle of a temple; but, before we paſs thither, we cannot refuſe particular attention to the edifices which incloſe this court on each ſide. They form a ſort of gallery which contains various chambers, ſeven of which may be reckoned in each of the principal wings, viz. two in a ſemicircle and five in an oblong ſquare. The bottom of theſe apartments ſtill retains pediments of niches and tabernacles, the ſupporters of which are deſtroyed. On the ſide of the court they are open, and preſent only four and ſix columns totally deſtroyed. It is not eaſy to conceive the uſe of theſe apartments; but this does not diminiſh our admiration at the beauty of their pilaſters, and the richneſs of the frize of the entablature. Neither is it poſſible to avoid remarking the ſingular effect which reſults from the mixture of the garlands, the large foliage of the capitals, and the ſculpture of wild plants with which they are every where ornamented. In traverſing the length of the court, we find in the middle a little ſquare eſplanade, where was a pavilion, of which nothing remains but the foundation. At length we arrive at the foot of the ſix columns; and then firſt conceive all the boldneſs of their elevation, and the richneſs of their workmanſhip. Their ſhafts are twenty-one feet eight inches in circumference, and fifty-eight feet high; ſo that the total height, including the entablature, is from ſeventy-one to ſeventy-two feet. The ſight of this ſuperb ruin, thus ſolitary and unaccompanied, at firſt ſtrikes us with aſtoniſhment; but, on a more attentive examination, we diſcover a ſeries of foundations which mark an oblong ſquare of 268 feet in length and 146 wide, and which, it ſeems probable, was the periſtyle of a grand temple, the primary purpoſe of this whole ſtructure. It preſented to the great court, that is to the eaſt, a front of ten columns, with nineteen on each ſide, which with the other ſix make in all fifty-four. The ground on which it ſtood was an oblong ſquare, on a level with this court, but narrower, ſo that there was only a terrace of twenty-ſeven feet wide round the colonnade; the eſplanade this produces fronts the open country toward the weſt, by a ſloping wall of about thirty feet. This deſcent, as you approach the city, becomes leſs ſteep, ſo that the foundation of the pavilion is on a level with the termination of the hill; whence it is evident, that the whole ground of the courts has been artificially raiſed. Such was the former ſtate of this edifice; but the ſouthern ſide of the grand temple was afterwards blocked up to build a ſmaller one, the periſtyle and walls of which are ſtill remaining. This temple, ſituated ſomewhat lower than the other, preſents a ſide of thirteen columns by eight in front (in all thirty-four), which are likewiſe of the Corinthian order; their ſhafts are fifteen feet eight inches in circumference, and forty-four in height. The building they ſurround is an oblong ſquare, the front of which, turned towards the eaſt, is out of the line of the left wing of the great court. To reach it you muſt croſs trunks of columns, heaps of ſtone, and a ruinous wall by which it is now hid. After ſurmounting theſe obſtacles, you arrive at the gate, where you may ſurvey the incloſure which was once the habitation of a god; but, inſtead of the awful ſcene of a proſtrate people and ſacrifices offered by a multitude of prieſts, the ſky, which is open from the falling in of the roof, only lets in light to ſhew a chaos of ruins covered with dirt and weeds. The walls, formerly enriched with all the ornaments of the Corinthian order, now preſent nothing but pediments of niches and tabernacles, of which almoſt all the ſupporters are fallen to the ground. Between theſe niches is a range of fluted pilaſters, whoſe capitals ſupport a broken entablature; but what remains of it diſplays a rich frize of foliage reſting on the heads of ſatyrs, horſes, bulls, &c. Over this entablature was the ancient roof, which was fifty-ſeven feet wide and 110 in length. The walls which ſupported it are thirty-one feet high, and without a window. It is impoſſible to form any idea of the ornaments of this roof, except from the fragments lying on the ground; but it could not have been richer than the gallery of the periſtyle: the principal remaining parts contain tablets in the form of lozenges, on which are repreſented Jupiter ſeated on his eagle; Leda careſſed by the ſwan; Diana with her bow and creſcent; and ſeveral buſts which ſeem to be figures of emperors and empreſſes. It would lead us too far to enter more minutely into the deſcription of this aſtoniſhing edifice. The lovers of the arts will find it deſcribed with the greateſt accuracy in a work publiſhed in 1757, under the title of Ruins of Balbec. This work, compiled by Mr. Robert Wood, the world owes to the attention and liberality of Mr. Dawkins, who in 1751 viſited Balbec and Palmyra. But ſeveral changes have taken place ſince their journey; for example, they found nine large columns ſtanding, and in 1784 Mr. Volney found but ſix. They reckoned twenty-nine at the leſſer temple, but there now remain but twenty; the others were overthrown by the earthquake of 1759. It has likewiſe ſo ſhaken the walls of the leſſer temple, that the ſtone of the ſoffit, or croſs-ſtone at the top of the gate, has ſlid between the two adjoining ones, and deſcended eight inches; by which means the body of the bird ſculptured on that ſtone is ſuſpended, detached from its wings and the two garlands which hung from its beak, and terminated in two genii. Nature alone has not effected this devaſtation; the Turks have had their ſhare in the deſtruction of the columns. Their motive is to procure the iron cramps, which ſerve to join the ſeveral blocks of which each column is compoſed. Theſe cramps anſwer ſo well the end intended, that ſeveral of the columns are not even disjointed by their fall; one, among others, as Mr. Wood obſerves, has penetrated a ſtone of the temple wall without giving way. Nothing can ſurpaſs the workmanſhip of theſe columns; they are joined without any cement, yet there is not room for the blade of a knife between their interſtices. After ſo many ages, they in general ſtill retain their original whiteneſs. But what is ſtill more aſtoniſhing, is the enormous ſtones which compoſe the ſloping wall. To the weſt the ſecond layer is formed of ſtones which are from twenty-eight to thirty-five feet long, by about nine in height. Over this layer, at the north-weſt angle, there are three ſtones which alone occupy a ſpace of 175½ feet, viz. the firſt fifty-eight feet ſeven inches, the ſecond fifty-eight feet eleven, and the third exactly fifty-eight feet; and each of theſe are twelve feet thick. Theſe ſtones are of a white granite, with large ſhining flakes like gypſe; there is a quarry of this kind of ſtone under the whole city and in the adjacent mountain, which is open in ſeveral places, and among others on the right, as we approach the city. There is ſtill remaining a ſtone, hewn on three ſides, which is ſixty-nine feet two inches long, twelve feet ten inches broad, and thirteen feet three in thickneſs. By what means could the ancients move theſe enormous maſſes? This is doubtleſs a problem in mechanics difficult to reſolve. The inhabitants of Balbec, however, have a very eaſy manner of explaining it, by ſuppoſing theſe edifices to have been conſtructed by *djenoun*, or ‘genii,’ who obeyed the orders of king Solomon; adding, that the motive of ſuch immenſe works was to conceal in ſubterraneous caverns vaſt treaſures, which ſtill remain there. To diſcover theſe, many have deſcended into the vaults which range under the whole edifice; but the inutility of their reſearches, added to the oppreſſions and extortions of their governors, who have made their ſuppoſed diſcoveries a pretext, have at length diſheartened them; but they imagine the Europeans would be more ſucceſsful, nor would it be poſſible to perſuade them but that we are poſſeſſed of the magic art of deſtroying taliſmans. It is in vain to oppoſe reaſon to ignorance and prejudice: and it would be no leſs ridiculous to attempt to prove to them that Solomon never was acquainted with the Corinthian order, which was only in uſe under the Roman emperors. But their tradition on the ſubject of this prince may ſuggeſt three important obſervations. Firſt, That all tradition relative to high antiquity is as falſe among the Orientals as the Europeans. With them, as with us, facts which happened 100 years before, when not preſerved in writing, are altered, mutilated, or forgotten. To expect information from them with reſpect to events in the time of David or Alexander, would be as abſurd as to make inquiries of the Flemiſh peaſants concerning Clovis or Charlemagne. Secondly, That throughout Syria, the Mahometans, as well as the Jews and Chriſtians, attribute every great work to Solomon: not that the memory of him ſtill remains by tradition in thoſe countries, but from certain paſſages in the Old Teſtament; which, with the goſpel, is the ſource of almoſt all their tradition, as theſe are the only hiſtorical books read or known; but, as their expounders are very ignorant, their applications of what they are told are generally very remote from truth: by an error of this kind they pretend Balbec is *the houſe of the foreſt of Lebanon* built by Solomon; nor do they approach nearer probability when they attribute to that king the well of Tyre and the buildings of Palmyra. Thirdly, That the belief in hidden treaſures has been confirmed by diſcoveries which have been really made from time to time. It is not many years ſince a ſmall coffer was found at Hebron full of gold and ſilver medals, with an ancient Arabic book on medicine. In the country of the Druſes an individual diſcovered, ſome time ſince, a jar with gold coin in the form of a creſcent; but as the chiefs and governors claim a right to theſe diſcoveries, and ruin thoſe who have made them, under pretext of obliging them to make reſtoration, thoſe who find any thing endeavour carefully to conceal it; they ſecretly melt the antique coins, nay, frequently bury them again in the ſame place where they found them, from the ſame fears which cauſed their firſt concealment, and which prove the ſame tyranny to have formerly exiſted in theſe countries.

When we conſider the extraordinary magnificence of the temple of Balbec, we cannot but be aſtoniſhed at the ſilence of the Greek and Roman authors. Mr. Wood, who has carefully examined all the ancient writers, has found no mention of it except in a fragment of John of Antioch, who attributes the conſtruction of this edifice to Antoninus Pius. The inſcriptions that remain corroborate this opinion, which perfectly accounts for the conſtant uſe of the Corinthian order, ſince that order was not in general uſe before the third age of Rome; but we ought by no means to allege as an additional proof the bird ſculptured over the gate; for if his crooked beak, large claws, and the caduceus he bears, give him the appearance of an eagle, the tuft of feathers on his head, like that of certain pigeons, proves that he is not the Roman eagle: beſides that, the ſame bird is found in the temple of Palmyra; and is therefore evidently an oriental eagle, conſecrated to the ſun, who was the divinity adored in both theſe temples. His worſhip exiſted at Balbec in the moſt remote antiquity. His ſtatue, which reſembled that of Oſiris, had been tranſported there from the Heliopolis of Egypt; and the ceremonies with which he was worſhipped have been deſcribed by Macrobius, in his *Saturnalia.* Mr. Wood ſuppoſes with reaſon, that the name of Balbec, which in Syriac ſignifies ‘City of Bal,’ or of the ſun, originated in this worſhip. The Greeks, by naming it *Heliopolis,* have in this inſtance only given a literal tranſlation of the oriental word: a practice to which they have not always adhered. We are ignorant of the ſtate of this city in remote antiquity; but it is to be preſumed, that its ſituation, on the road from Tyre to Palmyra, gave it ſome part of the commerce of theſe opulent capitals. Under the Romans, in the time of Auguſtus, it is mentioned as a garriſon-town; and there is ſtill remaining, on the wall of the ſouthern gate, on the right as we enter, an inſcription which proves the truth of this, the words KENTURIA PRIMA in Greek characters very legible. One hundred and forty years after, Antoninus built the preſent temple, inſtead of the ancient one, which was doubtleſs falling into ruins: but, Chriſtianity having gained the aſcendancy under Conſtantine, the modern temple was neglected, and afterwards converted into a church; a wall of which is now remaining, that hid the ſanctuary of the idols. It continued thus until the invaſion of the Arabs, when it is probable they envied the Chriſtians ſo beautiful a building. The church being leſs frequented fell to decay; wars ſucceeded; and it was converted into a place of defence; battlements were built on the wall which ſurrounded it, on the pavilions, and at the angles, which ſtill ſubſiſt; and, from that time, the temple, expoſed to the fate of war, fell rapidly to ruin. The ſtate of the city is not leſs deplorable. The wretched government of the emirs of the houſe of Harfouſhe had already greatly impaired it, and the earthquake of 1759 completed its deſtruction. The wars of the Emir Youſef and Djezzar have rendered it ſtill more deſerted and ruinous. Of 5000 inhabitants, at which number they were eſtimated in 1751, not 1200 are now remaining; and theſe moſtly poor, without induſtry or commerce, and cultivating nothing but a little cotton, ſome maize, and water-melons, for their ſubſiſtence.

BALBIL'LUS, a learned and benevolent man, governor of Egypt, of which he wrote the hiſtory, under Nero.

BALBI'NUS (Decimus Cœlius), the Roman emperor, being choſen by the ſenate in 237, was maſſacred by the ſoldiers, who had a diſlike to ſuch emperors as were elected only by the ſenators. This prince was eloquent, and wrote good verſes.

BALBO'A (Vaſco Nugnes de), a Caſtilian; a celebrated navigator, and one of the firſt diſcoverers of South America. He was beheaded by the Spaniſh governor of St. Mary, through jealouſy of his growing reputation, in 1517, aged forty-two.

To BALBU'CINATE, *v. n.* [from *balbutio,* Lat.] To ſtammer in ſpeaking.

BAL'BUS (Lucius Cornelius Theophanes), was born at Cadiz, and diſtinguiſhed himſelf by his valour in the war carried on by the Romans in Spain againſt Sertorius and the Luſitanians, on which account Pompey gave him the privileges of a Roman citizen. He was conſul in the 714th year of Rome, and was the firſt foreigner on whom that dignity was conferred. He was the friend of Pompey, Cæſar, Craſſus, and Cicero. There were many other illuſtrious Romans of the name of Balbus.

Balbus, a mountain of Africa, famous for the retreat of Maſſiniſſa, after he had fought a battle againſt Syphax.

To BALBÛ'TIATE, *v. n.* The ſame with BALBUCINATE.

BALBU'TIES, *ſ.* [from ϐαϐαζω, Gr. to ſtammer, or rather from בלבל Heb. to babble.] A defect of pronunciation: a ſtammering.

BALCAR'RY, a village of Scotland, on the ſouth coaſt of the county of Kircudbright, declared by act of parliament a free port, ten miles eaſt-ſouth-eaſt of Kircudbright.

BALCH, a river of Germany, which runs into the Rhine at Cologne.

BAL'CHEN (John), a celebrated Engliſh admiral, ſhipwrecked on the coaſt of Scilly, in the Victory, a firſt-rate, when upwards of 1100 perſons periſhed with him, in the year 1744.

BALCHIKAN'SKOI, a town of Siberia, 140 miles ſouth-weſt of Doroninſk.

BALCHUY'SEN, a town of Germany, in the circle of Weſtphalia, and duchy of Juliers, nine miles weſt of Cologne.

BAL'CONY, *ſ.* [from *balcon,* Fr.] In architecture, a kind of open gallery, without the walls of buildings, contrived chiefly for the convenience of looking around, ſeeing proceſſions, cavalcades, &c. Where there is but one, it is uſually in the middle of the front of the edifice, and level with the firſt floor: ſometimes they are made of wood, ſometimes of caſt-iron; the former ſurrounded with a rail, or balluſtrade, the latter wrought in various figures in *demi-relievo.* Some are alſo made of bar-iron, faſhioned in crail-work, or flouriſhes of divers fancies. They are lately become faſhionable, particularly in the metropolis, where few newly-erected houſes of any degree of elegance are without them. Balconies to houſes in London are regulated by the building act, 14 Geo. III. c. 78.

Balcony, in a ſhip, denotes a gallery either covered or open, made abaft, either for ornament, or convenience of the captain's cabin.

BALD, *adj.* [*bal,* Welſh.] Wanting hair; deſpoiled of hair by time or ſickneſs.—Neither ſhall men make themſelves *bald* for them. *Jeremiah.*—I find it remarked by Marchetti, that the cauſe of baldneſs in men is the dryneſs of the brain, and its ſhrinking from the ſkull; he having obſerved, that in *bald* perſons, under the *bald* part, there was a vacuity between the ſkull and the brain. *Ray.* —We ſhould imitate Cæſar, who, becauſe his head was *bald,* covered that defect with laurels. *Addiſon.*—Without natural covering:

Under an oak, whoſe boughs are moſs'd with age,
And high top *bald* with dry antiquity. *Shakeſpeare.*

Without the uſual covering.—He is ſet at the upper end o' th' table; but they ſtand *bald* before him. *Shakeſpeare.* —Unadorned; inelegant:

And that, though labour'd, line muſt *bald* appear,
That brings ungrateful muſic to the ear. *Creech.*

Mean; naked; without dignity; without value; bare.—What ſhould the people do with theſe *bald* tribunes. *Shakeſpeare.*—*Bald* was uſed by the northern nations to ſignify the ſame as *audax*, bold; and it is ſtill in uſe. So *Baldwin*, and by inverſion *Windbald*, is 'bold conqueror;' *Ethelbald*, 'nobly bold;' and *Eadbald*, 'happily bold;' which are of the ſame import as *Thraſeas*, *Thraſymachus*, and *Thraſybulus*, &c. *Gibſon.*

BALDACAN'IFER, corruptly alſo written *balcaniſer*, denotes a ſtandard-bearer; chiefly in the ancient order of Knights Templars.

BAL'DACHIN, *ſ.* [from *baldachino*, Ital.] A piece of architecture, in form of a canopy, ſupported with columns, and ſerving as a covering to an altar. It properly ſignifies a rich ſilk, *Du Cange*; and was a canopy carried over the hoſt.

BALDACHIN, or BALDAKIN, or BALDEKIN, popularly BAUDEKIN, in middle-age writers, denotes a rich kind of cloth made of gold warp and ſilk woof, variouſly figured. It took the denomination from its being formerly brought into theſe countries from Baldacio, or Babylon.

BALD'EGG, a lake of Swiſſerland, four miles long and one wide, nine miles ſouth-ſouth-weſt of Bremgarten.

BALDENAU', a town of Germany, in the circle of the Lower Rhine, and biſhopric of Treves, ſix miles ſouth-eaſt of Traarbach, and thirty-ſix ſouth-ſouth-weſt of Coblentz.

BAL'DERDASH, *ſ.* [probably of *bald*, Sax. bold, and *daſh*, to mingle.] Any thing jumbled together without judgment; rude mixture; a confuſed diſcourſe.

To BALDERDASH, *v. a.* To mix or adulterate any liquor.

BAL'DERN, a town of Germany in the circle of Swabia, and county of Ottingen, one mile ſouth-ſouth-eaſt of Zobing.

BALD'-HEAD, a cape on the weſt coaſt of North America, in Norton Sound. Lat. 64. 43. N. lon. 198. 18. E. Greenwich.

BALDINUC'CI (Philip), of Florence; a connoiſſeur in the polite arts, and the continuator of Vaſar's lives of the painters. He died in 1696, aged ſeventy-two.

BALDI'VIA, or VALDIVIA, a ſea-port town of Chili, in America, belonging to the Spaniards. It is ſituated between the rivers Callaculles and Portero, where they fall into the South Sea. S. lat. 40. 5. W. lon. 80. 5. It was built in 1551 by the Spaniſh general Baldivia, from whom it takes its name. We may judge of its importance from the ſum granted annually by the king for maintaining the garriſon, being no leſs than 300,000 pieces of eight. It is defended by four ſtrong caſtles, mounting 100 pieces of fine braſs cannon. Notwithſtanding which, it was very eaſily taken in 1643 by the Dutch, who would probably have maintained their conqueſt againſt all the power of the Spaniſh viceroy, had they not been obliged to relinquiſh it through ſickneſs and famine. The inhabitants of Baldivia amount to about 2000. The trade is leſs conſiderable than formerly, becauſe the gold mines in the neighbourhood are ſhut up; yet ſeveral large ſhips are employed in the trade between this port and that of Lima, which conſiſts of gold, corn, hides, and ſalt proviſions, exchanged for ſlaves, ſugar, chocolate, and European commodities and manufactures. Baldivia alſo gives name to a river and bay in the province of Chili.

BALD'MONY, *ſ.* The ſame with GENTIAN.

BALD'NESS, *ſ.* The want of hair. The loſs of hair. Among the cauſes of baldneſs, immoderate venery is reputed one of the chief. See ALOPECIA.

BAL'DO, a mountain, part of the Alps, which ſeparates the country of Tyrol from the country of Verona, thirty miles in circumference.

BAL'DOCK, a neat, open, and pleaſant, market-town, in Hertfordſhire, ſituated delightfully between the hills, diſtant from Royſton on the eaſt eight miles, and Hitchin on the weſt five, and from London, on the great north road, thirty-ſeven miles. Market on Thurſdays, chiefly for barley, the town being noted for making moſt excellent malt, and the quantity made being exceeded but by one town in the kingdom. Here are five fairs in the year, viz. March 7, (except in leap-year, and then March 6;) the laſt Thurſday in May; 5th of Auguſt; the 2d and 3d of October; and December 11; all of them chiefly for horſes and cheeſe. This town was founded, and the church built, by the Knights Templars in the days of king Stephen, by a grant of about 200 acres of waſte lands at the weſt end of the pariſh of Weſton, by the earl of Pembroke, then lord of Weſton. The church they dedicated to the Virgin Mary, and named the town *Balbec*, from the name of their ancient reſidence in Syria, which, in proceſs of time, was corrupted to *Baldock*. The Knight Hoſpitalers of St. John, and they of Jeruſalem likewiſe, erected dwellings on the eaſt ſide of the town, in the pariſh of Clothall, where veſtiges of the buildings are now frequently diſcovered. But theſe orders of ſuperſtition, even in the dark days of ignorance and bigotry, were found ſo rapacious by the people, that they were ſoon ſuppreſſed. Agricola's-way, now called Ickling-way, runs through Baldock eaſt and weſt; to the eaſt the road runs on to Icklington, Cambridgeſhire, (once Agricola's town,) and the other way to the weſt to Icklingford near Hitchin, and ſo on both ways to the ſea-coaſt. On the hills on the ſouth are the remains of a Roman and Daniſh encampment, fronting two more in Aſhwell and Willbury hills, near Icklingford. William Winn, a mercer and citizen of London, in 1621, left a ſufficiency to build and endow an alms-houſe for twelve poor widows, with forty ſhillings a-year each. John Parker, Eſq. gave a rent-charge on his eſtate of ten pounds a year, to purchaſe twenty-ſix penny-loaves, to be diſtributed every Sunday, after it has lain on his grave during the time the bell tolls for morning ſervice.

BALDOCK (Ralph de), biſhop of London in the reigns of Edward I. and II. was educated at Moreton-college, Oxford; became dean of St. Paul's; was afterwards promoted to the ſee of London; and made lord high chancellor of England. He acquired a very amiable character both for morals and learning; and wrote *Hiſtoria Anglica*, or An Hiſtory of the Britiſh Affairs down to his own time; and A Collection of the Statutes and Conſtitutions of the Church of St. Paul. He died at Stepney, July 24, 1313.

BALD'READ, [of *bald*, bold, and *rede*, Sax. counſel, q. d. that is bold in counſel.] The laſt king of Kent.

BALD'RIC, *ſ.* [Of uncertain etymology, unleſs from *baudier*, Fr. a long belt.] A girdle. By ſome dictionaries it is explained a *bracelet*:

A radiant *baldric*, o'er his ſhoulders tied,
Suſtain'd the ſword that glitter'd at his ſide. *Pope.*

The zodiac:

That like the twins of Jove they ſeem'd in ſight,
Which deck the *baldric* of the heavens bright. *Spenſer.*

BALD'WIN, [of *bald*, Sax. bold, and *winnen*, Teut. to overcome, i. e. bold conqueror.] A proper name of men.

BALDWIN, archbiſhop of Canterbury, was born of obſcure parents at Exeter, where, in the early part of his life, he taught a grammar-ſchool; after which he took orders, and was made archdeacon of Exeter: but he reſigned that dignity, and became a Ciſtertian monk in the monaſtery of Ford in Devonſhire, of which he was made abbot. In 1180, he was conſecrated biſhop of Worceſter. In 1184, he was promoted to the ſee of Canterbury by pope Lucius III. and by his ſucceſſor Urban III. was appointed legate for that dioceſe. He laid the foundation of a church and monaſtery in honour of Thomas à Becket, at Hackington, near Canterbury, for ſecular prieſts; but, being oppoſed by the monks of Canterbury and the pope, he was obliged to deſiſt. In 1190 he crowned Richard I. at Weſtminſter; and ſoon after followed that prince to the holy land, where he died at the ſiege of Ptolemais. He wrote various tracts on religious ſubjects, which were collected and publiſhed by Bertrand Tiſſier, in 1662.

BAL'DY, *adv.* Nakedly; meanly; inelegantly.

BALE (John), biſhop of Oſſory in Ireland, was born at Cove, in Suffolk, in 1495. At twelve years of age he was entered in the monaſtery of Carmelites at Norwich, and was thence ſent to Jeſus college, Oxford. He was educated a Roman Catholic, but was converted to the Proteſtant religion by Thomas lord Wentworth. On the death of Lord Cromwell, who protected him from the perſecutions of the Romiſh clergy, he was obliged to retire into the Low Countries, where he continued eight years. Soon after the acceſſion of Edward VI. he was recalled; and being firſt preſented to the living of Biſhop's Stoke in Hampſhire, in 1552, he was nominated to the ſee of Oſſory. During his reſidence in Ireland he was remarkably aſſiduous in propagating the Proteſtant doctrines; but to very little purpoſe, and frequently at the hazard of his life. Once, in particular, they murdered five of his domeſtics, who were making hay near his houſe; and would probably have done the ſame by him, if the laird of Kilkenny had not come to his aſſiſtance. On the acceſſion of queen Mary, he embarked for Holland, but was very unfortunate in his voyage. Firſt he was taken by a Dutch man-of-war, and robbed by the captain of all his effects. Then, being forced by ſtreſs of weather into St. Ive's in Cornwall, he was confined on ſuſpicion of treaſon. Being, however, releaſed after a few days confinement, the ſhip anchored in Dover road, where he was again ſeized on a falſe accuſation. After his arrival in Holland, he was made priſoner, and obliged to pay 30l. for his liberty. From Holland he travelled to Baſil in Switzerland, where he continued till queen Elizabeth aſcended the throne. After his return to England, he was in 1560 made prebendary of Canterbury. He died in 1563, at Canterbury, in the 68th year of his age. He was ſo ſevere a writer againſt the church of Rome, that his books were prohibited in the expurgatory index publiſhed at Madrid, in 1667. He is the earlieſt dramatic writer in the Engliſh language, or at leaſt author of the firſt pieces of that kind that we find in print. Of theſe twenty-one have been enumerated; only three of them, however, are extant, viz. 1. God's Promiſes, an interlude; 2. St. John Baptiſt, an interlude; 3. The Laws of Nature corrupted: the firſt has been reprinted by Dodſley in his collection of old plays, and the only copy extant of the laſt is preſerved in St. Sepulchre's library in Dublin. He alſo tranſlated the tragedies of Pammachius. His other works are very numerous; but the chief is his catalogue of Britiſh Authors. The title of it is, "Illuſtrium Majoris Britanniæ ſcriptorum catalogus, a Japheto ſanctiſſimi Noa filio ad A. D. 1557.

BALE, *ſ.* [*bæl,* Sax. *bale,* Dan. *bal, bol,* Icelandiſh.] Miſery; calamity.

She look'd about, and, ſeeing one in mail
Armed to point, ſought back to turn again;
For light ſhe hated as the deadly *bale.* *Fairy Queen.*

BALE, *ſ.* [*balle,* Fr.] In commerce, a term denoting a quantity of merchandize wrapped or packed up in cloth, and corded round very tight, after having been well ſecured with hay or ſtraw, to keep it from breaking, or to preſerve it from the weather. To ſell goods in the bale is to ſell them in the lump, on ſhewing a ſpecimen, without unpacking or taking off the cordage.

BALE-GOODS, in the Eaſt India trade, the bulky goods, as ſalt-petre, pepper, red-earth, tea, &c. Bale-goods ſtand oppoſed to piece-goods.

BALES OF CAMBLET, at Smyrna, are called *tables,* on account of their flat ſquare figure. A bale of cotton yarn is from three to four hundred weight: of raw ſilk, from one to four hundred; of lockram or dowlas, either three, three and a half, or four, pieces, &c.

BALE OF PAPER, denotes a certain number of reams packed together in a bundle. There are bales of more and fewer reams. Thoſe ſent from Marſeilles to Conſtantinople uſually contain twelve reams. A bale or ballon of crown paper, manufactured in ſome parts of Provence, conſiſts of fourteen reams, and is ſold in the Levant for Venice paper.

BALE OF DICE, denotes a little packet, or paper, containing ſome dozens of dice for playing with.

To BALE, *v. n.* [*emballer,* Fr. *imballare,* Ital.] To make up into a bale.

BALEA'RES INSULÆ, or BALEARIC ISLANDS. The appellation is commonly derived from βαλλειν, becauſe the inhabitants were excellent ſlingers. But Bochart makes the name of Punic or Phœnician original, as were the people: *Baal-jare,* ſkilful at throwing; the Phœnicians and Hebrews being dextrous at the uſe of the ſling. The Greeks called theſe iſlands *Gymneſiæ,* becauſe in ſummer the inhabitants were naked, or rather becauſe only armed with a ſling in war. *Heſychius.* They are three in number, modernly called *Majorca, Minorca,* and *Yvica,* on the coaſt of Spain. We are told by Florus, that the mothers never gave their children breakfaſt, before they had ſtruck with an arrow a certain mark in a tree. When a woman was married, ſhe was not admitted to her huſband's bed before ſhe had received the embraces of all her relations. The inhabitants were naturally of a laſcivious propenſity, and in their war they required nothing but females and wine, and often changed four men for one woman. See MAJORCA, and MINORCA.

BALECHOU' (John Joſeph), a celebrated French engraver, who flouriſhed about the year 1750. This extraordinary artiſt worked entirely with the graver. The clearneſs of his ſtrokes, and the depth of colour which he produced, are far beyond any productions prior to his own. The two large plates which he did from Vernet, one repreſenting a ſtorm, the other a calm, muſt ever be conſidered as very aſtoniſhing ſpecimens of the celebrity of this art. They are too well known, and too much admired, to need any further eulogium.

BALE'FUL, *adj.* Full of miſery; full of grief; ſorrowful; ſad; woeful:

Round he throws his *baleful* eyes,
That witneſs'd huge affliction and diſmay,
Mix'd with obdurate pride and ſtedfaſt hate. *Milton.*

Full of miſchief; deſtructive:

Happy Ierne, whoſe moſt wholſome air
Poiſons envenom'd ſpiders, and forbids
The *baleful* toad and vipers from her ſhore. *Philips.*

BALE'FULLY, *adv.* Sorrowfully; miſchievouſly.

BA'LEN (Hendrick Van), hiſtory and portrait painter, was born at Antwerp in 1560, and was a diſciple of Adam Van Oort; but he quitted that maſter to acquire a better taſte of deſign and compoſition, by purſuing his ſtudies at Rome, where he reſided for a conſiderable time. He diſtinguiſhed himſelf by a good manner of deſigning, and his works are admitted into the cabinets of the curious among thoſe of the principal painters. He particularly excelled in the naked, and gave to his figures ſo much taſte, expreſſion, and correctneſs of outline, that few of his cotemporaries could enter into competition with him. Several fine portraits of his are at the Hague; among which there is one adorned with the two figures of Wiſdom and Juſtice, which extorts commendation from all who attentively conſider it. All the hiſtorical ſubjects painted by Van Balen have abundant merit. His deſigns of the Deluge, of Moſes ſtriking the Rock, and the drowning of Pharaoh, are grand and noble compoſitions. He died in 1632.

BALEN (John Van), painter of hiſtory, landſcape, and boys, was born at Antwerp in 1611; and derived his knowledge of the art, and his fine taſte of drawing and deſign, from his father Hendrick Van Balen; but, as ſoon as he had made a competent progreſs, he travelled to Rome, and lived for ſeveral years in that emporium of the fine arts. His particular merit was ſhewn in his naked boys, cupids, nymphs, bathing or hunting, of which ſubjects he painted a conſiderable number; and he procured both praiſe and riches by his landſcapes and hiſtories. His pictures were well conceived, his trees touched with ſpirit, and his herbage and verdure natural and lively.

BA'LENBERG, a town of Germany, in the circle of the Lower Rhine, and electorate of Mentz, two miles north-weſt of Krautheim.

BA'LENGER, Balengaria, in middle-age writers, a kind of veſſel of war, but what in particular ſeems not well known. Blount ſays, that by the ſtat. 28 Hen. VI. c. 5. balenger ſeems to have been a kind of barge.

BALES (Peter), a very extraordinary maſter in the art of penmanſhip, and one of the firſt inventors of ſhort-hand writing. He was born in 1547, and is recorded for his ſkill in micrography, or miniature-writing, in Hollingſhed's Chronicle, anno 1575; and Mr. Evelyn has alſo celebrated his wonderful ſkill in this delicate operation of the hand, informing us that in the year 1575 he wrote the Lord's Prayer, the Creed, Decalogue, with two ſhort prayers in Latin, his own name, motto, day of the month, year of the Lord, and reign of the queen, to whom he preſented it at Hampton court, all within the circle of a ſilver penny, inchaced in a ring and border of gold; and covered with a chryſtal ſo accurately wrought, as to be very plainly legible, to the great admiration of her majeſty, the whole privy council, and ſeveral ambaſſadors then at court! He was farther very dextrous in imitating hand-writing, and, about 1686, was employed by ſecretary Walſingham in certain political manœuvres. We find him at the head of a ſchool near the Old Bailey, London, in 1590; in which year he publiſhed his "Writing Schoolmaſter, in three parts: the firſt teaching ſwift writing; the ſecond, true writing; the third, fair writing." In 1597, he re-publiſhed this work, which was in ſuch high reputation, that no leſs than eighteen copies of commendatory verſes, compoſed by learned and ingenious men of that time, were printed before it. We know little more of this curious perſon, but that he ſeems to have died about the year 1610.

BALES'TRA (Antonio), an excellent hiſtorical painter, was born at Verona in 1666. At the age of twenty-one he went to Venice, in the ſchool of Antonio Bellucci, from thence he viſited Bologna and Rome, and at the latter became the diſciple of Carlo Maratti. Under the tuition of ſo eminent a maſter, he made a great proficiency, and exerted himſelf in deſigning after the antiquities, by which he ſo effectually confirmed his taſte, that he obtained the prize of merit in the academy of St. Luke, in the year 1694, when he was only twenty-eight years of age. His ſtyle is ſweet and agreeable, not unlike that of Maratti; and the judicious obſerve in the works of Baleſtra, a certain mixture of the ſeveral manners of Raphael, Correggio, and Caracci. He died in 1740. In the church of Santa Maria Mater Domini, at Venice, there is one of the moſt capital altar-pieces of Baleſtra, repreſenting the Nativity of our Saviour. It is deſigned in a grand ſtyle, the compoſition is excellent, and has a noble effect.

BALESTRI'NA, a town of Italy, in the ſtate of Genoa, a fief of the empire, nine miles north of Albenga.

BALE'TUS, a ſon of Hippo, who firſt founded Corinth.

BA'LEY (Walter), ſon of Henry Baley of Warnwell in Dorſetſhire, was born at Potſham in the ſame county, and educated at Wincheſter ſchool. From thence he was ſent to Oxford; and after two years probation, was admitted perpetual fellow of New College. Having taken his degrees in arts, he practiſed phyſic, and in 1558 was proctor of the univerſity. About this time he obtained a prebend of Wells, which he reſigned in 1579. In the year 1563, he was appointed phyſician in ordinary to queen Elizabeth. He was thought ſkilful in his profeſſion, and had conſiderable practice. He died in 1592, aged ſixty-three; and was buried in the inner chapel of New College. His works are, 1. A Diſcourſe of three kinds of Pepper in common uſe, 1588, 8vo. 2. Brief Treatiſe of the Preſervation of the Eye-ſight, 1654, 8vo. 3. Directions for the Health Natural and Artificial, 1626, 4to. 4. Explicatio Galeni de Potu Convaleſcentium et Senum, &c. manuſcript, formerly in lord Ayleſbury's library.

BAL'GA, a town of Pruſſia, in the province of Natangen, twenty-four miles ſouth-weſt of Konigſberg.

BAL'GUY (Thomas), was the ſon of the Reverend John Balguy, prebendary of South Grantham, in the cathedral church of Saliſbury, and vicar of Northallerton; who, beſides ſermons, wrote ſeveral tracts, the ſubjects of which were, 1. A Letter to a Deiſt; 2. A Second Letter to a Deiſt; 3. The Foundation of Moral Goodneſs; 4. Divine Rectitude; 5. An Eſſay on Redemption; 6. The Law of Truth. His ſon, Thomas Balguy, was born in Yorkſhire, September 27, 1716. He was admitted into St. John's College, Cambridge, about the year 1732. He took his degree of A.M. in 1741, and of S.T.P. in 1758. During his reſidence at Cambridge, he was well known as a man of extraordinary penetration and quickneſs, in diſcriminating the niceſt diſtinctions which could be made in the courſe of an argument. A ſingular circumſtance happened to him during the ſame period. He was appointed to preach before the duke of Newcaſtle, who at that time was chancellor of the Univerſity of Cambridge. His diſcourſe on the occaſion was that which now ſtands firſt in his Volume of Diſcourſes. It is difficult to ſay what paſſage in it the duke could poſſibly apply to himſelf in particular: but the fact is, he really conceived the ſermon to be aimed at himſelf; expreſſed much diſpleaſure, and reſolved to impede Dr. Balguy's promotion in the church. In 1757, his friend Mr. Hurd (the preſent biſhop of Worceſter) publiſhed his Commentary and Notes on Horace's Art of Poetry. The note on v. 98, "Non ſatis eſt, &c." was written and communicated by Dr. Balguy to the Commentator. In that note, there is much more of metaphyſical diſquiſition than of critical learning or refined taſte. Not that Dr. Balguy wanted ſound claſſical learning, or even imagination and reliſh for works of genius: but the acute and preciſe reaſoner was the prevailing character, which appears evident in all his writings. In 1757 Biſhop Hoadley appointed him a prebendary in the cathedral church of Wincheſter; and in 1758, archdeacon of Wincheſter. For more than thirty years Dr. Balguy made an annual viſitation of the clergy in his archdeaconry, and either preached, or delivered a charge, on every viſitation. The ſubjects of his charges are ſome eſſential points of Chriſtianity, and ſome unanſwerable arguments in defence of a religious eſtabliſhment after ſome or another manner, in every Chriſtian kingdom. Theſe charges are added to the Diſcourſes, which he publiſhed in 1785. In the volume, which contains theſe works, will be found very evident traces of a mind that thought much and diverſely on important ſubjects. The ſtyle, in which he writes, is ſhort; but, in his brevity, he is uncommonly diſtinct and clear. Previouſly to the publication of his diſcourſes, he gave to the world a treatiſe entitled 'Divine Benevolence Aſſerted,' in 1781. So far as it goes, it exhibits a ſummary of arguments drawn from natural religion, in defence of God and Divine Providence, againſt the preſumptuous impieties of a noted ſceptic. It is however rather an analyſis of ſome complete work intended, than a whole of itſelf. But it is a maſter-piece of cloſe preciſion, methodical arrangement, and perſpicuous expreſſion, on moſt abſtruſe ſubjects. The name and talents of Dr. Balguy were not unknown to his preſent majeſty, nor unnoticed by a monarch who loves to reward learning, abilities, and worth. In 1781 the king graciouſly nominated him to the vacant ſee of Glouceſter; which dignified preferment however Dr. Balguy, after very little conſideration, begged leave to decline, contenting himſelf with the ſtation he held in Wincheſter cathedral, which indeed had been rendered to him more comfortable, by the addition of Alton vicarage in Hampſhire. The meſſenger who came to announce to him the news of his intended elevation arrived at the doctor's houſe in Wincheſter about one o'clock in the morning, and had him inſtantly called up to acquaint him with the news of his preferment. Dr. Balguy aroſe for about half an hour, wrote a ſhort note to lord North, the then premier, expreſſive of his gratitude to the king, and ſtating, that, not thinking his health and his time of life equal to the duties of that ſacred office, he begged permiſſion to decline it; and then retired again to his bed, without appearing the leaſt elated at this mark of the royal favour. In 1783, he publiſhed the firſt edition of his excellent diſcourſes, which being dedicated to the king, he therein mentions, with great modeſty, the honour his majeſty had intended him and his reaſons for declining to accept it. His refuſal of epiſcopacy he ſurvived fourteen years. He lived to January 19, 1795, on which day he finiſhed a life for the greater part very diligently and moſt uſefully employed. He was never married.

BALHA'RY, a town of Hindoſtan, in the Myſore country, ſixty-eight miles north of Chittledrug, and fifty-ſix ſouth-eaſt of Biſnagar.

BA'LI, or Little Java, one of the Sunda iſlands, twenty-five leagues long, and fifteen wide, fertile and well peopled. The principal productions are cotton, rice, ginger, and cloves. The number of inhabitants is ſaid to be 600,000; it is ſituated on the eaſt ſide of a ſtrait, called the *Strait of Bali*, or the *Strait of Ballabayn*, or the *Strait of Java*. Lat. 7. 12. S. lon. 113. 28. E. Greenwich.

BALIKES'RI, a town of European Turkey, in the province of Natolia, fifty-two miles north-eaſt of Pergamo. Lat. 39. 45. N. lon. 45. 36. E. Ferro.

BALINCAIL'ACH, a cape on the weſt coaſt of the Scotch iſland of Benbecula.

BA'LIOL, or Balliol, (Sir John de,) founder of Baliol-college in Oxford, was the ſon of Hugh Baliol, of Bernard-caſtle, in the dioceſe of Durham; and was a perſon very eminent for his power and riches. During the conteſts and wars between Henry III. and his barons, he firmly adhered to the king. In 1263, he began the foundation and endowment of Baliol-college, which was afterwards perfected by his widow. He died in the year 1269.

Baliol, Balliol, or Boilliol, (John), the brother of Alexander king of Scotland, and competitor with Robert Bruce for that crown. See Scotland.

BA'LIS, a town of Aſiatic Turkey, in Syria, on the frontiers of Diarbekir, on the weſt bank of the Euphrates, twenty leagues eaſt of Aleppo.

BALISO'RE, a ſea-port town of Aſia, in the Eaſt Indies, to the north-weſt of the bay of Bengal. It is about four miles from the ſea by land, but twenty by the river; ſeated in a very fruitful ſoil, producing rice, wheat, aromatic ſeeds, tobacco, &c. The inhabitants make ſeveral ſorts of ſtuffs of cotton, ſilk, and a kind of graſs. N. lat. 21. 30. E. lon. 85. 20.

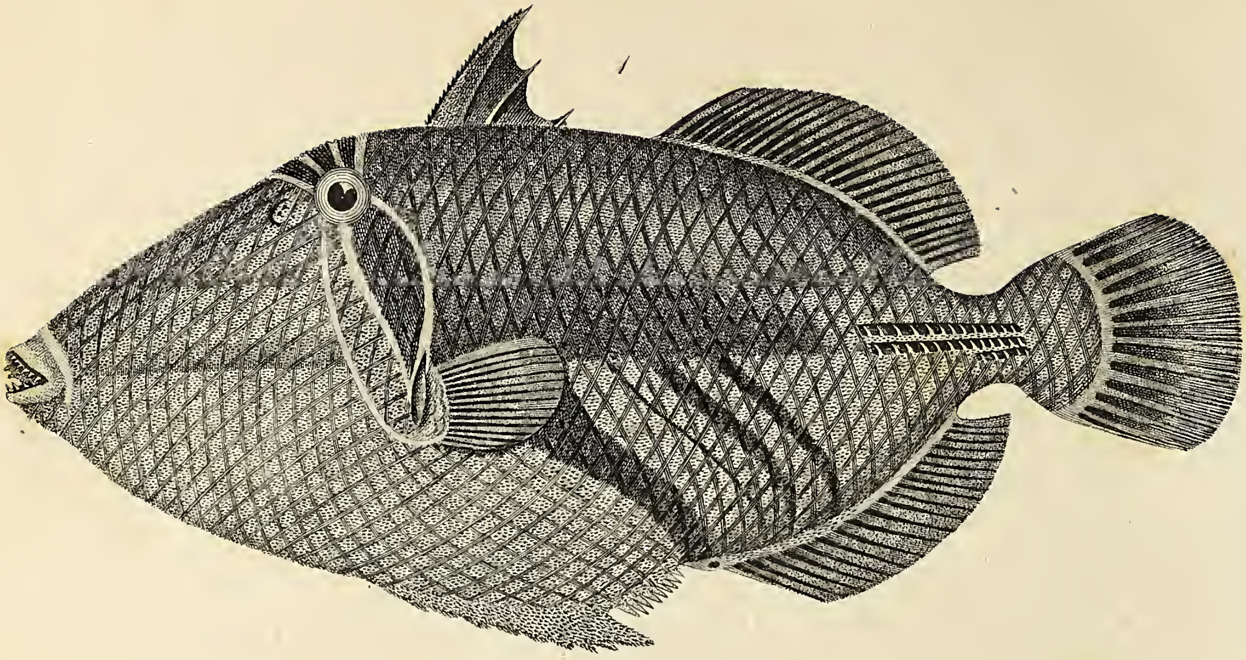
BALIS'TA, a mountain of Liguria.

BALIS'TES, *ſ.* in ichthiology, a genus of fiſhes belonging to the order of amphibia nantes. The characteriſtics by which this genus is diſtinguiſhed, are, a rough ſkin, and the belly armed with prickles. The body is compreſſed on the ſides, and furniſhed with ſhort prickles, ſo that this fiſh is unpleaſant to the touch. Where the body ends, and the head begins, is not exactly diſtinguiſhed. The mouth is narrow, with teeth in each jaw. The opening of the gills is very narrow, and placed above the pectoral fin; the cover of the gills is wanting, and the concealed membrane is furniſhed with two cartilaginous rays. The belly and back go off to a ſharp edge. On the back are two fins, the foremoſt of which in ſome ſpecies is between the eyes; and as, in ſuch caſe, it conſiſts but of one prickle, it has been called a horn. This fiſh has the faculty of inflating its belly with wind. From under the ſkin riſes a hard bone, whoſe extremity ſhews itſelf diagonally above, armed with ſmall prickles. The appearance of this bone, which much reſembles the arm of the *baliſta* of the ancients, has given the name *baliſtes* to this genus of fiſhes. Theſe fiſh are ravenous; ſome grow to a conſiderable ſize; ſome are ornamented with beautiful colours; but the greater part of them are reckoned poiſonous. There is only one ſpecies known in the ſeas of Europe, called the *ſea-hog*. Cluſius firſt deſcribed the *little unicorn*; Marcgrave the *ſea-unicorn*, the *old wife*, and the *Chineſe baliſtes*. After this, Liſter deſcribed the *long*, the *prickly*, the *fork-tailed*, and the *black*, baliſtes. Artedius arranged them, and gave them the name of *baliſtes* for the reaſon mentioned before; but he omits the ſea-unicorn, and the little unicorn. Seba ſome time after diſcovered the *ſnouted baliſtes*. Nieuhoff the *two-horned baliſtes* and the *ſpotted baliſtes*, or *long file-fiſh*, which Gronovius has exactly deſcribed. Klein brought forward a new ſpecies, which Gronovius ſays was found in the Indies, and calls it *capriſcus*. Gronovius afterwards deſcribed two other kinds, one from Curaçoa, and the other from America. Laſtly, Linnæus deſcribes two others, the *warted* and the *papillous* baliſtes, making in all eighteen ſpecies. Yet Linnæus places ten of them under other claſſifications, allowing to this genus only eight *ſpecies*, which are as follow:

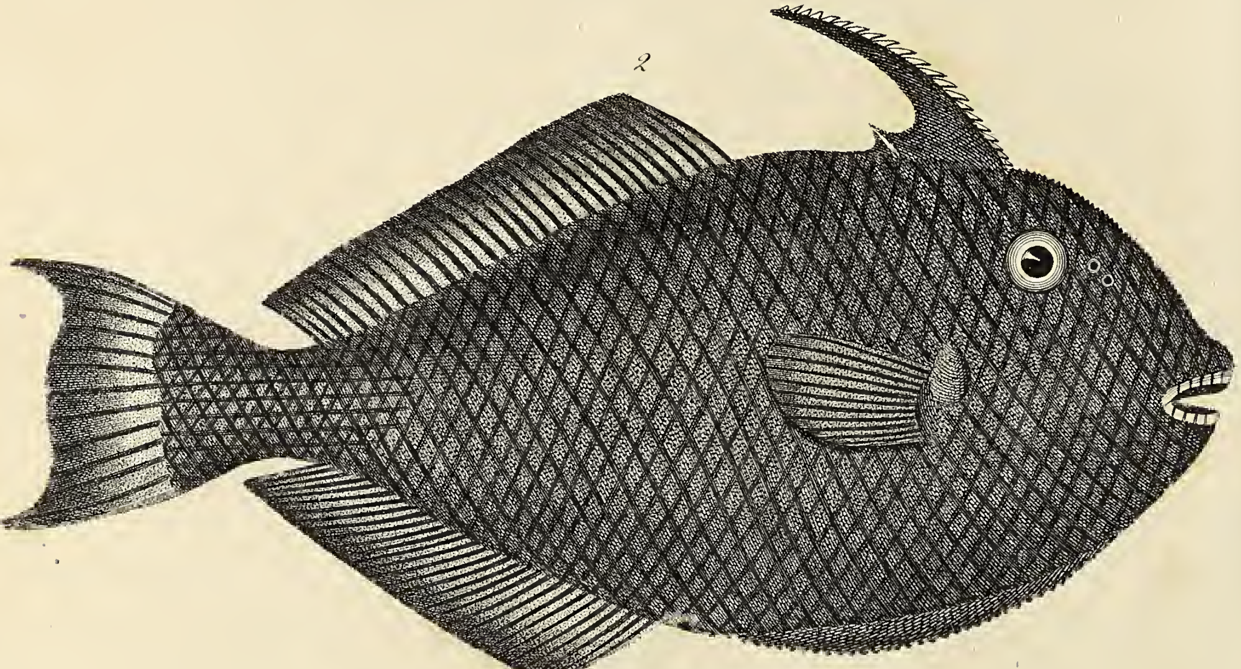
1. The monoceros, or ſea-unicorn: the diſtinguiſhing characters of which are—the horn riſing between the eyes, and the fifty-one radii in the anal fin. There are alſo fifteen radii in the pectoral fin; twelve in that of the tail, and forty-eight in the ſecond of the back. This fiſh is compreſſed at the ſides; it is thin, and very rough to the hand. The ground-colour is grey, marked with brown. The head is large and ſlopes off to the ſnout; the mouth is ſmall; of the jaws, the lower is the longeſt; each jaw has eight teeth, large towards the roots, and terminating in a point; the lips are moveable. The eyes are on the top of the head, and have a black pupil in a yellow iris. Before the eyes are two oblong apertures. Before and behind the pectoral fins are the gills, the apertures of which are narrow and in a tranſverſe direction. The two ſides, whereon the lateral line is not eaſily perceived, go off ſharp at top and bottom. The cavity of the belly is large; and the anus nearer to the aperture of the mouth than to the tail fin. The ray, which ſerves inſtead of a ventral fin, is hid in the outer ſkin; and that which repreſents the firſt dorſal fin is bent back; the two outer edges of this laſt are toothed, underneath it is faſtened to the back by a particular ſkin. All the fins are yellow; only that of the tail has two brown ſtripes. The radii on the dorſal and anal fins are ſimple, but thoſe on the tail and belly fins are branched. This fiſh is found in the waters of China, Japan, and Braſil; it is taken with a hook or a net. It grows to the length of a foot and more; but is not much eſteemed, becauſe it is very thin, and its fleſh is tough. It lives on ſmall cray-fiſh, &c. At Braſil it is called *acaramucu*. In China, and in Carolina, there is a variety of this fiſh, with ſpots on the body which bear ſome reſemblance to Chineſe characters; hence Oſbeck calls it the *lettered baliſtes*; but Cateſby calls it the *Bahama unicorn*, becauſe he found it in that iſland. This fiſh grows to the length of three feet; has but two teeth in each jaw; its fleſh is ſaid to be poiſonous; though nothing of a noxious quality, nor any thing worſe than coral and ſhell-fiſh, have been found in its ſtomach.

2. The tomentoſus, little unicorn, or little old wife. This differs from the ſea-unicorn by the ſmall points in the tail, which are bent backward; and from other fiſhes of this genus by the ſingle ray which repreſents the firſt dorſal fin; this ray is toothed at each corner near the root. There are nine radii to the pectoral fin, twenty-ſeven in the anal, nine in that of the tail, and in the ſecond thirty-one. The body is ſmall, rough, compreſſed on the ſides, and ſloped off at top and bottom. The mouth is ſmall; the jaws are of an equal length, the upper of which has ten ſmall teeth, and the lower eight. The noſtrils, which are double, are cloſe to the eyes; and the aperture of the gills is not far from the pectoral fin. The front and back are brown; on the back is a furrow wherein the fiſh can bury its horn. The ſide is yellow above, and grey lower down. The belly is yellow, with black oblong ſcales, rough to the touch. This fiſh forms an intermediate claſs as it were between the ſea-hedgehog with four teeth and the baliſtes.

1



2



1 The Aculeatus, or Prickly Balistes; 2 The Ringens, or Black Balistes.

London Publish'd as the Act directs March 10.1798 by J.Wilkes.

Poss sculp.

It agrees with the laſt in the firſt dorſal fin, the ventral fin, and the teeth; and with the firſt in the roughneſs of its belly, which alſo it can inflate. This fiſh is found in the Eaſt Indies and Jamaica. It grows ſeven or eight inches long, and lives on inſects and aquatic worms. According to Ruyſch, the fleſh is dry and ill-taſted; but it is good when ſalted, therefore it is never eaten freſh. It is called *ikan kipas* in the Eaſt Indies.

3. The biculeatus, or two horned baliſtes. This genus is eaſily diſtinguiſhed by the two prickes which ſupply the place of ventral fins. There are thirteen radii in the pectoral fin, one in the ventral, and ſeventeen in the anal, twelve in the tail-fin, four in the firſt of the back, and twenty-three in the ſecond. The body is long, ſomewhat rough to the touch, and rather thicker than the laſt ſpecies. The head terminates in form of a hog's ſnout; the mouth is ſmall; jaws of an equal length, with twelve pointed teeth in the upper and ten in the lower. The eyes are large, oblong, and placed near the top of the head; the pupil is black, the iris a clear green. The aperture of the gills is narrow, and placed near the pectoral fin. The ſides and belly are white; but the back is grey. The lateral line is very clearly perceptible in this ſpecies, which begins above the eye, runs in a parallel direction with the back, and forms a bend near the tail-fin, into which it runs. The two prickles (or horns) are long, and toothed on both ſides; and there are two furrows to receive or hide them occaſionally; juſt before theſe holes or furrows is a black ſpot. The firſt dorſal fin is black; all the reſt yellowiſh; the tail fin is long and forked. The ſtructure of its mouth ſhews it to be of the voracious kind.

4. The aculeatus, or prickly baliſtes. From two to five rows of ſharp prickles, which are found in the tail of this fiſh, are the true characters which diſtinguiſh this from the other baliſtes. There are fifteen radii in the pectoral fin; thirteen in the ventral, twenty-three in the anal; three in the firſt of the back, and twenty-five in the ſecond. The prickles bend back, and prick the fingers in paſſing the hand from the tail to the head. The number of prickles is not equal in all theſe fiſh, nor the number of them in each row. The body is large, and thicker than the preceding; and its ſurface, which is rough to the hand, is divided into diamond-ſquares, which are covered with ſmall round excreſcences. The head is round, terminating in a blunt point. Above the lips is a blue ſtripe; and there are four of the ſame colour above the eyes, and three beneath. The eye is round, the pupil black, and the iris of a gold-yellow. Juſt oppoſite the eyes are the noſtrils, which are ſmall and round. Between the pectoral fins and the laſt blue ſtripe appears the opening of the gills. There is a reddiſh ſtreak from the mouth to the firſt blue line. The ſides are brown above, and a faint yellow below. From the middle of the ſides are extended behind the pectoral four brown ſtripes which ornament the belly. Under the belly is a ſtrong dentated ray, under which are ſeveral ſharp points, and it may be conſidered as a ventral fin. The lateral line is not viſible in this fiſh. The fins are all ſhort; the firſt of the back is black; the reſt are of a reddiſh brown, but grey at the extremities; the firſt ray of the dorſal fin is large, and toothed before. This beautiful fiſh which we have correctly ſhewn in the plate, is an inhabitant of the Eaſt Indies, and particularly of the Red Sea. Forſchel ſays the fleſh is of an ill ſmell and bad taſte. Willoughby is the firſt writer who has ſpoken of this fiſh.

5. The vetula, or old wife, is diſtinguiſhed by a ſingle ventral fin, and three prickles in the firſt dorſal fin. There are two radii to the membrane of the gills, eighteen to the pectoral fin, twenty-eight to the anal, fourteen to that of the tail; three to the firſt of the back, and twenty-nine to the ſecond. This fiſh is large, but thin, rough to the touch, and the ſcales are divided into ſmall trapeziums. The head is of a moderate ſize compared with the other baliſtes. The aperture of the mouth is ſmall, with ten cutting teeth in the upper jaw and twelve in the lower. The lips are ſtrong, and edged with blue. There are two ſtripes of blue on the cheeks, three under the eyes, and eight above; theſe laſt ſeem to come out of the eyes as out of a cave. The pupil of the eye is black; and the iris, which ſurrounds it, is red. The aperture of the gills is above the pectoral fin, and farther off than in other fiſhes of the ſame kind. Before the eyes is a little hollow place, wherein are two ſmall apertures. The trunk is compreſſed on the two ſides; and the body is a browniſh yellow, with ſome ſtripes of a blue green. The ſides are yellow; the chin and belly grey. Near the ventral fin are three rows of prickles. The lateral line is not viſible. The anus is in the middle of the body. The tail is furniſhed with blue ſtreaks near the anal fin, which incline to green as they approach the tail. The anal fin is grey, with blue ſtripes. The tail fin has yellow branching rays, and a beautiful blue border; the two outer rays of this fin are very long, and give it a pleaſing form. The dorſal fins are bluiſh; the ray of the firſt is very ſtrong, and toothed before; behind this ray is a furrow in the back, deſtined for its reception. The ſecond dorſal fin is ſickle-ſhaped, and ornamented with many blue ſtripes: it has forked rays, as well as the pectoral and anal fin. This fiſh is found both in the Eaſt and Weſt Indies. Marcgrave found it at Braſil, Brown near Jamaica, Plumier in America in 17° N. lat. Oſbeck ſaw it at China, and Valentine at Japan. At a diſtance it looks like a bream. It grunts or grumbles when taken, whence fiſhermen have given it the name of *old wife*; it is called alſo the *file-fiſh*. It grows to a conſiderable ſize. It lives moſtly at the bottom of the water, and feeds upon oyſters and other ſhell-fiſh. It is taken with a hook. According to Marcgrave, it is only eaten broiled, as otherwiſe the fleſh has a bad taſte. This fiſh alſo can inflate the belly. The ſtomach is large; the inteſtinal canal has two bendings; the liver is of a pale yellow; thin, and conſiſting of two lobes, one large, and the other ſmall The gall-bladder is ſmall; the ſpleen bluiſh. The air-bladder, which is united to the diaphragm, is a ſtrong thick membrane. In this fiſh we find neither roe nor eggs; therefore we cannot determine whether it is oviparous or viviparous.

6. The maculeatus, or ſpotted baliſtes, is diſtinguiſhed by the large anal fin, and the two prickles of the firſt dorſal fin. There are fourteen rays in the ventral fin; twenty-one in the anal, twelve in the tail, two in the firſt of the back, and twenty-four in the ſecond. This fiſh is thicker than the preceding. The ſurface is alſo divided into diamond-ſquares, with little protuberances or warts. There are round blue ſpots all over the breaſt, back, and tail. The head is ſmall in proportion to the body; the mouth is very narrow; jaws of an equal length, with twelve pointed teeth in each. Cloſe to the eyes is a long hollow place, above which are the noſtrils. The pupil of the eye is black, ſurrounded with a ſea-green iris. The back and ſides are of a violet-colour; the belly of a yellowiſh white; the bone of the belly is very hard, and rough to the hand. Between this bone and the anus, there are ſome prickles which ſupply the place of a ventral fin. The firſt fin of the back has a ſtrong ray which is long, and dentated before, and another which is thin and ſhort. It is joined to the back by a long membrane. The ſecond dorſal fin, with thoſe of the anus and tail, are large, with branching rays, as alſo the pectoral fin, which is ſmall; this laſt and that of the tail are yellow. This fiſh is found in the waters of America and the Eaſt Indies, and grows to a conſiderable ſize. Neither eggs nor roe were found in this, any more than the preceding, by Bloch, who carefully examined three different kinds of this fiſh.

7. The ringens, or black baliſtes, is diſtinguiſhed by the narrow anal fin, and the two prickles of the firſt dorſal. There are fifteen rays in the pectoral fin, thirty-two in the anal; thirteen in the tail; two in the firſt of the back, and thirty-three in the ſecond. The body is black, with a blue ſtripe on the anal fin and on the ſecond dorſal. It is alſo compreſſed on the ſides, large before, and narrow towards the tail. The head is ſhort. The aperture of the

mouth is larger than in the other baliſtes; jaws of an equal length, each furniſhed with ten large or cutting teeth. The eyes round, with black pupil and white iris. There are four apertures near the eyes. Inſtead of the ventral fin is a long, hard, ſtrong, ray, covered for the moſt part by the ſkin. This fiſh is rough to the hand, and in ſeveral parts formed into trapezium-ſhaped diviſions. At the tail are ſeven or eight rows of prickles bent forwards, which wound the fingers when the hand is moved from the head to the tail. The firſt ray of the firſt dorſal fin is very ſtrong, bent backwards but toothed before; the ſecond is ſmall. All the rays of the fins are branched at the ends, and the two outermoſt rays of the tail form by their length a forked ſlope or hollow. This fiſh is found in China; and Oſbeck aſſures us, that, when drawn towards the ſhore by the waves, it may be enticed by a piece of bread, and taken with the hand. It grows larger than other fiſh of this kind. Its black colour makes it very remarkable and curious. Liſter firſt made this fiſh known, and Willoughby gave the firſt correct drawing of it, which is engraved in the annexed plate.

8. The Chinenſis, or Chineſe baliſtes, is diſtinguiſhed from the three firſt ſpecies by the ventral fin, and from the reſt by the prickle on the head. Here are thirteen rays in the pectoral fin, thirteen in the ventral, thirty in the anal, twelve in the tail; one in the firſt dorſal, and thirty in the ſecond. The body is large and rough, has many little yellow ſpots, and is much compreſſed on the ſides. The head is ſhort and ſloping; jaws of an equal length, with ten narrow teeth in each, placed very cloſe. The eyes are large and round, with a black pupil in a green iris; and near them are four little apertures. The horn prickle, erected above the eyes, hath a ſaw-like or double row of teeth. Behind this horn is a furrow on the back to receive it. The back and belly are ſharp; the belly is whitiſh, the ſides grey. The lateral line begins behind the eyes, ſoon after makes a bend towards the belly, and is ſcarcely viſible at the tail. Here are eight prickles bent forwards, and placed in two rows. There is only one ventral fin, which is rough to the touch; the rays are dentated, and hidden in a thick ſkin; only the firſt ray ſtands out. The ſecond dorſal fin and that of the anus are ſcattered with grey and yellow prickles. The tail-fin is round, and its rays are divided at the end; but thoſe of the other fins are ſimple. This fiſh is natural to Braſil and China. As it is not fleſhy, nor of a very good taſte, it is only eaten by the poor. Marcgrave firſt brought this fiſh into notice; and, as Willoughby made it pretty well known, it is ſomewhat ſtrange that Klein and Artedius have omitted it entirely.

BALI'VO AMOVEN'DO, *ſ.* in law, a writ for removing a bailiff from his office, for want of having ſufficient land in his bailwick to anſwer the king and his people, according to the ſtatute of Weſtminſter. 2 *Reg. Orig.* 78.

BA'LIUS and XANTHUS, the two horſes of Achilles; they were ſaid to be born of Zephyr and Celeno.

BALK, *ſ.* [*balk*, Dut. and Germ.] A great beam, ſuch as is uſed in building; a rafter over an out-houſe or barn.

BALK, *ſ.* [derived by Skinner from *valicare*, Ital. to paſs over.] A ridge of land left unploughed between the furrows, or at the end of the field.

BALK, or BALKH, a province of Great Bukharia in Aſia, about 360 miles long and 250 broad, ſituated to the ſouth of the province of Samarcand, and to the eaſt of Bukharia Proper. It is the leaſt of the three provinces of Great Bukharia; but, being extremely fertile and well cultivated, the prince draws a great revenue from it. The country abounds with ſilk, of which the inhabitants make divers manufactures. The Uzbecks ſubject to the khan of Balkh are the moſt civilized of all the Tartars inhabiting Great Bukharia, owing probably to their commerce with the Perſians: they are likewiſe more induſtrious, and more honeſt; but in other reſpects have the ſame cuſtoms with the reſt of the Tartars. The province is ſubdivided into ſeveral counties; the moſt remarkable of which are Khotlan or Katlan, Tokhareſtan, and Badagſhan. Its chief cities are Balk, Farriyab, Talkhan, Badagſhan, and Anderab.

BALK, the capital of the province above-mentioned, ſituated on the frontiers of Perſia, in N. lat. 37. 0. E. lon. 65. 20. It is probably the ancient Bactra, capital of the kingdom of Bactria; and is ſaid to have been founded by Kay-umaraz the firſt king of Perſia, becauſe he met his brother upon this ſpot, after he had been loſt for a long time; *balkhiden* or *balghiden*, in the Perſic language, ſignifying to receive or embrace a friend. The firſt kings of Perſia who reſided in the province of Media or Aderbijan, conſidered this city as one of their principal frontiers on the ſide of Scythia. In the 27th year of the Hegira, of Chriſt 647, Balk was reduced by the Arabs, under the command of Abdallah Ebn Amer. It continued ſubject to the Arabs till the year of the Hegira 432, of Chriſt 1041; when it was reduced by Togrol Beg, the Tangrolipix of the Greeks, and prince of the Seljukian dynaſty. It was taken by Jenghiz Khan, A. D. 1221, who with his uſual and unparalleled cruelty cauſed all the inhabitants to be brought without the walls and maſſacred in cold blood. In 1369, Sultan Hoſein, the laſt of the race of Jenghiz Khan, was driven from Balk by Tamerlane, whoſe ſucceſſors were driven out by the Uzbecks in the 15th century. It was afterwards redeemed by Shah Iſmael Sufi; but finally wreſted from him by the Uzbeck Tartars, between whom and the Perſians it is the occaſion of almoſt continual wars. It is the moſt conſiderable city poſſeſſed in theſe parts by the Mahometan Tartars, being large, well-built, and populous, the houſes for the moſt part of ſtone or brick. The fortifications conſiſt of bulwarks of earth, fenced with a ſtrong wall high enough to cover the ſoldiers employed in its defence. As this place is the reſort of all the buſineſs tranſacted between the Indies and Great Bukharia, trade flouriſhes extremely at Balk; eſpecially as it has a fine river paſſing through its ſuburbs. This river falls into the Amu, in N. lat. 38. 30. upon the confines of Great Bukharia and Kowarazm. The khan's palace, or caſtle, is a large edifice built almoſt entirely of marble, of which there are fine quarries in the neighbourhood.

To BALK, *v. a.* To diſappoint; to fruſtrate; to elude.—Every one has a deſire to keep up the vigour of his faculties, and not to *balk* his underſtanding by what is too hard for it. *Locke.*—To miſs any thing; to leave untouched:

Balk'd of his prey, the yelling monſter flies,
And fills the city with his hideous cries. *Pope.*

To omit, or refuſe, any thing.—This was looked for at your hand, and this was *balkt. Shakeſpeare.*—To heap, as on a ridge. This, or ſomething like this, ſeems to be intended here:

Ten thouſand bold Scots, three-and-twenty knights,
Balk'd in their own blood, did Sir Walter ſee
On Holmedon's plains. *Shakeſpeare.*

BAL'KAN, a mountain of European Turkey, which divides Romania from Bulgaria.

BAL'KEE, a town of Hindoſtan, in the country of Doulatabad, fifteen miles weſt-north-weſt of Beder.

BALK'ERS, *ſ.* in fiſhery, men who ſtand on a cliff, or high place on the ſhore, and give a ſign to the men in the fiſhing-boats, which way the paſſage or ſhoal of herrings is.—The pilchards are purſued by a bigger fiſh, called a pluſher, who leapeth above water, and bewrayeth them to the *balker. Carew.*

BALL, *ſ.* [*Bol*, Dan. *bol*, Dut. *bal*, diminutively *belin*, the ſun, or Apollo, of the Celtæ, was called by the ancient Gauls *abellio*. Whatever was round, and in particular the head, was called by the ancients either *bâl*, or *bel*, and likewiſe *ból* and *biil*. Among the modern Perſians, the head is called *pole*; and the Flemings ſtill call the head *boile*. Πολος, is the head or poll; and πολειν, is to turn. Βολος, likewiſe ſignifies a round ball, whence *bowl*, and *bell*, and *ball*, which the Welſh term *bĕl*. By the Scotch alſo the head is named *bhĕl*; whence the Engliſh *bill* is derived, ſignifying the beak of a bird. Figuratively, the Phrygians and Thurians by βαλλην, underſtood a king. Hence alſo, in the Syriac dialects, βααλ, βηλ, and likewiſe βωλ, ſignifies lord, and by this name alſo the ſun; and, in ſome dialects, ηλ and ιλ, whence ιλος and ηλιος, γηλιος and βηλιος, and alſo, in the Celtic diminutive way of expreſſion, ελενος, γελενος, and βελενος, ſignified the ſun; and ελενη, γελενη, and βελενη, the moon. Among the Teutonics, *hol* and *heil* have the ſame meaning; whence the adjective *halig*, or *heilig*, is derived, and ſignifies divine or holy; and the aſpiration being changed into *ſ*, the Romans form their *ſol*.] Any thing made in a round form, or approaching to round.—Worms with many feet round themſelves into *balls* under logs of timber, but not in the timber. *Bacon.*—Like a *ball* of ſnow tumbling down a hill, he gathered ſtrength as he paſſed. *Howell.*—A round thing to play with, either with the hand or foot, or a racket.—Thoſe I have ſeen play at *ball*, grow extremely earneſt who ſhould have the *ball*. *Sidney.*—A ſmall round thing, with ſome particular mark, by which the votes are given, or the lots caſt:

Minos, the ſtrict inquiſitor, appears:
Round in his urn the blended *balls* he rowls,
Abſolves the juſt, and dooms the guilty ſouls. *Dryden.*

A globe; as, the *ball* of the earth:

Ye gods, what juſtice rules the *ball*?
Freedom and arts together fall. *Pope.*

A globe borne as an enſign of ſovereignty.—Hear the tragedy of a young man, that by right ought to hold the *ball* of a kingdom; but, by fortune, is made himſelf a *ball*, toſſed from miſery to miſery, from place to place. *Bacon.*—Any part of the body that approaches to roundneſs; as, the lower and ſwelling part of the thumb; the apple of the eye.—To make a ſtern countenance, let your brow bend ſo, that it may almoſt touch the *ball* of the eye. *Peacham.*

BALL, *ſ.* [*bal*, Fr. from *balare*, low Lat. from βαλλιζειν, to dance.] An entertainment of dancing, at which the preparations are made at the expence of ſome particular perſon or perſons:

If golden ſconces hang not on the walls,
To light the coſtly ſuppers and the *balls*. *Dryden.*

—He would make no extraordinary figure at a *ball*; but I can aſſure the ladies, for their conſolation, that he has written better verſes on the ſex than any man. *Swift.*

BALL, in the military art, comprehends all ſorts of bullets for fire-arms, from the cannon to the piſtol. Cannon-balls are of iron; muſket-balls, piſtol-balls, &c. are of lead. The experiment has been tried of iron balls for piſtols and fuſees; but they are juſtly rejected, not only on account of their lightneſs, which prevents them from flying ſtraight, but becauſe they are apt to furrow the barrel of the piſtol, &c.

BALL of a PENDULUM, the weight at the bottom. In ſhorter pendulums this is called the *bob*.

BALL, in pyrotechnics, is a compoſition of various combuſtible ingredients, ſerving to burn, ſmoke, give light, &c. In this ſenſe we read of fire-balls, light-balls, ſmoke-balls, ſtink-balls, ſky-balls, water-balls, land-balls, horſe-balls, &c.

BALL, among the Corniſh miners, ſignifies a tin-mine.

BALL, among printers, a kind of wooden tunnel ſtuffed with wool, contained in a leather cover, which is nailed to the wood, with which the ink is applied on the forms to be wrought off. See PRINTING.

Horſe-BALLS, among farriers. Horſes have a very nice taſte; it is therefore proper to give the more diſagreeable drugs in the form of balls, and to make drenches of the more palatable. Horſe-balls ſhould be of an oval ſhape, not exceeding the ſize of a pullet's egg; and ſhould be dipped in ſweet oil to make them ſlip down the eaſier. See FARRIERY.

BALL-VEIN, in mineralogy, a name given by the miners of Suſſex to a ſort of iron ore produced there, and wrought to conſiderable advantage. It yields not any great quantity of metal, but what it has runs freely in the fire; it is uſually found in looſe maſſes; not in the form of a ſtratum, and is often covered with one or more cruſts. It generally contains ſome glittering particles; and is uſually of a circular form in the perfect maſſes, thickeſt in the middle, and gradually thinner as it approaches the ſides. The ores of Suſſex in general are poor, but they require very little trouble in the working; ſo that a conſiderable profit is made from them.

BALL and SOCKET is an inſtrument made of braſs, with a perpetual ſcrew, ſo as to move horizontally, vertically, and obliquely; and is generally uſed for the management of ſurveying and aſtronomical inſtruments.

Puff-BALL, the Engliſh name of the lycoperdon, a genus of fungi. See LYCOPERDON.

BALLS, MARTIAL. A medical compoſition, conſiſting of iron filings and cream of tartar, uſed to impregnate water, or other liquids, with iron diſſolved by the acid of tartar. To make theſe balls, one part of filings of iron and two parts of powdered cream of tartar are mixed well together, and put into an earthen or iron veſſel with ſome water. This mixture is to be ſtirred from time to time, until it becomes almoſt dry, and then it is to receive more water, and to be ſtirred as before. This treatment is to be continued until it acquires, when nearly dry, ſomewhat of the conſiſtence and tenacity of ſoftened reſin. Then it is to be rolled up into the form of a ball, which is generally kept tied up in a rag; and when intended to be uſed, it is to be infuſed in water until it gives ſome colour to that liquid. In this compoſition, part of the acid of tartar, combines with part of the iron; and the remaining or greater part of the cream of tartar and iron continues ſolid in this way of proceeding. The infuſion of the martial ball in water does not therefore differ, as Macquer obſerves, from the tartarized tincture of iron. Its virtues are much the ſame as thoſe of other martial medicines. Theſe balls are unknown to us in England.

BALLS, MERCURIAL. Theſe conſiſt of an amalgam of tin and mercury, in which the former metal ſo far predominates, as to give the maſs a ſolid form. Macquer mentions the uſe of them by travellers to purify water, in which they are boiled for this purpoſe. We do not ſee, however, in what reſpect they would produce any material advantage. The mercurial impregnation, which the water would ſlightly receive from this treatment, does not ſeem likely to counteract, in any conſiderable degree, the bad qualities of another nature which may predominate in waters.

BALLS of SILK-WORMS and SPIDERS, are little caſes or cones of ſilk, wherein thoſe inſects depoſit their eggs. Spiders are extremely careful of their balls, which they carry about with them, adhering to the papillæ of the anus. See ARANEA.

BALLS, in electricity, invented by Mr. Canton, are two pieces of cork, or pith of elder-tree, nicely turned in a lathe to the ſize of a ſmall pea, and ſuſpended by fine linen threads. They are uſed as electrometers, and are of excellent uſe to diſcover ſmall degrees of electricity; and to obſerve its changes from poſitive to negative, or the reverſe; as alſo to eſtimate the force of a ſhock before the diſcharge, ſo that the operator ſhall always be able to tell very nearly before-hand what the exploſion will be, by knowing how high he has charged his jars.

BALLS of FIRE, in meteorology. See FIRE-*Balls*.

Fire-BALLS, in the military art, are bags of canvas filled with gun-powder, ſulphur, ſalt-petre, pitch, &c. to be thrown by the ſoldiers, or out of mortars, to fire the houſes, ſtorm trenches, advanced poſts, or the like. The Greeks had divers kinds of fire-balls, or πυροβολος λιθοι;

one called, more particularly, σκυταλια, or σκυταλιδες, made of wood, ſometimes a foot or even a cubit long; their heads being armed with ſpikes of iron, beneath which were hemp, pitch, and other combuſtibles, which, being ſet on fire, were caſt among the enemy. See ARCHERY. The preparation of fire-balls, among the moderns, conſiſts of ſeveral operations, viz. making the bag, preparing the compoſition, tying, and, laſtly, dipping, the ball. The bags for this purpoſe are either oval or round. The compoſition is generally as follows: To ten pounds of meal-gunpowder add two of ſalt-petre, one of ſulphur, and one of colophony; or to ſix pounds of gunpowder, add four of ſalt-petre, four of ſulphur, one of powdered glaſs, half a pound of antimony, as much camphor, an ounce of ſal-ammoniac, and four of common ſalt, all pulveriſed. For tying the fire-balls, they prepare two iron rings, one fitted round the aperture, where the ball is to be lighted, the other near its baſe. A cord is tied to theſe rings in ſuch a manner, as that the ſeveral turns repreſent ſemicircles of the ſphere cutting the globe through the poles: over the cords, extended according to the length of the ball, others are tied, cutting the former at right angles, and parallel to each other, making a knot at each interſection: laſtly, after putting in a leaden bullet, the reſt of the ſpace is filled with tow or paper. Thus completed, the fire-ball remains to be dipped in a compoſition of melted pitch four pounds, colophony two, and linſeed oil or oil of turpentine two; after dipping, they cover it round with tow, and dip again, till it be brought to the juſt diameter required.

Light-BALLS, with engineers, are ſuch as diffuſe an intenſe light around; or they are balls which, being caſt out of the hand, or from a mortar, burn for ſome time, and illuminate the adjacent parts. Small light-balls for the hand are made of ground powder, ſalt-petre, brimſtone, camphor, and borax, all ſprinkled with oil, and moulded into a maſs with ſuet; and this is wrapped up in tow, with a ſheet of ſtrong paper over it. To fire it, they make a hole with a bodkin, into which they put ſome priming that will burn ſlow. Its uſe is to be caſt into any of the enemy's works they would examine in the night-time. For the larger light-balls, or thoſe to be thrown to a greater diſtance, they melt equal quantities of ſulphur, turpentine, and pitch; and therein dip an earthen or ſtone ball, of a diameter much leſs than that of the mortar out of which it is to be caſt: then rolling it in gun-powder, and covering it round with gauze, they dip it again and again, till it come to fit the cavity of the mortar: they then ſprinkle it around with gun-powder. This, being once kindled, will ſtrongly illuminate the ſpot where it is thrown, and give opportunity to examine the ſtate and condition of the place.

Smoke or *Dark* BALLS, are thoſe which fill the air with ſmoke and darken a place to prevent diſcoveries. To prepare a darkening ball, make an oval or ſpherical bag, melt roſin over the coals, and add an equal part of nitre, the ſame of ſulphur, and a fifth part of charcoal. The whole being well incorporated, put in ſome ſhred tow, and fill the bag with this compoſition, dipping it as directed for the fire-ball.

Stink-BALLS, are thoſe which yield a great ſtench when fired to annoy the enemy. They are prepared thus: Melt ten pounds of pitch, ſix of roſin, twenty of ſalt-petre, eight of gunpowder, and four of colophony; to theſe add two of charcoal, ſix of horſe-hoofs cut ſmall; three of aſſafœtida, one of the ſtinking-ſaracen, and any other offenſive ingredients. With this compoſition fill the bag, and dip as before.

Sky-BALLS, are thoſe which are caſt on high out of mortars, and which, when arrived at their height, burſting like rockets, afford a beautiful ſpectacle. Sky-balls are made of a wooden ſhell, filled with various compoſitions, particularly that of the ſtars or ſnakes of a rocket. Theſe are ſometimes intermixed with crackers and other combuſtibles, making rains of fire, &c.

Water-BALLS, thoſe which ſwim and burn a conſiderable time in the water, and at length burſt therein. Theſe are made in a wooden ſhell, the cavity of which is filled with refined ſalt-petre, ſulphur, ſaw-duſt boiled in water of ſaltpetre, and dried; to which ſometimes other ingredients are added, as iron filings, Greek pitch, amber duſt, powdered glaſs, and camphor. The ingredients are to be ground, mixed up, and moiſtened with linſeed oil, nut oil, olive oil, hempſeed oil, or petrol. At the bottom is placed an iron coffin, filled with whole gun-powder, that the ball may at laſt explode with a great noiſe: and, laſtly, the ball is, by the addition of lead or otherwiſe, made of the ſame ſpecific gravity with water.

Land-BALLS, or SHELLS, are thoſe which, being thrown out of a mortar, fall to the ground, burn, and burſt there. The ingredients are much the ſame as in the *Water*-BALLS, only the ſpecific gravity is not attended to. For other inventions of the kind, and for the art of preparing all manner of fire-works, ſee the article PYROTECHNY.

BALLABU'AN (Straits of), or STRAITS of BALI, the channel between the iſlands of Java and Bali, in the Indian Sea.

BAL'LAD, *ſ.* [*balade*, Fr.] A ſonnet or ſong, generally conſiſting of trivial verſes, reciting ſome action, adventure, or intrigue:

Like the ſweet *ballad*, this amuſing lay
Too long detains the lover on his way. *Gay.*

The French confine their ballads to ſtricter terms. A ballad, according to Richelet, is a ſong conſiſting of three ſtrophes, or ſtanzas, of eight verſes each, beſides a half ſtrophe; the whole in rhime, of two, three, or four, verſes, with a burthen repeated at the end of each ſtrophe, as well as of the half ſtrophe. In the old Engliſh verſion of the Bible, the book of Canticles is intitled The Ballad of Ballads; which has given ſcandal to ſome Romiſh writers as countenancing the opinion of thoſe who hold that book a ballad of love, or a recital of the amours between Solomon and his concubine, as Caſtalio and ſome others have conceived it to be. Some have ſuggeſted that a collection of ballads is neceſſary to a miniſter, in order to learn the temper and inclinations of a people, which are here frequently uttered with great ſimplicity. The great Cecil, chief miniſter to queen Elizabeth, is ſaid to have made a moſt ample collection of ballads, on this account. There is a very curious collection of old Engliſh and Scottiſh ballads, publiſhed in three volumes octavo, by Dr. Percy; in which, and in a diſſertation prefixed to Dr. Aikin's Collection of Songs, &c. the curious in this way may find abundance of entertainment and information.

To BALLAD, *v. n.* To make or ſing ballads:

They'll catch at us like ſtrumpets, and ſcall'd rhimers,
Ballad us out o' tune. *Shakeſpeare.*

BALLAD-SINGER, *ſ.* [from *ballad* and *ſing.*] One whoſe employment it is to ſing ballads in the ſtreets:

No ſooner 'gan he raiſe his tuneful ſong,
But lads and laſſes round about him throng.
Not *ballad-ſinger*, plac'd above the crowd,
Sings with a note ſo ſhrilling, ſweet, and loud. *Gay.*

BALLADUK', a town of Arabia Deſerta, 140 miles eaſt-north-eaſt of Damaſcus.

BALLAGHAN', a town of Ireland, in the county of Sligo, and province of Connaught.

BALLAGHAN-POINT, a cape on the eaſt coaſt of Ireland, in the county of Louth, the ſouth-weſt entrance of Carlingford bay, eleven miles ſouth-eaſt of Newry. Lat. 53. 58. N. lon. 6. 4. W. Greenwich.

BAL'LAN, a town of France, in the late dioceſe of Mons, with the title of a marquiſate, ſeated on the river Orne.

BALLANTI'RE, or BALLANTRAE, a ſea-port town of Scotland, on the weſt coaſt of the county of Ayr, in the Frith of Clyde, containing about eighty houſes and

300 inhabitants: they have a good ſalmon fiſhery in the mouth of a ſmall river which joins the Frith near the town: twenty-eight miles ſouth-ſouth-weſt of Ayr.

BAL'LARD (George), a ſelf-taught genius, who left ſeveral compoſitions behind him, the only one of repute is, Memoirs of Britiſh Ladies. He died in 1775.

BAL'LARD's POINT, a cape on the weſt coaſt of Ireland, in the county of Clare. Lat. 52. 42. N. lon. 9. 32. W. Greenwich.

BAL'LAS, a town of Egypt, ten miles S. of Dendera.

BAL'LAST, *ſ.* [*ballaſte*, Dutch.] Any heavy matter put at the bottom of a ſhip, to keep it ſteady to the centre of gravity.—There muſt be middle counſellors to keep things ſteady; for, without that *ballaſt*, the ſhip will roll too much. *Bacon.*—That which is uſed to make any thing ſteady:

Why ſhould he ſink where nothing ſeem'd to preſs?
His lading little, and his *ballaſt* leſs. *Swift.*

The method of ballaſting a ſhip with propriety, deſerves the ſtricteſt attention of the ſkilful mariner; for although it is known, that ſhips in general will not carry a ſufficient quantity of ſail till they are laden ſo deep that the ſurface of the water will nearly glance on the extreme breadth amidſhips, yet there is more than this general knowledge required; ſince, if ſhe has a great weight of heavy ballaſt, as lead, iron, &c. in the bottom, it will place the centre of gravity too low in the hold; and, although this will enable her to carry a great ſail, ſhe will nevertheleſs ſail very heavily, and run the riſk of being diſmaſted by her violent rolling. There is alſo great difference in the proportion of ballaſt required to prepare ſhips of equal burden for a voyage; the quantity being always more or leſs according to the ſharpneſs or flatneſs of the ſhip's bottom, which ſeamen call the *floor*. To ballaſt a ſhip, is therefore the art of diſpoſing thoſe materials ſo that ſhe may be duly poiſed, and maintain a proper equilibrium on the water, ſo as neither to be too ſtiff nor too crank, qualities equally pernicious: as in the firſt, although the ſhip may be fitted to carry a great ſail, yet her velocity will not be proportionably increaſed; whilſt her maſts are more endangered by her ſudden jerks and exceſſive labouring: and in the laſt, ſhe will be incapable of carrying ſail, without the riſk of overſetting. Stiffneſs, in ballaſting, is occaſioned by diſpoſing a great quantity of heavy ballaſt in the bottom, which naturally places the centre of gravity very near the keel; and, that being the centre about which the vibrations are made, the lower it is placed, the more violent will be the motion of rolling. Crankneſs, on the other hand, is occaſioned by having too little ballaſt, or by diſpoſing the ſhip's lading ſo as to raiſe the centre of gravity too high, which alſo endangers the maſts in carrying ſail when it blows hard: for, when the maſts loſe their perpendicular height, they ſtrain on the ſhrouds in the nature of a lever, which increaſes as the ſine of their obliquity; and a ſhip that loſes her maſts is in great danger of foundering. The whole art of ballaſting, therefore, conſiſts in placing the centre of gravity to correſpond with the trim and ſhape of the veſſel, ſo as neither to be too high nor too low; neither too far forward nor too far aft, and to lade the ſhip ſo deep, that the ſurface of the water may nearly riſe to the extreme breadth amidſhips; and thus ſhe will be enabled to carry a good ſail, incline but little, and ply well to windward.

Ships are ſaid to be in ballaſt when they have no other loading. Maſters of veſſels are obliged to declare the quantity of ballaſt they bear, and to unload it at certain places. They are prohibited unloading their ballaſt in havens, roads, &c. the neglect of which has ruined many excellent ports. Ships and veſſels taking in ballaſt in the river Thames, are required by law to pay ſo much a ton to Trinity-houſe, Deptford; who ſhall employ ballaſtmen, and regulate them; and their lighters are to be marked, &c. on pain of 10l. 6 Geo. II. c. 29.

To BALLAST, *v. a.* To put weight at the bottom of a ſhip, in order to keep her ſteady.—If this be ſo *ballaſted*, as to be of equal weight with the like magnitude of water, it will be moveable. *Wilkins.*—To keep any thing ſteady:

Now you have given me virtue for my guide,
And with true honour *ballaſted* my pride. *Dryden.*

BALLATOO'NS, *ſ.* Large heavy luggage-boats uſed for carrying wood by the river from Aſtracan and the Caſpian ſea to Moſcow. Theſe will carry from 100 to 200 tons, and have from 100 to 120 men employed to row and tow them along.

BAL'LENDEN (Sir John), a Scottiſh poet, in the reign of James V. of Scotland, was deſcended from an ancient family in that kingdom. Having taken orders, and being created doctor of divinity, at the Sorbonne, he was made canon of Roſs, and archdeacon of Murray. He was extremely aſſiduous in retarding the progreſs of the reformation; till at laſt, finding the oppoſition too powerful, he quitted Scotland and went to Rome, where he died in the year 1550. His works are, 1. Coſmography to the Hiſtory of Scotland, with a poetical proem. 2. A Deſcription of Albany. 3. Tranſlation of Boethius's Deſcription of Scotland. 4. Epiſtles to King James V. 5. Several poems in Carmichael's collection of Scottiſh poems.

BAL'LEROY, a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Bayeux; ſix leagues ſouth of Caen, and two and a quarter ſouth-ſouth-weſt of Bayeux.

BAL'LETTE, *ſ.* [*ballette*, Fr. from βαλλειν, *jacere*, to caſt, throw, or toſs; whence alſo in writers of the middle age, we find *ballationes* for *ſaltationes*, dancings; and *ballare* for *ſaltare*, to dance.] A kind of dramatic poem, repreſenting ſome fabulous action or ſubject divided into ſeveral entries; wherein ſeveral perſons appear, and recite things under the name of ſome deity, or other illuſtrious character. *Ballette* is alſo uſed for a kind of comic dance, conſiſting of a ſeries of different movements, which together repreſent ſome ſubject or action. They are performed chiefly by maſks repreſenting ſylvans, tritons, nymphs, ſhepherds, and the like; and conſiſt of three parts, the entry, figure, and the retreat. See DANCE.

BAL'LIAGE, or BAI'LIAGE, *ſ.* in commerce, a ſmall duty paid to the city of London by aliens, and even denizens, for certain commodities exported by them.

BAL'LIARDS, *ſ.* [from *ball* and *yard*, or ſtick to puſh it with.] A play at which a ball is driven by the end of a ſtick; now corruptly called *billiards*:

With dice, with cards, with *balliards*, far unfit,
With ſhuttlecocks miſſeeming manly wit. *Spenſer.*

BALLICON'NEL, a town of Ireland, in the county of Cavan, and province of Ulſter.

BAL'LIMONEY, a town of Ireland, in the county of Antrim; twenty-three miles north of Antrim, and thirty eaſt of Londonderry.

BALLIMO'RE, a town of Ireland, in the county of Weſtmeath; ten miles north-eaſt of Athlone.

BALLINACOUR'TY POINT, a cape on the ſouth coaſt of Ireland, in the county of Waterford, and north ſide of Dungarvon bay; four miles eaſt of Dungarvon.

BALLINAKILL', a town of Ireland, in Queen's county, and a borough, which ſends two members to the Iriſh parliament; fourteen miles weſt of Carlow, and eighteen ſouth of Portarlington.

BALLINASKEL'LIG, a bay on the ſouth-weſt coaſt of Ireland, and county of Kerry. Lat. 41. 46. N. lon. 10. 6. W. Greenwich.

BALLINASLO'E, a town of Ireland, in the county of Galway; thirty miles weſt of Galway.

BALLINRO'BE, or BALLINRA'AL, a town of Ireland, in the county of Mayo; fifteen miles S. of Caſtlebar.

BALLINTOY', a ſea-port town of Ireland, on the north coaſt of the county of Antrim, with a good bay, and a coal-mine in the neighbourhood; twenty miles north of Ballymena.

BALLIS'TA, *ſ.* [of βαλλω, Gr. to ſhoot, or throw.] A military engine uſed in the ancient artillery. See Artillery, p. 230, of this volume.

Ballista, *ſ.* in practical geometry, the ſame as the geometrical croſs, called alſo *Jacob's Staff*. See Cross-Staff.

BALLISTA'RII, or Ballistra'rii, *ſ.* in antiquity, ſlingers in the ancient armies, or ſoldiers who fought with the balliſtæ. There are two kinds of *balliſtarii milites*; the former caſt ſtones, and other miſſive weapons, with the hand, called *manuballiſtarii*, ſometimes ſimply *manuballiſtæ*; the latter, called *carroballiſtarii*, ſometimes only *carroballiſtæ*, made uſe of a machine. Some ſpeak of a third kind, called *arcuballiſtarii*; but theſe are better reduced to the ſecond. The *balliſtarii* were ſcarcely heard of before the age of Conſtantine. *Balliſtarius* is alſo uſed, in middle-age writers, for a croſs-bowman, or *arbaletier*.

BALLIS'TEUM, or Ballis'træa, *ſ.* [from βαλλω, Gr. to caſt or toſs, on account of the motions uſed in this dance.] In antiquity, a military ſong or dance uſed on occaſions of victory. Vopiſcus has preſerved the *balliſteum* ſung in honour of Aurelian, who, in the Sarmatian war, was ſaid to have killed forty-eight of the enemy in one day with his own hand. *Mille, mille, mille, mille, mille, mille decollavimus: unus homo mille, mille, mille, mille decollavit; mille, mille, mille vivat, qui mille, mille occidit. Tantum vini habet nemo, quantum fudit ſanguinis.* The ſame writer ſubjoins another popular ſong of the ſame kind: *Mille Francos, mille Sarmatas, ſemel occidimus; mille, mille, mille, mille, mille Perſas quærimus.* The *balliſtea* were a kind of popular ballads, compoſed by poets of the lower claſs, without much regard to the laws of metre.

BALLIS'TIC PENDULUM, *ſ.* an ingenious machine invented by Benjamin Robins, for aſcertaining the velocity of military projectiles, and conſequently the force of fired gunpowder. It conſiſts of a large block of wood, annexed to the end of a ſtrong iron ſtem, having a croſs ſteel axis at the other end, placed horizontally, about which the whole vibrates together like the pendulum of a clock. The machine being at reſt, a piece of ordnance is pointed ſtraight towards the wooden block, or ball of this pendulum, and then diſcharged: the conſequence is this; the ball diſcharged from the gun ſtrikes and enters the block, and cauſes the pendulum to vibrate more or leſs according to the velocity of the projectile, or the force of the blow; and, by obſerving the extent of the vibration, the force of that blow becomes known, or the greateſt velocity with which the block is moved out of its place, and conſequently the velocity of the projectile itſelf which ſtruck the blow and urged the pendulum.

BALLIS'TICS, *ſ.* is uſed by ſome for projectiles, or the art of throwing heavy bodies. Merſennus has publiſhed a treatiſe on the projection of bodies, under this title.

BAL'LOCK, rocks on the north-weſt coaſt of the iſland of Ila.

BALLOGIS'TAN, a diſtrict of Hindoſtan, in the country of Delhi, of an oval form, about eighty miles long, and from twenty to thirty broad; the extremity about twenty miles weſt from Delhi.

BALLOO'N, *ſ.* [*ballon*, Fr.] Any ſpherical hollow body, of whatever matter it be compoſed, or for whatever purpoſes it be deſigned. Thus, with chemiſts, balloon denotes a round ſhort-necked veſſel, uſed to receive what is diſtilled by means of fire; in architecture, a round globe on the top of a pillar; and among engineers, a kind of bomb made of paſteboard, and played off, in fireworks, either in the air or on the water, in imitation of a real bomb.

Air-Balloon. See Aerostation & Air-Balloon.

Balloon alſo denotes a kind of game ſomething reſembling tennis. The balloon is played in the open field, with a great round ball of double leather blown up with wind, and thus driven to and fro with the ſtrength of a man's arm, fortified with a brace of wood.

Balloon, or Balloen, is more particulary uſed among voyagers for the ſtate-barges of Siam. The balloons are a kind of brigantine, managed with oars, of very odd figures, as ſerpents, ſea-horſes, &c. but, by their ſharpneſs and number of oars, are of incredible ſwiftneſs. The balloons are ſaid to be made of a ſingle piece of timber, of great ſize and length; they are raiſed high, and much decorated with carving at the head and ſtern: ſome are gilt over, and carry 120 or even 150 rowers on each ſide. The oars are either plated over with ſilver, or gilt, or radiated with gold; and the dome or canopy in the middle, where the company is placed, is ornamented with rich ſtuff, and furniſhed with a balluſtrade of ivory or ebony, enriched with gilding. The edges of the balloon juſt touch the water, but the extremities riſe with a ſweep to a great height. Some are adorned with variety of figures, made of pieces of mother-of-pearl inlaid: the richer ſort, inſtead of a dome, carry a kind of ſteeple in the middle; ſo that, conſidering the ſlenderneſs of the veſſel, which is uſually 100 or 120 feet long, and ſcarcely ſix broad, the height of the two ends, and of the ſteeple with a load of decorations, it is a kind of miracle that they are not overſet.

Balloon, in the French paper-trade, is a term for a quantity of paper, containing twenty-four reams.

Balloon, Ballon, or Ballot, in the French glaſs-trade, ſignifies a certain quantity of glaſs-plates, ſmaller or greater, according to their quality. The ballon of white glaſs contains twenty-five bundles, of ſix plates per bundle; but the ballon of coloured glaſs is only of twelve bundles and a half, and of three plates to a bundle.

BAL'LOT, *ſ.* [*ballotte*, Fr.] A little ball or ticket uſed in giving votes, being put privately into a box or urn. The act of voting by ballot.

To Ballot, *v. n.* [*ballotter*, Fr.] To chooſe by ballot, that is, by putting little balls or tickets, with particular marks, privately into a box; by taking out or counting which, it is known what is the reſult of the poll, without any diſcovery by whom each vote was given.—Giving their votes by *balloting*, they lie under no awe. *Swift.*

BALLO'TA, *ſ.* [βαλλωτη, Gr. a name in Dioſcorides.] In botany, a genus of the claſs didynamia, order gymnoſpermia, natural order of verticillatæ, or labiatæ. The generic characters are—Calyx: perianthium one-leafed, tubular, ſalver-ſhaped, five-cornered, oblong, ten-ſtreaked, erect, permanent, equal; mouth acute, patulous, plaited, five-toothed; involucre of linear folioles under the whorls. Corolla: monopetalous, ringent; tube cylindric, the length of the calyx; upper lip erect, ovate, entire, crenate, concave; lower trifid, obtuſe; the middle ſegment larger, emarginate. Stamina: filaments four, the two ſhorter ſubulate, bending towards the upper lip, and ſhorter than it; antheræ oblong, lateral. Piſtillum: germ quadrifid; ſtyle filiform, in the ſame ſituation and form with the ſtamens; ſtigma ſlender, bifid. Pericarpium: none; calyx unchanged, foſtering the ſeeds in its boſom. Seeds: four, ovate.—*Eſſential Character.* Calyx ſalver-ſhaped, five-toothed, ten-ſtreaked; corolla, upper lip crenate, concave.

Species. 1. Ballota nigra, or ſtinking or black horehound: leaves cordate, undivided, ſerrate; calyxes acuminate. Stinking or black horehound is a hairy plant, with an upright browniſh ſtem, about two feet in height. It is a perennial plant, common in moſt parts of Europe, in waſte places and hedges, flowering in July. It is recommended in hyſterical caſes. In Gotland it is an univerſal remedy in diſorders incident to cattle; but the Swediſh plant is ſuppoſed not to be the ſame with ours. The flowers are occaſionally found white, and then it is miſtaken for ballota alba of Linnæus, which is not a native of England.

2. Ballota alba, or white-flowered black horehound: leaves cordate, undivided, ſerrate; calyxes ſubtruncate. Linnæus doubts whether this may not be a variety of the foregoing ſort.

3. Ballota lanata, or woolly black horehound: leaves palmate, toothed; ſtem woolly. Native of Siberia towards China. Cultivated in 1776, by Mr. James Gordon.

4. Ballota ſuaveolens, or ſweet-ſmelling black horehound: leaves cordate, ſpikes leafy, calyxes truncate, awns linear. Root annual. Browne ſays, that it commonly riſes to the height of three or four feet; and that it is a grateful cephalic and alexipharmic. It is a very odorous plant, and the people of St. Domingo uſe it in their warm baths. Native of the Weſt Indies.

5. Ballota diſticha, or betony-leaved black horehound: whorls halved, two-parted, half-ſpiked. Native of the Eaſt Indies.

6. Ballota piloſa: leaves ovate, crenate, tomentoſe; whorls hairy, calyxes ten-toothed. Stem perennial, four feet high, upright, but weak, ſtreaked, hairy, branched; leaves acute; flowers white, in hairy whorls. Native of Cochin-china.

Propagation and Culture. The European ſorts, being common ſtinking weeds, are never introduced into gardens. The third is hardy. The three laſt require the protection of a ſtove. They may all be increaſed by ſeeds.

BALLOTA'TION, *ſ.* The act of voting by ballot.—The election is intricate and curious, conſiſting of ten ſeveral *ballotations*. *Wotton.*

BALLS, or BALLETS, *ſ.* in heraldry, a frequent bearing in coats of arms, uſually denominated, according to their colour, bezants, plates, hurts, &c.

BALLYBAY', a town of Ireland, in the county of Monaghan; nine miles ſouth of Monaghan.

BALLYCAS'TLE, a town of Ireland, in the county of Antrim, ſituated on the eaſt ſide of a bay to which it gives name, with a good pier; there is alſo a colliery near it; thirty miles north of Antrim. Lat. 55. 12. N. lon. 6. 6. W. Greenwich.

BALLYCOT'TON, a bay in St. George's Channel, on the ſouth-weſt coaſt of Ireland, in the county of Cork, north-weſt of Ballycotton iſland; ten miles eaſt of Cork harbour.

BALLYCOTTON, an iſland in St. George's Channel, on the ſouth-weſt coaſt of Ireland. Lat. 51. 50. N. lon. 7. 59. W. Greenwich.

BALLYDO'NEGAN, a bay on the ſouth coaſt of Ireland, in the county of Cork, on the ſouth ſide of the entrance into Kenmure river.

BALLYE'LA, a bay in the Atlantic Ocean, on the weſt coaſt of Ireland; twelve miles ſouth-eaſt of South Arran iſlands. Lat. 52. 53. N. lon. 9. 20. W. Greenwich.

BALLYGEL'LY HEAD, a cape on the eaſt coaſt of Ireland, in the Iriſh Sea. Lat. 54. 54. N. lon. 5. 44. W. Greenwich.

BALLYLA'NY, a ſmall iſland in the Atlantic Ocean, near the weſt coaſt of Ireland. Lat. 53. 23. N. lon. 10. 16. W. Greenwich.

BALLYME'NAH, a town of Ireland, in the county of Antrim; ten miles north of Antrim.

BALLYQUIN'TON POINT, a cape on the eaſt coaſt of the county of Down, in Ireland, in the Iriſh Sea, at the eaſt of the entrance into Strangford Lough; 7 miles eaſt of Downpatrick. Lat. 54. 19. N. lon. 5. 26. W. Greenwich.

BALLYSHAN'NON, a ſea-port town of Ireland, ſituated in a bay to which it gives name, open to the Atlantic Ocean, at the mouth of the river Erne, in the county of Donegal, with a good harbour, and conſiderable trade. It is a borough town, and returns two members to the Iriſh parliament; forty miles ſouth-weſt of Londonderry. Lat. 54. 31. N. lon. 8. 2. W. Greenwich.

BALLYVAGHAN', a bay on the weſtern coaſt of Ireland, and north part of the county of Clare, in the ſouth part of Galway bay.

BALM, *ſ.* [*baume*, Fr. *balſamum*, Lat.] The ſap or juice of a ſhrub remarkably odoriferous:

Balm trickles through the bleeding veins
Of happy ſhrubs in Idumean plains. *Dryden.*

Any valuable or fragrant ointment. Any thing that ſoothes or mitigates pain:

A tender ſmile, our ſorrow's only *balm.* *Young.*

To BALM, *v. a.* To anoint with balm, or with any thing medicinal. To ſoothe; to mitigate; to aſſuage:

Oppreſſed nature ſleeps:
This reſt might yet have *balm'd* thy ſenſes. *Shakeſpeare.*

BALM, a town of Germany, in the circle of Upper Saxony, and Hinder Pomerania: ſeventeen miles ſouth-weſt of Stargard, and ſeventeen ſouth of Old Stettin. Lat. 53. 8. N. lon. 32. 34. E. Ferro.

BALM, *ſ.* in botany. See MELISSA.

BALM of GILEAD. See AMYRIS.

BALMALA', a town of Africa, in the deſert of Berdoa.

BALMAMUT'; a town of Aſiatic Turkey; twelve miles weſt of Karahiſar.

BAL'MONT (Comteſſe de St.), an extraordinary heroine of the ſixteenth century. The abbé Arnauld has left us the following memorial of her. "In the year 1638, this amazon of her time was conſidered as a prodigy of courage and of virtue, uniting in her perſon all the valour of a determined ſoldier, and all the modeſty of a truly Chriſtian woman. She was of a very good family of Lorraine, and was born with a diſpoſition worthy of her birth. The beauty of her face correſponded to that of her mind, but her ſhape by no means agreed with it, being ſmall and rather clumſy. Providence, who had deſtined her for a life more laborious than that which females in general lead, had formed her more robuſt and more able to bear bodily fatigue. It had inſpired her with ſo great a contempt for beauty, that when ſhe had the ſmall-pox ſhe was as pleaſed to be marked with it as other women are afflicted on a ſimilar occaſion. She was married to the Count de St. Balmont, who was not inferior to her either in birth or in merit. They lived together very happily till the troubles that aroſe in Lorraine obliged them to ſeparate. The count was conſtantly employed by the duke his ſovereign in a manner ſuitable to his rank and diſpoſition, except when he once gave him the command of a poor feeble fortreſs, in which he had the aſſurance to reſiſt the arms of Louis XIV. for ſeveral days together, at the riſk of being treated with the extremeſt ſeverity of military law, which denounces the moſt degrading puniſhment againſt all thoſe officers who hold out without any proſpect of ſucceſs. M. de Balmont went indeed farther, and added inſolence to raſhneſs; for, at every ſhot of cannon that was fired at the fortreſs, he appeared at the windows, attended by ſome fiddlers, who played by his ſide. This madneſs (for one cannot call it by a more gentle name) had nearly coſt him very dear; for, when he was taken priſoner, it was agitated in the council of war, compoſed of the officers whom he had treated with this contempt, whether he ſhould not be hung up immediately; but regard was paid to his birth, and perhaps to his courage, however indiſcreet. Madame de St. Balmont remained upon his eſtates to take care of them. Hitherto ſhe had only exerted her ſoldier-like diſpoſition in hunting and ſhooting (which is a kind of war), but very ſoon an opportunity preſented itſelf of realizing it, and it was this: an officer in the cavalry had taken up his quarters upon one of her huſband's eſtates, and was living there at diſcretion. Madame de St. Balmont ſent him a very civil letter of complaint on his ill behaviour, which he treated with great contempt. Piqued at this, ſhe was reſolved that he ſhould give her ſatisfaction, and, merely conſulting her reſentment, ſhe wrote him a note ſigned Le Chevalier de St. Balmont. In this note ſhe obſerved to him, that the ungentleman-like manner in which he had behaved to his ſiſter-in-law obliged him to reſent it, and that he would give him with his ſword that ſatisfaction which his letter had refuſed. The officer accepted the challenge, and repaired to the place appointed. Madame de St. Balmont met him dreſſed in men's clothes. They immediately drew their ſwords, and the comteſſe had the advantage of him; when, after having diſarmed him, ſhe ſaid, with a very gracious ſmile, You thought, ſir, I make no doubt, that you were fighting with Le Chevalier de St. Balmont; it is, however, Madame de St. Balmont of that name who returns you your ſword, and begs you in future to pay more regard to the requeſts of the ladies. She then left him, covered with ſhame and confuſion. The courage of the fair challenger being thus inflamed, ſhe did not reſt ſatisfied with merely preſerving her eſtates by repelling force by force, but ſhe afforded protection to many of the gentlemen in her neighbourhood, who made no ſcruple to take refuge in her village, and to put themſelves under her orders when ſhe took the field, which ſhe always did with ſucceſs, her deſigns being executed with a prudence equal to her courage. The manner of living, however, of Madame de St. Balmont, ſo far removed from that of her ſex, and which, in all other females who have attempted it, has ever been found united with libertiniſm of manners, was in her accompanied with nothing that bore the leaſt reſemblance to it. When ſhe was at home, in time of peace, her whole day was employed in the offices of religion; in prayers, in reading the Bible and books of devotion, in viſiting the poor of her pariſh, whom ſhe was ever aſſiſting with the moſt active zeal and charity. This manner of living procured her the admiration and eſteem of perſons of all deſcriptions in her neighbourhood, and inſured her a degree of reſpect that could not have been greater towards a queen."

BALMUC'CIA, a town of Piedmont, in the valley of Seſia; ſeven miles weſt of Varallo.

BAL'MY, *adj.* Having the qualities of balm:

> Soft on the flow'ry herb I found me laid,
> In *balmy* ſweat; which with his beams the ſun
> Soon dry'd. *Milton.*

Producing balm:

> Let India boaſt her groves, nor envy we
> The weeping amber and the *balmy* tree. *Pope.*

Soothing; ſoft; mild:

> Come, Deſdemona, 'tis the ſoldiers life
> To have their *balmy* ſlumbers wak'd with ſtriſe. *Shakeſp.*

Fragrant; odoriferous:

> The winds upon their *balmy* wings convey'd,
> Thoſe rich perfumes which firſt the world betray'd. *Dryd.*

Mitigating; aſſuaſive:

> O *balmy* breath, that doth almoſt perſuade
> Juſtice to break her ſword! *Shakeſpeare.*

BALNEA'RII SER'VI, in antiquity, ſervants or attendants belonging to the baths. Some were appointed to heat them, called *fornicatores*; others were denominated *capſarii*, who kept the clothes of thoſe that went into them; others *aliptæ*, whoſe care it was to pull off the hair; others *unctuarii*, who anointed and perfumed the body.

BALNEA'RIUS FUR, in antiquity, a kind of thief who practiſed ſtealing the clothes of perſons in the baths; ſometimes alſo called *fur balnearum.* The crime of thoſe thieves was a kind of ſacrilege; for the hot baths were ſacred: hence they were more ſeverely puniſhed than common thieves who ſtole out of private houſes. The latter were acquitted with paying double the value of the thing ſtolen; whereas the former were puniſhed with death.

BAL'NEARY, *ſ.* [*balnearium*, Lat.] A bathing-room. —The *balnearies*, and bathing-places, he expoſeth unto the ſummer ſetting. *Brown.*

BALNEA'TION, *ſ.* [from *balneum*, Lat. a bath.] The act of bathing.—As the head may be diſturbed by the ſkin, it may the ſame way be relieved, as is obſervable in *balneations*, and fomentations of that part. *Brown.*

BAL'NEATORY, *adj.* [*balnearius*, Lat.] Belonging to a bath or ſtove.

BAL'NEUM, *ſ.* [*βαλανειον*, from *βαλανος*, an acorn, becauſe the ancients uſed to burn the huſks of nuts or acorns in their baths. Minſhew. Or from *βαλλω*, to caſt away, and *ανια*, grief, becauſe it expels griefs from the mind. D. Auguſt. in Lib. Confeſſ. Probably from בלן Talmud.] A bath, or bathing-houſe. Alſo a term uſed by chemiſts to ſignify a veſſel filled with ſand, water, or the like, in which another is placed that requires a more gentle heat than the naked fire.

BALOG', a town of Hungary, 20 miles eaſt of Altſol.

BALO'HA, a town of Africa, on the river Grand, inhabited by the deſcendants of a mixture of Portugueſe and Africans.

BALON'GO, three iſlands in the bay of Bengal, near the coaſt of Aracan. Lat. 19. 50. to 20. 5. N. lon. 93. to 93. 20. E. Greenwich.

BALOTA'DE, *ſ.* The leap of a horſe, ſo that, when his fore-feet are in the air, he ſhews nothing but the ſhoes of his hinder-feet, without yerking out. A *balotade* differs from a capriole; for, when a horſe works at caprioles, he yerks out his hinder legs with all his force.

BALOU', a country or kingdom of Africa, bounded on the north by Egypt, on the weſt by Nubia, on the eaſt by the Red Sea, and on the ſouth by Abyſſinia; ſixty leagues in length, and forty in breadth. The inhabitants are Mahometans, but the country is not well peopled.

BALOU, a town of Aſia, in Armenia; twenty-five miles north-weſt of Cars.

BALS, a river of Weſt Greenland, which runs into the ſea. Lat. 64. 30. N. lon. 50. 10. W. Greenwich.

BAL'SA, anciently a town of Luſitania in the Ager, Cunæus; now *Tavira*, capital of Algarva.

BAL'SAM, *ſ.* [*balſam*, Teut. *baum*, Fr. *balſamum*, Lat. of *βαλσαμον*, Gr.] A name given to certain oily, reſinous, and odorous, ſubſtances, procured by making inciſions in the outer bark of trees or plants. They are originally liquid, but ſomewhat thick, and in ſome inſtances flow ſpontaneouſly from the plant which produces them. Theſe are called natural balſams, to diſtinguiſh them from pharmaceutical or chemical compoſitions that bear the ſame name. Balſams are only *reſins* in their liquid ſtate, though they are often found to be combined with a conſiderable proportion of gum, in which ſtate they are called *gum reſins.* Reſins not ſo combined are only ſoluble in vinous ſpirits and oils. They cannot be diſſolved by water, nor are they volatile in the heat of boiling water; but they are fuſible in a ſmall degree of heat, and readily inflammable on the contact of any flaming or ignited body. Balſams which are of the nature of gum reſins can only be diſſolved by a mixture of ſpirit and water. See CHEMISTRY.

Balſamic medicines are warm and ſtimulating. Under this denomination come what we commonly call nervous and antiparalytic medicines, as alſo many cordial tinctures and other compounds of ſimilar properties. The principal medicines belonging to this claſs, which are retained in our modern pharmacopœias, are amber, benzoin, ſtorax, the balſams of Peru and Tolu, &c. &c. But though many writers have conſidered that claſs of remedies which we call balſams as of great ſervice in medicine, yet there are others who entertain great doubts of their efficacy. And indeed it muſt be admitted, that where they are deſigned to act locally, as on the lungs for inſtance, balſams labour under a moſt important defect; for they muſt take a great circuit in moſt inſtances, before they can arrive at the diſeaſed part; by which means they not only operate ſlowly, but are much weakened by the action of the ſtomach and blood-veſſels, and by the intermixture of other fluids. Where balſams are chiefly given, the ſeat of the diſorder is generally in the viſcera; where a medicine can only arrive by the common conveyance of the blood; and how long, from its being taken into the ſtomach, muſt ſuch a medicine be, and how many alterations muſt it undergo in the divers parts of the body it paſſes through, before it comes to the part affected! Though the lungs are, by their ſituation, ſo near the ſtomach, yet a medicine cannot arrive there till it has taken its courſe through the lacteals, paſſed all the meanders of the meſentery, gone up with the chyle into the ſubclavian vein, and there entered the blood; and, after all, it has only the chance of coming to the part in ſuch a quantity, as with regard

gard to the whole medicine which entered the blood, bears the ſame proportion, as the blood in the pulmonary artery bears to all the blood in the other arteries. Theſe conſiderations led the biſhop of Cloyne to prefer tar-water to all other balſamics; but, notwithſtanding this reaſoning on the ſubject, we know from experience, that, let their *modus operandi* be what it may, the ſtimulating gums, or the balſams prepared from them, are capable of doing conſiderable ſervice in the treatment of diſeaſes, particularly thoſe ariſing from debility.

Balsam of Mecca, or *Balm of Gilead*, as a popular medicine has been held in the greateſt eſteem, though there are ſome who hold that of Peru to be equal to it in virtue. It is drawn by inciſion from a tree of the ſame name growing in Egypt and Judea, and in Arabia Felix, which is held ſo precious, that it makes part of the ſpecial revenue of the grand ſignior, without whoſe permiſſion, Dr. Lewis aſſerts, none are allowed to be planted or cultivated. It is unqueſtionably a very valuable medicine. It is of the ſame uſe with capivi in gonorrhœas, and is excellent in ſome complaints of the kidneys, and is by ſome perſons thought of ſo much efficacy in diſeaſes of the lungs, as to be eſteemed a cure for conſumptions. But, though it does not abſolutely deſerve that title, yet with proper management it may do great ſervice in them. Externally it has alſo been of conſiderable advantage in the cure of ulcers, &c. For internal uſe it ſhould be given in boluſes, or elſe diſſolved by triture with the yolk of an egg, in the form of a mixture. For particulars of the culture and preparation of this balſam, ſee Amyris, vol. i. p. 501.

Balsam (Luccatellus's), an old and not ineffectual though nauſeous remedy for coughs of long ſtanding. The college have lately rejected it from their pharmacopœia. It is compoſed of oil two parts, and turpentine and wax each one part; with ſome red ſanders to colour and improve its ſmell.

Balsam of Peru, is of three kinds; or rather, it is one and the ſame balſam, having three ſeveral names: 1. Balſam of inciſion, which is a white glutinous reſin, oozing at an inciſion in the tree, and afterwards thickened and hardened. This is excellent for ill-conditioned ulcers, and much reſembles the opobalſamum, except in ſmell, which diſtinguiſhes it. 2. Dry balſam, which is diſtilled from the tips of branches cut off, to which are faſtened little veſſels to receive the liquor, which at firſt is like milk, but reddens by being expoſed to the ſun. 3. The balſam by lotion, which is blackiſh, and is drawn from the bark, roots, and leaves, of the tree, bruiſed and boiled together. This is alſo uſed for the cure of wounds, like the white balſam; and, on account of its excellent ſmell, by the perfumers. The virtues of this balſam as a cordial, pectoral, and diuretic, are very great. It is given with ſucceſs from five to ten drops for a doſe, in conſumptions, aſthmas, nephritic complaints, obſtructions of the viſcera, and ſuppreſſions of the menſes. It is beſt taken dropped on ſugar; the yolk of an egg will indeed diſſolve it, and it may that way be made into an emulſion, but it is more acrid in that form than when taken ſingly. It is often made an ingredient in boluſes and electuaries; and enters into ſome of the officinal compoſitions. For the tree that produces this balſam, ſee Myroxylon.

Balsam of Capahu, or Copaiba, vulgarly Capivi, comes from Braſil in earthen bottles. There are two ſorts, the one bright and thin, the other thick; the firſt white, of a reſinous ſmell; the other a little more on the yellow. Both are uſeful for wounds: the Jews uſe this balſam after circumciſion to ſtop the blood. Many of the Americans call all odoriferous reſins and ſweet-ſcented gums *copal*; and the word *iba*, or *iva*, is the name for a tree; by which the etymology of *copaiva* eaſily appears. Having the property common to all terebinthinates of getting into the urine in an unaltered ſtate, and poſſeſſed of all its aſtringent and ſtimulating properties, it is found of uſe in the cure of gleets, fluor albus, &c. It alſo poſſeſſes the uſual properties of the balſams, and is therefore very advantageouſly adminiſtered in coughs and other pulmonary affections. Its heat and acrimony, however, render it hurtful in all inflammatory caſes, and it is ſometimes liable to produce very alarming effects when given too largely in urinary complaints. The balſam of copaiba is frequently adulterated with olive oil, and oil of turpentine: indeed the near reſemblance it bears to this laſt, has occaſioned them to be ſometimes confounded; though they may be eaſily diſtinguiſhed both by their conſiſtence and colour; turpentine being thicker, and of a vitreous caſt, and the balſam more inclining to yellow. It is alſo more odorous, as well as ſharper and more bitter to the taſte. This balſam yields a very large proportion of eſſential oil, by diſtillation with water, even to the quantity of five or ſix ounces from a pound; and the chemiſts who know this, adulterate their oils, either by mixing them with the oil of copaiba, or more artfully, by putting a proper quantity of this balſam with the ingredients into the ſtill, and ſo drawing off the oil of both mixed intimately together: and there ſeems no eaſy way of detecting this fraud. See Copaifera.

Balsam of Tolu, is at firſt a liquid reſin, which, as it grows old, becomes of the colour and conſiſtence of Flanders glue. It is obtained by inciſion from ſome trees growing in New Spain; where the inhabitants receive it in little veſſels of black wax. In taſte and ſmell it reſembles balm of Gilead; and, as it grows old, it takes the conſiſtence of a dry balſam. It is an excellent balſamic remedy, eſpecially for diſeaſes of the lungs. It cures catarrhs and coughs, and protects the throat from tickling defluxions, &c. There is a ſyrup of it in the ſhops; but the beſt form of adminiſtering it is in ſubſtance mixed with an equal proportion of honey; or elſe diſſolved in ſome ſpirituous menſtruum, in which ſtate it is ſimilar to Sir John Hill's balſam of honey. It takes its denomination from a place called Tolu, ſituated between Carthagena and Nombre de Dios.

Balsam (Hungarian), is a ſpecies of oil, or liquid reſin, oozing from a coniferous tree growing on the Carpathian mountains, to which the Hungarians attribute many virtues. (Ephem. Acad. N. C. Cent. 7. Obſ. 2. p. 4.) The virtues of this balſam, internally taken, or externally applied, are ſaid to be very great, and not inferior to thoſe of the oriental balſam. But whether either deſerve the commendations beſtowed on them, and how far they excel the common turpentine, is a queſtion that muſt be left to impartial practitioners to decide.

Balsam of Liquid Amber, is a clear liquid reſin, produced by a tree in New Spain, called by the natives *oſoſol*; in ſome degree reſembling ambergriſe in ſmell, whence its name. This balſam is liquid; in which ſtate it is called *oil of liquid amber*, and when old, *balſam of liquid amber*; it comes from both the Spains, in barrels, but the genuine is very rare among us.

Balsam (New), reſembles balſam of Tolu in ſmell and colour, and is procured in the manner of oil of bays, from a red fruit in the iſland of St. Domingo. It is found excellent for wounds and ulcers, and eſpecially for fiſtulæ in ano.

Balsam is alſo a term applied to a mineral ſubſtance, of a fragrant quality, extracted from a kind of ſtones diſcovered in a mine near Bergamo in Italy. (Phil. Tranſ. No. lxxix. p. 3059; or, Abridg. vol. ii. p. 460.) This is more particularly called, by way of diſtinction, the *mineral balſam*. The diſcoverer was Sig. Caſtagna. Its chief uſe is in diſorders of the uterus; on which account it is in great eſteem among the Genoeſe, to relieve women after labour. Some have alſo found it of great benefit in the phthiſis pulmonalis.

Balsam is alſo a name given to certain factitious ſubſtances, made by chemiſts and apothecaries in imitation of the native balſams. Theſe are called, by way of diſtinction, factitious or artificial balſams. We have two different compoſitions of balſams, in imitation of the true or Egyptian balſam; one by Mathiolus, the other by Euricus Cordus,

Cordus. Pomet has alſo given a method of imitating one of the native balſams.

BALSAM of ANTIMONY, a famous medicine deſcribed by Baſil Valentine in his *Currus Antimonii Triumphalis*. This author has related many incredible things in its praiſe: but Kerkring, in his commentaries on that work, declares, that all he has ſaid of it is ſhort of its real praiſe; and that, in particular, cancers were to be cured by it: himſelf having, as he informs us, performed a perfect cure on a breaſt condemned to be cut off, by anointing it with this balſam, and giving the common internal remedies. Both theſe gentlemen, however, are very cautious of giving the proceſſes for this and the like medicines in intelligible terms; but they acknowledge, that it contains all the virtues of antimony.

BALSAM of SULPHUR, is a ſolution of the flowers of ſulphur in oil: it is made by boiling the two together over a ſlow fire for the ſpace of an hour, or till the ſulphur be totally incorporated with the oil into a dark red balſam. The balſams of ſulphur are named from the particular oils which enter into their compoſition. Thus if it be made with the eſſential oil of turpentine, it is called *terebinthinated balſam of ſulphur*; if made with the eſſential oil of aniſeed, it is called *aniſated balſam of ſulphur*. Theſe are the two that have been moſt uſed. When made with the oil of nuts, it was called *Rulland's balſam of ſulphur*. The new name given to the common balſam of ſulphur by the college is *oleum ſulphuratum*; and that formerly called balſamum ſulphuris barbadenſe, they have named *petroleum ſulphuratum*. Theſe are of uſe both in external and internal caſes. Helmont, the inventor of this remedy, extols it for all diſeaſes of the breaſt; and in many reſpects juſtly: yet Boerhaave rejects all internal uſe of it, as too hot and acrimonious. Bartholin alſo obſerves, that it ſometimes cauſes the heartburn.

BALSAM of SATURN, is prepared by diſſolving the ceruſſa acetata in oil of turpentine; digeſting the mixture till it acquires a red colour. This is found to be a good remedy for cleanſing foul ulcers.

BALSAM, or BALM, among alchemiſts, ſometimes denotes the ſpirit of common ſalt extracted in a particular manner. The preparation is thus: they diſſolve the ſalt, and place the ſolution of it, well clarified, in horſe-dung, to putrefy, for the ſpace of two or three months, and then diſtil it ſtrongly with a ſand heat; upon which there ariſes a precious unctuoſity, wherein things the moſt corruptible being ſteeped, are ſaid to remain entire for ever! It is ſaid, that it was by this means ſome of the ancients preſerved dead bodies entire, without reducing them to mummy: and particularly that of the woman mentioned by Volaterranus to be found in a mauſoleum near Albano, in the time of pope Alexander VI. which was by his order thrown ſecretly into the Tiber, to prevent idolatry; ſhe being found as freſh as when alive, though ſhe had been dead near 1300 years. We read of a balſam of this kind, called *dead balſam*, which was a liquor prepared with myrrh and aloes, diſſolved in ſpirit of wine, chiefly uſed for drying and abſorbing the moiſture of dead bodies.

BALSAM of the PHILOSOPHERS, *balſamum philoſophorum*, is one of thoſe enigmatical terms, whereby they expreſs *aurum potabile*.

BALSAM is ſometimes uſed, in eccleſiaſtical writers, for the ſacred chryſm. This is otherwiſe denominated *balſamelæum*.

BALSAM (Vulnerary), a form of medicine preſcribed in the London Diſpenſatory, intended to ſupply the place of the tincture commonly called the *friar's balſam*, ſo famous for curing old ulcers. The college have lately named it *tinctura benzoes compoſita*.

BALSAMA'TIO, *ſ.* [from *balſamum*, a balſam.] The embalming of dead bodies.

BALSA'MIC, or BALSA'MICAL, *adj.* Having the qualities of balſam; unctuous; mitigating; ſoft; mild; oily. —If there be a wound in my leg, the vital energy of my ſoul thruſts out the *balſamical* humour of my blood to heal it. *Hale.*—The aliment of ſuch as have freſh wounds ought to be ſuch as keeps the humours from putrefaction, and renders them oily and *balſamic*. *Arbuthnot.*—The term *balſamic* is a very lax one; it includes medicines of very different qualities, as emollients, detergents, reſtoratives, &c. but in medicines of all theſe kinds there ſeems to be this requiſite in them, viz. that they be ſoft, fragrant, and adheſive, alſo that by their ſtimulus they have a diſpoſition to invigorate. Medicines of this tribe are generally required for complaints whoſe ſeat is in the viſcera; and, as they cannot be conveyed there but by the common road of the circulation, it follows, that no great effects can be expected from them but by their long continuation. Hoffman calls by the name of *balſamics*, thoſe medicines which are hot and acrid, and alſo the natural balſams, gums, &c. by which the vital heat is increaſed.

BALSA'MINA, *ſ.* in botany. See IMPATIENS.

BALSA'MITA, *ſ.* in botany. See ACHILLEA, CHRYSANTHEMUM, and TANACETUM.

BAL'SAS, a town of South America, in Peru, and juriſdiction of Caxamarca, near the river Maragnon.

BAL'SHAM (Hugh de), was biſhop of Ely, and founder of Peter-houſe college, Cambridge. He was equally eminent for piety and munificence; and died in 1286.

BAL'SORA. See BASSORA.

BALTA'GI, *ſ.* among the Turks, porters, and hewers of wood, in the court of the grand ſignior; who alſo mount on horſeback when the emperor rides out. Part of them alſo, who, for that purpoſe, muſt be caſtrated, keep watch at the gates of the firſt and ſecond courts of the ſeraglio. Theſe laſt are called *capigi*, and their commander *capigi paſcha*.

BAL'TAS, a town of Courland, twenty miles eaſt of Seelburg.

BALTCHUT'ZKO, a town of Siberia, forty-eight miles eaſt of Kraſnoiarſk.

BALTELUK', a town of European Turkey, in the province of Bulgaria, twelve miles north-eaſt of Varna.

BALTHA'ZAR, [בלתצר of בלי without, and איצר treaſure, Heb. without treaſure.] A proper name of men.

BALTHAZARI'NI, a celebrated Italian muſician, who flouriſhed about the year 1581.

BAL'TIC, an inland ſea, on the N.W. part of Europe, formed by the coaſts of Sweden, Ruſſia, Courland, Pruſſia, Germany, and Denmark: there are a great number of iſlands in this ſea. Aland, which is ſituated in the northern part, and divides it from the Gulf of Bothnia, Dago, and Eſel, or Oeſel, near the coaſt of Ruſſia, Gothland, and Ocland, belonging to Sweden, Rugen, a part of Pomerania, Bornholm, Falſter, Moen, or Mona, and Laland, belonging to Denmark, beſides a number of other ſmaller ones; the iſlands of Zealand and Funen ſeparate it from the Scaggerack, or Cattegat Sea. The length from ſouth-weſt to north-eaſt rather more than 200 leagues, and its breadth between Sweden and Germany about twenty-five leagues, but in ſome places fifty. The general paſſage for veſſels from the North Sea into the Baltic, is through a narrow paſſage between the coaſt of Sweden and the iſland of Zealand; and a toll is paid by veſſels to the king of Denmark, for the purpoſe of maintaining lighthouſes as a guide for mariners in the night. Several large rivers empty themſelves into the Baltic, as the Dwina, the Oder, the Viſtula, the Rega, the Perſante, the Niemen, &c. which give a degree of freſhneſs to the water, and probably make it more liable to be frozen, which it generally is for three months in the winter.

BAL'TIMORE, a village of Ireland, in the county of Cork, with a good harbour, ſituated on the eaſt ſide of a bay to which it gives name. It is a borough, and ſends two members to the Iriſh parliament. It was formerly a place of trade, but, being plundered by the Algerines in 1631, it has never recovered itſelf: thirteen miles ſouth of Bantry.

BALTIMORE, a county of Maryland, in North America; originally ſettled by lord Baltimore, whence its name,

name. It is the moſt northern county of the ſtate, on the weſt ſide of Cheſapeak-bay.

Baltimore, a ſea-port town of North America, in the ſtate of Maryland, ſituated at the extremity of Cheſapeak-bay. It is reckoned the fourth in ſize, and fifth in trade, in the United States. It contains nine churches, and about 12,000 inhabitants: a creek divides it into two parts, Baltimore Town and Fell's Point; to the latter of which large veſſels can ſail, but only ſmall veſſels come up to the town. It is forty-five miles north-eaſt of Annapolis. Lat. 39. 21. N. lon. 76. 30. W. Greenwich.

Baltimore-Bird. See Oriolus.

BALTHAZARI'NI, a celebrated Italian muſician, who flouriſhed about the year 1581.

BAL'TINGLASS, a town of Ireland, in the county of Wicklow, ſeventeen miles ſouth of Naas, and twenty-five weſt of Wicklow.

BAL'TRUM, an iſland in the German Ocean, near the coaſt of Eaſt Frieſland, about four miles long, and one and a half broad. Lat. 53. 47. N. lon. 24. 42. E. Ferro.

BALT'SHIK, a town of European Turkey, in the province of Bulgaria, eighteen miles north-eaſt of Varna.

BALTUR'TA, a ſalt lake of Aſiatic Ruſſia, in the government of Orenburg, 144 miles ſouth-weſt of Upha. Lat. 50. 0. N. lon. 69. 50. E. Ferro.

BALTIIS'KOI, or Port Baltic, a ſea-port town of Ruſſia, in the government of Revel, on the ſouth coaſt of the entrance into the gulph of Finland, thirty-ſix miles weſt of Revel, and 140 north-north-weſt of Riga. Lat. 59. 16. N. lon. 41. 10. E. Ferro.

BALT'ZAR (Thomas), a native of Lubec, and an eminent muſical compoſer, eſteemed the fineſt performer on the violin of his time. He came to England in 1658, and lived two years in the houſe of Sir Anthony Cope of Hanwell in Oxfordſhire. He was a great competitor of Davis Mell, a clockmaker, who was, till Baltzar came, allowed to be the fineſt performer on the violin in England; and after his arrival he divided with him the public applauſe, it being agreed that Mell excelled in the fineneſs of his tone and the ſweetneſs of his manner, and Baltzar in the power of execution and command of the inſtrument. Baltzar alſo firſt taught the Engliſh the practice of ſhifting, and the uſe of the upper part of the finger-board. He was buried in Weſtminſter-abbey, the 27th of July, 1663.

BAL'VE, a town of Germany, in the circle of the Lower Rhine, and ſeat of a bailiwick, in the duchy of Weſtphalia, ſituated on the Hohn. It is ten miles ſouth-weſt of Arenſberg, and thirty-eight north-eaſt of Cologne.

BA'LUSTER, *ſ.* [according to Du Cange, from *baluſtrinum*, low Lat. a bathing-place.] A ſmall column or pilaſter, from an inch and three quarters to four inches ſquare or diameter. Their dimenſions and forms are various; they are frequently adorned with mouldings; and are placed with rails on ſtairs, and in the fronts of galleries in churches, &c. as deſcribed under Architecture. In 1782, a patent was granted to Mr. Francis Underwood, of St. Mary-le-Bone, in London, for compoſition baluſters, which were caſt in moulds, either plain or ornamented, and are neater and much more durable than wood. The compoſition, and method of making them, are as follow, taken from the patent: "I, Francis Underwood, do declare, that my new invention conſiſts of the following materials, and is performed by preparing a compoſition made of grain or block tin, regulus of antimony, and copper, or zink, mixed together, in ſuch proportions of the harder and ſofter metals as are requiſite, to bring the maſs or compoſition to the degree of hardneſs and ſtiffneſs which the nature or purpoſe of the work requires. Then, by making or providing moulds of iron, braſs, copper, or other hard metal, or ſtone, either plain or for ornaments, as ſcrolls, leaves, huſks, ſhells, flowers, or whatever ornaments the work or drawings after which I am to work may require; within which moulds I place plain rods, bars, or wires, of iron, braſs, copper, ſteel, or other ſtrong or hard metal, the length or ſize of the baluſters, and of whatever form or ſize may be requiſite to ſtrengthen the work. I then caſt the compoſition firſt mentioned upon thoſe rods, bars, or wires, in the moulds; and I afterwards form the work, thus prepared, by bending, ſetting, and ſoldering, it, to whatever form is wanted, either by way of frame, for the reception of baſſo-relievos of plaſter of Paris, paintings, drawings, or ornaments of any other kind; or to exhibit the ornaments of this compoſition. And, in the ſetting or fixing of baluſtrades upon wood or ſtone, with a pediment or baſe, I firſt ſet the baluſter plain, or without its plinth, into the wood or ſtone, and then, being provided with the proper mould for the plinth to go round the foot of the rail or baluſter, I caſt the compoſition round the baluſter when fixed. And, in order to the making and ornamenting of chimney-pieces, I make uſe of ſmall rods or wires, upon which to caſt the before-named compoſition; which I bend or turn, and ſolder, ſo as to become a frame, of whatever figure or dimenſions I want, to receive plate or other glaſs, either plain or ſilvered; behind which, if plain, I place paintings, drawings, baſſo-relievos, or other ornaments; and which chimney-pieces I finiſh round with mouldings, ſtrengthened with bars or rods, as aforeſaid, if requiſite; and with pediments of the ſame metal, or compoſition, caſt in moulds, and caſed or covered behind with a plate of the ſame, or any other kind of metal, or other body." The term of the patent being expired, any perſon who chuſes may of courſe adopt the ſame method of making them.

BA'LUSTRADE, *ſ.* An aſſemblage of one or more rows of little turned pillars, called *baluſters*, fixed upon a terrace, or the top of a building, for ſeparating one part from another.

BA'LUX, *ſ.* [βαλλεκα, Gr.] The ſand of rivers which is mixed with gold.

BALU'ZE (Stephen), a French writer, born in 1631, was librarian to M. Colbert. In 1693 he obtained a penſion, with the poſt of director of the royal college, for writing the lives of the popes of Avignon; both which advantages he ſoon loſt in the fluctuation of court parties. M. Baluze is much more noted for collecting ancient MSS. and illuſtrating them by notes, than famed for his own compoſitions.

BALYUR', or Baliur, a ſea-port of Africa, in the kingdom of Dancali, about fourteen hours journey weſt from Babel-Mandel. It is remarkable only for being the landing-place of the Abyſſinian patriarch Alphonſus Mendez, with his jeſuits and Portugueſe, on the 3d day of April, 1724.

BALZAC' (John Lewis Guez de), born at Angouleſme in 1595. Voltaire allows him the merit of having given harmony to the French proſe, but cenſures his ſtyle as too bombaſt. The critics of his own time gave him no little diſquiet; but, getting rid of their diſputes by his moderation, he refined his ſtyle and genius, and got by his letters and other writings the reputation of being the moſt able writer in France. He was drawn from his retirement by the hopes of making his fortune under cardinal Richelieu, but in a few years he retired again, diſguſted with the ſlaviſh dependence of a court life. All he obtained was a penſion of 2000 livres, with the titles of counſellor of ſtate, and hiſtoriographer of France. He died in 1654; and was buried in the hoſpital of Notre Dame des Anges, to which he bequeathed 12,000 livres. He left an eſtate of 100 franks per ann. for a gold medal to be beſtowed every two years for the beſt diſcourſe on ſome moral ſubject. Beſides his letters, he wrote a work called *Oeuvres Diverſes*, i. e. on various ſubjects; The Prince; The Chriſtian Socrates, &c. and many other pieces; all of which have been publiſhed in two volumes folio.

BAM, a town of Perſia, in the province of Kerman, 130 miles eaſt-ſouth-eaſt of Sirgian.

Bam, or Beam, being initials in the name of any place, uſually imply it to have been woody; from the Saxon *beam*, which we uſe in the ſame ſenſe to this day.

BAMAN'KOI, a town of Africa, in the country of Loango, and province of Angoi.

BAM'BA, a province of the kingdom of Congo in Africa. It is ſituated between the rivers Ambriſi and Loſe; the laſt of which parts it from Pemba on the eaſt, as the Ambriſi does from the province of Sogno on the north. Along the ſea-coaſts it extends northward to the river Lelunda: and on the ſouth to that of Danda, which parts it from the kingdom of Angola. The ſoil of this province is very fertile; and would produce all the neceſſaries of life in great abundance, were the inhabitants induſtrious in its cultivation. Here is alſo the fiſhery of the zimbis, or little ſea-ſnail, whoſe ſhell is the current money not only in this and the neighbouring kingdom, but alſo in the moſt diſtant parts of Africa. Here are alſo mines of gold, ſilver, quickſilver, copper, tin, and iron; but none except the iron mines are allowed to be worked.

Bamba, a town in the province of the ſame name, large and populous, about ſeventy leagues from the ſea, and in the poſſeſſion of the Portugueſe.

BAMBA'LIO, *ſ.* [from βαμϐαλιων, to ſpeak inarticulately.] A perſon who ſtammers or ſtutters.

BAMBAMAR'CA, a town of Sonth America, in Peru, and juriſdiction of Patas, or Caxamarquilla.

BAM'BAN, a town of Egypt, on the Nile, forty-two miles ſouth-ſouth-eaſt of Aſna.

BAM'BERG, a biſhopric and principality of Germany, in the circle of Franconia; is bounded on the north by the principality of Cobourg and the Vogtland, on the eaſt by Brandenburg-Bayreuth and the eſtates of Nuremburgh, on the ſouth by the eſtates of Nuremberg and the principality of Schwartzenberg, and on the weſt by the biſhopric of Wurtzburg; about ſixty miles in length, and forty in breadth. The ſoil is rich and fertile, producing grain and fruit in abundance, ſaffron, and liquorice; and near the city of Bamberg in particular, figs, lemons, and oranges: the inhabitants alſo raiſe a great number of cattle. The principal rivers are the Mayn, (which riſes in this principality,) the Rotach, the Itz, and the Rednitz, beſides ſmaller ones. The principal towns are Bamberg, Forchheim, Ebermanſtads, Weiſchenfeld, Kupferberg, Lichtenfels, and Vilſeck. At the diet of the empire, the biſhop takes the fourth place in the council of the ſpiritual princes. The inhabitants are Roman Catholics.

Bamberg, a city of Germany, and capital of the biſhopric, in the circle of Franconia, is ſituated on hills, and interſected by the river Rednitz. The city or part encloſed in walls is ſmall, but the ſuburbs are extenſive. It is thirty miles north-north-weſt of Nuremberg, ninety-two eaſt of Frankfort on the Mayn, and 110 eaſt of Mentz. Lat. 49. 51. N. lon. 28. 36. E. Ferro.

Bamberg (New), a town of Germany, in the circle of the Lower Rhine, twenty miles ſouth-weſt of Mentz, and eight ſouth of Bingen.

BAMBOC'CIO, a celebrated painter of converſation, landſcape, cattle, &c. was born at Laeren, near Narden, in 1613. His name was Peter Van Laer; but in Italy they gave him the name of Bamboccio, on account of the uncommon ſhape of his body, the lower part being one-third longer than the upper, and his neck ſo ſhort that it was buried between his ſhoulders. Providence, however, made ample amends for his deformity. He was held in the higheſt eſteem, not only on account of his extraordinary abilities, but alſo for the amiable qualities of his mind. He ſtudied nature inceſſantly; obſerving with a curious exactneſs every effect of light on different objects, at different hours of the day; and, whatſoever incident afforded pleaſure to his imagination, his memory conſtantly retained. His ſtyle of painting is ſweet and true; and his touch delicate, with great tranſparency of colouring. His figures are well-proportioned, and correctly deſigned; and, although his ſubjects are chiefly taken from the lower order of nature, ſuch as plunderings, playing at bowls, inns, farrier's-ſhops, cattle, or converſations, yet whatever he painted was ſo excellently deſigned, ſo happily executed, and ſo highly finiſhed, that his manner was adopted by many of the Italian painters of his time. His works are ſtill univerſally admired, and he is juſtly ranked among the firſt claſs of the eminent maſters. In the latter part of his life, he was ſeverely tormented with an aſthmatic complaint, which he endured with much impatience; and it is reported, that, as the diſorder ſeemed to him inſupportable, he threw himſelf into a canal to ſhorten his miſery, and was drowned. His death happened in 1673.

BAMBOO', or Bambu', *ſ.* in botany. See Arundo and Nastus.

Bamboo-Habit, a Chineſe contrivance by which a perſon who does not know how to ſwim may eaſily keep himſelf above water. The following deſcription of it is from a letter to the author of the Seaman's Preſervative: "In the year 1730, I was paſſenger in a ſhip from Batavia to China, freighted by Engliſh, Chineſe, and Portugueſe. Near the coaſt of China we met one of thoſe ſtorms called a *tuftoon*, or 'great wind,' which carried away all our maſts, bowſprit, and rudder; and in our hold we had ſix feet of water, expecting every moment the ſhip would founder. We conſequently were conſulting our preſervation: the Engliſh and Portugueſe ſtood in their ſhirts only, ready to be thrown off: but the Chineſe merchants came upon deck, not in a cork-jacket, but in a *bamboo-habit*, which had lain ready in their cheſts againſt ſuch dangers; and it was thus conſtructed; four bamboos, two before and two behind their bodies, were placed horizontally, and projected about twenty-eight inches. Theſe were croſſed by two others on each ſide, and the whole properly ſecured, leaving a ſpace in the centre for their body; ſo that they had only to put it over their heads, and tie the ſame ſecurely round the waiſt, which was done in two minutes, and we were ſatisfied they could not poſſibly ſink."

To BAMBOO'ZLE, *v. a.* [a cant word not uſed in pure or in grave writings.] To deceive; to impoſe upon; to confound.—After Nick had *bamboozled* about the money, John called for counters. *Arbuthnot.*

BAMBOO'ZLER, *ſ.* A tricking fellow; a cheat.—There are a ſet of fellows they call banterers and *bamboozlers*, that play ſuch tricks. *Arbuthnot.*

BAM'BOROUGH, [of *Bebbanburgh*, Sax. from queen Bebba, who erected it, ſays Bede.] An ancient town on the coaſt of Northumberland; which, though now only an inconſiderable village, was once a royal borough, and ſent two members to parliament. It even gave name to a large tract extending ſouthward, which was called *Bamboroughſhire*. It had alſo three religious foundations. Its very ancient caſtle ſtands on an almoſt perpendicular rock cloſe to the ſea, and acceſſible only on the ſouth-eaſt ſide, on a ſpot where, according to the monkiſh hiſtorians, there ſtood the caſtle or palace of the kings of Northumberland; built, as it is ſaid, by king Ida, who began his reign about the year 559. Part of the preſent ruins are by ſome ſuppoſed to be the remains of king Ida's work. In the reign of Elizabeth, Sir John Forſter, warden of the marches, was made governor of it, after the battle of Muſſelburgh; and his grandſon John obtained a grant of both caſtle and manor from James I. His deſcendant Thomas fortified both in 1715; but his maternal uncle, Nathaniel Crew, biſhop of Durham, purchaſed and bequeathed them to charitable uſes. The ruins are ſtill conſiderable; but, in the year 1757, the truſtees for lord Crew's charity began the repairs of the keep or great tower; the direction and management being committed to Dr. Sharp archdeacon of Durham, one of their number; who has made a moſt judicious and humane application of his lordſhip's generous bequeſt. The upper parts of the building have been formed into granaries; whence, in times of ſcarcity, corn is ſold to the indigent without any diſtinction at four ſhillings per buſhel. A hall and ſome ſmall apartments are reſerved by the doctor, who frequently reſides here to ſee that his noble plan is properly executed. Among the variety of diſtreſſed who find relief from the judicious diſpoſition of this charity, are the mariners navigating this dangerous coaſt, for whoſe benefit a conſtant watch is kept on the top of the tower; from whence ſignals are given to the fiſhermen of Holy Iſland when any ſhip is diſcovered in diſtreſs, theſe fiſhermen by their ſituation being able to put off their boats when none from the land can get over the breakers. The ſignals are ſo regulated as to point out the particular place where the diſtreſſed veſſel lies. Beſides which, in every great ſtorm, two men on horſeback patrole the adjacent coaſt from ſun-ſet to ſun-riſe, who, in caſe of any ſhipwreck, are to give immediate notice at the caſtle. Premiums are likewiſe paid for the earlieſt information of any ſuch misfortune. By theſe means the lives of many ſeamen are preſerved, who would otherwiſe periſh for want of timely aſſiſtance. Nor does this benevolent arrangement ſtop here. The ſhipwrecked mariner finds an hoſpitable aſylum in this caſtle; and is here maintained for a week or longer, as circumſtances may require. Here, likewiſe, are ſtorehouſes for depoſiting the goods which may be ſaved; inſtruments and tackle for weighing and raiſing the ſunken and ſtranded veſſels; and, to complete the whole, at the expence of this fund, the laſt offices are decently performed to the bodies of ſuch drowned ſailors as are caſt aſhore.

BAMBOU'K, a country of Africa, of which the following account is given by the abbé Raynal: "In the interior of Africa, under the 12th or 13th degree of north latitude, there is a large country, known by the name of *Bambouk*. It is not ſubject to a particular king; but governed by village lords, called *farims*. Theſe hereditary and independent chiefs are all obliged to unite for the defence of the ſtate, when it is either attacked as a community, or only in one of its branches. The ſoil of this country is dry and barren. It produces neither maize, rice, nor pulſe. The inſupportable heat it is ſubject to, proceeds in part from its being ſurrounded by high mountains, which prevent the wind from refreſhing the air. The climate is as unwholeſome as it is diſagreeable: vapours, which continually iſſue from the bowels of a ſoil replete with minerals, render this country unfit to live in, eſpecially to ſtrangers. It is gold that hath made this miſerable country an object worthy of notice; gold, which in the eyes of the covetous man ſeems to compenſate for all the evils of nature, though in reality it increaſes them all. This metal is ſo common in this country, that it is found almoſt indiſcriminately every where. To obtain it, ſometimes it is ſufficient to ſcrape the ſurface of the earth, which is light, and mixed with ſand. When the mine is very rich, it is digged only to the depth of a few feet, and never deeper; though it has been obſerved, that the lower it was digged, the more gold the ſoil afforded. The miners are too indolent to purſue a toil which conſtantly becomes more tedious, and too ignorant to perceive the inconveniences it would be attended with. Their negligence and their folly are in this inſtance ſo extraordinary, that in waſhing the gold, in order to ſeparate it from the earth, they only preſerve the larger pieces: the light parts paſs away with the water, which flows down an inclined plain. The inhabitants of Bambouk do not work theſe mines at all times, nor are they at liberty to do it when they pleaſe. They are obliged to wait till private or public wants determine the farims to grant them permiſſion. When it is proclaimed, all who are able to avail themſelves of this advantage meet at the appointed place. When their work is finiſhed, a diviſion is made. Half of the gold goes to the lord, and the remainder is equally diſtributed among the labourers. Thoſe who want gold at any other time than that of the general digging, ſearch for it in the beds of the rivers, where it is very common. The French and Engliſh have ſucceſſively been deſirous of appropriating to themſelves theſe real or imaginary riches. Some thought they could reach this country by the Niger, others by the Salum. Far from having ſucceeded in their attempts of becoming maſters of this country, they have not yet aſcertained its exiſtence. The unſucceſsfulneſs of paſt efforts hath redoubled the activity of ſanguine minds; ſenſible and judicious merchants have choſen to limit themſelves to a commerce much more important, which is that of ſlaves."

BAMBUKALAI'SI, a town in Aſiatic Turkey, in the province of Natolia, twelve miles north of Deguizlu.

BAMBU'SA, *ſ.* in botany, a genus of the claſs hexandria, order monogynia. The generic characters are—Calyx: none, except glume-like bractes ſcattered, often three under each ſpikelet, oblong-ovate, ſharp-pointed, concave, keeled, unequal, ſhorter than the floſcules, two oppoſite, the third leaning on the flat ſide of the ſpikelet; ſpikelets lanceolate, diſtichous, compreſſed, ſharp, nearly five-flowered. Corolla: glume two-valved; valve inferior oblong, ventricoſe, acuminate, towards the tip keeled and ſtreaked; interior lanceolate, flat, (with complicated margins,) ciliate, a little longer than the inferior and projecting from it; nectary two-leaved, flat, at the anterior ſide of the germ; leaflets ovate, acuminate, bearded at the tip, membranaceous. Stamina: filaments ſix, capillary, almoſt the length of the corolla; antheræ parallelopiped, two-cleft at the baſe. Piſtillum: germ oblong; ſtyle capillary, two-cleft; ſtigmas feathery. Pericapium: none. Seed: ſingle, oblong. For the reſt ſee ARUNDO, BAMBOS, and NASTUS. Gmelin, in *Syſt. Nat.* has made two genera of this, under the name of *bambus* and *naſtus*.

BAMFF, or BANFF, a ſhire of Scotland, comprehending part of Buchan, with the counties of Strathdevron, Boyn, Enzie, Strathaven, and Balvenie, extends thirty-two miles from eaſt to weſt, and thirteen in breadth from north to ſouth. On the ſouth it is ſeparated from part of Buchan by the river Ugie; on the eaſt it is watered by the Devron, and the German Ocean; on the weſt it is bounded by the Spey, and the county of Murray; on the ſouth-weſt, it borders on Badenoch and the Braes of Mar; and, on the north, it is confined by the Murray Frith. The face of the country is agreeably diverſified with hill and dale, not without woods, well watered with rivers, and exhibiting many ſeats and plantations. The air is pure and keen, the climate healthy, and the ſoil fertile, producing plentiful crops of corn. The county of Buchan, extending northwards from the river Ugie to the ſea, and weſtward as far as Devron, comprehending a tract of twenty miles in length and nine in breadth, is more free from hills and mountains than any other country of the ſame extent in Scotland. It is inhabited chiefly by Lowlanders, and gives the title of earl to the family of Erſkine. The county of Bamff abounds with the neceſſaries and comforts of life. The paſture-grounds yield ſheep, cattle, and horſes: the arable lands produce plenty of corn; while the rivers and ſea ſupply great quantities of fiſh. Various minerals have been found in different parts of the ſhire; and a piece of amber, as large as a horſe, was once caſt aſhore on the beach. In the mountainous diſtrict of Balvenie on the weſtern ſide of the ſhire, watered by the Spey, there is a noted rock, famous for bones and whetſtones. Here are alſo veins of alum-ſtone, and ſprings of alum-water. Strathallan, another diſtrict to the north-eaſt of Balvenie, abounds with ſuch plenty of lime-ſtone, that the inhabitants uſe it in building their houſes. Along this whole coaſt, there are ancient monuments, ſuch as cairns, tumuli, and huge ſtones ſtanding erect, which appear to be of druidical origin.

BAMFF, the capital of the ſhire of that name in Scotland, is pleaſantly ſituated on the ſide of a hill, at the mouth of the river Devron. It has ſeveral ſtreets; of which that with the town-houſe in it, adorned with a new ſpire, is very handſome. This place was erected into a borough by virtue of a charter from Robert II. in 1372, endowing it with the ſame privileges, and putting it on the ſame footing, with the burgh of Aberdeen; but tradition ſays it was founded in the reign of Malcolm Canmore. It gives title of baron to the Ogilvie family. The harbour is very bad, being often ſtopped by the ſhifting of the ſands; the pier is therefore placed on the outſide. Much ſalmon is exported from hence. About Troophead ſome kelp is made; and the adventurers pay the lord of the manor 50l. per ann. for the liberty of collecting the materials. Near the town is a magnificent ſeat lately built by the earl of Fife. Lat. 57. 40. N. lon. 2. 12. W. Greenwich.

BAMIYAN', a city of Aſia, in the province of Zableſtan, ten days journey from Balkh, and eight from Gazna. It is remarkable only for its dreadful cataſtrophe when taken by Jenghiz Khan in 1221. At that time the city belonged to ſultan Jalallodin, the laſt of the famous Mahmud Gazni's race. Jenghiz Khan was about to attack Gazna, that prince's capital; but was for ſome time prevented by the prudence and foreſight of the garriſon, which he had hoped would give him no trouble. In this, however, he was diſappointed. The people had for a long time expected an attack; and had therefore deſolated the country for five or ſix leagues round, while the peaſants had carried away every thing that could be of uſe to the beſiegers. Accordingly, Jenghiz Khan having erected wooden towers, and planted his engines upon them, was in a ſhort time obliged to give over his attacks, till the proper neceſſaries could be brought from a great diſtance. The walls of the city were very ſtrong, ſo that the engines of the Moguls made but little impreſſion; and the garriſon making frequent and furious ſallies cut off whole ſquadrons of their enemies, and frequently overthrew their towers and engines. This exceedingly enraged Jenghiz Khan; who one day returning from a fruitleſs attack, and hearing of the defeat of one of his generals by Jalallodin, he vowed to be revenged on Bamiyan. This coſt the life of one of his grandchildren; who, expoſing himſelf too much, was ſlain with an arrow. At laſt, by the numberleſs multitude of the Moguls, who continued the attack without intermiſſion, the city was taken, after the braveſt ſoldiers and officers of the garriſon had fallen in its defence. The mother of the young prince who had been killed, entering with the troops, and more deſerving the name of a fiend than a human being, cauſed the throats of all the inhabitants to be cut, without exception. She even gave orders to rip up the bellies of all the women with child, that not an infant might be left alive. In ſhort, to gratify the rage of this unfeeling woman, the buildings were levelled with the ground, and every living creature deſtroyed; inſomuch that the relentleſs Moguls themſelves gave this place the name of *Maubalig*, which ſignifies the 'unfortunate city.' A ſtrong caſtle has ſince been built out of its ruins.

BAM'MA, *ſ.* [from βαπτω, to immerge.] A kind of medicated pickle to ſop bread or other food in.

BAMOTH-BA'AL, one of the towns of the tribe of Reuben, which ſeems alſo to have had a temple of Baal on an eminence; lying eaſtwards, and not far from the river Arnon, and the territory of Moab. Jerome calls it *Bamoth*, a city of the Amorites, beyond Jordan, in the poſſeſſion of the ſons of Reuben. Whether the ſame with that mentioned Numb. xxi. is doubtful, from the diſagreement of interpreters; and yet we may admit it to be the place of encampment of the Iſraelites, and of Balaam's firſt ſtation, where he had the firſt view of the rear of the people.

BAMP'TON, a market town in Oxfordſhire, pleaſantly ſituated on a ſmall ſtream that runs into the Iſis, a little below the town, diſtant from London ſeventy miles. It is ſaid to have been a place of good repute even before the conqueſt; but at preſent there is not a building in the town that merits the notice of a traveller, except the church and the remains of an old caſtle; the former of which is a very ſpacious edifice, with a ſtately ſpire. What is moſt worthy of remark is, there are three vicars or portioniſts belonging to the church, whoſe ſeparate livings amount to about 230l. per annum; the pariſh of conſequence is very extenſive, conſiſting of ſix hamlets. It has a good fair for horſes on the 26th of Auguſt; but the weekly market, which was formerly on a Wedneſday, has been long diſcontinued.

Bampton, or Baunton (for Bathampton), an ancient inland borough-town in Devon, ſituated upon a branch of the river Ex, about mid-way from Exeter to Minehead. It ſtands in a valley, encompaſſed by hills. On the ſouth and ſouth-eaſt are two fine lime-rocks, which ſupply a great number of farmers in the neighbourhood, and employ many poor labourers. At the foot of the town runs a fine ſerpentine river called Bathan, which empties itſelf into the beautiful river Ex. The chief manufacture here are ſerges. There is a large venerable church, with a lofty tower, very romantic. The market-day is on Wedneſday: there are two fairs in the year, viz. Whit-Tueſday and the laſt Thurſday in October, remarkable for as good ſheep, in ſize and quality, as any in England. This town is weſt of London a hundred and ſixty-ſeven miles, north-weſt of Exeter twenty-two, Tiverton ſeven, and Dulverton five, miles. At the foot of the town is a fine mineral ſpring of water, drunk by the inhabitants and travellers for the benefit of their health. This borough formerly ſent two members to parliament; but then the inhabitants paid the expence of them; times are ſo much altered now, that, if any gentleman could renew the charter, he would doubtleſs be glad to pay his own expences, to name his colleague, and be returned to parliament. In 614 an obſtinate battle was fought here between the Saxons and the Britons, wherein the former were defeated.

BAN, *ſ.* [*ban*, Teut. a public proclamation, as of proſcription, interdiction, excommunication, &c.] Public notice given, whereby any thing is publicly commanded or forbidden. This word is moſt eſpecially uſed in the publication of intended marriages; which muſt be done on three ſeveral Sundays previous to the marriage, to the end, that, if any can ſhew juſt cauſe againſt ſuch marriage, they may have opportunity to make their objections. But the ſpiritual judge by a licence may diſpenſe with the formality of publication. But, if any perſons ſhall be married without either publication of bans, or licence, the marriage ſhall be void, and the miniſter officiating ſhall be tranſported. 26 Geo. II. c. 33. See Marriage.

I bar it in the intereſt of my wife;
'Tis ſhe is ſubcontracted to this lord,
And I her huſband contradict your *bans*. *Shakeſpeare.*

A curſe; excommunication; interdiction:

Bold deed to the eye
The ſacred fruit, ſacred to abſtinence,
Much more to taſte it, under *ban* to touch. *Milton.*

Ban, in commerce, a ſort of ſmooth fine muſlin, which the Engliſh import from the Eaſt Indies. The piece is almoſt a yard broad, and runs about 20½ yards.

Ban of the Empire, a public cenſure by which the privileges of any German prince are ſuſpended.—He proceeded ſo far by treaty, that he was proffered to have the imperial *ban* taken off Altapinus, upon ſubmiſſion. *Howell.*

To Ban, *v. a.* [*bannen*, Dut. to curſe.] To curſe; to execrate.—Shall we think that it *banneth* the work which they leave behind them, or taketh away the uſe thereof? *Hooker.*—It is uncertain whether this word, in the foregoing ſenſe, is to be deduced from *ban*, to curſe, or *bane*, to poiſon.—Before theſe Moors went a Numidian prieſt, bellowing out charms, and caſting ſcrowls of paper on each ſide, wherein he curſed and *banned* the Chriſtians. *Knolles.*

BANA'GHER, a town of Ireland, in King's County, which ſends two members to the Iriſh parliament. It is ſituated on the river Shannon, twenty-five miles weſt of Portarlington.

BANAMATAPA', a town of Africa, in the country of Monomotapa.

BANA'NA-TREE, *ſ.* a ſpecies of the plantain. See Musa.

BANA'RA, *ſ.* [a vernacular name of the country.] In botany, a genus of the claſs dodecandria, order monogynia, natural order of columniferæ. The generic characters are—Calyx: perianthium one-leafed, ſix-parted, permanent; parts ovate. Corolla: petals ſix, rounding, concave, ſpreading, three times larger than the calyx, inſerted into the receptacle. Stamina: filaments fifteen and more, capillary, length of the corolla, inſerted into a glandule ſurrounding the germ; antheræ roundiſh. Piſtillum: germ ſomewhat globoſe, ſeated in a glandule; ſtyle filiform, of the height of the ſtamens; ſtigma headed. Pericarpium: berry globoſe, but little ſucculent, one-celled, crowned by the permanent ſtyle. Seeds: very many, very ſmall, cornered, ſtriated.—*Eſſential Character.* Calyx ſix-parted, permanent; corolla ſix-petalled; germ ſeated on a glandule; ſtigma headed; berry globoſe, one-celled, many-ſeeded.

Only one ſpecies, named banara Guianenſis. It is a tree of ten feet or more in height, and about ſeven inches in diameter, with a greyiſh bark, and a whitiſh light wood. Leaves alternate, ovate-oblong, toothletted, ſharp; green and ſmooth on the upper ſurface, paler and ſlightly tomentoſe on the lower. The petiole is ſhort, with two ſmall deciduous ſtipules at the baſe. The largeſt leaves are five inches long, and two broad. Flowers in axillary and terminating racemes, with a ſingle bracte to each pedicel. The corolla is yellow; the berry black. Native of the iſland of Cayenne, flowering in May, and bearing fruit in July.

BANA'RES. See BENARES.

BANAW', a river of Pruſſia, which runs into the Friſch Haffe, two miles weſt-north-weſt of Heiligenbeil.

BANAZ', a town of Aſiatic Turkey, thirty miles north-weſt of Kara-hiſar.

BAN'BURY, [of *bana*, manſlaughter, and *byrig*, Sax. a city; perhaps ſo called from ſome great ſlaughter happening there.] A borough-town in Oxfordſhire, ſituated near the river Charwel, on the edge of Northamptonſhire, in the road from Buckingham to Bridgenorth, ſeventeen miles from Oxford, and ſeventy-four from London. A caſtle was built here, anno 1125, now totally demoliſhed. In the reign of James I. it was incorporated, with a mayor, twelve aldermen, and ſix capital burgeſſes; and, in 1718, it had a new charter from George I. It is now governed by a mayor, high-ſteward, recorder, ſix capital burgeſſes, and thirty aſſiſtants, a town-clerk, and two ſerjeants-at-mace. It has a fine large handſome church, a free-ſchool, and two charity-ſchools. It was famous, even in Camden's time, for good cheeſe; and in the ploughed fields near it are often found coins of the Roman emperors. The pyrites aureus, or golden fire-ſtone, is found here in great plenty. The principal manufacture is pluſh, or ſhag cloth, moſtly exported to Portugal. The fairs are, the firſt Thurſday after the 17th of January, for horſes and cattle; the firſt Thurſday in Lent, for fiſh and cattle; Holy Thurſday, for fiſh and cattle; Thurſday after Trinity Sunday, for cattle; the 12th of Auguſt; Thurſday after October 10, for hiring ſervants, and cattle; and laſt, on the 29th of October. The market-day (Thurſday) neareſt to Old Lady-day is fully attended, and nearly adequate to a fair, as is alſo the ſecond Thurſday before Chriſtmas. The ſeats in the vicinity of Banbury are, Wroxton-houſe, belonging to the earl of Guildford; Broughton-caſtle, the reſidence of lord Say and Sele; alſo of W. Holbech, Eſq. at Farnborough; of John F. Willes, Eſq. at Aſtrop; of Francis Eyre, Eſq. at Warkſworth; and of Charles Fox, Eſq. at Chalcomb.

Three miles and a half ſouth-eaſt of Banbury is the pleaſant village of Adderbury, on the direct road to Oxford; from which another road branches out to the eaſt, at the north end of the village, being the direct London road from Banbury, through Buckingham. It was formerly reſpectable for a number of genteel inhabitants, as there are ſeveral ſeats in it; among which is the noble modern-built manſion of the duke of Buccleugh, who is lord of the manor; and another fine old houſe, formerly the ſeat of the Cobbs, baronets. In the weſt part of the village, are the ſeats of John Barber, and Chriſtopher Aplin, Eſqrs. About a mile and a quarter from Adderbury, the Oxford canal (from Birmingham and Coventry) croſſes the Charwell, by a wear, 150 yards below the bridge.

BAN'CA, an iſland in the Indian Sea, about 100 miles long, and thirty broad, with a chain of mountains extending nearly its whole length. It is populous, tolerably fertile, and lies to the eaſt-north-eaſt of Sumatra, being ſeparated by a narrow ſea, called the *Straits of Banca.* Lat. 3. 10. to 3. 50. N. lon. 104. 30. to 106. 20. E. Ferro.

BANCA'LA, a kingdom in the iſland of Celebes.

BANCA'LIA, *ſ.* Cuſhions, or coverings for ſeats and benches.

BANCA'LIS, a town of the iſland of Sumatra, in the kingdom of Acheen.

BANCK (Peter Vander), an engraver of conſiderable repute, was born at Paris, and was a pupil of the celebrated François de Poilly. He came to England with Gaſcar the painter, in 1674; and married the ſiſter of a gentleman in Hartfordſhire, named Forreſter. His chief talent was engraving portraits; and, according to Vertue's account, publiſhed by the Hon. Mr. Walpole, he was the firſt in England who engraved them on a large ſcale. But even the novelty, added to their merit, could ſcarcely ſupport the artiſt. Like many of Poilly's diſciples, his great merit, according to Mr. Strutt, conſiſted in the laboured neatneſs and management of the mechanical part. Freedom, harmony, and chaſteneſs of outline, are by no means the characteriſtic of his prints. However, though they cannot rank with the ſuperior productions of Edelink or Nanteuil, &c. they will be always eſteemed in England as preſerving the beſt reſemblance of many eminent perſons of that time.

BAN'CO, in commerce, an Italian word, uſed among merchants, principally in Holland, to diſtinguiſh bank-money from the common currency. See the article ARITHMETIC, p. 177, of this volume.

BAN'COCK, BANKOK, or FOU, a town of Aſia, in the kingdom of Siam, ſituated on an iſland formed by the river Menan.

BANCOO'TE, an iſland in the Indian Sea, near the coaſt of Concan.

BANCOU'L, a town in the iſland of Sumatra, and kingdom of Indrapour, where the Engliſh have a fort.

BAN'CROFT (Richard), archbiſhop of Canterbury in the reign of James I. diſtinguiſhed as an able ſtateſman, and polemical writer, was born in 1544, and died in 1610.

BAND, *ſ.* [*bende*, Dut. *band*, Sax.] A tie; a bandage; that by which one thing is joined to another.—You ſhall find the *band*, that ſeems to tie their friendſhip together, will be the very ſtrangler of their amity. *Shakeſpeare.*—A chain by which any animal is kept in reſtraint. This is now uſually ſpelt, leſs properly, *bond*:

So wild a beaſt, ſo tame ytaught to be,
And buxom to his *bands*, is joy to ſee. *Hub. Tale.*

Any means of union or connexion between perſons:

Here's eight that muſt take hands,
To join in Hymen's *bands*. *Shakeſpeare.*

Something worn about the neck; a neckcloth. It is now reſtrained to a neckcloth of particular form, worn by clergymen, lawyers, and ſtudents in colleges. Any thing bound round another.—In old ſtatues of ſtone in cellars, the feet of them being bound with leaden *bands*, it appeared that the lead did ſwell. *Bacon.*—In architecture, any flat low member or moulding, called alſo *faſcia*, *face*, or *plinth*. A company of ſoldiers. A company of perſons joined together in any common deſign:

We few, we happy few, we *band* of brothers. *Shakeſpeare.*

Straight the three *bands* prepare in arms to join,
Each *band* the number of the ſacred Nine. *Pope.*

BAND, a town of Perſia, in the province of Mecran, 400 miles ſouth-ſouth-weſt of Candahar.

BAND, a military order in Spain, inſtituted by Alphonſus XI. king of Caſtile, for the younger ſons of the nobility; who, before their admiſſion, muſt ſerve ten years either in the army or at court; and are bound to take up arms for the Catholic faith againſt the infidels.

Band of Pensioners. See Pensioner.

Bands of a Saddle, are two pieces of iron nailed upon the bows of the ſaddle, to hold the bows in the right ſituation.

To Band, *v. a.* To unite together into one body or troop:

They, to live exempt
From heav'ns high juriſdiction, in new league
Banded againſt his throne. *Milton.*

To bind over with a band:

And by his mother ſtood an infant lover,
With wings unfledg'd, his eyes were banded over. *Dryden.*

BAN'DA ISLANDS, the general name of five iſlands in the Eaſt Indies, lately belonging to the Dutch; but which, with Amboyna, ſurrendered to the Engliſh on the 8th of March, 1796. Their names are, Banda or Lantor, Gonapi or Gounong-Api, Ay or Pulo-Ay or Poolaway, Rhun or Pulo-Rhun or Poleron, and Roſingyn. Banda lies in lat. 4. 48. S. lon. 128. 3. E. Greenwich. Two of theſe iſlands are uncultivated, and almoſt entirely uninhabited; the other three claim the diſtinction of being the only places in the world that produce the nutmeg. If we except this valuable ſpice, the iſlands of Banda, like all the Moluccas, are barren in a dreadful degree. What they produce in ſuperfluities they want in neceſſaries. The land will not bring forth any kind of corn; and the pith of the ſago ſerves the natives of the country inſtead of bread. As this food is not ſufficient for the Europeans who ſettle in the Moluccas, they are allowed to fetch proviſions from Java, Macaſſar, or the extremely fertile iſland of Bali.

This is the only ſettlement in the Eaſt Indies that can be conſidered as an European colony; becauſe it is the only one where the Europeans are proprietors of lands. The Dutch company, finding that the inhabitants of Banda were ſavage, cruel, and treacherous, becauſe they were impatient under their yoke, reſolved to exterminate them. Their poſſeſſions were divided among the white people, who got ſlaves from ſome of the neighbouring iſlands to cultivate the lands. Theſe white people are for the moſt part Creoles, or malcontents who have quitted the ſervice of the country. In the ſmall iſland of Roſingyn there are likewiſe ſeveral banditti, whom the laws have branded with diſgrace; and young men of abandoned principles, whoſe families wanted to get rid of them: ſo that Banda is called the *Iſland of Correction*. The climate is ſo unhealthy, that theſe unhappy men live but a ſhort time. It is on account of the loſs of ſo great a number of hands, that attempts have been made to transfer the culture of the nutmeg to Amboyna; and the company were likewiſe probably influenced by two other ſtrong motives of intereſt, as their trade would be carried on with leſs expence and greater ſafety. When the Britiſh troops took poſſeſſion of Banda, there were found in the treaſury 66,675 rixdollars, and in ſtore 84,777lbs. of nutmegs, 19,587lbs. of mace, beſides merchandiſe and other ſtores.

BAN'DAGE, *ſ.* [*bandage*, Fr.] Something bound over another.—Zeal too had a place among the reſt, with a *bandage* over her eyes; though one would not have expected to have ſeen her repreſented in ſnow. *Addiſon.*—It is uſed, in ſurgery, for the fillet or roller wrapped over a wounded member; and, ſometimes, for the act or practice of applying bandages. See Surgery.

BANDALE'ER, or Bandileer, *ſ.* [The word is originally French, *bandouiller*, formed apparently from *bandoulier*, a kind of banditti particularly infeſting the Pyreneans, who were formerly diſtinguiſhed by this piece of furniture; and were themſelves ſo denominated, *quaſi ban de volieres*, 'a knot of robbers.'] A large leathern belt, thrown over the right ſhoulder, and hanging down under the left arm; worn by the ancient muſqueteers, both for the ſuſtaining of their fire-arms, and for the carriage of their muſquet-charges; which, being put up in little wooden caſes, coated with leather, were hung, to the number of twelve, to each bandaleer.

BAND'BOX, *ſ.* [from *band* and *box*.] A ſlight box uſed for bands, and other things of ſmall weight:

With empty *bandbox* ſhe delights to range,
And feigns a diſtant errand from the 'Change. *Gay.*

BAN'DEL CAUS, a town of Africa, on the coaſt of the kingdom of Adel.

BAN'DELET, *ſ.* [*bandelet*, Fr.] In architecture, any little band, flat moulding, or fillet.

BANDE'RAS, a large bay in the Pacific Ocean, on the weſt coaſt of Mexico, between Cape Corientes and Tintoque Point.

BANDE'RE, or Bando'ra, a town of Hindoſtan, in the Circar of Gohud, 100 miles ſouth of Agra, and forty-four ſouth-ſouth-eaſt of Gohud.

BAN'DERET, *ſ.* a general, or commander in chief. This appellation is given to the principal commanders of the troops of the canton of Bern in Switzerland, where there are four banderets, who command all the forces of that canton.

BAN'DI, a river of Africa, in the country of Calabar, in Lower Guinea, which runs into the ſea by two channels, with a town of the ſame name on an iſland at its mouth.

BANDINEL'LI (Baccio), a celebrated Florentine ſculptor and painter, born in 1471, and died in 1559.

BANDIT, *ſ.* [*bandito*, Ital.] A man outlawed:

No *bandit* fierce, no tyrant mad with pride,
No cavern'd hermit, reſts ſelf-ſatisfy'd. *Pope.*

BANDIT'TO, *ſ.* in the plural *banditti*, [*bandito*, Ital.]

A Roman ſworder, and *banditto* ſlave. *Shakeſpeare.*

Banditti are perſons proſcribed, or, as we call it, outlawed: ſometimes denominated *banniti*, or *forris banniti*. It is alſo a denomination given to highwaymen or robbers who infeſt the road in troops, eſpecially in Italy, France, and Sicily. Mr. Brydone, in his Tour through Sicily, informs us, that in the eaſtern part, called *Val Demoni*, from the evil ſpirits that are ſuppoſed to inhabit mount Ætna, it has ever been found altogether impracticable to extirpate the banditti; there being numberleſs caverns and ſubterraneous paſſages round that mountain, where no troops could poſſibly purſue them: beſides they are known to be perfectly determined and reſolute, never failing to take a dreadful revenge on all who have offended them. Hence the prince of Villa Franca has embraced it, not only as the ſafeſt, but the wiſeſt and moſt political, ſcheme, to become their declared patron and protector: and ſuch of them as think proper to leave their mountains and foreſts, though perhaps only for a time, are ſure to meet with good encouragement and a certain protection in his ſervice, whoſe confidence they enjoy, and which they have never yet been found to make an improper uſe of. They are clothed in the prince's livery, yellow and green, with ſilver lace; and wear likewiſe a badge of their order, which intitles them to reſpect from the people.

In ſome circumſtances theſe banditti are the moſt conſcientious people of the iſland, and have by much the higheſt and moſt romantic notions of what they call the *point of honour*. However criminal they may be with regard to plunder in general; yet, with reſpect to one another, and to every perſon to whom they have once profeſſed it, they have ever maintained the moſt unſhaken fidelity. The magiſtrates have often been obliged to protect them, and pay them in court, as they are known to be perfectly determined and deſperate, and ſo extremely vindictive, that they will certainly put any perſon to death that has ever given them ſerious provocation. On the other hand, it never was known that any perſon who had put himſelf under their protection, and ſhewed that he had confidence in them, had cauſe to repent of it, or was injured by any of them in the moſt minute trifle; but, on the contrary, they will protect him from impoſitions of every kind, and ſcorn to go halves with the landlord, like moſt other conductors and travelling ſervants, and will defend him with their lives if there be occaſion. Thoſe of their number who have thus enliſted themſelves as guides in the ſervice of ſociety, are known and reſpected by the other banditti all over the iſland; and the perſons they accompany are ever held ſacred. For theſe reaſons, moſt travellers chooſe to hire a couple of them from town to town; and may thus travel over the whole iſland in ſafety.

BAN'DLE, *ſ.* an Iriſh meaſure of two feet in length.

BAN'DOG, *ſ.* [from *ban* or *band*, and *dog*. The original of this word is very doubtful. Caius, de Canibus Britannicis, derives it from *band*, that is, 'a dog chained up.' Skinner inclines to deduce it from *bana*, a 'murderer.' May it not come from *ban*, a 'curſe,' as we ſay a *curſt cur*; or rather from *baund*, 'ſwelled or large,' a Daniſh word; from whence, in ſome counties, they call a great nut a *ban nut?*] A kind of large dog:

The time of night when Troy was ſet on fire,
The time when ſcreech-owls cry, and *bandogs* howl. *Shakeſ.*

BANDOLE'ERS. See Bandaleers.

BAN'DON, a river of Ireland, which empties itſelf into the harbour of Kinſale, in the county of Cork.

BANDONBRIDG'E, a town of Ireland, in the county of Cork, on the river Bandon. It is a borough-town, and ſends two members to the Iriſh parliament: eleven miles S. S. W. of Cork, and eight N. W. of Kinſale.

BANDO'RE, *ſ.* the name of a muſical inſtrument with ſtrings, reſembling a lute, ſaid to be invented in the reign of queen Elizabeth, by John Roſe of London.

BAN'DROL, *ſ.* [*banderol*, Fr.] A little flag or ſtreamer; the little fringed ſilk flag that hangs on a trumpet.

BANDT, a ſmall iſland in the German Ocean, near the coaſt of Eaſt Frieſland. Lat. 53.36.N. lon. 24.19.E. Ferro.

BANDU'RI (Anſelm), an Italian Benedictine friar, eminent as an antiquarian and critic. He died in 1743.

BAN'DY, *ſ.* [from *bander*, Fr.] A club turned round at the bottom, for ſtriking a ball at play.

To Bandy, *v. a.* [probably from *bandy*, the inſtrument with which they ſtrike balls at play, which, being crooked, is named from the term *bander*; as, *bander un arc*, 'to ſtring or bend a bow.'] To beat to and fro, or from one to another.—They do cunningly, from one hand to another, *bandy* the ſervice like a tennis-ball. *Spenſer.*

What vigorous arm, what repercuſſive blow,
Bandies the mighty globe ſtill too and fro? *Blackmore.*

To exchange; to give and take reciprocally. To agitate; to toſs about.—Ever ſince men have been united into governments, the endeavours after univerſal monarchy have been *bandied* among them. *Swift.*—Let not obvious and known truth, or ſome of the moſt plain and certain propoſitions, be *bandied* about in a diſputation. *Watts.*

To Bandy, *v. n.* To contend, as at ſome game, in which each ſtrives to drive the ball his own way:

A valiant ſon-in-law thou ſhalt enjoy:
One fit to *bandy* with thy lawleſs ſons,
To ruffle in the commonwealth. *Shakeſpeare.*

BAN'DYLEG, *ſ.* [from *bander*, Fr.] A crooked leg.

BAN'DYLEGGED, *adj.* Having crooked legs.—The Ethiopians had an one-eyed *bandylegged* prince; ſuch a perſon would have made but an odd figure. *Collier.*

BANE, *ſ.* [*bana*, Sax. a murderer.] Poiſon:

Thus am I doubly arm'd; my death and life,
My *bane* and antidote, are both before me;
This, in a moment, brings me to an end;
But that informs me I ſhall never die. *Addiſon.*

That which deſtroys; miſchief; ruin.—Inſolency muſt be repreſt, or it will be the *bane* of the Chriſtian religion. *Hooker.*

I will not be afraid of death and *bane*,
Till Birnam foreſt come to Dunſinane. *Shakeſpeare.*

Who can omit the Gracchi, who declare
The Scipios worth, thoſe thunderbolts of war,
The double *bane* of Carthage? *Dryden.*

To Bane, *v. a.* To poiſon:

What if my houſe be troubled with a rat,
And I be pleas'd to give ten thouſand ducats
To have it *ban'd?* *Shakeſpeare.*

Bane-Berry, *ſ.* in botany. See Actæa.

BANE'E, a ſmall iſland of France, near the Engliſh Channel, about a league ſouth-weſt of Uſhant.

BA'NEFUL, *adj.* [from *bane* and *full.*] Poiſonous; deſtructive:

The nightly wolf is *baneful* to the fold,
Storms to the wheat, to buds the bitter cold. *Dryden.*

BA'NEFULNESS, *ſ.* Poiſonouſneſs; deſtructiveneſs.

BANFF. See Bamff.

To BANG, *v. a.* [*vengolen*, Dut.] To beat; to thump; to cudgel: *a low and familiar word.*—Formerly I was to be *banged* becauſe I was too ſtrong, and now becauſe I am too weak to reſiſt. *Arbuthnot.*—To handle roughly; to treat with violence, in general:

The deſperate tempeſt hath ſo *bang'd* the Turks,
That their deſignment halts. *Shakeſpeare.*

Bang, *ſ.* A blow; a thump; a ſtroke: *a low word.*—I am a bachelor.---That's to ſay, they are fools that marry; you'll bear me a *bang* for that. *Shakeſpeare.*

BAN'GA, a town of Africa, in the country of Whidah, on the Slave Coaſt.

BANGALO'RE, a fortified town of Hindoſtan, and one of the ſtrongeſt holds of Tippoo Saib, in the Myſore country. It was taken by the army under the marquis Cornwallis, after a moſt obſtinate reſiſtance, on March 22, 1791. The garriſon conſiſted of about 3000 men, upwards of 1500 of whom were killed on the ſpot. The venerable killedar, Bahauder Khan, an old man, and nearly related to Tippoo, with ſeveral principal officers, fell in the ſtorming of the fort, which took place at midnight, directed by a blaze of artificial light from fire-balls and rockets, and which exhibited a dreadful ſcene of carnage and ſlaughter. The fort is nearly oval, with two gates covered by outworks, but without a drawbridge; one to the ſouth-weſt, called the Seringapatam-gate: the other, Ooſcottah, to the eaſtward. It is irregularly built, about a mile and three-quarters in circumference, with ſmall round baſtions at the diſtance of fifty or ſixty yards, containing three guns each. Six lofty cavaliers in different parts, mounting ten guns, command the fort and the adjacent country; the rampart is ſufficiently broad to admit of the heavieſt guns being fired from the curtains; and the ditch, except in two places where it is covered by outworks, is deep and broad. The fauſſe-braye is wide, and the covert-way very judiciouſly conſtructed; but the glacis, as is uſual in Indian forts, is too ſteep. More than 100 pieces of cannon were taken, with great quantities of ammunition and military ſtores. All accounts concur in admiring the extent and magnificence of Tippoo's palace in this town, and the plantation and diſpoſition of its garden; exact architecture or elegance could not be looked for, but much more of both was found than could have been expected. In the extenſive chambers of the palace were a rich profuſion of carpets, hangings, and ſilks, gilded and fluted pillars, and walls and ceilings painted and burniſhed; and, in the garden, walks and pieces of water well diſpoſed, and planted with lofty and ſhady avenues, and fruit and flowers in great abundance. But a ſtill more important proof of the rapid ſtrides the former maſter of Bangalore, Hyder Ali, was making in uſeful improvements, was the ſtate of the foundery for cannon and iron-works, which he carried on there in high perfection, and to a great extent. For the many intereſting and arduous events of the war in India, ſee England and Hindostan. Bangalore was reſtored to Tippoo at the peace concluded in 1792. It is fifty-eight miles north-eaſt of Seringapatam. Lat. 12. 58. N. lon. 77. 46. E. Greenwich.

BAN'GIUS (Thomas), a Daniſh divine, and an elegant Latin writer on the origin of languages and a variety of other ſubjects. He died in 1661.

To BAN'GLE, *v.a.* To waſte by little and little; to ſquander careleſsly: *a word now uſed only in converſation.*—If we *bangle* away the legacy of peace left us by Chriſt, it is a ſign of our want of regard for him. *Duty of Man.*

BANGLE EARS, an imperfection in a horſe, remedied in the following manner. Place his ears in ſuch a manner as you would have them ſtand; bind them with two little boards ſo faſt that they cannot ſtir, and then clip away all the empty wrinkled ſkin cloſe by the head.

BAN'GOR, [once *Banchor*, q. *Benchor*, i. e. a capital choir.] An epiſcopal city of Caernarvonſhire, in North Wales. It has but one ſtreet, of about half a mile in length; a market-day on Friday; and four fairs in the year, viz. April 5, June 25, September 8, and October 28. It was formerly of great note, and by the Welſh was called *Bangor-fawr*, i. e. Great Bangor. Here is a large free-ſchool, lately re-built in a very capital ſtile under the preſent biſhop's direction. The preſent cathedral is a Gothic building, (having been built in the reign of Henry VII.) in good repair, and well worthy the notice of the antiquary. This church boaſts of being one of the moſt ancient in Britain; and that St. Daniel (to whom it was dedicated) was firſt biſhop here, in the year 512. The pagans, perhaps of Angleſea, under Owen Glendower, deſtroyed the church, and poſſeſſed the biſhopric for above 100 years; nor is there any account of it from the year 512 to 1009. After this the biſhopric was again deſolated by one of its own biſhops, whoſe name was Bulkeley: he, as the Monaſticon ſays, not only ſold the revenues, but even the very bells; for which ſacrilege, it is ſaid, he was ſtruck blind. It is certainly at preſent no rich biſhopric; but the biſhops are generally allowed to hold ſome other good benefice *in commendam*, and are generally tranſlated from hence to a more profitable ſee. The cathedral has received ſome great improvements and repairs by Dr. Warren, biſhop of the dioceſe, who, with great taſte and at a conſiderable expence, has modernized the old palace, where his lordſhip with a diſtinguiſhed hoſpitality entertains the neighbouring gentry and clergy, and receives the bleſſings of a numerous poor, during a reſidence of one-half of the year, ſhewing a laudable example to other dioceſans. The remains of ſeveral Welſh princes, as alſo of biſhops and deans, lie interred in this cathedral. Bangor is two miles from the ferry, twenty-ſeven from Holyhead, nine from Carnarvon, fifteen from Conway, and a hundred and forty-ſix from London.

At a little diſtance from Bangor is Llandegai, where the church makes a conſpicuous figure, and contains the remains of archbiſhop John Williams, a native of Conway, who, at the commencement of the civil wars, was a zealous royaliſt, and afterwards, on a ſuppoſed injury, aſſiſted the parliamentary forces to ſubdue the caſtle of Conway. A little below the church is a village called Aber Cegid, by the ſide of a ſmall rivulet, which here paſſes into the ſea. Upon the left ſtands Penrhyn-hall, the elegant manſion of lord Penrhyn, to whoſe liberal ſpirit for improvement, and acquaintance with the advantages of an active life, this country owes very great obligations. The ſituation is elevated and pleaſant, commanding a view of Angleſea and the Iriſh ſea, and bounded on the other ſide by the Snowdon-hills. On the ſite of this manſion ſtood formerly a caſtle, or palace, the reſidence of Roderic Molwynog, a Welſh prince, who reigned about the year 720. A large wood formerly incloſed the houſe, which the improved taſte of modern times has in ſome degree removed; but the very extenſive plantations, which his lordſhip makes every year, will in a ſhort time change the otherwiſe bleak aſpect of the country. The caſtellated form of the houſe, with its elegant turrets, meeting the eye above the trees, exhibit a charming object to the traveller. It has the appearance of being built with ſtone; but the front is faced with tiles, brought from Southampton, which, upon a nearer approach, ſeem to be jointed like bricks; the inſide doors are of mahogany, brought from his lordſhip's eſtates in Jamaica. The ancient drinking-horn is in the poſſeſſion of this family. At a ſhort diſtance the eye is ſtruck with the appearance of a houſe built in a ſtile of great neatneſs, on a ſpot which a ſhort time ago was covered with fragments of rocks and ſtones, interſperſed with ruſhes and roots of alder, whoſe rugged appearance ſeemed to have been continued from the deluge; but now, by the prophetic eye of taſte, aſſumes a new creation, and is ſeen with wonder and delight. The river, which once ran rugged and unbounded in its courſe, is now confined within the margin of a ſloping lawn, and the progreſſive heights of the ſtream form beautiful caſcades and ſalmon-leaps, ſeen from the front of the houſe; the turnpike-road, over the bridge, croſſes the view, which is terminated by the Snowdon-hills. At a little diſtance are thoſe immenſe rocks of ſlate, which now employ upwards of a thouſand people, and produce to lord Penrhyn more than 20,000l. per annum.

BANGOR, a borough and ſea-port town of Ireland, in the county of Wicklow, which ſends two members to the Iriſh parliament, with a bay or harbour, on the ſouth ſide of Belfaſt Lough. It is ten miles north-eaſt of Belfaſt. Lat. 54. 39. N. lon. 5. 33. W. Greenwich.

BAN'GUE, *ſ.* a ſpecies of opiate, in great uſe throughout the eaſt, for drowning cares and inſpiring joy. This by the Perſians is called *beng*; by the Arabs *eſrar*, corruptly *aſſeral*, and *aſſarth*; by the Turks *bengitie*, and vulgarly *maſlack*; by the European naturaliſts *bangue*, or *bange*. It is the leaf of a kind of wild hemp, growing in the Levant. Some have ſuppoſed it a ſpecies of althæa, but this is not the fact. It is prepared in a variety of ways in different countries. Olearius deſcribes the method uſed in Perſia. Mr. Sale tells us, that, among the Arabs, the leaf is made into pills, or conſerves. But the moſt diſtinct account is that given by Alexander Maurocordato, counſellor and phyſician of the Ottoman Porte, in a letter to Wedelius. According to him, bangue is made of the leaves of wild hemp, dried in the ſhade, then ground to powder; put into a pot wherein butter has been kept; ſet in an oven till it begin to torrefy: then taken out, and pulverized again; thus to be uſed occaſionally, as much at a time as will lie on the point of a knife. Such is the Turkiſh bangue. The effects of this drug are, to confound the underſtanding; ſet the imagination looſe; induce a kind of folly and forgetfulneſs, wherein all cares are left, and joy and gaiety rule in their ſtead. Bangue, in reality, is a ſuccedaneum to wine, and obtains in thoſe countries where Mahometaniſm is eſtabliſhed; which totally prohibiting the uſe of that liquor, the poor muſſulmans are forced to have recourſe to ſuccedanea to rouſe their ſpirits. The principal are opium and this bangue. As to the opinion among Europeans, that the Turks prepare themſelves for battle by a doſe of bangue, which rouſes their courage, and drives them, with eagerneſs, to meet death; Dr. Maurocordato aſſures us, that it is a popular error; the Turks think they are then going aſſuredly to receive the crown of martyrdom; and would not, for any conſideration, loſe the merit of it, which they would do by eating the bangue, as being held unlawful by their apoſtle, among other things which intoxicate.

BAN'HOO GUR, a town of Hindoſtan, in the Sohagepour Circar, twenty miles north-weſt of Sohagepour, thirty-five miles ſouth of Makoonda.

BA'NI, a ſmall diſtrict of Africa, in the country of Calabar, containing nine or ten villages.

BANI, a town of Italy, in the kingdom of Naples, and province of Capitanata, ten miles ſouth of Troja.

BA'NIA, a river of Croatia, which runs into the Lenia.

BANIAC', a ſmall iſland, near the weſt coaſt of Sumatra, in the Indian Sea. Lat. 1. 42. N. lon. 96. 48. E. Greenwich.

BANJALU'KA, or BAGNALUKA, a town of European Turkey, in Boſnia, the reſidence of a pacha, 144 miles weſt of Belgrade, twenty-ſix miles ſouth of Gradiſca.

BANIAN'-TREE. See FICUS.

BANIANS', a religious ſect in the empire of the Mogul, who believe a metempſychoſis; and therefore eat no living creature, nor kill even noxious animals, but endeavour to releaſe them when in the hands of others. The name *Banian* is uſed with ſome diverſity, which has occaſioned much confuſion, and many miſtakes. Sometimes it is taken in a leſs proper ſenſe, and extended to all the idolators of India, as contradiſtinguiſhed from the Mahometans: in which ſenſe Banians include the Bramin and other caſts. Banians, in a more proper ſenſe, is reſtrained to a peculiar caſt, or tribe, of Indians, whoſe office or profeſſion is trade and merchandize: in which ſenſe, *Banians* ſtands contradiſtinguiſhed from *Bramins*, *Cuttery*, and *Wyſe*, the three other caſts into which the Indians are divided. See INDIA. The four caſts are abſolutely ſeparate as to occupation, relation, marriage, &c. though all of the ſame religion; which is more properly denominated the religion of the Bramins, who make the eccleſiaſtical tribe, than of the Banians, who make the mercantile. The proper Banians are called, in the *Shaſter*, or book of their law, by the name of *Skuddery*; under which are comprehended all who live after the manner of merchants, or that deal and tranſact for others, as brokers; excluſive of the mechanics, or artificers, who make another caſt, called *Wyſe*. Theſe Banians have no peculiar ſect or religion, unleſs it be, that two of the eight general precepts given by their legiſlator Bremaw to the Indian nation, are, on account of the profeſſion of the Banians, ſuppoſed more immediately to relate to them, viz. thoſe which enjoin veracity in their words and dealings, and avoiding all practices of circumvention in buying and ſelling. Some of the Banians, quitting their poſſeſſion, and retiring from the world, commence religious, aſſume a peculiar habit, and devote themſelves more immediately to God, under the denomination of *Vertea*. Theſe, though they do not hereby change their caſt, are commonly reckoned Bramins of a more devout kind. The name *Banian* imports in the Bramin language, a people innocent and harmleſs; void of guile; ſo gentle, that they cannot endure to ſee either a fly or a worm injured; and who, when ſtruck, will patiently bear it, without reſiſting or returning the blow. Their mien and appearance is deſcribed by Lord, in terms a little preciſe, but very ſignificant: "A people preſented themſelves to my eyes clothed in linen garments, ſomewhat low deſcending, of a geſture and garb, as I may ſay, maidenly, and well nigh effeminate, of a countenance ſhy and ſomewhat eſtranged." Gemelli Careri divides the Banians into twenty-two tribes, all diſtinct, and not allowed to marry with each other. Lord aſſures us they are divided into eighty-two caſts or tribes, correſpondent to the caſts or diviſions of the Bramins or prieſts, under whoſe diſcipline they are, as to religious matters; though the generality of the Banians chooſe to be under the direction of the two Bramin tribes, the Viſalnagranaugers and Vulnagranaugers.

The Banians are the great factors, by whom the trade of India is principally managed: in this reſpect they may be compared to the Jews and Armenians, and not behind either, in point of ſkill and experience, in whatever relates to commerce. Nothing is bought but by their mediation. They ſeem to claim a kind of *jus divinum* to the adminiſtration of the traffic of the nation, grounded on the ſacred books, as the Bramins do to that of religion. They are diſperſed, for this purpoſe, through all parts of Aſia, and abound in Perſia, particularly at Iſpahan and Gombroon, where many of them are extremely rich, yet not above acting as brokers, where a penny is to be got. The chief agents of the Engliſh, Dutch, and French, Eaſt-India companies, are of this nation: they are faithful, and are generally truſted with the caſh of thoſe companies in their keeping. They act alſo as bankers, and can give bills of exchange for moſt cities in the Eaſt Indies. Their form of contract in buying and ſelling is remarkable; being done without words, in the profoundeſt ſilence, only by touching each other's fingers: the buyer, looſening his *pamerin* or girdle, ſpreads it on his knee, and both he and the ſeller having their hands underneath, by the intercourſe of the fingers, mark the price of pounds, ſhillings, &c. demanded, offered, and at length agreed on. When the ſeller takes the buyer's whole hand, it denotes a thouſand; and, as many times as he ſqueezes it, as many thouſand pagodas, or roupees, according to the ſpecies in queſtion, are demanded: when he only takes the five fingers, it denotes five hundred; and when only one, one hundred; taking only half a finger, to the ſecond joint, denotes fifty; the ſmall end of the finger, to the firſt joint, ſtands for ten.

BAN'JAR MAS'SIM, a kingdom in the iſland of Borneo, the principal town of which is called *Negara*. The country produces great quantities of pepper; there are alſo mines of gold, iron, copper, and tin. It is ſaid the king can raiſe above ſeven thouſand armed men.

BA'NIAS, a town of Syria, fifty miles S. W. Damaſcus.

BAN'IER (Anthony), licentiate in laws, member of the academy of inſcriptions and belles lettres, and eccleſiaſtic of the dioceſe of Clermont in Auvergne; died in November 1741, aged ſixty-nine. He is principally celebrated for his tranſlation of the Metamorphoſes of Ovid, with hiſtorical remarks and explanations; publiſhed in 1732, at Amſterdam, in folio, with copper-plates, by Picart; reprinted at Paris 1738, 2 vols. 4to. and for his Mythology, or fables of the ancients explained by hiſtory; a work full of the moſt important information, was tranſlated into Engliſh, and printed at London in 1741, 4 vols. 8vo.

To BA'NISH, *v. a.* [*banir*, Fr. *banio*, low Lat. probably from *ban*, Teut. an outlawry, or proſcription.] To condemn to leave his own country:

Oh, fare thee well!
Thoſe evils thou repeat'ſt upon thyſelf
Have *baniſh'd* me from Scotland. *Shakeſpeare.*

To drive away.—It is for wicked men only to dread God, and to endeavour to *baniſh* the thoughts of him out of their minds. *Tillotſon.*

Succeſsleſs all her ſoft careſſes prove,
To *baniſh* from his breaſt his country's love. *Pope.*

BA'NISHER, *ſ.* He that forces another from his own country.

BA'NISHMENT, *ſ.* [*baniſſement*, Fr.] The act of baniſhing another; as, he ſecured himſelf by the *baniſhment* of his enemies. The ſtate of being baniſhed; exile:

Now go we in content
To liberty, and not to *baniſhment.* *Shakeſpeare.*

By the common law, every Engliſhman may claim a right to abide in his own country ſo long as he pleaſes, and not to be baniſhed or driven from it but by the ſentence of the law. The king, by his royal prerogative, may iſſue out his writ *ne exeat regnum*, and prohibit any of his ſubjects from going into foreign parts without licence; but no power leſs than the authority of parliament can ſend any ſubject out of the land againſt his will, no not even a criminal; for, wherever baniſhment or tranſportation is inflicted, it is either by the choice of the criminal himſelf, to eſcape a capital puniſhment, or by the expreſs direction of an act of parliament. By the great charter, c. 29. it is declared, that no freeman ſhall be baniſhed, unleſs by the judgment of his peers, or by the law of the land. And by the *habeas corpus* act, 31 Car. II. c. 2. no ſubject of this realm, who is an inhabitant of England, Wales, or Berwick, ſhall be ſent priſoner into Scotland, Ireland, Jerſey, Guernſey, or place beyond the ſeas, where they cannot have the benefit and protection of the common law, but all ſuch impriſonment ſhall be illegal. And the law in this reſpect is ſo liberally conſtrued for the benefit of the ſubject, that, though within the realm, the king may command the attendance and ſervice of all his liegemen, yet he cannot ſend any man out of the realm, even upon the public ſervice, except ſailors and ſoldiers, the nature of whoſe employment neceſſarily implies an exception: he cannot even conſtitute a man lord deputy, or lieutenant of Ireland, againſt his will, nor make him a foreign ambaſſador; for this might, in reality, be no more than an honourable exile. 1 *Black.* 137.

The ſtate of baniſhment was repreſented by the ancients by a man in a pilgrim's habit, in his right hand a ſtaff and in his left a falcon, with a down-caſt and ſorrowful countenance.

BA'NISTER (John), a phyſician and ſurgeon in the reign of queen Elizabeth, was educated at Oxford, where, ſays Anthony Wood, he ſtudied logicals for a time; but afterwards applied himſelf ſolely to phyſic and ſurgery. In 1573 he took the degree of bachelor of phyſic; and, obtaining a licence from the univerſity to practiſe, ſettled at Nottingham, where he lived many years in great repute, and wrote ſeveral medical treatiſes. His works were collected and publiſhed in 1633, 4to.

BANISTE'RIA, *ſ.* [So named by Dr. Houſtoun, in memory of the Rev. John Baniſter, a curious botaniſt, who loſt his life, in the ſearch after plants, in Virginia.] In botany, a genus of the claſs decandria, order trigynia, natural order of trihilatæ. The generic characters are—Calyx: perianthium five-parted, very ſmall, ſtiff underneath with tubercles, permanent; two melliferous glands are under each diviſion of the calyx, except one; they are therefore eight in number. Corolla: petals five, orbiculate, very large, ſpreading, crenate; claws oblong, linear. Stamina: filaments ten, very ſmall, coaleſcent at bottom; antheræ ſimple. Piſtillum: germ three, winged, coaleſcent; ſtyles three, ſimple; ſtigmas obtuſe. Pericarpium: capſules three, running out into a long wing, one-celled, marked at the ſides with ſmall appendicles, not gaping. Seeds ſolitary, covered, toothed on the lateral edge.—*Eſſential Character.* Calyx five-parted, with melliferous pores at the baſe on the outſide. Petals roundiſh, with claws. Stigmas leaf-ſhaped. Seeds three, winged with membranes.

Species. 1. Baniſteria anguloſa: leaves ſinuate-angular. Stem twining, with oppoſite branches, thickened at the baſe. Leaves cordate, angular, the breadth equal to the length, ending at top in a ſhort dagger point, green above, whitiſh beneath, nearly equal to the petioles, on which and near the leaf are two oppoſite glands. Native of the iſland of Dominique, (where Plumer firſt obſerved it,) Hiſpaniola, &c.

2. Baniſteria purpurea: leaves ovate, ſpikes lateral, ſeeds erect. Stems ſtrong and woody, divided into many branches, which are oppoſite and twining. It creeps with theſe over the hedges. Leaves an inch long, on ſhort petioles. Native of the Caribbee iſlands. Mr. Miller ſays he had it from Campeachy. He cultivated it in 1759.

3. Baniſteria laurifolia: leaves ovate-oblong rigid, racemes terminal. Stem ſhrubby, climbing, with looſe, reflex, diverging, roundiſh, rugged, branches. Native of Jamaica and Hiſpaniola.

4. Baniſteria longifolia: leaves oblong acuminate rigid ſhining, panicle terminating, branches ſpreading very much. Native of the Weſt Indies.

5. Baniſteria Benghalenſis: leaves ovate-oblong acuminate, racemes lateral, ſeeds ſpreading. This has ſtrong woody ſtalks, twining about trees which grow near it, and riſing twenty feet high. Branches round. Leaves ſmooth, like thoſe of the bay-tree. Fruit triple; each having a lanceolate, obtuſe, membrane, thicker downwards, with a ſmall lobe on each ſide at the baſe. This ſpecies recedes from the genus; it has only one ſtyle, and the capſule has four wings. Native of the Eaſt and Weſt Indies.

6. Baniſteria dichotoma: leaves ovate, branches dichotomous. Stem ſlender, very tough, climbing aloft upon the neighbouring trees. Leaves ovate-acuminate, very like thoſe of convolvulus, but much larger, quite entire, ſmooth, bright green. Plumier firſt obſerved it in the iſland of Martinico.

7. Baniſteria fulgens: leaves ſubovate, tomentoſe underneath, racemes brachiate, peduncles umbelled. This has ſlender winding ſtalks, which riſe five or ſix feet high. The flowers grow in a round bunch at the extremity of the branches, and are of a browniſh yellow colour. The ſeeds are ſmaller, and have narrower wings than in the third ſpecies. The leaves are ovate with a point, villoſe beneath, ſhining, ſmooth on the upper ſurface. A ſolitary branch comes forth from the axils, furniſhed with leaves, producing at top in a kind of umbel ſeveral filiform, ſimple, one-flowered, peduncles. Native of Jamaica, and Barbadoes. Miller ſays, Campeachy, &c.

8. Baniſteria brachiata: leaves ſubovate, branches brachiate, ſeeds narrower within. Very like the foregoing, but the leaves more blunt: the upper branches flower-bearing, panicled; the inner margin of the winged ſeed ſharp, the outer blunt; it has no toothlet beſides the lateral ones at the baſe. This ſends out many branches, which divide again into others, growing without order, and become very buſhy upward, ſending out tendrils by which they faſten themſelves to the neighbouring trees, and mount to a great height; theſe are garniſhed with oval ſtiff leaves, ending in a point. The flowers are produced in looſe ſpikes at the ends of the branches; are firſt of a gold colour, and fade to a ſcarlet. Theſe are ſucceeded by ſlender thin ſeeds, and for the moſt part ſingle. Native of Carthagena.

9. Baniſteria aculeata: leaves pinnate, leaflets oblong, obtuſe, flowers ſpiked, ſtem branching prickly. This has climbing ſtalks, which divide into many branches, garniſhed with long winged leaves, compoſed of about twenty pair of ſmall, oblong, blunt, pinnæ, each having a deep furrow on the under ſide. At the wings of the leaves the ſtalks are armed with ſhort ſtrong ſpines, a little crooked. The flowers grow in long looſe ſpikes at the end of the branches, are ſucceeded by ſingle ſeeds, and as large as thoſe of the greater Maple. Native of Tolu.

10. Baniſteria cœrulea: branches tubercled, leaves ovate-acute, coriaceous, racemes axillary. Stem climbing: branches round, with a whitiſh bark, ſomewhat rough. Native of Jamaica and Dominique.

11. Baniſteria nitida: leaves ovate-oblong, quite entire, ſhining beneath, panicle terminating, leafy. Branches ſmooth and round. Native of Braſil, where it was found by Commerſon.

12. Baniſteria chryſophylla: branches tubercled, leaves ovate-acute, with a golden nap on the lower ſurface, wings very long. Stem arboreous, branched, covered with a glaucous bark, variegated with white tubercles and fiſſures. Fruits a little larger than the Chice-pea, ſmooth, running out into large golden wings. Found by Commerſon, near Rio-Janeiro in Braſil.

13. Baniſteria muricata: leaves ovate-acute, tomentoſe beneath, racemes axillary, capſules muricate. Native of Peru, where it was found by Joſeph de Juſſieu.

14. Baniſteria Leona: branches tubercled, leaves ovate-acuminate coriaceous, flowers panicled. Native of America; and found by Smeathman at Sierra Leona in Africa, whither perhaps it has been tranſported.

15. Baniſteria ferruginea: leaves ovate-acuminate, ferruginous beneath, flowers panicled, bractes imbricate. Native of Rio-Janeira near St. Sebaſtian in Braſil; and found there by Commerſon.

16. Baniſteria emarginata: leaves ovate ſubcordate, emarginate-cuſpidate at the end, tomentoſe on the lower ſurface, flowers raceme-corymbed. Branches ſlender, with a brown bark. Leaves above ſhining, lead-coloured when dry. Native of America.

17. Baniſteria quapara: leaves ovate, tomentoſe beneath, flowers in corymbs, ſeeds erect. This is a ſhrub, ſix feet in height, putting out many twining branches, by which it climbs up trees. Native of Guiana, on the borders of meadows; flowering in Auguſt: obſerved there by Aublet.

18. Baniſteria ſinemarienſis: leaves ovate-acuminate, flowers in corymbs yellow, wings gradually widening. This is a ſhrub with a trunk five feet high, putting forth many climbing twining branches. Leaves pale green beneath, dark green above, covered with ſmall briſtles.

Native of Guiana, on trees, by the ſides of meadows and fields; flowering and fruiting in Auguſt: obſerved there by Aublet.

19. Baniſteria orbiculata: ſtem twining, leaves orbiculate, beneath tomentoſe and ſilky, petioles biglandular. Stem long, branched, jointed. Leaves large, cordate at the baſe, eſpecially the lower ones. Native of Jamaica, Guadaloupe, and St. Domingo.

20. Baniſteria ciliata: leaves cordate-roundiſh, eared, ſmooth, ciliate. Stem ſmooth, ſlender, twining, reddiſh, rough, with little white dots. Native of Braſil, where it was found by Dombey.

21. Baniſteria auriculata: ſtem twining, leaves ſubſagittate, ſmooth, with rounded lobes, flowers in umbels. Native of Rio-Janeiro, and found there by Commerſon.

22. Baniſteria ovata: ſtem twining, leaves ovate, acute, quite entire, flowers in umbels, involucres ſtipuled. Native of the iſland of Dominique, where it was found by Deſportes and Surian.

23. Baniſteria palmata: ſtem twining, leaves palmate, tomentoſe beneath, petioles biglandular. Leaves divided into five acute parts, the middle one longeſt, cordate at their baſe; deep green and ſmooth above, very tomentoſe and whitiſh beneath. Native of St. Domingo, and found there by Deſportes.

24. Baniſteria ſagittata: ſtem twining, leaves ſagittate, large, tomentoſe, petioles biglandular. The leaves have one tooth on each ſide towards the tip; they are ſmooth above, but tomentoſe beneath. Native of St. Domingo, and found there by Deſportes.

Propagation and Culture. Theſe plants, being all natives of hot countries, cannot be preſerved in England, unleſs they are kept in a bark-ſtove. They are propagated by ſeeds, which muſt be procured from the countries where they grow naturally. Theſe ſeeds ſhould be fully ripe when gathered, and put into ſand or earth, in which they ſhould be ſent to England, otherwiſe they will loſe their vegetative quality; for from a large parcel of theſe ſeeds which were ſent over in papers, as freſh as they could poſſibly arrive here, very few plants were raiſed, and thoſe did not appear till the ſecond year; therefore when the ſeeds arrive, they ſhould be immediately ſown in pots, and, if it happens in autumn or winter, the pots ſhould be plunged into a hot-bed of tanner's bark, where the heat is very moderate, and ſecured from froſt and wet, till ſpring, when they muſt be removed to a freſh hot-bed, which will bring up the plants; but, if they ſhould not appear the firſt year, the pots ſhould be preſerved till the next ſpring, to ſee if the ſeeds will grow. When the plants come up, they muſt be put into ſeparate pots, filled with light earth, and plunged into the bark bed, after which they muſt be treated like other tender plants from the ſame countries. See GOUANIA.

BANK, *ſ.* [*banc*, Sax.] The earth ariſing on each ſide of a water. We ſay, properly, the *ſhore* of the *ſea*, and the *banks* of a *river*, *brook*, or ſmall water:

> 'Tis happy when our ſtreams of knowledge flow,
> To fill their *banks*, but not to overthrow. *Denham.*

Any heap of earth piled up.—They beſiged him in Abel of Bethmaachah, and they caſt up a *bank* againſt the city; and it ſtood in the trench. *Samuel.*

It is provided by ſtat. 9 Geo. c. 22. that if any perſon ſhall unlawfully and maliciouſly break down the head, mound, or *bank*, of any fiſh-pond, whereby the fiſh ſhall be loſt or deſtroyed; or break down or cut away the *bank* of any river, or any ſea-bank, whereby any lands ſhall be overflowed or damaged; he ſhall be guilty of felony without benefit of clergy.

BANK, *ſ.* [from *banc*, Fr.] A ſeat or bench of rowers:

> Mean time the king with gifts a veſſel ſtores,
> Supplies the *banks* with twenty choſen oars. *Dryden.*

—That *banks* of oars were not in the ſame plane, but raiſed above one another, is evident from deſcriptions of ancient ſhips. *Arbuthnot.*

BANK, in ſea language, denotes an elevation of the ground, at the bottom of the ſea, ſo as ſometimes to ſurmount the ſurface of the water, or, at leaſt, to leave the water ſo ſhallow, as uſually not to allow a veſſel to float over it. In this ſenſe, bank amounts to much the ſame with flat, ſhoal, &c. There are *banks* of ſand, and others of ſtone, called alſo ſhelves or rocks. In the north ſea, they deſcribe *banks* of ice, which are large pieces of that ſubſtance floating about. Vapours at ſea ſometimes occaſion ſuch a *deceptio viſûs*, that mariners imagine they ſee land with trees, &c. They call theſe *fog-banks*. A remarkable appearance of this kind is deſcribed in Dr. Hawkſworth's Account of the Voyages to the Southern Hemiſphere, vol. i. p. 10. A long narrow bank is ſometimes called a *rib*. The bank, main bank, or great bank, denotes technically that of Newfoundland, the region of the cod fiſhery. It is called the *great bank*, not only by reaſon of its vaſt extent, being, according to the Engliſh computation, two hundred miles long, and, according to the French, one hundred leagues, or three hundred miles; but alſo on account of ſeveral ſmaller banks near it, where cod are alſo caught. Theſe laſt the French call *banquereaux*. This is one of thoſe banks which have water enough to float a ſhip, and which, on this account, are not dangerous. Banks that are dangerous are uſually diſtinguiſhed by a buoy, poſt, or the like. On charts, ſand-banks are uſually marked by little dots, and banks of ſtone by croſſes. The colours of the buoys are alſo varied accordingly; ſand-banks being denoted by light coloured buoys, and rocks by black ones. In large rivers, as the Elbe, &c. ſand-banks, by high tides and inundations, are liable to change places; care is therefore taken to ſhift the buoys from time to time, to ſhew the true channel of the river. An exact knowledge of the banks, their extent, and the depth of water on them, forms the moſt eſſential part of the ſcience of a pilot, and a maſter of a ſhip. If the veſſel be large, and draw much water, great attention will be neceſſary to keep clear of the banks: on the contrary, if it be ſmall, the ſame banks afford a ſure aſylum, where it may brave the largeſt and ſtouteſt veſſels, which dare not follow it. By means of this barrier, many a ſmall veſſel has eſcaped a purſuing enemy.

BANK, in the common law, is uſually taken for a ſeat or bench of judgment; as *Bank le Roy*, (B. R.) the court of King's Bench; *Bank le Common Pleas*, (B. C.) the Bench or Court of Common Pleas, or the Common Bench; called alſo in Latin *Bancus Regis*, and *Bancus Communium Placitorum*. *Jus Banci*, or the privilege of the bench, was anciently allowed only to the king's judges, *qui ſummam adminiſtrant juſtitiam*; for inferior courts were not allowed that privilege. There are, in each of the terms, ſtated days, called *days in bank*, *dies in banco*, that is, days of appearance in the court of Common Pleas. They are generally at the diſtance of about a week from each other, and regulated by ſome feſtival of the church. On ſome one of theſe days in bank all original writs muſt be made returnable; and therefore they are generally called the returns of that term.

BANK, in commerce, is a denomination given to certain ſocieties, or communities, who take on them the charge of the money of private perſons, to keep it ſecure, and pay whenſoever demanded. The word *bank*, in this ſenſe, comes from the Italian *banco*, a bench, whereon the ancient money-changers ſat in the public markets; or, as others think, a table whereon they told their money. It cannot be doubted but that the beginning of traffic was by exchanging one commodity for another, as men could beſt ſuit each others occaſions. But the neceſſities of men being ſo various and different, in reſpect to the quantity and quality of requiſites, money was inſtituted as the moſt convenient medium for commerce; whereby people might procure whatſoever they ſtood in need of, in quantities according to their exigencies. Yet this way of payment is attended with many inconveniencies, as the trouble in counting the money, hazard in ſecuring it from the attempts of robbers, and loſs from truſting it with unfaithful ſervants: for the prevention of all which, cities of large commerce very naturally introduced the uſe of *banks.* A bank therefore may properly be defined a common repoſitory, where many perſons agree to keep their caſh, to be always ready at their call or direction. And banks are of two kinds; either *public*, conſiſting of a company of monied men, who being duly eſtabliſhed, and incorporated by the laws of their country, agree to depoſit a conſiderable fund, or joint ſtock, to be employed for the uſe of the ſociety, in lending money upon ſecurity, buying and ſelling bullion, diſcounting bills of exchange, &c. or *private*, i. e. ſet up by private perſons, or partnerſhips, who deal in the ſame way as the former upon their own ſingle ſtock and credit. Of theſe banks we ſhall now give the hiſtory both public and private; and firſt, of the

BANK of ENGLAND.

The bank of England is the greateſt public bank in the world. It was firſt introduced in the year 1694, upon a plan ſuggeſted by Mr. Patterſon, a merchant of great eminence, occaſionally to ſupply the exigencies of government, and, as he termed it, "to ſave the miniſterial people the diſgrace of ſtooping ſo frequently to ſolicitations to the London common-council, for the borrowing of only one or two hundred thouſand pounds, upon the credit of the land-tax; as the common-councilmen did to the private inhabitants of their wards, going from houſe to houſe, for the loan of the money." After the ſcheme had been debated for a long while in the privy-council, the plan was at length adopted, and the company was incorporated by parliament, in the 5th and 6th years of William and Mary, by the name of the Governors and Company of the Bank of England; in conſideration of the loan of 1,200,000l. to the government; for which the ſubſcribers received almoſt eight per cent. By this charter, the company are not to borrow under their common ſeal, unleſs by act of parliament: they are not to trade, or ſuffer any perſon in truſt for them to trade, in any goods or merchandiſe; but they may deal in bills of exchange, in buying or ſelling bullion, and foreign gold and ſilver coin, &c. By an act of parliament paſſed in the 8th and 9th year of William III. they were impowered to enlarge their capital ſtock to 2,201,171l. 10s. It was then alſo enacted, that bank ſtock ſhould be a *perſonal* and not a *real* eſtate; that no contract either in word or writing, for buying or ſelling bank ſtock, ſhould be good in law, unleſs regiſtered in the books of the bank within ſeven days, and the ſtock transferred in fourteen days; and that it ſhould be felony, without the benefit of clergy, to counterfeit the common ſeal of the bank, or any ſealed bank bill, or any bank note, or to alter or eraſe ſuch bills or notes. By another act, paſſed in the 7th of queen Anne, the company were impowered to augment their capital to 4,402,343l. and they then advanced 400,000l. more to the government; and in 1714 they advanced another loan of 1,500,000.

In the third year of the reign of George I. the intereſt of their capital ſtock was reduced to five per cent. when the bank agreed to deliver up as many exchequer-bills as amounted to 2,000,000l. and to accept an annuity of 100,000l. and it was declared lawful for the bank to call from their members, in proportion to their intereſts in their capital ſtock, ſuch ſums of money as in a general court ſhould be found neceſſary. If any member ſhould neglect to pay his ſhare of the monies ſo called for, at the time appointed, by notice in the London Gazette, and fixed upon the Royal Exchange, it ſhould be lawful for the bank, not only to ſtop the dividend of ſuch a member, and to apply it toward payment of the money in queſtion; and alſo to ſtop the transfer of the ſhare of ſuch defaulter, and to charge him with the intereſt of five per cent. per annum, for the money ſo omitted to be paid: and, if the principal and intereſt ſhould be three months unpaid, the bank ſhould then have power to ſell ſo much of the ſtock belonging to the defaulter as would ſatisfy the ſame. After this, the bank reduced the intereſt of the 2,000,000l. lent to the government, from five to four per cent. and purchaſed ſeveral other annuities, which were afterwards redeemed by the government, and the national debt due to the bank was reduced to 1,600,000l. But in 1742, the company engaged to ſupply the government with 1,600,000l. at three per cent. which is now called *the three per cent. annuities*; ſo that the government was now indebted to the company 3,200,000l. the one half carrying four, and the other three, per cent.

In the year 1746, the company agreed that the ſum of 986,800l. due to them in the exchequer-bills unſatisfied, on the duties for licences to ſell ſpirituous liquours by retail, ſhould be cancelled, and in lieu thereof to accept an annuity of 39,442l. the intereſt of that ſum at four per cent. The company alſo agreed to advance the farther ſum of 1,000,000l. into the exchequer, upon the credit of the duties ariſing by the malt and land tax, at four per cent. for exchequer-bills to be iſſued for that purpoſe; in conſideration of which, the company were enabled to augment their capital with 986,800l. the intereſt of which, as well as that of the other annuities, was reduced to three and a half per cent. till the 25th of December, 1757, and from that time to carry only three per cent. And, in order to enable them to circulate theſe exchequer-bills, they eſtabliſhed what is now called *bank circulation*; the nature of which is as follows: The company of the bank are obliged to keep caſh ſufficient to anſwer not only the common but alſo any extraordinary demand that may be made upon them; and whatever money they have by them, over and above the ſum ſuppoſed neceſſary for theſe purpoſes, they employ in what may be called *the trade of the company*; that is to ſay, in diſcounting bills of exchange, in buying of gold and ſilver, and in government ſecurities, &c. But when the bank entered into the above-mentioned contract, as they did not keep unemployed a larger ſum of money than what they deemed neceſſary to anſwer their ordinary and extraordinary demands, they could not conveniently take out of their current caſh ſo large a ſum as a million, with which they were obliged to furniſh the government, without either leſſening that ſum they employed in diſcounting, buying gold and ſilver, &c. (which would have been very diſadvantageous to them,) or inventing ſome method that ſhould anſwer all the purpoſes of keeping the million in caſh. The method which they choſe, and which fully anſwers their end, was as follows: They opened a ſubſcription, *which they renew annually*, for a million of money; wherein the ſubſcribers advance ten per cent. and enter into a contract to pay the remainder, or any part thereof, whenever the bank ſhall call upon them, under the penalty of forfeiting the ten per cent. ſo advanced; in conſideration of which, the bank pays the ſubſcribers four per cent. intereſt for the money paid in, and one fourth per cent. for the whole ſum they agree to furniſh and in caſe a call ſhall be made for the whole, or any part thereof, the bank farther agrees to pay them at the rate of five per cent. per annum for ſuch ſum till they repay it, which they are under an obligation to do at the end of the year. By this means the bank obtains all the purpoſes of keeping a million of money by them; and though the ſubſcribers, if no *run* is made upon them, receive ſix and a half per cent. for the money they advance, yet the company gains the ſum of 23,500l. per annum by the contract; as will appear by the following account:

The bank receives from the government for the advance of a million - -	£.30,000
The bank pays to the ſubſcribers who advance 100,000l. and engage to pay (when called for) 900,000l. more - - -	6,500
The clear gain to the bank therefore is -	23,500

This is the ſtate of the caſe, provided the company ſhould make no call on the ſubſcribers, which they will be very unwilling to do, becauſe it would not only leſſen their profit, but affect the public credit in general. Bank *ſtock* may not improperly be called a *trading ſtock*, ſince with this they deal very largely in foreign gold and ſilver, in diſcounting bills of exchange, &c. Beſides which, they are allowed by the government very conſiderable ſums annually for the management of the annuities paid at their office. All which advantages render a ſhare in their ſtock very valuable; though it is not equal in value to the Eaſt-India ſtock. The company make dividends of the profits half-yearly, of which notice is publicly given: when thoſe who have occaſion for their money, may readily receive it; but private perſons, if they judge convenient, are permitted to continue their funds, and to have their intereſt added to the principal. This company is under the direction of a governor, deputy governor, and twenty-four directors, who are annually elected by the general court, in the ſame manner as in the Eaſt-India company. Thirteen, or more, compoſe a court of directors for managing the affairs of the company.

The bank of England acts not only as the great engine of ſtate and of commerce, but tranſacts buſineſs with individuals the ſame as an ordinary bank. It poſſeſſes the reputation of having, upon ſeveral arduous occaſions, ſupported the credit of the principal houſes, not only in England, but of Hamburgh and Holland. Upon one occaſion it is ſaid to have advanced for this purpoſe, in one week, no leſs a ſum than 1,600,000l. nearly all in bullion.

Private Banks are of an earlier origin than the public. The royal mint in the tower of London had for ſome years prior to 1640 been made uſe of as a kind of bank, or depoſit, for merchants to lodge their caſh in. But Charles I. having in that year made free with their money, the mint loſt its credit. We may date the commencement of private banking from the year 1645, which ſeems to have originated with the goldſmith's company. The proper buſineſs of the London goldſmiths had always been to buy and ſell plate, bullion, and foreign coins of gold and ſilver; to melt and cull them; to coin ſome at the mint; and with the reſt to ſupply the refiners, plate-makers, and merchants, as they found convenient to the advantages of trade. But, in conſequence of the civil broils which broke out about this period of king Charles's reign, the merchants and principal traders began to lodge their money in the goldſmiths' hands for its greater ſafety. This became ſo much the faſhion, that in a very ſhort time the banking ſcheme conſtituted a very conſiderable branch of buſineſs. The goldſmiths began to diſcount merchants bonds and bills, both in town and from the country; and alſo, began to receive the rents of gentlemen's eſtates remitted to town, and to allow them, and others, who put caſh into their hands, ſome intereſt for it, if it remained only for a ſingle month. This was a great allurement to people to put out their money, and an invention that brought an immenſe quantity of caſh into their hands; ſo that they were enabled to ſupply government as the bank of England now does, with temporary ſums, for which theſe bankers took ten per cent. and on bills, tallies, orders, and debts due to the king, they ſometimes got from twenty to thirty per cent. to the great diſhonour of government. This great gain induced the goldſmiths more and more to become lenders to government; to anticipate all the revenue; to take every grant of parliament into pawn, as ſoon as it was given; ſo that in fact all the revenue paſſed through their hands. Thus they went on till the year 1672, when they had jointly and ſeverally amaſſed of the public's money 1,328,526l. which was depoſited, for ſafety, in the king's treaſury, and from whence they were wont to receive weekly whatever ſum or ſums were wanted for their cuſtomers.

At this time, Charles II. happening to be much ſtraightened for caſh, he ſhut up the exchequer, and ſeized upon all the money, to carry on his war with Holland. This violent meaſure (a ſpecies of open robbery never before nor ſince experienced) bankrupted the goldſmiths, and is ſaid to have brought near ten thouſand families to poverty. A general murmur ran through the nation; and the public became ſo clamorous, that the king, for his perſonal ſafety, was obliged to bind himſelf to pay the principal out of his revenue, and, till that could be effected, to allow an intereſt of ſix per cent. per annum; but the principal was never paid. However, the parliament, 12 William III. c. 12, provided for a large arrear of intereſt then due, and ſettled the intereſt at three per cent. for the future. The debt was hereby made redeemable, on paying one moiety of the principal ſum, viz. 664,263l. farther confirmed by an act of queen Anne, which moiety now became the proper debt of the public, and was finally ſubſcribed into the South-ſea capital ſtock, in the year 1720. Upon this ſubject, Sir William Temple, in his Miſcellanies, makes the following remark: "The credit of our Exchequer is irrecoverably loſt, by the laſt breach with the bankers; for credit is gained by cuſtom, and ſeldom recovers a ſtain." Several bitter invectives againſt the trade of banking were now publiſhed; and many years after, when the preſent cuſtom of receiving and paying money from morning till night in an open ſhop came firſt to be introduced, it was thought to be a ſtrange ſort of thing; and Sir Joſhua Child, and ſeveral other authors of credit, wrote vehemently againſt it. The bankers were accuſed of being a pack of uſurers; of keeping the intereſt of money at leaſt two per cent. higher than otherwiſe it would be, which was productive of many evils; and alſo, that they made money ſcarce amongſt individuals, by ſurreptitiouſly collecting all they could into their own poſſeſſion, whereby the country was drained in every part, and the ſubject injured. But, upon the whole, whatever might have been the practice of bankers then, the caſe is now quite otherwiſe. The diſpatch given by our modern bankers to merchants and dealers in general, is found ſo convenient to trade, that people are greatly accommodated by lodging caſh with them, to be drawn out from time to time as they want it, without receiving or expecting any intereſt whatever; and the facility with which bills, notes, drafts, bonds, and real perſonal ſecurities, are and may be converted into immediate money through the medium of private banks, both in London and in the country, muſt be acknowledged a very great public conveniency, and one of the moſt important aids to trade and commerce that cuſtom or invention ever introduced. The great national utility of the bank of England, its particular intereſts, tranſactions with the government, quantum of its circulating notes, and cauſes of the late temporary inability to retrieve them, are ſubjects that have been lately very ably diſcuſſed by Sir Francis Baring; and, as they are no leſs intereſting than important to the commercial world, we ſhall here ſubjoin the moſt material part of the worthy baronet's obſervations; and alſo his remarks upon the economy and management of private banks both in town and country.

The operations of the bank of England may be conſidered under three diſtinct heads. The firſt relates to the general circulation, or *circulating medium*, of the country. The ſecond, its tranſactions with the government, by loans, payment of dividends, &c. The third, its commercial diſcounts. Circulation, as the word implies, muſt have a pivot or centre on which the whole can turn; and that centre, as far as relates to the iſland of Great Britain, is the bank of England; whoſe paper or notes repreſent that medium, for every uſeful and convenient purpoſe. Indeed any thing may become a circulating medium; but paper is as good a repreſentative ſign as gold, and in many inſtances it is better, becauſe it is more eaſy to manage and to transfer; but then it muſt be underſtood, that, with a correct knowledge of the baſis on which ſuch paper is founded, it enjoys the moſt perfect confidence: in which caſe, the only difference conſiſts in ſuch paper being the circulating medium for the country where it iſſues; while gold or ſilver are the circulating mediums in every part of the world,—for both are no more than repreſentative ſigns. If there were more gold than was wanted, confidence in it, as a repreſentative ſign, would ſlacken, and it would no longer become a circulating medium. If bank notes were augmented ſo as to be ſold at a diſcount, confidence would vaniſh, and thoſe notes be no longer a circulating medium.

It is impoſſible to underſtand the principles upon which the bank of England is eſtabliſhed, the nature of its public and private intereſt, and more particularly to appreciate the real ſituation of the country in reſpect to the paper circulation, without entering into ſome explanations with regard to paſt occurrences, and the relative ſtate of the country banks; in which it is material to obſerve, that the bank of never did entirely abſorb the whole of the national and commercial circulations. The amount of the bills diſcounted by the bank for commercial purpoſes nominally is not known; but, when the ſtate of their affairs was recently laid before parliament, the amount could not have been large; at leaſt it muſt have borne a ſmall proportion to the commerce and ſolid circulation of the country; but, if the amount of paper diſcounted for fictitious and ſtock-jobbing purpoſes be deducted, the remainder will bear a very ſmall proportion indeed to the whole; and therefore the commerce of the country would not receive a fatal blow if the bank ſhould decline diſcounts altogether: nor even ſhould it fail. The convulſion would no doubt be great, the difficulty and diſtreſs incalculable, but the country would not be *ruined*. The exiſtence of the bank depends on that of the country; but the exiſtence of the country by no means depends on that of the bank.

Very few foreigners have underſtood the principles on which the bank of England is eſtabliſhed; they have always conſidered their notes as government paper, and the experience they have had of the practice of governments in every country, induced them to ſuppoſe, that, when gold was lately refuſed on the preſentation of the notes, the bank and the country were equally on the brink of ruin. They could not diſtinguiſh between paper iſſued for the ſole purpoſe of circulation, limited in its amount, and under the authority and reſponſibility of a corporate body, abſolutely independent,—and that paper which government could iſſue *ad libitum*, bearing an intereſt, which rendered it an object for perſons to purchaſe as a productive inveſtment of their capitals: they were very much aſtoniſhed to find the total amount of notes in circulation to be ſo ſmall, compared with the commerce and wealth of the country; and equally ſo, that after all bank notes continued to circulate at par. Thoſe opinions, however, did not prevail at home, for the knowledge of the ſources from whence thoſe notes iſſued, namely, depoſits of bullion, loans to government, and commercial diſcounts, together with the confidence repoſed in the directors, from the open manner in which they met and even courted public inveſtigation, at the late alarming criſis of their ſtopping payment. From long experience, the directors of the bank muſt underſtand correctly the amount to which their notes can circulate without depreciation or diſcount; and, altho' they acted very wiſely at the awful moment to iſſue a larger ſum than uſual, yet the event has proved, that they have conducted themſelves with equal judgment, by not extending their iſſues beyond what the currency of the country requires, and can ſupport. Thus public confidence was reſtored to a degree much beyond what could have been expected; but the ſlur muſt indelibly remain, for it never can be effaced.

As the circulation of the bank of England, although the moſt important, is not the entire circulating medium of the country, it becomes neceſſary to take ſome notice of the *country* banks, in order to form a correct opinion of the whole. The eſtabliſhment of moſt country banks is of modern date; yet there has been no material ſhock, with regard to circulation, from the time of the rebellion, until that which happened by the failure of the Air bank, in 1772. This failure was accompanied with others of great extent at the ſame time in Holland; but, as it was evidently partial and not general, the bank of England acted very wiſely, as well as liberally, by affording a ſupport to thoſe houſes whoſe ſolidity was unqueſtionable, leaving others which were rotten to fall; and, as they were ſwept away, confidence was gradually reſtored. The next check to commercial credit aroſe from the failure of a circulation eſtabliſhed between Lancaſhire and London, well known in the courts of law by the caſe of *Gibſon* v. *Johnſon*, which has been ſo often tried; but, although the amount was large, it moved in ſo narrow a line, that it produced no general effect on the country. What happened by the failure of ſo many private banks in the beginning of 1793 was, however, very different: far beyond any thing which preceded, or has followed it, in magnitude; it pervaded, more or leſs, every part or place in both iſlands, and affected every deſcription of property.

During the interval between the failure of the Air bank and the diſtreſs of 1793, a very material change had taken place in regard to the general circulation. Banks had been eſtabliſhed in almoſt every town, and even in villages, throughout the country; and, in the larger towns rival eſtabliſhments were formed. Theſe produced a moſt important, and, whilſt it was ſecure, a beneficial, change to the country, by increaſing its circulation: but unfortunately the principles on which thoſe banks were moſtly eſtabliſhed were inſecure, in their being compelled to inveſt or employ the depoſit left in their hands, and thereby rendering themſelves incapable of facing a ſudden ſtorm, or, as it is called, anſwering a run upon them, which, from natural events, muſt, in a courſe of time, ariſe. A banker in London never allows intereſt to his cuſtomers, and can afford to reſerve a proportion of his depoſits, to enable him to anſwer ſudden demands, or a run on his houſe; as he thereby ſuſtains no real loſs, but only diminiſhes the amount of his profit. The country banker is in a very different ſituation, for he allows intereſt on depoſits, and therefore he cannot afford to ſuffer even a ſmall ſum to remain dormant and unproductive; for every 100l. which he ſuffers to remain in that predicament, is a loſs of the intereſt which he pays to his cuſtomer, and which intereſt he muſt get reimburſed, by inveſting the money, before he can realiſe any profit for himſelf. Thus it will appear, that whilſt the circulation was greatly increaſed, and its beneficial effects enjoyed, by the commerce, manufactures, agriculture, &c. of the country, it was founded on the moſt inſecure principle, and liable to almoſt inſtantaneous convulſion, by unforeſeen and even trifling circumſtances. This might be promoted, more or leſs, by the practice of particular eſtabliſhments; for if country banks, whoſe principals are men of large unqueſtionable property, ſhould fail, the contagion will immediately ſpread, and the conſequences are incalculable. Thus, for inſtance, in the beginning of the year 1793, and of 1797, the banks of Newcaſtle ſtopped payment, whilſt thoſe of Exeter and the weſt of England ſtood their ground. The partners in the banks of Newcaſtle were far more opulent, but their private fortunes, being inveſted, could not be realiſed in time to anſwer a run on their banks. Their notes allowed intereſt to commence ſome months after date, and were then payable on demand; by which means they had not an hour to prepare for their diſcharge. The banks at Exeter, on the contrary, iſſued notes payable *twenty days after ſight*, with intereſt to commence from the date of the note, and to ceaſe on the day of acceptance. There can be no doubt but the practice of the banks at Newcaſtle is more lucrative, but it muſt for ever be liable to a return of what has happened; whilſt the twenty days reſerved at Exeter furniſhes ample time to communicate with London, and to receive every degree of aſſiſtance which may be required.

Another circumſtance contributed very materially to produce the diſtreſs of 1793, which was the ſudden and unexpected declaration of war. That event is uſually preceded by ſome indication which enables the commercial and monied men to make preparation. On this occaſion, however, the ſhort notice rendered the leaſt degree of general preparation impoſſible. The foreign market was by this means ſhut, or rendered more difficult of acceſs to the merchant; of courſe he could not purchaſe from the manufacturer; and an important variation in the rate of exchange on the continent, furniſhed a pretence to foreigners to withhold their remittances from both. The manufacturers in their diſtreſs applied to the bankers in the country for relief; but as the want of money became general, and that want increaſed gradually by a general alarm, the country banks required the re-payment of old debts, being utterly incapable of increaſing them, and which of courſe brought their own ſituation to the teſt. In this predicament the country at large could have no other reſource but London; and, after having exhauſted the bankers, that reſource finally terminated in the bank of England. In the mean while, the alarm in the country continued to increaſe; confidence in their banks vaniſhed; every creditor was clamorous for payment, which he inſiſted ſhould be made in gold, and which was complied with, until the bankers in London were exhauſted. At firſt the bank accommodated themſelves to circumſtances, and furniſhed large ſupplies; but unfortunately the directors caught the panic; their nerves could not ſupport the daily and conſtant demand for guineas; and for the purpoſe of checking that demand, they curtailed their diſcounts to a point never before experienced, and which placed every part of the commerce of the country in a conſiderable degree of danger. Under all circumſtances, it might perhaps have been right for the bank to leſſen the amount of their diſcounts, or to leſſen the accommodations which individuals had been accuſtomed to receive; but then it ought to have been gradual; their determination, and the extent to which it was carried, came like an electrical ſhock. In ſuch caſes the bank are not an intermediate body, or power: there is no reſource on their refuſal, for they are the *dernier reſort*. The laws againſt uſury effectually deſtroy every other means of relief in this country, whilſt experience has proved, at Hamburgh, at Amſterdam, and other places, that the moſt effectual mode of keeping the rate of intereſt low, is to leave it free from every reſtriction. As the determination of the bank was founded upon the demand which came from every quarter of the country for guineas, it may be proper to notice the cauſe which gave riſe to the demand for guineas, and which ſeems attributable to the three following circumſtances: 1ſt, As a medium of remittance to foreign parts, to ſupply the want of bills of exchange. 2dly, For the purpoſe of hoarding in the country, from a want of confidence in the government and in the circulating paper. 3dly, To enable country banks to diſcharge their demands, whilſt confidence in government, and in the bank of England, remained entire.

The firſt is the moſt dangerous predicament, as being moſt injurious to the country; every meaſure ought to be taken to palliate or prevent it, prohibitions or bankruptcy excepted; but it is inevitable, if we ſhall continue for a long time to have more to pay to foreigners than we receive from them; or, in other words, if the balance of trade is againſt us. It was notorious, at the time, that large quantities of gold and ſilver were received from France; of courſe none could be ſent thither, as is obvious from the then courſe of exchange. The following calculation will ſerve for Amſterdam, viz.

	l.	s.	d.
100 guineas coſt, with freight, inſurance, and charges - -	106	13	0
Sold at *f*12 each, is *f*1200, agio 100½ per cent. is banco *f*1193, 11, and at the average exchange of 38 6 from January to March, 1793, is - - -	103	6	9
Loſs - - - - - -	3	6	3

The price of guineas at Amſterdam was invariably *f*12, from January to the 12th of April, 1793; but guineas were hardly ever in ſufficient quantity in Holland to become an object of trade, until the Britiſh troops landed there in February, 1793. The calculation for Hamburgh appears ſtill more unfavourable:

100 guineas coſt, with charges, -	£106	13	0
They contain, in ducat gold, at Hamburgh, 225 ducats, at 96½ banco per ducat, is marks banco 1357, at the average exchange of 35 3 - - -	102	10	6
Loſs - - - - -	4	2	6

The price of 96½ is the par for a ducat, which was about the average price for January, February, and March, 1793. In this ſituation of foreign exchange it was impoſſible that the coin of the country could have been exported: individuals will not act contrary to their own intereſt, which operates in ſuch caſes more effectually than acts of parliament; and is in reality the only wiſe reſtriction which ought to exiſt, in a country ſo much dependant on its trade. Individuals muſt pay freight, inſurance, brokerage, and ſome ſmall expences, in addition to the loſs on the price; ſo that no impartial perſon can entertain apprehenſions for a moment, under ſuch circumſtances. The export of foreign gold and ſilver ought always to be free, and the bank ought to ſupply the demand, whenever it ſhall ariſe; under a certainty that the export will produce a beneficial effect on the courſe of exchange, and thereby enſure its return (provided the balance of trade is in our favour), with additional profit. The coin of the country may, however, be in a different ſituation; but on this ſubject we will not enter, as it will require a volume to diſcuſs. If the balance is againſt us, whether ariſing from our trade, or as the reſult of ſubſidies paid to foreign powers, that balance muſt be paid in gold or ſilver; and, if there is not ſufficient foreign bullion in the country for the purpoſe, guineas muſt and will be ſent, or bank notes will be reduced to an enormous diſcount: it is in vain to prohibit what cannot be hindered; the ſevereſt law will only tend to throw that profit into the pocket of the ſmuggler which would otherwiſe belong to the fair trader.

We ſhould diſtinguiſh, however, between that drain which is the reſult of a balance againſt the country, and *forced* operations for temporary purpoſes, which government, with the aid of the bank of England, can more or leſs prevent. Thus, for inſtance, at the commencement of the French revolution, the comptroller-general endeavoured to draw ſilver from hence, and from other places, to ſerve temporary purpoſes at Paris, which the miniſter ſtopped. If his object was to benefit this country, or to diſtreſs the finances of France, he ought to have encouraged and promoted ſuch operations; or, which would have been moſt effectual, he ought to have remained a ſilent ſpectator. Such was the ſtate of exchange at the time, that each tranſaction coſt 12½ per cent. and, as thoſe operations could have been performed four, five, perhaps ſix, times in the courſe of a year, the benefit to this country, and the loſs to France, could only have been limited by the extent of the powers of the latter; and which muſt in time be exhauſted, when 100l. ſent from hence in ſilver ſhall be found to return in two, or at moſt in three, months, with an addition of 12l. 10s. for profit. Such tranſactions would have produced a real effect without the aid of acts of parliament, or the hand of power; whilſt the wild and ignorant ſpeculations on the conſequences of the aſſignats and mandats of France, have vaniſhed in ſmoke.

To the charter of the bank of England this country is indebted in a high degree for the proſperity ſhe has enjoyed; and to a clauſe in that charter, which prohibits any other eſtabliſhments of a ſimilar deſcription, we may look as to a ſhield to protect us againſt projects ſuch as thoſe of the South Sea, the Miſſiſſippi, the Air bank, &c. &c. It ought to prove a deciſive anſwer to thoſe who have ſuggeſted an increaſe of paper by means of a new bank, that the bank of England can, and muſt, iſſue to the full extent which the circulation of the country can ſupport with ſafety; for their charter obliges them, and it is their intereſt to do ſo. If an addition is made by means of a new eſtabliſhment, the paper of one, perhaps of both, banks, muſt ſuffer a depreciation, and cannot circulate at par.

Paper, as a circulating medium, is more than convenient; for in theſe enlightened times it is neceſſary, and even indiſpenſable. The difficulty ariſes from the conſequences which reſult from the two extremes: in the caſe of too great an exceſs, depreciation and diſtreſs will inevitably follow; but, if too much curtailed, the exertion and induſtry of the country is chilled or palſied, and its growing proſperity is thereby prevented. The bank of England, from their central poſition, are moſt fortunately placed to form a correct judgment on this ſubject, and the amount of their notes in circulation will conſtitute a perfect barometer, reſulting from long experience and practice.

The tranquillity, confidence, and general proſperity, which ſucceeded the diſtreſs in 1793, continued through the years 1794, 1795, and part of 1796; but money again became ſcarce towards the end of 1796, and the bank of England ſtopped payment in the beginning of 1797! This very ſudden tranſition from plenty to ſcarcity, from ſcarcity to diſtreſs, and from plenty to diſtreſs again, could ariſe from no common cauſe. Indeed all convulſions in the circulation and commerce of every country muſt originate in the operations of the government, or in the miſtaken views and erroneous meaſures of thoſe poſſeſſing the power of influencing credit and circulation; for they are not otherwiſe ſuſceptible of convulſion; and, if left to themſelves, they will find their own level, and flow in one uniform ſtream.

The ſcarcity of guineas which took place towards the end of 1796, ſeems to have been in conſequence of the increaſed amount of foreign ſubſidies, and remittances to the continent for the public account: theſe had increaſed beyond the capacity of the current circulating paper to ſupply, and therefore could not be melted down in the courſe of the year, by means of the balance of trade, but muſt be liquidated with gold and ſilver alone. At firſt, and indeed for many months, the bank acted in ſuch a manner as to ſatisfy the public, and to keep the country quiet; but the demand for guineas muſt have been enormous: this will eaſily be underſtood by a calculation of the profit to be obtained on exporting them to Hamburgh, in the months of January, February, and March, 1796. The price of gold abroad had advanced to 99¾ per ducat, which for 100 guineas makes 1402-12-marks banco, and at the

average exchange of thoſe months 32-3 is	£115	9	9
Deduct the coſt as before - - -	106	13	0
Profit - - -	8	16	9

But, as this was the higheſt price, it may be proper to quote the average of each month in 1796:

	Exchange in London	Price of Gold at Hamburgh	Produces an Exchange	Profit
In January	31-8	97½	34-2	7½
February	32-8	99⅝	34-10	6½
March	31-11	99	34-8½	8⅜

With ſuch documents in the poſſeſſion of every foreign merchant, it is eaſy to ſee that there muſt have exiſted ſome forced unuſual operation, by which the country was drained of its bullion, and of its coin, beyond a poſſibility of continuing for any length of time; and this drain was in a great degree the Imperial loan, aided by ſome other collateral circumſtances. As the public attention was particularly drawn to the Imperial loan at the time, and as it formed the prominent feature in the remonſtrances from the bank, it has been conſidered as the ſole cauſe of the general embarraſſment. But it was the magnitude of the ſum, not the deſcription of ſervice, which created the difficulty. It muſt be indifferent to the country, if bullion is *exported*, to what ſervice it ſhall be applied; but it is of infinite importance, whether the magnitude of the ſum ſhall exceed, or fall ſhort, of the balance of trade. Whether money ſo exported ſhall be applied to the payment of the Britiſh troops in Germany, for the foreign expenditure of fleets in the Mediterranean or Liſbon, or whether it ſhall be for an Imperial loan, or foreign ſubſidies, is exactly the ſame to the country; for, whilſt the balance of trade is favourable, the money muſt return.

It muſt not however be underſtood, that foreign loans, or foreign expenditures, are ſubjects of indifference to the country; they are no doubt clear unequivocal loſſes, which the calamity of war has invariably produced. It is therefore moſt ardently to be wiſhed, that there ſhould be no occaſion for the exportation of bullion; or, in other words, that there ſhould be perpetual peace; but, during war, one of the moſt eſſential ſervices which commerce can render for the aid and aſſiſtance of the public, is to furniſh, from that treaſure which the balance of trade has contributed to accumulate during peace, the gold and ſilver which the exertions and exigencies of the ſtate ſhall require for their operations abroad during the war. It is by ſuch means alone, that the political and commercial powers have formed a combination of ſtrength, both for offenſive and defenſive operations, which has aſtoniſhed all Europe; although, from the profuſe manner in which they have been applied, they have not always produced their proper effect. It was, therefore, not the nature or deſcription of ſervice, which rendered the Imperial loan ſo injurious; but ſo many drains on the bullion of the country exiſted at the time, that the addition of ſuch an enormous ſum produced the moſt pernicious conſequences. The alarm of the bank, and their remonſtrances, were well founded; and their ſituation, if ſuch operations had continued, was pregnant with real danger. They had ſtruggled, however, through the year 1796, and would certainly have ſurmounted every difficulty, as any further imperial loan had been abandoned, and the foreign exchange was turning in favour of the country, when an event happened which was deciſive on the fate of the bank. This was the general rumour of a French invaſion, which was confirmed in the minds of many by the landing of a handful of French troops in Wales. This occaſioned a panic, which gave riſe to an immediate demand for money, to which neither gold nor ſilver in bullion could be applied, as nothing would be accepted but the circulating coin of the country. Perſons of almoſt every deſcription caught the alarm: tradeſmen, mechanics, and particularly women and farmers, all wanted guineas, for the ſole purpoſe of hoarding. In 1793, when confidence in the notes of country banks, and in every other deſcription of paper, had vaniſhed, thoſe of the bank of England circulated with the utmoſt freedom, and without the ſlighteſt heſitation or doubt. But on this occaſion bank notes at firſt were conſidered almoſt as waſte paper, ſo that it was impoſſible to ſatisfy the timid and ignorant with any other payment but guineas.

If this event had happened before the bank had been drained for foreign ſervices, it might have produced an effect only, which they could have faced by means of their uſual depoſits, under a perſuaſion that the cauſe would ſoon be removed, on finding that the attempt on the part of the French was not ſupported. But it came at a moment when their ſtock of guineas was already too low, and rendered the meaſure to which they adverted indiſpenſable. The demand for guineas ceaſed, no doubt; not becauſe the deſire of obtaining them had abated, but becauſe the bankers and merchants united firmly to ſupport the bank in their refuſal to iſſue guineas, and to accept of their notes inſtead, as a circulating medium. The cauſe of the calamity originated in thoſe drains which had previouſly exiſted, to ſupply the foreign loans, and foreign ſervices, on behalf of government, and which had never been properly combined with the capacity which the country poſſeſſed to ſupply them; but what produced the *criſis* was, the landing of the French troops. The timidity which appeared in many very ſenſible men, on that occaſion, was ſurpriſing. Yet they muſt have known the impoſſibility of obtaining a ſum in guineas, in any degree proportionable to their property; as every perſon had an equal right to be ſupplied, and would hoard as well as themſelves. Whatever ſum they could obtain (as property,

perty, from its nature, cannot be entirely converted, but is more or leſs fixed or immovable) would ſerve only for a ſhort time, when their general property muſt ſerve at laſt, for a purpoſe to which it is equally applicable from the firſt; namely, that of exchange or barter. If a foreign enemy could poſſibly land with an irreſiſtible force; if the bank of England was annihilated; if the public debt followed, accompanied with general confuſion; ſome order of things muſt either continue to exiſt, or ſoon be re-eſtabliſhed: we know, from authority more than human, what followed even a ſtate of chaos. The circulating paper cannot be entirely deſtroyed; it muſt in every event preſerve a certain value: in the firſt place, it muſt liquidate, and at par, a large maſs of engagements by a mutual exchange, as thoſe who hold a large ſum in paper have generally a large ſum to pay: the balance which reſults, after ſuch liquidation, will ſtand, however, in a very different predicament, and depends altogether on circumſtances, but appears in ſuch numerous intricate points of view, as to render a diſcuſſion impoſſible; excepting only that thoſe balances, even viewing them in their worſt light, cannot be conſidered as of no value. Property muſt always exiſt under every government, and cannot be annihilated; its nominal value will vary conſiderably; but its comparative value, although it may be affected for a time by accidental circumſtances, will in the end be more or leſs the ſame. The comparative advantage, therefore, of any one deſcription over another, is at leaſt dubious, and opens a wide field for opinion. It depends, at the ſame time, upon the magnitude or value of ſuch property.

To illuſtrate this, we will ſuppoſe an inveſtment to the amount of 10,000l. each, in the caſe of an invaſion, or even conqueſt of the country, by a foreign enemy; the one in corn, the other in bank of England notes. The ſum of 10,000l. veſted in corn, will form a maſs of conſiderable bulk, and cannot eſcape the knowledge of the neighbourhood; it will no doubt preſerve its comparative value more than any other article, becauſe it is indiſpenſable; but in this conſiſts its diſadvantage or danger: for what relates to the neighbourhood, they will pay for their purchaſes by an exchange of goods or labour, as far as their capacity will permit, by a transfer of debts to a certain extent; and, as the exchange and the transfer cannot ſuffice for the whole amount, they may perhaps offer in payment for what remains the circulating medium of the time; for perſons in ſuch ſituations cannot be poſſeſſed of gold or ſilver. If the proprietor accepts ſuch payment, all objections againſt the circulating medium vaniſhes; but, as it is probable the wealthy proprietor or farmer will refuſe, the neighbourhood will not ſtarve, with the means of ſubſiſtence in view; and then the common proverb may be literally verified, that 'hunger will break through ſtone walls.' With regard to invaders, or ſuppoſe even that they are conquerors, they would demand corn as well as money; and their requiſitions would be more irreſiſtible for corn, which cannot be concealed, than for articles which are leſs bulky and more eaſily kept out of view: theſe circumſtances are independent of fire, and depreciation of quality. If it ſhall be ſaid, that the objections are againſt the maſs, or amount, and not to the article, the effect will ſtill be the ſame, whether corn is withheld by one or by twenty perſons. Its being withheld produces the conſequences; in the firſt place againſt the large maſſes, but finally againſt all; and the ſame argument will apply againſt holding a ſtock of any article of ſuperior uſe or neceſſity for the public, in caſes of calamity and danger.

The circumſtances which would attend the notes of the bank of England do not require ſo much detail. Under every ſituation of convulſion, or invaſion, moſt of the gold and ſilver would diſappear, and ſomething muſt be ſubſtituted. In ſuch a predicament, what ſubſtitute can equal the paper of the bank of England? the extent being ſo moderate, compared to the circulation of the country, and iſſuing totally independent of the government. It would even be for the intereſt of an invading enemy to ſupport a bank ſo eſtabliſhed; for by deſtroying it they would deprive themſelves of the means of drawing any advantage from it. When the French took poſſeſſion of Amſterdam, they were wiſe enough not to touch the bank; and bank money at Amſterdam is worth more ſince that invaſion than it was before. It is therefore not impoſſible but that, even in ſuch an event as is now ſtated by way of ſuppoſition, paper of this deſcription, inſtead of being the worſt, would prove the beſt, ſecurity in which property could be inveſted. At all events, a wheat-ſtack may be conſumed by fire, and the whole of the capital loſt; but ſomething muſt attach to a bank note in the worſt of times, ſo long as the independence of the bank on government ſhall be preſerved, and that their notes in circulation do not much exceed the quantity ſtated by the directors to parliament on the 25th of February, 1797, which then amounted to eight millions and a half.

The late alarming ſituation of the bank is now totally removed, in conſequence of the very high courſe of exchange with Hamburgh, which has produced a prodigious influx of gold and ſilver, whilſt the panic has ſubſided, and confidence is generally reſtored. In this pleaſing ſtate of things, it only remains to conſider the effects of the temporary indemnity bill, or act of parliament, which empowers the bank of England to retain its gold, to iſſue notes without reſtriction, and makes, as far as relates to their corporate capacity, their own notes a *legal* tender.

On this ſubject Sir Francis Baring obſerves as follows: "I am aware of all the objections which can be urged againſt the making paper of any deſcription a legal tender; and I ſhould have been forward in oppoſition to every ſuch plan or propoſal, if the bank had not ſtopped payment. But, though we have ſuffered the diſgrace, no ſerious conſequences have ariſen; yet, if the ſame diſgrace ſhall happen a ſecond time, we may not be equally fortunate with regard to the conſequences. I deſire, however, to be underſtood, that I do not recommend government paper of any deſcription as a circulating medium; between that, and the paper of a corporate, independent, reſponſible, company, there is a wide difference, a long interval indeed. The exchequer bills of government never can circulate, and never will be taken, as a medium, becauſe the public never can rely on the amount being confined within proper bounds. So long as they are paid, or can be abſorbed in the revenue, ſoon after they become due, they are of uſe to the executive government, and a benefit to the public. But, when the amount exceeds the means of liquidation, they become a dead weight, and clog every channel of the general circulation in ſuch a manner as to compel the miniſter to reduce them once more within proper bounds. If this were not the caſe, exchequer bills and aſſignats would be ſynonimous terms, and ultimately experience the ſame fate. The aſſignats iſſued originally under a plan and promiſe for their gradual extinction; but, when it was found that they continued to iſſue to an amount far beyond what was extinguiſhed, the diſcount bore a proportion to that amount, and finally ſwallowed up the principal. We were at one time induced to ſuppoſe, that the deſtruction of aſſignats in France was neceſſary for the ſalvation of Europe. But, if the intention of this country was to diſtreſs France by every poſſible means, we ought to have uſed every endeavour to encourage and ſupport the aſſignats in France; becauſe they would have entailed an enormous debt on that country, for which taxes muſt have been impoſed, ſoon or late, to defray the intereſt. What a ſituation the two countries would have been in, if peace could have been made, leaving the aſſignats in exiſtence, with a diſcount of ſeventy or eighty per cent! thereby intailing upon the country the neceſſity of impoſing taxes ſufficient to pay the intereſt, and of courſe augmenting the price of labour in a proportionable degree. At preſent the debt of France is trifling, and the taxes, when peace comes, will ſcarcely affect the price of labour; whilſt our own taxes, for the purpoſe of defraying the intereſt alone, will amount to full thirty ſhillings for every head; and which for every labourer, who generally pays for many others beſides himſelf, cannot be leſs than three or four times that ſum.

"Amongſt many other expedients to promote the circulation of aſſignats in France, when they bore a large diſcount, one was, to fix the price of proviſions, and every article at which the ſeller ſhould be compelled to receive thoſe aſſignats in payment, and which was called the law of the maximum. So long as the real diſcount on the aſſignats bore a tolerable proportion to the maximum price fixed on the proviſions, all went on ſmooth and well; but, when the diſcount advanced, the proviſions diſappeared, which was the chief cauſe of the diſtreſs and famine which prevailed in that country. The ſame fate will infallibly attend all government paper, or paper of any deſcription, whether exchequer bills or bank notes, which may be iſſued beyond a capacity in the circulation of the country, to receive at par. Not even the terror of Robeſpierre could induce the farmers or graziers to ſell corn and meat at the nominal price of the aſſignats: in a very ſhort time, notwithſtanding the dread of the guillotine, two prices were eſtabliſhed by univerſal practice, the one for money, the other for aſſignats; the interval, however, had been dreadful, having produced real diſtreſs and famine. Let not the policy of this country fall into ſimilar miſtakes. If the government ſhall repoſe ſo much confidence in the bank as to continue the preſent indemnity bill during the war, it ſeems reaſonable that the bank ſhould be reſtrained and limited in the amount for which their notes ſhall be iſſued, as a ſecurity to the public with regard to the ability of the company afterwards to pay them; and alſo to prevent their becoming, either directly or indirectly, the means of introducing government paper as the circulating medium of the country. But, if they are not thus reſtricted, and have beſides the privilege of making their notes a legal tender for themſelves, it ſeems to follow in point of juſtice, that, during the continuance of this indulgence, the ſame privilege ſhould be allowed to the community at large, by making bank notes a *general* legal tender. The gentlemen in the profeſſion of the law are very naturally againſt making them a legal tender; which is not ſupriſing, ſince it is a principle abhorrent to the conſtitution of the country, and which nothing but abſolute neceſſity can juſtify. The queſtion, however, is not, Whether we ſhall do that which in itſelf is moſt deſirable and right? for ſomething ſtronger than opinion has already decided the point: but, Whether the public are diſpoſed, from motives of prudence and foreſight, to take the only effectual meaſures to prevent a return of thoſe convulſions to circulation and commercial credit, which *may* poſſibly ariſe from the circumſtances already deſcribed? And in this caſe it ſhould be conſidered whether the making bank notes a *general* legal tender, *for a time*, and limiting the amount, is not a better ſecurity for the public againſt abuſe and danger, than to ſuffer the bank to remain with an excluſive protection, and a power to iſſue notes without limitation."

Upon the whole, it ſeems peculiarly unjuſt, that, by the indemnity act, the governor and company of the bank of England ſhould have the privilege of making their own notes a legal tender, and of paying them inſtead of gold to their creditors, and to every individual who receives payment at the bank. For, although a perſon is obliged to receive theſe notes inſtead of money at the bank, yet, as they are not made a general legal tender, no one is obliged to receive them from him; ſo that with thouſands in his pocket his goods may be taken in execution, and himſelf committed to gaol, if his creditor does not chuſe to take bank notes in payment for the debt. But it is devoutly to be hoped that the indemnity bill will very ſhortly be repealed, that the bank of England will again reſume its payments in ſterling gold, and that the neceſſity of making paper a legal tender in any caſe will be thus ſuperſeded, and finally done away. By thus removing the gloomy proſpect which now depreſſes every friend to his country, we may look forward to more auſpicious times, when our commerce, no longer employed as the inſtrument of war, ſhall ſerve to extend our friendly and beneficial intercourſe with mankind; and when our credit, eſtabliſhed on its firmeſt foundation, peace, economy, and liberty, ſhall ſecure to Great Britain that dignified reſpect and honour which ſhall again elevate her to the ſtate of being the moſt envied nation in the world.

BANKS OF SCOTLAND.

In Scotland there are two public banks, both at Edinburgh. The one, called the *Bank of Scotland*, was eſtabliſhed by an act of parliament in 1695; the other, called the *Royal Bank*, by royal charter in 1727. Within the laſt thirty years there have alſo been erected private banking companies in almoſt every conſiderable town, and even in ſome villages. Hence the buſineſs of the country is almoſt entirely carried on by paper currency, in the notes of thoſe different banking companies; with which purchaſes and payments of all kinds are commonly made. But tho' the conduct of all theſe different companies has not been unexceptionable, and has accordingly required an act of parliament to regulate it, the country, notwithſtanding, has evidently derived great benefit from their trade. It has been aſſerted, that the trade of the city of Glaſgow doubled in about fifteen years after the firſt erection of the banks there; and that the trade of Scotland has more than quadrupled ſince the firſt erection of the two public banks in Edinburgh. Whether the trade, either of Scotland in general, or of the city of Glaſgow in particular, has really increaſed in ſo great a proportion, during ſo ſhort a period, is a fact we cannot poſſibly aſcertain; but, if either of them has increaſed in this proportion, it ſeems to be an effect too great to be accounted for by the ſole operation of this cauſe. That the trade and induſtry of Scotland, however, have increaſed very conſiderably during this period, and that the banks have contributed a good deal to this increaſe, cannot be diſputed.

It is chiefly by diſcounting bills of exchange, that is, by advancing money upon them before they are due, that the greater part of banks and bankers iſſue their promiſſory notes. They deduct always, upon whatever ſum they advance, the legal intereſt till the bill ſhall become due. The payment of the bill, when it becomes due, replaces to the bank the value of what had been advanced, together with a clear profit of the intereſt. The banker, who advances to the merchant whoſe bill he diſcounts, not gold and ſilver, but his own promiſſory notes, has the advantage of being able to diſcount to a greater amount, by the whole value of his promiſſory notes which he finds by experience are commonly in circulation. He is thereby enabled to make his clear gain of intereſt on ſo much greater a ſum. The commerce of Scotland, which at preſent is not very great, was ſtill more inconſiderable when the two firſt banking companies were eſtabliſhed; and thoſe companies would have had but little trade, had they confined their buſineſs to the diſcounting of bills of exchange. They invented, therefore, another method of iſſuing their promiſſory notes, by granting what they called *caſh-accounts*; that is, by giving credit to the extent of a certain ſum (2000l. or 3000l. for example) to any individual who could procure two perſons of undoubted credit and good landed eſtate to become ſurety for him, that whatever money ſhould be advanced to him, within the ſum for which the credit had been given, ſhould be repaid upon demand, together with the legal intereſt. Credits of this kind are commonly granted by banks and bankers in all commercial parts of the world. But the eaſy terms on which the Scots banking companies accept of re-payment are peculiar to them, and have perhaps been the principal cauſe, both of the great trade of thoſe companies, and of the benefit which the country has derived from it.

Whoever has a credit of this kind with one of thoſe companies, and borrows 1000l. upon it, for example, may repay this ſum piece-meal, by 20l. and 30l. at a time, the company diſcounting a proportionable part of the intereſt of the great ſum from the day on which each of thoſe ſmall ſums is paid in, till the whole be in this manner repaid. All merchants, therefore, and almoſt all men of buſineſs, find it convenient to keep ſuch caſh-accounts with them; and are thereby intereſted to promote the trade of thoſe companies, by readily receiving their notes in all payments, and by encouraging all thoſe with whom they have any influence to do the ſame. The banks, when their cuſtomers apply for money, generally advance it to them in their own promiſſory notes. Theſe the merchants pay away to the manufacturers for goods, the manufacturers to the farmers for materials and proviſions, the farmers to their landlords for rent, the landlords repay them to the merchants for the conveniences and luxuries with which they ſupply them, and the merchants again return them to the banks in order to balance their caſh-accounts, or to replace what they have borrowed of them; and thus almoſt the whole money-buſineſs of the country is tranſacted by paper currency.

By means of theſe caſh-accounts, every merchant can, without imprudence, carry on a greater trade than he otherwiſe could do. If there are two merchants, one in London and the other in Edinburgh, who employ equal ſtocks in the ſame branch of trade, the Edinburgh merchant can, with leſs hazard, carry on a greater trade, and give employment to a greater number of people, than the London merchant. The London merchant muſt always keep by him a conſiderable ſum of money, either in his own coffers or in thoſe of his banker (who gives him no intereſt for it), in order to anſwer the demands continually coming upon him for payment of the goods which he purchaſes upon credit. Let the ordinary amount of this ſum be ſuppoſed 500l. The value of the goods in his warehouſe muſt always be leſs by 500l. than it would have been had he not been obliged to keep ſuch a ſum unemployed. Suppoſe that he generally diſpoſes of his whole ſtock upon hand, or of goods to the value of his whole ſtock, once in a year. By being obliged to keep ſuch a ſum unemployed, he muſt ſell in a year 500l. worth leſs goods than he might otherwiſe have done. His annual profits muſt be leſs by all that he could have made by the ſale of 500l. worth more goods; and the number of people employed in preparing his goods for the market muſt be leſs by all thoſe that 500l. more ſtock could have employed. The merchant in Edinburgh, on the other hand, keeps no money unemployed for anſwering ſuch occaſional demands. When they actually come upon him, he ſatisfies them from his caſh account with the bank, and gradually replaces the ſum borrowed with the money or paper which comes in from the occaſional ſales of his goods. With the ſame ſtock, therefore, he can, without riſque, have at all times in his warehouſe a larger quantity of goods than the London merchant; and can thereby both make a greater profit himſelf, and give conſtant employment to a greater number of induſtrious people who prepare thoſe goods for the market. Hence the great benefit which the country has derived from a trade carried on by the means deſcribed.

The other kind of banks conſiſt of ſuch as are inſtituted wholly on the public account, and are called *banks of depoſit*; the nature of which not being generally underſtood, the following explanation may not be unacceptable: The currency of a great ſtate, ſuch as Britain, generally conſiſts almoſt entirely of its own coin. Should this currency, therefore, be at any time worn, clipt, or otherwiſe degraded below its ſtandard value, the ſtate by a reformation of its coin can effectually re-eſtabliſh its currency. But the currency of a ſmall ſtate, ſuch as Genoa or Hamburgh, can ſeldom conſiſt altogether in its own coin, but muſt be made up, in a great meaſure, of the coins of all the neighbouring ſtates with which its inhabitants have a continual intercourſe. Such a ſtate, therefore, by reforming its coin, will not always be able to reform its currency. If foreign bills of exchange are paid in this currency, the uncertain value of any ſum, of what is in its own nature ſo uncertain, muſt render the exchange always very much againſt ſuch a ſtate, its currency being, in all foreign markets, neceſſarily valued even below what it is worth. In order to remedy the inconvenience to which this diſadvantageous exchange muſt have ſubjected their merchants, ſuch ſmall ſtates, when they began to attend to the intereſt of trade, have frequently enacted, that foreign bills of exchange of a certain value ſhould be paid, not in common currency, but by an order upon, or by a transfer in the books of, a certain bank, eſtabliſhed upon the credit and under the protection of the ſtate; this bank being always obliged to pay, in good and true money, exactly according to the ſtandard of the ſtate. The banks of Venice, Genoa, Amſterdam, Hamburgh, and Nuremberg, ſeem to have been all originally eſtabliſhed with this view, though ſome of them may have afterwards been made ſubſervient to other purpoſes. The money of ſuch banks, being better than the common currency of the country, neceſſarily bore an agio, which was greater or ſmaller, according as the currency was ſuppoſed to be more or leſs degraded below the ſtandard of the ſtate. The agio of the bank of Hamburgh, for example, which is ſaid to be commonly about 14 per cent. is the ſuppoſed difference between the good ſtandard money of the ſtate, and the clipt, worn, and diminiſhed, currency, poured into it from all the neighbouring countries.

Bank of Amsterdam. Previous to the year 1609, the great quantity of clipt and worn foreign coin, which the extenſive trade of Amſterdam brought from all parts of Europe, reduced the value of its currency about 9 per cent. below that of good money freſh from the mint. Such money no ſooner appeared, than it was melted down or carried away, as it always is in ſuch circumſtances. The merchants, with plenty of currency, could not always find a ſufficient quantity of *good* money to pay their bills of exchange; and the value of thoſe bills, in ſpite of ſeveral regulations which were made to prevent it, became in a great meaſure uncertain. In order to remedy theſe inconveniences, a bank was eſtabliſhed in 1609 under the guarantee of the city. The bank received both foreign coin, and the light and worn coin of the country, at its real and intrinſic value in the good ſtandard money of the country, deducting only ſo much as was neceſſary for defraying the expence of coinage, and the other neceſſary expence of management. For the value which remained after this ſmall deduction was made, it gave a credit in its books. This credit was called *bank-money*; which, as it repreſented money exactly according to the ſtandard of the mint, was always of the ſame real value, and intrinſically worth more than current money. It was at the ſame time enacted, that all bills drawn upon or negociated at Amſterdam of the value of 600 guilders and upwards ſhould be paid in bank-money, which at once took away all uncertainty in the value of thoſe bills. Every merchant, in conſequence of this regulation, was obliged to keep an account with the bank in order to pay his foreign bills of exchange, which neceſſarily occaſioned a certain demand for bank-money.

Bank-money, over and above both its intrinſic ſuperiority to currency, and the additional value which this demand neceſſarily gives it, has likewiſe ſome other advantages. It is ſecure from fire, robbery, and other accidents; the city of Amſterdam is bound for it; it can be paid away by a ſimple transfer, without the trouble of counting, or the riſk of tranſporting it from one place to another. In conſequence of thoſe different advantages, it ſeems from the beginning to have borne an agio; and it is generally believed that all the money originally depoſited in the bank was allowed to remain there, nobody caring to demand payment of a debt which he could ſell for a premium in the market. Beſides, this money could not be brought from thoſe coffers without previouſly paying for the keep.

Thoſe depoſits of coin, or which the bank was bound to reſtore in coin, conſtituted the original capital of the bank, or the whole value of what is repreſented by bank-money. At preſent they are ſuppoſed to conſtitute but a very ſmall part of it. In order to facilitate the trade in bullion, the bank has been for many years in the practice of giving credit in its books upon depoſits of gold and ſilver bullion. This credit is generally about 5 per cent. below the mint price of ſuch bullion. The bank grants at the ſame time what is called a *recipe* or receipt, entitling the perſon who makes the depoſit, or the bearer, to take out the bullion again at any time within ſix months, upon re-transferring to the bank a quantity of bank-money equal to that for which credit had been given in its books when the depoſit was made, and upon paying ¼ per cent. for the keeping if the depoſit was in ſilver, and ½ per cent. if it was in gold; but at the ſame time declaring, that in default of ſuch payment, and upon the expiration of this term, the depoſit ſhould belong to the bank at the price at which it had been received, or for which credit had been given in the transfer books. What is thus paid for the keeping of the depoſit may be conſidered as a ſort of warehouſe rent; and why this warehouſe rent ſhould be ſo much dearer for gold than for ſilver, ſeveral different reaſons have been aſſigned. The fineneſs of gold, it has been ſaid, is more difficult to be aſcertained than that of ſilver. Frauds are more eaſily practiſed, and occaſion a greater loſs in the more precious metal. Silver, beſides, being the ſtandard metal, the ſtate, it has been ſaid, wiſhes to encourage more the making depoſits of ſilver than of gold.

Depoſits of bullion are moſt commonly made when the price is ſomewhat lower than ordinary; and they are taken out again when it happens to riſe. In Holland the market price of bullion is generally above the mint price, for the ſame reaſon it was ſo in England before the late reformation of the gold coin. The difference is ſaid to be commonly from about ſix to ſixteen ſtivers upon the mark, or eight ounces of ſilver of eleven parts fine and one part alloy. The bank price, or the credit which the bank gives for depoſits of ſuch ſilver (when made in foreign coin of which the fineneſs is well known and aſcertained, ſuch as Mexico dollars), is twenty-two guilders the mark; the mint price is about twenty-three guilders; and the market price is from twenty-three guilders ſix, to twenty-three guilders ſixteen, ſtivers, or from 2 to 3 per cent. above the mint price. The proportions between the bank price, the mint price, and the market price, of gold bullion are nearly the ſame. A perſon can generally ſell his receipt for the difference between the mint price of bullion and the market price. A receipt for bullion is almoſt always worth ſomething; and it very ſeldom happens, therefore, that any body ſuffers his receipt to expire, or allows his bullion to fall to the bank at the price at which it had been received, either by not taking it out before the end of the ſix months, or by neglecting to pay the ¼ or ½ per cent. in order to obtain a new receipt for another ſix months. This, however, though it ſeldom happens, is ſaid to happen ſometimes, and more frequently with regard to gold than with regard to ſilver, on account of the higher warehouſe rent which is paid for the keeping of the former. The perſon who by making a depoſit of bullion obtains both a bank credit and a receipt, pays his bills of exchange as they become due with his bank credit; and either ſells or keeps his receipt, according as he judges that the price of bullion is likely to riſe or fall. The receipt and the bank credit ſeldom keep long together, and there is no occaſion that they ſhould. The perſon who has a receipt, and who wants to take out bullion, finds always plenty of bank credits, or bank money, to buy at the ordinary price; and the perſon who has bank money, and wants to take out bullion, finds receipts always in equal abundance.

The owners of bank credits and the holders of receipts conſtitute two different ſorts of creditors againſt the bank. The holder of a receipt cannot draw out the bullion for which it is granted, without re-aſſigning to the bank a ſum of bank money equal to the price at which the bullion had been received. If he has no bank money of his own, he muſt purchaſe it of thoſe who have it. The owner of bank money cannot draw out bullion without producing to the bank receipts for the quantity which he wants. If he had none of his own, he muſt buy them. The holder of a receipt, when he purchaſes bank money, purchaſes the power of taking out a quantity of bullion, of which the mint price is 5 per cent. above the bank price. The agio of 5 per cent. therefore, which he commonly pays for it, is paid, not for an imaginary, but for a real value. The owner of bank money, when he purchaſes a receipt, purchaſes the power of taking out a quantity of bullion, of which the market price is commonly from 2 to 3 per cent. above the mint price. The price which he pays for it, therefore, is paid likewiſe for a real value. The price of the receipt, and the price of the bank money, compound or make up between them the full value or price of the bullion.

Upon depoſits of the coin current in the country, the bank grants receipts likewiſe as well as bank credits; but thoſe receipts are frequently of no value, and will bring no price in the market. Upon ducatoons, for example, which in the currency paſs for three guilders three ſtivers each, the bank gives a credit of three guilders only, or 5 per cent. below their current value. It grants a receipt likewiſe entitling the bearer to take out the number of ducatoons depoſited at any time within ſix months, upon paying ¼ per cent. for the keeping. This receipt will frequently bring no price in the market. Three guilders bank money generally ſell in the market for three guilders three ſtivers, the full value of the ducatoons if they were taken out of the bank; and, before they can be taken out, ¼ per cent. muſt be paid for the keeping, which would be mere loſs to the holder of the receipt. If the agio of the bank, however, ſhould at any time fall to 3 per cent. ſuch receipts might bring ſome price in the market, and might ſell for 1¾ per cent. But the agio of the bank being now generally about 5 per cent. ſuch receipts are frequently allowed to expire, or, as they expreſs it, to fall to the bank. The 5 per cent. which the bank gains, when depoſits either of coin or bullion are allowed to fall to it, may be conſidered as the warehouſe rent for the perpetual keeping of ſuch depoſits.

The ſum of bank money for which the receipts are expired muſt be very conſiderable. It muſt comprehend the whole original capital of the bank, which, it is generally ſuppoſed, has been allowed to remain there from the time it was firſt depoſited, nobody caring either to renew his receipt or to take out his depoſit, as, for the reaſons already aſſigned, neither the one nor the other could be done without loſs. But, whatever may be the amount of this ſum, the proportion which it bears to the whole maſs of bank money is ſuppoſed to be very ſmall. The bank of Amſterdam has for many years paſt been the great warehouſe of Europe for bullion, for which the receipts are very ſeldom allowed to expire, or, as they expreſs it, to fall to the bank. The far greater part of the bank money, or of the credits upon the books of the bank, is ſuppoſed to have been created, for theſe many years paſt, by ſuch depoſits as the dealers in bullion are continually both making and withdrawing.

No demand can be made upon the bank but by means of a recipe or receipt. The ſmaller maſs of bank money, for which the receipts are expired, is mixed and confounded with the much greater maſs for which they are ſtill in force; ſo that, though there may be a conſiderable ſum of bank money for which there are no receipts, there is no ſpecific ſum or portion of it which may not at any time be demanded by one. The bank cannot be debtor to two perſons for the ſame thing; and the owner of bank money who has no receipt cannot demand payment of the bank till he buys one. In ordinary and quiet times, he can find no difficulty in getting one to buy at the market price, which generally correſponds with the price he can get for the coin or bullion it entitles him to take out of the bank. It might be otherwiſe during a public calamity; an invaſion, for example, ſuch as that of the French in 1672. The owners of bank money being then all eager to draw it out of the bank, in order to have it in their own keeping, the demand for receipts might raiſe their price to an exorbitant height. The holders of them might form extravagant expectations, and, inſtead of 2 or 5 per cent. demand half the bank money for which credit had been given upon the depoſits that the receipts had reſpectively been granted for. The enemy, informed of the conſtitution of the bank, might even buy them up in order to prevent the carrying away of the treaſure. In ſuch emergencies, the bank, it is ſuppoſed, would break through its ordinary rule of making payment only to the holders of receipts. The holders of receipts, who had no bank money, muſt have received within 2 or 3 per cent. of the value of the depoſit for which their reſpective receipts had been granted. The bank, therefore, it is ſaid, would in this caſe make no ſcruple of paying, either with money or bullion, the full value of what the owners of bank money who could get no receipts were credited for in its books; paying at the ſame time 2 or 3 per cent. to ſuch holders of receipts as had no bank money, that being the whole value which in this ſtate of things could juſtly be ſuppoſed due to them. Even in ordinary and quiet times it is the intereſt of the holders of receipts to depreſs the agio, in order either to buy bank money (and conſequently the bullion which their receipts would then enable them to take out of the bank) ſo much cheaper, or to ſell their receipts to thoſe who have bank money, and who want to take out bullion, ſo much dearer; the price of a receipt being generally equal to the difference between the market price of bank money and that of the coin or bullion for which the receipt had been granted. It is the intereſt of the owners of bank money, on the contrary, to raiſe the agio, in order either to ſell their bank money ſo much dearer, or to buy a receipt ſo much cheaper. To prevent the ſtock-jobbing tricks which theſe oppoſite intereſts might ſometimes occaſion, the bank has of late years come to a reſolution to ſell at all times bank money for currency, at 5 per cent. agio, and to buy it again at 4 per cent. agio. In conſequence of this reſolution, the agio can never either riſe above 5 or ſink below 4 per cent. and the proportion between the market price of the bank and that of the current money is kept at all times very near to the proportion between their intrinſic values. Before this reſolution was taken, the market price of money uſed ſometimes to riſe ſo high as 9 per cent. agio, and ſometimes to ſink ſo low as par, according as oppoſite intereſts happened to influence the market.

The bank of Amſterdam profeſſes to lend out no part of what is depoſited with it, but, for every guilder for which it gives credit in its books, to keep in its repoſitories the value of a guilder either in money or bullion. That it keeps in its repoſitories all the money or bullion for which there are receipts in force, for which it is at all times liable to be called upon, and which, in reality, is continually going from it and returning to it again, cannot well be doubted. But whether it does ſo likewiſe with regard to that part of its capital for which the receipts are long ago expired, for which in ordinary and quiet times it cannot be called upon, and which in reality is very likely to remain with it for ever, or as long as the ſtates of the United Provinces ſubſiſt, may perhaps appear more uncertain. At Amſterdam, however, no part of faith is better eſtabliſhed, than that for every guilder circulated as bank money there is a correſpondent guilder in gold or ſilver to be found in the treaſury of the bank. The city is guarantee that it ſhall be ſo. The bank is under the direction of the four reigning burgomaſters, who are changed every year. Each new ſet of burgomaſters viſits the treaſure, compares it with the books, receives it upon oath, and delivers it over, with the ſame awful ſolemnity, to the ſet which ſucceeds them; and in that ſober and religious country oaths are not yet diſregarded. A rotation of this kind ſeems alone a ſufficient ſecurity againſt any practices which cannot be avowed. Amidſt all the revolutions which faction has ever occaſioned in the government of Amſterdam, the prevailing party has at no time accuſed their predeceſſors of infidelity in the adminiſtration of the bank. No accuſation could have affected more deeply the reputation and fortune of the diſgraced party; and, if ſuch an accuſation could have been ſupported, we may be aſſured that it would have been brought. In 1672, when the French king was at Utrecht, the bank of Amſterdam paid ſo readily as left no doubt of the fidelity with which it had obſerved its engagements. Some of the pieces which were then brought from its repoſitories appeared to have been ſcorched with the fire which happened in the town-houſe ſoon after the bank was eſtabliſhed. Thoſe pieces, therefore, muſt have lain there from that period.

What may be the amount of the treaſure in the bank of Amſterdam, is a queſtion which has long employed the ſpeculations of the curious. Nothing but conjecture can be offered concerning it. It is generally reckoned, that there are about 2000 people who keep accounts with the bank; and allowing them to have, one with another, the value of 1500l. lying upon their reſpective accounts (a very large allowance), the whole quantity of bank money, and conſequently of treaſure in the bank, will amount to 3,000,000l. or, at eleven guilders the pound ſterling, 33,000,000 of guilders; a great ſum, and ſufficient to carry on a very extenſive circulation, but vaſtly below the extravagant ideas which ſome people have formed of this treaſure.

The city of Amſterdam derives a conſiderable revenue from its bank. Beſides what may be called the warehouſe rent above-mentioned, each perſon, upon firſt opening an account with the bank, pays a fee of ten guilders; and, for every new account, three guilders three ſtivers; for every transfer, two ſtivers; and, if the transfer is for leſs than 300 guilders, ſix ſtivers, in order to diſcourage the multiplicity of ſmall tranſactions. The perſon who neglects to balance his accounts twice in the year forfeits twenty-five guilders. The perſon who orders a transfer for more than is upon his account, is obliged to pay 3 per cent. for the ſum overdrawn, and his order is ſet aſide into the bargain. The bank is ſuppoſed too to make a conſiderable profit by the ſale of the foreign coin or bullion which ſometimes falls to it by the expiring of receipts, and which is always kept till it can be ſold with advantage. It makes a profit likewiſe by ſelling bank money at 5 per cent. agio, and buying it in at 4. Theſe different emoluments amount to a good deal more than what is neceſſary for paying the ſalaries of officers, and defraying the expence of management. What is paid for the keeping of bullion upon receipts, is alone ſuppoſed to amount to a nett annual revenue of between 150,000 and 200,000 guilders. Public utility, however, and not revenue, was the original object of this inſtitution. Its object was to relieve the merchants from the inconvenience of a diſadvantageous exchange. The revenue which has ariſen from it was unforeſeen, and may be conſidered as an accidental benefit.

Bank of Venice, commonly called *banco del guira*, was eſtabliſhed in the middle of the twelfth century, and is properly a board of public credit and intereſt; or a general and perpetual purſe for all merchants and traders; eſtabliſhed by a ſolemn edict of the commonwealth, which enacts, that all payments of wholeſale merchandize, and letters of exchange, ſhall be in banco, or bank notes; and that all debtors and creditors ſhall be obliged, the one to carry their money to the bank, the other to receive their payments at banco; ſo that payments are performed by a ſimple transfer from the one to the other: he who was before creditor on the bank books becoming debtor as ſoon as he has reſigned his right to another, who is entered down as creditor in his place; ſo that the parties only change names, without any effective payment being made. Indeed there are ſometimes actual payments made, eſpecially in matters of retail, and when foreigners are diſpoſed to have ready money to carry off in ſpecie; or when particular traders chooſe to have a ſtock by them to negociate in bills of exchange, &c. The neceſſity of theſe effective payments has given occaſion to the opening a fund of ready money; which is found ſo far from diminiſhing the ſtock, that this liberty of withdrawing money at pleaſure rather augments it. By means of this bank, the late republic of Venice, without encroaching on the freedom of commerce, or without paying any intereſt, became miſtreſs of 5,000,000 ducats, to which the capital of the bank is limited, to be in readineſs on any preſſing occaſion; the republic being ſecurity for the capital ſum.

Bank (Million), derived its name from king William's million lottery in the year 1695. The proprietors agreed in partnerſhip to purchaſe tickets in this lottery. They afterwards purchaſed many reverſions of the 4 per cent. annuities, and admitted many proprietors of annuities to purchaſe their joint ſtock, which amounted to 500,000l. They are a partnerſhip by deed enrolled in chancery, in the year 1721. They divided 5 per cent. till Lady-day, 1728, when they reduced their annual dividend to 4 per cent. and it was afterwards again raiſed to 5 per cent.

To **Bank**, *v. a.* [from the noun.] To incloſe with banks; to lay up money in a bank.

Bank-bill, *ſ.* [from *bank* and *bill.*] A note for money laid up in a bank, at the tendering of which the money is paid.

BANK'ER, *ſ.* One that traffics in money; one that keeps or manages a bank.

Bankers, in the court of Rome, were perſons authoriſed, excluſive of all others, to ſolicit and procure by their correſpondents at Rome, all bulls, diſpenſations, and other acts, diſpatched at the papal datary, or in the legateſhip of Avignon. They were common in all the cities of France that had a parliament, or a preſidial; and were erected into a regular and hereditary office, by an edict in 1673. They owe their origin to the Guelphs, who took ſhelter at Avignon, and in other cities within the juriſdiction of the pope, in the time of the civil wars in Italy. The favour they were in with the pontiffs, for having eſpouſed the papal cauſe, occaſioned their being employed in procuring expeditions of the court of Rome. But the heavy extortions they practiſed towards their clients, ſoon rendered them odious, and occaſioned ſeveral denominations of reproach, as *coarcini*, *caturcini*, *caurſini*, *corſini*, &c. from the city Cahors, the native place of pope John XXII. in whoſe pontificate they were in their higheſt power.

Banker, in bricklaying, a piece of timber whereon they cut the bricks. The banker is ſix feet long or more, according to the number or men to work at it, and nine or ten inches ſquare; it is to be laid on two piers of timber, three feet high from the floor they ſtand on.

BANK'ING, *ſ.* The making of banks to oppoſe the force of the ſea, rivers, or the like, and ſecure the land from being overflowed. With reſpect to the water which is to be kept out, this is called *banking*; with reſpect to the land, which is hereby to be defended, *imbanking*.

Banking is alſo applied to the keeping a bank, or the employment of a banker. Banking, in this ſenſe, ſignifies the trading in money, or remitting it from place to place, by means of bills of exchange. This anſwers to what the French call *faire la banque*. In France every body is allowed to bank, whether merchant or not; even foreigners are indulged in this kind of traffic. In Italy, banking did not derogate from nobility, eſpecially in the former republic ſtates; whence it was, that moſt of the younger ſons of great families engaged in it. In reality, it was the nobility of Venice and Genoa, that, for a long time, were the chief bankers in the other countries of Europe.

BANK'RUPT, *adj.* [*banqueroute*, Fr. *bancorotto*, Ital.] In debt beyond the power of payment:

The king's grown *bankrupt*, like a broken man. *Shakeſp.*

Bankrupt, *ſ.* A man in debt beyond the power of payment.—It is with wicked men as with a *bankrupt:* when his creditors are loud and clamorous, and ſpeak big, he giveth them many good words. *Calamy.*

In vain at court the *bankrupt* pleads his cauſe;
His thankleſs country leaves him to her laws. *Pope.*

A bankrupt, in the eye of the law, is a trader, who ſecretes himſelf, or does certain other acts, tending to elude or defraud his creditors. The word, in this ſenſe, is derived from *bancus* or *banque*, the table or counter of a tradeſman (*Dufreſne*, i. 969.) and *ruptus*, broken, denoting thereby one whoſe ſhop or place of trade is broken or gone; though others chooſe to adopt the French word, *route*, a trace or track; a bankrupt, ſay they, being one who has removed his *banque*, leaving but a trace behind. It is obſervable that the title of the firſt Engliſh ſtatute concerning this offence, ſtat. 34 Hen. VIII. c. 4, "againſt ſuch perſons as do make bankrupt," is a literal tranſlation of the French idiom, *qui ſont banque route.* 2 *Comm.* 472.

The bankrupt-law is a ſyſtem of poſitive regulations by various ſtatutes, the conſtruction of which have produced the multiplied caſes on the ſubject, from whence the following principles and rules are extracted. Theſe ſtatutes are: 13 Eliz. c. 7, (which almoſt totally altered the old ſtat. 34 Hen. VIII. c. 4, mentioned above.) 1 Jac. I. c. 15. 21 Jac. I. c. 19. 10 Anne, c. 15. 7 Geo. I. c. 31. 5 Geo. II. c. 30, continued at preſent by 28 Geo. III. c. 24. 19 Geo. II. c. 32. 24 Geo. II. c. 57. 4 Geo. III. c. 33.

The ſtatute, 13 Eliz. c. 7, enacts, "That any merchant or other perſon, being ſubject or denizen, uſing or exerciſing the trade of merchandiſe, by way of bargaining, exchange, rechange, bartery, cheviſance, or otherwiſe, in groſs or by retail, or ſeeking his or her trade or living by buying and ſelling," may become bankrupts. Drawing and re-drawing bills of exchange may, in certain caſes, be conſidered as trading. 1 *Atk.* 128. See *Cowp.* 745. Every perſon being a trader, and capable of making binding contracts, is liable to become a bankrupt; as a nobleman, member of parliament, clergyman, &c. And where it is ſaid, that farmers, innkeepers, &c. cannot be bankrupts, it means, in reſpect to that particular deſcription; and not as affording protection, if in any other ſhape they come within the bankrupt-laws. But infants and married women cannot be bankrupts. As to the latter, however, there are exceptions; for a *feme covert* in London, being a ſole trader according to the cuſtom, is liable to a commiſſion of bankruptcy; and, as repeated determinations have ſettled that a feme covert living apart from her huſband, as a feme ſole, is liable to execution for debts contracted by her, there ſeems no doubt that ſuch a married woman is equally liable to a commiſſion of bankruptcy. But, if a *feme ſole* trader commit an act of bankruptcy, and afterwards marry and live with her huſband, ſhe cannot be made a bankrupt. *Ex parte* Mear, ſee *Cooke B. L.* c. 3. 4 *Term Rep.* 362. Buying only, or ſelling only, will not qualify a man to be a bankrupt; but it muſt be both buying and ſelling, and thereby attempting to get a livelihood. 2 *Com.* 476. 2 *Wilſ.* 171.

There can be no ſuch thing as an equitable bankruptcy; it muſt be a legal one; and the party muſt be a trader in his own right; for, if a perſon that is a trader makes another his executor, who only diſpoſes of the ſtock of his trade, it will not make the executor a trader, and liable to a commiſſion of bankruptcy. 2 *P. Wms.* 429. 1 *Atk.* 102. Any perſon trading to England, whether native, denizen, or alien, though never reſident as a trader in England, may be a bankrupt, if he occaſionally come to this country and commit an act of bankruptcy. *Cowp.* 398, 402. *Raym.* 375. *Salk.* 110. If a merchant gives over his trade, and ſome years after becomes inſolvent for money he owed while a merchant, he may be a bankrupt; but if it be for new debts, or old debts continued on new ſecurity, it is otherwiſe. 1 *Vent.* 5, 29.

To enumerate every trade ſufficient to make a man a bankrupt would be tedious. The following, however, ſeem now ſettled; and ſome others are enumerated which have afforded cauſe of diſpute, chiefly from the particular facts of the caſe. It is to be premiſed, that a chapman, or one that buys and ſells any thing, though his dealing does not come under the denomination of any particular trade, may become a bankrupt.

WHO MAY, OR MAY NOT, be BANKRUPTS.

Alehouſe-keepers, *not*. *Cooke* 53. *Cro. Car.* 395.
Alum manufacturers, *not*. *Cooke*, 34, 46.
Artificers, labourers, &c. *not*. *Cro. Car.* 21. *Cro. Jac.* 585. 3 *Mod.* 330. 2 *Wilſ.* 171. 2 *Comm.* 476. 4 *Burr.* 2148.
Bankers, *may*. Stat. 5 Geo. II. c. 30.
Bakers, *may*.
Brewers, *may*.
Brokers, *may*. Stat. 5 Geo. II. c. 30.
Brick-makers, *may*. 2 *Wilſ.* 172. *Brown Ch. Ca.* 173. Parker *v.* Wells, 1 *Brown* 494. 1 *Term. Rep.* 34. *Cooke's B. L.* c. 3, § 2.

In this caſe and that of alum-manufacturers, though they ſeem to differ, the ſame principle is recogniſed, viz. "If a man exerciſes a manufacture upon the produce of his own land, as a neceſſary or uſual mode of reaping and enjoying that produce, and bringing it advantageouſly to market, he ſhall not be conſidered as a trader, though he buys materials or ingredients; as in the caſe of cheeſe, cyder, alum and coal mines, and the like. But where the produce of land is merely the raw materials of a manufacture, and uſed as ſuch, and not as the mode of raiſing the produce of the land; in ſhort, where the produce of the land is an inſignificant article, compared with the expence of the whole manufacture, there in truth he is, and ought to be conſidered as, a trader. As this diſtinction turns on the nature and manner of exerciſing the manufacture, and the motive with which it is carried on, it depends ſo much upon the light in which a jury ſees the whole tranſaction, the law and the fact are ſo blended together, that it is hardly poſſible to diſtinguiſh them."

Butchers, *may*. 4 *Burr.* 2148.
Carpenters, not merely workmen, but buying timber and materials to carry on trade, *may*. 3 *Mod.* 155. *Raym.* 741.
Clergymen trading, *may*. *Cowp.* 745.
Clothiers, *may*.
Coal-dealers, *may*; but not owners or leſſees of coal-mines. 2 *Wilſ.* 169, 170.
Companies or corporations, proprietors of ſhares in, generally, *not*; except perhaps in the ſtationers' company. 2 *Ld. Raym.* 851. And, by ſtatute, "no member of the bank of England; of the Eaſt-India or Engliſh linen company; no perſon circulating exchequer-bills; no adventurer in the royal fiſhing-trade, or Guinea company; no member of the London aſſurance, Royal Exchange, or South-Sea, companies; ſhall be deemed a bankrupt, on account of their ſtock in thoſe companies." 3 Geo. I. c. 3. 13 & 14 Car. II. c. 24. 4 Geo. III. c. 37. 6 Geo. I. c. 18. 8 Geo. I. c. 21.
Contractors, public, and ſuch other public officers, *not*. 3 *Keb.* 451. Butlers and ſtewards of inns of courts, farmers of cuſtoms, receivers-general, exciſemen, &c. *not*, all on the ſame principle.
Drovers of cattle, *not*. 5 Geo. II. c. 30.
Dyers, *may*.
Factors, *may*. 5 Geo. III. c. 30.
Farmer, *not*. *Cooke*, 21. But as a potatoe-merchant he *may*, 573.
Funds or ſtock, dealers in, *not*. 2 *P. Wms.* 308.
Goldſmiths, *may*.
Graziers, *not*. 5 Geo. II. c. 30.
Innkeepers, *not*. 3 *Mod.* 329. *Cro. Car.* 395.
Iron-manufacturers, *may*.
Labourers, *not*.
Land-jobber, *not*. 2 *Wilſ.* 169.
Members of parliament, *may*. 4 Geo. III. c. 33.
Milliners, *may*.
Nailors, *may*.
Pawnbrokers, *may*. 1 *Atk.* 206, 218.
Plumbers, *may*.
Receiver-general of taxes, *not*. 5 Geo. II. c. 30.
Saleſmen, *may*. *Good.* 12.
Scriveners, *may*. 21 Jac. I. c. 19.
Ship-owner, *not*; freighter, *may*. 1 *Vent.* 29. *Comb.* 182. 1 *Sid.* 411.
Shoemaker, *may*. 2 *Wilſ.* 171.
Smugglers, *may*. 1 *Atk.* 200.
Stock-jobbers, *not*.
Tanners, *may*.
Taylors, working, *not*. *Cooke*, 45.
Victuallers, *not*. 4 *Burr.* 2067. 2 *Wilſ.* 382.
Vintners, being wine-merchants, *may*. *Cooke*, 37.

The above alphabetical liſt is probably not ſo perfect or extenſive as it might have been made; but the general principles hereby laid down will ſerve to determine in moſt other caſes.

ACTS of BANKRUPTCY,

Whereby any trader becomes liable to have a docket ſtruck againſt him, and a commiſſion of bankrupt taken out, viz. 1. To depart the realm, or from his dwelling-houſe, with intent to defraud or hinder his creditors. 2. To begin to keep his houſe privately, to abſent himſelf from and avoid his creditors. 3. To procure or ſuffer himſelf willingly to be arreſted, without juſt or lawful cauſe; to ſuffer himſelf to be outlawed; or to yield himſelf to priſon. 13 Eliz. c. 7. 1 Jac. I. c. 15. 4. Willingly or fraudulently to procure his goods, money, or chattels, to be attached or ſequeſtered. 5. To make any fraudulent grant or conveyance of his lands, tenements, goods, or chattels, to the intent or whereby his creditors ſhall and may be defeated or delayed from the recovery of their juſt debts. 6. Being arreſted for debt, to lie in priſon two months after his arreſt, upon that or any other arreſt, or detention for debt. 21 Jac. I. c. 19. 7. To obtain privilege, other than that of parliament, againſt arreſt. 8. Being arreſted for 100l. or more, to eſcape out of priſon. 9. To prefer to any court, any petition or bill againſt any of the creditors, thereby endeavouring to enforce them to accept leſs than their juſt debts, or to procure time, or longer days of payment, than was given at the time of their original contracts. 10. For a bankrupt to pay, ſatisfy, or ſecure, the petitioning creditor his debt, is an act of bankruptcy which ſhall ſuperſede that commiſſion, and be ſufficient on which to ground another: and ſuch petitioning creditor ſhall loſe his debt, to be divided among the other creditors. 5 Geo. II. c. 30. 11. Neglecting to make ſatisfaction for any juſt debt, to the amount of 100l. within two months after ſervice of legal proceſs, for ſuch debt, upon any trader, having privilege of parliament, is an act of bankruptcy. 4 Geo. III. c. 33.

The legiſlature having thus, by poſitive laws, declared what acts ſhall be conſidered as criterions of inſolvency or fraud, whereon to ground a commiſſion; none other can be admitted by inference or analogy. Therefore it is not an act of bankruptcy for a trader ſecretly to convey his goods out of his houſe, and conceal them, to prevent their being taken in execution, nor to give money for notice when a writ ſhould come into the ſheriff's office. 1 *Ld. Raym.* 725. *Bull. N. P.* 40. So, if a trader procure his goods fraudulently to be taken in execution, or makes a fraudulent ſale of them, it is not an act of bankruptcy, tho' void againſt creditors. 4 *Burr.* 2478. *Cowp.* 429. Many of the acts of bankruptcy above deſcribed are in themſelves equivocal, and capable of being explained by circumſtances; for, to bring them within the purview and meaning of the ſtatute, it is abſolutely neceſſary they ſhould be done to defraud and delay creditors from recovering their juſt debts. The better to obtain a clear and comprehenſive view of the deciſions on this part of the ſubject, each act of bankruptcy on which any queſtion appears to have been raiſed, ſhall be conſidered ſeparately; premiſing that the ſtatutes of bankrupts are local, and do not extend to acts done in foreign countries, or other dominions of Great Britain. *Cowp.* 398.

Departing the realm, will not be an act of bankruptcy unleſs done *with a view* of defrauding or delaying creditors;

tors; but, if it did appear that they are in fact delayed by ſuch abſence, it will be the ſame as if the original departure was fraudulent. *Bull. N. P.* 39. 1 *Atk.* 196, 240. *Cooke's B. L.* Vernon *v.* Hankey.

Beginning to keep-houſe, or otherwiſe to abſent himſelf. Denial to a creditor is *primâ facie* evidence of this act of bankruptcy. But, as the ſtatute requires it to be with an *intent* to delay or defraud creditors, the mere denial is therefore capable of being explained by circumſtances, ſuch as ſickneſs, company, buſineſs, or even the lateneſs of the hour at which the creditor calls. Neither will an order by the debtor to his ſervant to deny him be ſufficient. For, where a trader gave orders to his ſervant to deny him to creditors on the 26th of May, but was not actually denied to a creditor till the 28th, the court held the actual denial, and not the order, conſtituted the act of bankruptcy. *Bull. N. P.* 39. 1 *Atk.* 201. *Cooke* cites Hawkes *v.* Sanders, T. 24 Geo. III. Keeping in another man's houſe or chamber, having no houſe of his own, or on ſhip-board, is an act of bankruptcy; ſo a miller keeping his mill. Any keeping houſe for the purpoſe of delaying a creditor, even for a very ſhort time, will be an act of bankruptcy; notwithſtanding the party afterwards goes abroad and appears in public. 2 *Stra.* 809. 2 *Term Rep.* 59. A general denial will not be ſufficient, but it muſt be a denial to a creditor who has a debt at that time due; for, if he is only a creditor by a note payable at a future day, a denial to him will be no act of bankruptcy. 7 *Vin.* 6. *pl.* 14. It frequently happens that traders in declining circumſtances call their creditors together to inſpect their affairs; and determine whether a commiſſion ſhall iſſue againſt them or not; and, if thought adviſeable, it is uſual for the trader to deny himſelf to a creditor, for the purpoſe of making an act of bankruptcy. However it ſeems doubtful how far ſuch *concerted* denial will be an act of bankruptcy to affect the intereſt of third perſons. 1 *Black. Rep.* 441. *Bull N. P.* 39.

Departing from his dwelling-houſe, may become an act of bankruptcy or not, according to the motive by which the party is impelled; if it be done with a view of defrauding his creditors, or even delaying them, and his abſence be but for a ſingle day, it will be an act of bankruptcy; and his very abſenting himſelf is ſufficient *primâ facie* evidence of an intention to defraud or delay his creditors; but it muſt be a voluntary abſenting, and not by means of an arreſt. 1 *Salk.* 110. 1 *Burr.* 484. 2 *Stra.* 809. *Green* 53.

Suffering himſelf to be outlawed. An outlawry in Ireland does not make one a bankrupt; but in the county palatine of Durham it does. However an outlawry does not appear to be an act of bankruptcy, unleſs it be ſuffered with intent to defraud creditors. *Stone* 124. *Billing.* 94. *Good.* 23.

Yielding himſelf to priſon, is to be intended of a voluntary yielding for debt; and, if a perſon capable of paying will notwithſtanding, from fraudulent motives, voluntarily go to priſon, it is an act of bankruptcy.

Willingly or fraudulently procuring his goods to be attached or ſequeſtered, which is a plain and direct endeavour to diſappoint his creditors of their ſecurity. 2 *Comm.* 478. The attachment here meant, and which the legiſlature had in view, is that ſort of attachment only by which ſuits are commenced; as in London and other places where that ſpecies of proceſs is uſed. *Cowp.* 427.

Making any fraudulent conveyance of his lands or goods. A fraudulent grant, to come within the meaning of the ſtatute, muſt be by deed; therefore a fraudulent ſale of goods, not by deed, is no act of bankruptcy in itſelf; but, being a ſcheme concerted at the eve of bankruptcy, to cheat innocent perſons, in order to ſecure particular creditors, is ſuch a fraud as ſhall render the ſale void. 4 *Burr.* 2478. A grant or conveyance fraudulent within ſtat. 13 Eliz. c. 5, or 27 Eliz. c. 4, is an act of bankruptcy. A trader before he becomes a bankrupt may prefer one creditor to another; and may pay him his debt; or may make him a mortgage, with poſſeſſion delivered, or may aſſign part of his effects; but a preference of one creditor to the reſt, by conveying by deed all his effects to him, is a fraud upon the whole bankrupt law, and an act of bankruptcy. 1 *Burr.* 467. Whether a tranſaction be fair or fraudulent, is often a queſtion of law; it is the judgment of law upon facts and intents; but tranſactions valid as between the parties may be fraudulent by reaſon of covin, colluſion, or confederacy, to injure third perſons. 2 *Burr.* 827. Nor will the caſe be different, if the aſſignment is made to indemnify a ſurety; for the inconvenience and miſchief ariſing from an undue preference is the ſame. *Cooke's B. L.* 78. *Dougl.* 282. An equal diſtribution among creditors who equally give a general perſonal credit to the bankrupt, is provided for ever ſince by ſtat. 21 Jac. I. c. 19; therefore, when a bankrupt, by deed, conveys all his effects to truſtees to pay all but one creditor, it is fraudulent, and an act of bankruptcy. Tho' a conveyance by deed of all a bankrupt's effects, or ſo much of his ſtock in trade, as to diſable him from being a trader, (or all his houſehold goods,) is itſelf an act of bankruptcy, a conveyance of part is very different; that may be public, fair, and honeſt. As a trader may ſell, ſo may he openly transfer many kinds of property by way of ſecurity. What aſſignment of part will or will not be fraudulent, muſt depend on the particular circumſtances of the caſe; but a colourable exception of a ſmall part of his eſtate or effects, will not prevent the deed being declared fraudulent; for the law will never ſuffer an evaſion to prevail to take a caſe out of the general rule, which is ſo eſſential to juſtice. 1 *Black. Rep.* 144. 2 *Bl. Rep.* 362, 996. 1 *Burr.* 477. An aſſignment by deed of part of a trader's effects, will be good, if made *bonâ fide,* and poſſeſſion delivered; and indeed the not delivering poſſeſſion being only evidence of fraud, may be explained by circumſtances. But an aſſignment even only of part of a trader's effects, to a fair creditor, will, if done in contemplation of bankruptcy itſelf, become the very act. 3 *Wilſ.* 47. *Cowp.* 124.

Procuring any protection except the privilege of parliament. If any one be protected as the king's ſervant, it does not make him bankrupt. *Skin.* 21. By ſtat. 7 Anne, c. 12, declaring the privilege of ambaſſadors and their train, it is expreſsly enacted, That no merchant, or other trader whatſoever, within the deſcription of any of the ſtatutes againſt bankrupts, ſhall have any benefit of that act.

Being arreſted for debt, and lying two months in priſon. The ſtatute does not make the mere being arreſted an act of bankruptcy. The moſt ſubſtantial trader is liable to be arreſted; but the preſumption of inſolvency ariſes from his lying in priſon two months without being able to get bail; nor will this preſumption be obviated by a mere formal bail, put in for the purpoſe of changing from one cuſtody to another. Where bail is really put in, the bankruptcy only relates to the time of the ſurrender; but, when it is only formal bail, it will have relation to the firſt arreſt. 1 *Burn* 437. *Salk.* 109. *Bull. N. P.* 38.

Eſcape out of priſon on arreſt for 100l. or more. The act clearly intends ſuch an eſcape, as ſhews he means to run away, and thereby to defeat his creditors; it muſt be an eſcape againſt the will of the ſheriff, for a man ſhall not be made a criminal where he has not the leaſt criminal intention to diſobey any law. 1 *Burr.* 440. It is not act of bankruptcy for a banker to refuſe payment, if he appears, and keeps his ſhop open. 7 *Mod.* 139. An act of bankruptcy, if once plainly committed, can never be purged, even though the party continues to carry on a great trade. 2 *Term Rep.* 59. But, if the act was doubtful, then circumſtances may explain the intent of the firſt act, and ſhew it not to have been done with a view to defraud creditors. But, if after a plain act of bankruptcy, a man pays off and compounds with all his creditors, he becomes a new man. 1 *Burr.* 484. 1 *Salk.* 110.

How to proceed on a Commission of Bankrupt.

There muſt firſt be a petition to the lord chancellor by one creditor to the amount of 100l. or by two the amount of 150l. or by three or more to the amount of 200l. which debts muſt be proved by affidavit. 5 Geo. II. c. 30. Upon on this he grants a commiſſion to ſuch diſcreet perſons as to him ſhall ſeem good, who are then ſtiled commiſſioners of bankrupt. 13 Eliz. c. 7. Of theſe commiſſioners there are ſeveral exiſting liſts, which take the commiſſions of bankruptcy in turn. The petitioners, to prevent malicious applications, muſt be bound in a bond to the lord chancellor for 200l. to make the party amends in caſe they do not prove him a bankrupt. And if, on the other hand, they receive any money or effects from the bankrupt, as a recompence for ſuing out the commiſſion, ſo as to receive more than their rateable dividends of the bankrupt's eſtate, they forfeit not only what they ſhall have ſo received, but their whole debt. Theſe proviſions are made, as well to ſecure perſons in good credit from being dammified by malicious petitions, as to prevent knaviſh combinations between the creditors and bankrupt, in order to obtain the benefit of a commiſſion. When the commiſſion is awarded and iſſued, the commiſſioners are to meet at their own expence, and to take an oath for the due execution of their commiſſion, and to be allowed a ſum not exceeding 20s. per diem, each, at every ſitting. And no commiſſion of bankrupt ſhall abate, or be void, by the death of the bankrupt ſubſequent to the commiſſion, (1 Jac. I. c. 15;) nor upon any demiſe of the crown. 5 Geo. II. c. 30. The granting a commiſſion of bankruptcy is not diſcretionary, but a matter of right. 1 *Vern.* 153.

By ſtat. 5 Geo. II. c. 30, the petitioning creditor is directed at his own coſts to proſecute the commiſſion until aſſignees ſhall be choſen; which coſts are to be aſcertained by the commiſſioners at the meeting for the choice of aſſignees; and are to be paid by the aſſignees to the petitioning creditor out of the firſt money or effects received by them, under the commiſſion. But theſe coſts may be taxed by a maſter in chancery, on petition to the lord chancellor. *Cooke's B. L.* c. 1. Notwithſtanding this ſtatute has provided a remedy againſt maliciouſly ſuing out commiſſions of bankrupt, yet it is held not to take away the common-law remedy by an action for damages, but that the party may proceed at law to obtain ſuch redreſs for the injury he has ſuſtained, as a jury may think he is entitled to. 3 *Burr.* 1418. 1 *Atk.* 144.

If more than two of the commiſſioners ſhould die, by which means there would not be a ſufficient number to execute it, or if the commiſſion ſhould be loſt, it muſt be renewed; upon which renewal only half the fees are paid, and the commiſſioners under the renewed commiſſion proceed from that ſtep which was left incomplete by the former. The commiſſioners are firſt to receive proof of the perſon's being a trader, and having committed ſome act of bankruptcy; and then to declare him a bankrupt, if proved ſo; and to give notice thereof in the Gazette, and at the ſame time to appoint three meetings. At one of theſe meetings, an election muſt be made of aſſignees or perſons to whom the bankrupt's eſtate ſhall be aſſigned, and in whom it ſhall be veſted for the benefit of the creditors; and aſſignees are to be choſen by the major part in value of the creditors who ſhall then have proved their debts; and one creditor, if to a ſufficient amount, may chuſe himſelf aſſignee; but aſſignees may be, if neceſſary, originally appointed by the commiſſioners, and afterwards approved or rejected by the creditors: but no creditor ſhall be admitted to vote in the choice of aſſignees, whoſe debt on the balance of accounts does not amount to 10l. And at the third meeting at fartheſt, which muſt be on the forty-ſecond day after the advertiſement in the Gazette, (unleſs the time be enlarged by the lord chancellor; it may not be for more than fifty days, unleſs on ſpecial circumſtances of involuntary default by the bankrupt, 1 *Atk.* 222,) the bankrupt, upon notice alſo perſonally ſerved upon him, or left at his uſual place of abode, muſt ſurrender himſelf perſonally to the commiſſioners; which ſurrender, if voluntary, protects him from all arreſts till his final examination is paſt: and he muſt thenceforth in all reſpects conform to the directions of the ſtatutes of bankruptcy; or, in default of either ſurrender or conformity, he ſhall be guilty of felony without benefit of clergy, and ſhall ſuffer death, and his goods and eſtate ſhall be diſtributed among his creditors. 5 Geo. II. c. 30.

In caſe the bankrupt abſconds, or is likely to run away, between the time of the commiſſion iſſued and the laſt day of ſurrender, he may by warrant from any judge or juſtice of the peace be apprehended and committed to the county gaol, in order to be forthcoming to the commiſſioners; who are alſo empowered immediately to grant a warrant for ſeizing his goods and papers. When the bankrupt appears, the commiſſioners are to examine him, touching all matters relating to his trade and effects. They may alſo ſummon before them, and examine, the bankrupt's wife (21 Jac. I. c. 19); and any other perſon whatſoever, as to all matters relating to the bankrupt's affairs. And in caſe any of them ſhould refuſe to anſwer, or ſhall not anſwer fully, to any lawful queſtion, or ſhall refuſe to ſubſcribe ſuch their examination, the commiſſioners may commit them to priſon without bail, till they ſubmit themſelves, and make and ſign a full anſwer; the commiſſioners ſpecifying in their warrant of commitment the queſtion ſo refuſed to be anſwered. And any gaoler, permitting ſuch perſon to eſcape, or go out of priſon, ſhall forfeit 500l. to the creditors. 5 Geo. II. c. 30. The bankrupt, upon this examination, is bound upon pain of death to make a full diſcovery of all his eſtate and effects, as well in expectancy as poſſeſſion, and how he has diſpoſed of the ſame; together with all books and writings relating thereto: and is to deliver up all in his own power to the commiſſioners, (except the neceſſary apparel of himſelf, his wife, and children;) or, in caſe he conceals or embezzles any effects to the amount of 20l. or withholds any books or writings, with intent to defraud his creditors, he ſhall be guilty of felony without benefit of clergy; and his goods and eſtate ſhall be divided among his creditors. And unleſs it ſhall appear, that his inability to pay his debts aroſe from ſome caſual loſs, he may, upon conviction by indictment for ſuch groſs miſconduct and negligence, be ſet upon the pillory for two hours, and have one of his ears nailed to the ſame and cut off. 21 Jac. I. c. 19. And ſo careful is the law to avoid any fraud, diſhoneſty, or concealment, on the part of the bankrupt, that an agreement by the friends of the bankrupt, to pay a ſum in conſideration that the creditors would not examine him as to particular points, is void. Nerot *v.* Wallace, 3 *Term Rep.* 17. After the time allowed to the bankrupt for ſuch diſcovery is expired, any other perſon voluntarily diſcovering any part of his eſtate, before unknown to the aſſignees, ſhall be entitled to 5 per cent. out of the effects ſo diſcovered, and ſuch farther reward as the aſſignees and commiſſioners ſhall think proper. And any truſtee wilfully concealing the eſtate of any bankrupt, after the expiration of the two-and-forty days, ſhall forfeit 100l. and double the value of the eſtate concealed, to the creditors. 5 Geo. II. c. 30.

Hitherto every thing is in favour of the creditors; and the law ſeems to be pretty rigid and ſevere againſt the bankrupt; but, in caſe he proves himſelf honeſt, it makes him full amends for all this rigour and ſeverity. For, if the bankrupt hath made an ingenuous diſcovery, (of the truth and ſufficiency of which there remains no reaſon to doubt), and hath conformed in all points to the directions of the law; and if, in conſequence thereof, the creditors, or four parts in five of them in number and value, (but none of them for leſs than 20l.) will ſign a certificate to that purport; the commiſſioners are then to authenticate ſuch certificate under their hands and ſeals, and to tranſmit it to the lord chancellor, and he, or two of the judges whom he ſhall appoint, on oath made by the bankrupt that ſuch certificate was obtained without fraud, may allow the ſame; or diſallow it upon cauſe ſhewn by any of the creditors of the bankrupt. If no cauſe be ſhewn to the contrary, the certificate is allowed of courſe, and then the bankrupt is entitled to a decent and reaſonable allowance out of his effects for his future ſupport and maintenance, and to put him in a way of honeſt induſtry. This allowance is alſo in proportion to his former good behaviour, in the early diſcovery of the decline of his affairs, and thereby giving his creditors a larger dividend. For, if his effects will not pay one-half of his debts, or ten ſhillings in the pound, he is left to the diſcretion of the commiſſioners and aſſignees, to have a competent ſum allowed him, not exceeding 3 per cent. but, if they pay 10s. in the pound, he is to be allowed 5 per cent. if 12s. 6d. then 7½ per cent. and, if 15s. in the pound, then the bankrupt ſhall be allowed 10 per cent. provided that ſuch allowance do not in the firſt caſe exceed 200l. in the ſecond 250l. and in the third 300l. Beſides this allowance, he has alſo an indemnity granted him of being free and diſcharged for ever from all debts owing by him at the time he became a bankrupt; even though judgment ſhould have been obtained againſt him, and he lies in priſon upon execution for ſuch debts. And, for that among other purpoſes, all proceedings in commiſſions of bankrupt are, on petition, to be entered of record, as a perpetual bar againſt actions to be commenced on this account; though in general the production of the certificate, properly allowed, ſhall be ſufficient evidence of all previous proceedings. 5 Geo. II. c. 30.

The allowing the certificate of a bankrupt will not diſcharge his ſureties; but, if a bankrupt obtains his certificate before his bail are fixed, it will diſcharge them; but, if not till after they are fixed, they will remain liable notwithſtanding the certificate, for it has no relation back; and till allowed it is nothing. And, if the creditor proves his debt, with intent to obſtruct the certificate, it does not preclude him from purſuing his legal remedies; and even if he had received his debt, or part of it, under the commiſſion, ſtill he might proceed to fix the bail, who would be entitled to their remedy, ſo far as they are oppreſſed, by *audita querela*, or by motion. 1 *Atk.* 84. 1 *Burr.* 244. 2 *Black.* 812. However, the bankrupt's certificate, obtained after judgment in an action upon a bail-bond againſt the bankrupt himſelf, will not diſcharge the bail-bond, although it diſcharged the original debt; for it is a new and diſtinct cauſe of action. 1 *Burr.* 436. 2 *Stra.* 1196.

The certificate does not diſcharge a bankrupt from his own expreſs collateral covenant, which does not run with the land. 4 *Burr.* 2443. Nor from a covenant to pay rent. 4 *Term. Rep.* 94. A bankrupt after a commiſſion of bankruptcy ſued out, may, in conſideration of a debt due before the bankruptcy, and for which the creditor agrees to accept no dividend or benefit under the commiſſion, make ſuch creditor a ſatisfaction, in part or for the whole of his debt, by a new undertaking or agreement, and aſſumpſit will lie upon ſuch new promiſe or undertaking. 1 *Atk.* 67. If a bankrupt has his certificate, and an action be brought againſt him afterwards for a debt precedent to the commiſſion, he may plead his certificate, or otherwiſe he is without relief. 2 *Vern.* 696, 697. The common method of pleading is, generally, that he became a bankrupt within the intent and meaning of the ſtatutes made and in force concerning bankrupts, and that the cauſe of action accrued before he became a bankrupt. Though a creditor of a bankrupt under 20l. is excluded from aſſent or diſſent to the certificate, yet, as he is affected by the conſequence of allowing the certificate, he hath a right to petition, and ſhew any fraud againſt allowing the certificate. 7 *Vin. Abr.* 134.

No allowance or indemnity ſhall be given to a bankrupt, unleſs his certificate be ſigned and allowed; and alſo, if any creditor produces a fictitious debt, or is induced by money or notes to ſign his certificate, and the bankrupt does not make diſcovery of it, but ſuffers the fair creditors to be impoſed upon, he loſes all title to theſe advantages. 24 Geo. II. c. 57. Neither can he claim them, if he has given with any of his children above 100l. for a marriage portion, unleſs he had at that time ſufficient left to pay all his debts, or if he has loſt at any one time 5l. or in the whole 100l. within a twelvemonth before he became a bankrupt, by any manner of gaming or wagering whatſoever; or within the ſame time has loſt to the value of 100l. by ſtock-jobbing.

Alſo, to prevent the too common practice of frequent and fraudulent or careleſs breaking, a mark is ſet upon ſuch as have been once cleared by a commiſſion of bankrupt, or have compounded with their creditors, or have been delivered by an act of inſolvency. Perſons who have been once cleared by any of theſe methods, and afterwards become bankrupts again, unleſs they pay full 15s. in the pound, are only thereby indemnified as to the confinement of their bodies; but any future eſtate they ſhall acquire remains liable to their creditors, excepting their neceſſary apparel, houſehold goods, and the tools and implements of their trades. 5 Geo. II. c. 30. But money, gained by his trade or profeſſion for the neceſſary maintenance of himſelf and family, may be recovered by action by an uncertificated bankrupt. Chippendale *v.* Tomlinſon, *Co. B. L.*

By the ſtat. 13 Eliz. c. 7, the commiſſioners ſhall have full power to diſpoſe of all the bankrupt's lands and tenements, which he had in his own right at the time when he became a bankrupt, or which ſhall deſcend or come to him at any time afterwards, before his debts are ſatisfied or agreed for; [and all lands and tenements which were purchaſed by him jointly with his wife or children to his own uſe, (or ſuch intereſt therein as he may lawfully part with,) or purchaſed with any other perſon, upon ſecret truſt, for his own uſe;] and cauſe them to be appraiſed to their full value, and to ſell the ſame, by deed indented and inrolled, or divide them proportionably among his creditors. This ſtatute expreſsly includes not only freehold, but cuſtomary and copyhold, lands: and the lord of the manor is thereby bound to admit the aſſignee (*Cro. Car.* 568, 1 *Atk.* 96), but did not extend to eſtates tail, farther than for the bankrupt's life; nor to equities of redemption on a mortgaged eſtate, wherein the bankrupt has no legal intereſt, but only an equitable reverſion. Whereupon the ſtatute 21 Jac. I. c. 19, enacts, that the commiſſioners ſhall be impowered to ſell or convey, by deed indented and inrolled, any lands or tenements of the bankrupt, wherein he ſhall be ſeiſed of an eſtate-tail in poſſeſſion, remainder, or reverſion, unleſs the remainder or reverſion thereof ſhall be in the crown; and that ſuch ſale ſhall be good againſt all ſuch iſſue in tail, remainder-men, and reverſioners, whom the bankrupt himſelf might have barred by a common recovery, or other means; and that all equities of redemption upon mortgaged eſtates, ſhall be at the diſpoſal of the commiſſioners; for they ſhall have power to redeem the ſame, as the bankrupt himſelf might have done, and after redemption to ſell them. And the commiſſioners may ſell a copyhold entailed by cuſtom. *Stone*, 127. *Billing.* 148. And alſo, by this and a former act, 1 Jac. I. c. 15, all fraudulent conveyances to defeat the intent of theſe ſtatutes are declared void; but it is provided, that no purchaſer *boná fide*, for a good or valuable conſideration, ſhall be affected by the bankrupt-laws, unleſs the commiſſion be ſued forth within five years after the act of bankruptcy committed. *Cooke's B. L.* c. 8.

If there be two joint-tenants, and the one becomes bankrupt and dies, Billinghurſt is of opinion the bankrupt's part ſhall be ſold, and that there ſhall be no ſurvivorſhip; becauſe the bankrupt's moiety is bound by the ſtatutes, and alſo the bankrupt had power to ſell the ſame in his life-time, and might depart with it. And by ſtat. 1 Jac. c. 15, the commiſſioners after the bankrupt's death, may proceed in execution, in and upon the commiſſion, for and concerning the offender's lands, tenements, &c. in ſuch ſort as if the offender had been living; which they cannot do, if the ſurvivorſhip is held to take place. If the bankrupt be a joint-tenant in fee, for life or years, the commiſſioners may ſell a moiety. So, if he be ſeiſed in right of his wife, they may ſell during the coverture. 1 *Com. Dig.* 530.

In caſe of a patron becoming bankrupt, the commiſſioners may ſell the advowſon of the living; but, if the church be void at the time of the ſale, the vendee ſhall not preſent to the void turn, but the bankrupt himſelf, becauſe the void turn of a church is not valuable. 1 *Burn's Eccl. Law*, 4 ed. p. 125. The commiſſioners may ſell offices of inheritance and for terms of years; but an office concerning the execution of juſtice (and therefore within 5 and 6 Edw. VI. c. 16) cannot be ſold. 1 *Atk.* 213. But a place that does not concern the execution of juſtice, but only the police, may be ſold. 1 *Atk.* 210, 215. If a mortgage is made by a bankrupt, tenant in tail, without ſuffering a recovery, the aſſignees ſhall take advantage of this defect, and hold the land clear of the mortgage. 1 *Wilſ.* 276. The commiſſioners may aſſign a poſſibility of right belonging to the bankrupt. 3 *P. Wms.* 132.

When aſſignees are choſen under a commiſſion, all the eſtate and effects of the bankrupt, whether they be goods in actual poſſeſſion, or debts, contracts, and legacies, and other choſes in action, are veſted in them by aſſignment, (but until the aſſignment the property is not transferred out of the bankrupt;) and every new acquiſition previous to the certificate will veſt in the aſſignees; but, as to future real eſtates, there muſt be a new aſſignment of them. 1 *Atk.* 253. *Billing.* 1184. 1 *P. Wms.* 385, 6. The commiſſioners, by their warrant, may cauſe any houſe or tenement of the bankrupt to be broken open, in order to enter and ſeize the ſame. 2 *Show.* 247. When the aſſignees are choſen or approved by the creditors, the commiſſioners are to aſſign every thing over to them: and the property of every part of the eſtate is thereby as fully veſted in them as it was in the bankrupt himſelf, and they have the ſame remedies to recover it. 12 *Mod.* 324.

The commiſſioners in England may ſell the bankrupt's goods in Ireland; and (notwithſtanding a *dictum* of lord Mansfield to the contrary, *Dougl.* 151) it ſeems now decided, that, by the aſſignment of the commiſſioners, all the bankrupt's property, whether in England or abroad, is conveyed to the uſe of his creditors. See Hunter *v.* Potts, 4 *Term. Rep.* 182; and *Cooke's B. L.* c. 8.

If a man ſends bills of exchange, or conſigns a cargo, and the perſon to whom he ſends them has paid the value before, though he did not know of the ſending them at that time, the ſending of them to the carrier will be ſufficient to prevent the aſſignees from taking theſe goods back, in caſe of an intervening act of bankruptcy. 4 *Burr.* 2239. But, if the goods were ſent in contemplation of bankruptcy, and to give a preference to a former creditor, if the act of bankruptcy is committed before the creditor receives the property, and aſſents to it, the commiſſioners may aſſign it, as part of the bankrupt's effects, and it will veſt in the aſſignees. 4 *Burr.* 2235. All queſtions of preference turn upon the action being complete, before an act of bankruptcy committed, for then the property is transferred; otherwiſe an act of bankruptcy intervening veſts the property in the hands and diſpoſal of the law. If a man were to make a payment but the evening before he becomes a bankrupt, independent of the act of parliament, and in a courſe of dealing and trade, it would be good. Where an act is done that is right to be done, and the ſingle motive is not to give an unjuſt preference, the creditor will have a preference. *Cowp.* 123.

In the caſe Smith *v.* Payne, B. R. H. 35 Geo. III. 6 *T. R.* 152, it was determined, that where a creditor, knowing his debtor to be in diſtreſſed circumſtances, and unable to pay his debt, applied to him in the firſt inſtance about two months before his bankruptcy for a ſecurity, and took part of his ſtock in trade for that purpoſe, this was not an undue preference, though the creditor did not threaten to ſue him in caſe of a refuſal.

If the merchant conſigns goods to a trader, and, before their arrival, the conſignee becomes bankrupt, if the merchant can prevent the goods getting into the bankrupt's hands, the commiſſioners' aſſignment will not affect them. 2 *Vern.* 203. 1 *Atk.* 248. *Cowp.* 296. The future profits ariſing from a bankrupt's perſonal labour are not ſubject to the aſſignment. Chippendale *v.* Tomlinſon, *T.* 25 Geo. III. B. R.

The property veſted in the aſſignees is the whole that the bankrupt had in himſelf, at the time he committed the firſt act of bankruptcy, or that has been veſted in him ſince, before his debts are ſatisfied or agreed for; therefore, when the commiſſion is awarded, the commiſſion, and the property of the aſſignees, ſhall have a relation, or reference, back to the firſt and original act of bankruptcy. 4 *Burr.* 32. Inſomuch, that all tranſactions of the bankrupt are, from that time, abſolutely null and void; either with regard to the alienation of his property, or the receipt of his debts, from ſuch as are privy to his bankruptcy; for they are no longer his property, or his debts, but thoſe of the future aſſignees. Therefore, even if a banker pay the draft of a trader keeping caſh with him after knowledge of an act of bankruptcy, the aſſignees may recover the money. 2 *Term Rep.* 113. 3 *Bro. C. R.* 313. Vernon *v.* Hankey, 2 *Term Rep.* 287. And, if an execution be ſued out, but not ſerved and executed on the bankrupt's effects till after the act of bankruptcy, it is void as againſt the aſſignees. But the king is not bound by this fictitious relation, nor is it within the ſtatutes of bankrupts, (1 *Atk.* 262. *W. Jones* 202. 2 *Show.* 480.) for if, after the act of bankruptcy committed, and before the aſſignment of his effects, an extent iſſues for the debt of the crown, the goods are bound thereby. *Vin. Abr.* 104. *Cooke's B. L.* c. 14. As theſe acts of bankruptcy however may ſometimes be ſecret to all but a few, and it would be prejudicial to trade to carry this notion to its utmoſt length, it is provided by 19 Geo. II. c. 32, that no money paid by a bankrupt to a *bonâ fide* or real creditor, in a courſe of trade, even after an act of bankruptcy done, ſhall be liable to be refunded. Nor, by ſtat. 1 Jac. I. c. 15, ſhall any debtor of a bankrupt that pays him his debt, without knowing of his bankruptcy, be liable to account for it again. The intention of this relative power being only to reach fraudulent tranſactions, and not to diſtreſs the fair trader.

Sale of goods by a bankrupt after an act of bankruptcy is not merely void; the contract is good between the parties; but it may be avoided by the commiſſioners or aſſignees at pleaſure; therefore they may either bring *trover* for the goods, as ſuppoſing the contract may be void, or may bring a debt or aſſumpſit for the value, which affirms the contract. 3 *Salk.* 59. 2 *Term. Rep.* 143. And ſo, if a bankrupt, on the eve of bankruptcy, fraudulently deliver goods to a creditor. 4 *Term Rep.* 211.

The aſſignees may purſue any legal method of recovering the property veſted in them, by their own authority; but cannot commence a ſuit in equity, nor compound any debts owing to the bankrupt, nor refer any matters to arbitration, without the conſent of the creditors, or the major part of them, in value, at a meeting to be held in purſuance of notice in the Gazette. 5 Geo. II. c. 30. 1 *Atk.* 91. *Cooke's B. L.* c. 14.

In the caſe, Bradley *v.* Clark, B. R. Eaſt. 33 Geo. III. 5 *T. R.* 197, it was decided, that aſſignees, under the ſtat. 19 Geo. II. c. 32, may recover money paid by a trader, after a ſecret act of bankruptcy, to a carrier for the carriage of goods; this ſtatute being ſtrictly confined by the courts to *goods ſold*, and *bills drawn*. In the caſe, Brandon *v.* Pate, C. P. E. 34 Geo. III. 2 *H. Bl.* 308, it was determined, that aſſignees may maintain an action of debt under the ſtat. 9 Anne, c. 14, for money loſt at play by the bankrupt before the bankruptcy. And in the caſe, Smith *v.* Coffin, C. P. E. 35 Geo. III. 2 *H. Bl.* 144, it was decided, that the right to bring a real action paſſes to the aſſignees by the uſual words of a deed of aſſignment. In the caſe, Lewis *v.* Piercy, C. P. T. 28 Geo. III. 1 *H. Bl.* 29, it was determined, that inſuring in the lottery is not gaming within the meaning of the ſtatute 5 Geo. I. c. 24.

When they have got in all the effects they can reaſonably hope for, and reduced them to ready money, the aſſignees muſt, after four, and within twelve, months after the commiſſion iſſued, give twenty-one days notice to the creditors of a meeting for a dividend or diſtribution; at which time they muſt produce their accounts, and verify them upon oath, if required: and, under ſtat. 5 Geo. II. c. 30, by affidavit if living in the country, and if Quakers by affirmation. And then the commiſſioners ſhall direct a dividend to be made, at ſo much in the pound, to all creditors who have before proved, or ſhall then prove, their debts. This dividend muſt be made equally, and in a rateable proportion, to all the creditors, according to the quantity of their debts; no regard being had to the quality of them. Mortgages indeed, for which the creditor has a real ſecurity in his own hands, are entirely ſafe, for the commiſſion of bankrupt reaches only the equity of redemption. *Finch. Rep.* 466. 2 *Rep.* 25. So are alſo perſonal debts, where the creditor has a chattel in his hands, as a pledge or pawn for the payment, or has taken the debtor's lands or goods in execution. But, otherwiſe, judgments and recognizances, (both which are debts of record, and therefore at other times have a priority,) and alſo bonds and obligations by deed or ſpecial inſtrument, (which are called debts by ſpecialty, and are uſually next in order,) theſe are all put on a level with debts by mere ſimple contract, and all paid *pari paſſu*. 21 Jac. c. 19. Nay, ſo far is this matter carried, that, by the expreſs proviſion of the ſtat. 7 Geo. I. c. 31, debts not due at the time of the dividend made, as bonds or notes of hand payable at a future day certain, ſhall be proved and paid equally with the reſt, allowing a diſcount or drawback in proportion. *Ld. Raym.* 1549. *Stra.* 949. 2 *P. Wms.* 396. 3 *Wilſ.* 17. And inſurances and obligations upon bottomry or *reſpondentia*, *bonâ fide* made by the bankrupt, though forfeited after the commiſſion is awarded, ſhall be looked upon in the ſame light as debts contracted before any act of bankruptcy; alſo annuity-bonds, though not forfeited at the time of the bankruptcy. *Cowp.* 540. 2 *Blac. R.* 110 *b*. And policies of inſurances for life. *Dougl.* 166.

Within eighteen months after the commiſſion iſſued, a ſecond and final dividend ſhall be made, unleſs all the effects were exhauſted by the firſt. 5 Geo. II. c. 30. It is the duty of aſſignees to make a dividend as early as poſſible after the time given by the ſtatute. And, if they neglect to do ſo, and keep the money in their own hands, they will be liable to pay intereſt for it. And, if any ſurplus remains after ſelling his eſtates, and paying every creditor his full debt, it ſhall be reſtored to the bankrupt. 13 Eliz. c. 7. This is a caſe which ſometimes happens to men in trade, who involuntarily, or at leaſt unwarily, commit acts of bankruptcy, by abſconding and the like, while their effects are more than ſufficient to pay their creditors. And, if any ſuſpicious or malevolent creditor will take the advantage of ſuch acts, and ſue out a commiſſion, the bankrupt has no remedy, but muſt quietly ſubmit to the effects of his own imprudence, except that, upon ſatisfaction made to all the creditors, the commiſſion may be ſuperſeded. 2 *Cha. Ca.* 144. This caſe may alſo happen, when a knave is deſirous of defrauding his creditors, and is compelled by a commiſſion to do them that juſtice which otherwiſe he wanted to evade. And therefore, though the uſual rule is, that all intereſt on debts carrying intereſt ſhall ceaſe from the time of iſſuing the commiſſion, yet, in caſe of a ſurplus left after payment of every debt, ſuch intereſt ſhall again revive, and be chargeable on the bankrupt, or his repreſentatives. 1 *Atk.* 244.

The *ſuperſedeas* is a writ iſſuing under the great ſeal, to ſuperſede the commiſſion; and this writ may be iſſued at the diſcretion of the lord chancellor, when the creditors of the bankrupt agree to ſuperſede the commiſſion; or becauſe the party appears not to have been a trader; that the party had not committed an act of bankruptcy; that the commiſſion was not opened till three months after it iſſued; or that he has paid all his creditors. Though the uſual courſe is for the lord chancellor to order a feigned iſſue to try the bankruptcy at law, yet, if it appears plainly to have been taken out fraudulently and vexatiouſly, the court will at once ſuperſede the commiſſion, and order the petitioning creditor's bond to be aſſigned. 1 *Atk.* 128, 144, 218.

Of the DIFFERENT KINDS of DEBTS, and MODE of PROVING them.

The ſeveral acts of parliament relating to bankrupts, being made for the relief of creditors, none but a creditor could at any time have taken out a commiſſion; and now he muſt have a legal demand to the amount ſpecified in 5 Geo. II. c. 30. But a debt in equity will in no circumſtances be a foundation for a commiſſion; therefore, if a legal demand is not in its own nature aſſignable, the aſſignee, notwithſtanding his equitable claim, cannot be a petitioning creditor. *Forreſt* 248. *Ch. Ca.* 191. *Freem.* 270. 1 *Atk.* 147. 2 *Vez.* 407. 2 *Stra.* 899. 1 *P. Wms.* 783. It is generally underſtood, that the commiſſion muſt iſſue on the petition of ſome creditor capable of claiming relief under it; and therefore, that, if the debt of the petitioning creditor appears to have been contracted ſubſequent to a ſecret act of bankruptcy committed by the trader, no commiſſion ought to be granted upon his petition. 2 *Str.* 744, 6. 1 *Atk.* 73. A debt at law, notwithſtanding the ſtatute of limitations has incurred, will ſupport a commiſſion; for the ſtatute does not extinguiſh the debt, but the remedy, and the leaſt hint will revive it. 2 *Black. Rep.* 703. It has been determined, that a creditor, by notes bought in at 10s. in the pound, was a creditor for the full ſum, and might take out a commiſſion. 1 *P. Wms.* 783. A creditor, before the party entered into trade, may on account of ſuch debt ſue out a commiſſion, but a creditor for a debt contracted after leaving off trade cannot. But, when a commiſſion is ſued, thoſe creditors who have become ſuch ſince the quitting trade, may come in and ſhare the dividend with thoſe who were creditors before or during the trading, provided they are not barred by a prior act of bankruptcy. 12 *Mod.* 159. *Ld. Raym.* 287. 1 *Sid.* 411.

If a creditor has his debtor in execution, he cannot petition for a commiſſion of bankruptcy; for, the body of the debtor being in execution, it is a ſatisfaction of the debt, in point of law. Therefore, where a commiſſion had iſſued on the petition of a creditor who had the bankrupt in execution, it was upon that account ſuperſeded. 3 *Wilſ.* 271. 1 *Stra.* 653. Nor has the petitioning creditor the ordinary election to ſue the bankrupt at law, or come under the commiſſion as other creditors have; for, if he was to elect to proceed at law, the commiſſion muſt be ſuperſeded, which would affect thoſe creditors who had proved debts under it. 1 *Atk.* 154.

Debts may be proved at any of the public meetings appointed by the commiſſioners; the uſual proof is the oath of the creditor, which if not objected to by the bankrupt himſelf, or any of thoſe creditors, is generally eſteemed ſufficient; but, if any objection is raiſed, the demand muſt be farther ſubſtantiated by evidence. For, though the creditor ſhould make a poſitive oath of the debt, the commiſſioners, if they conceive themſelves to have juſt grounds to doubt its fairneſs, ought to admit it only as a claim; and, if it is not made out to their ſatisfaction, it may be rejected. 1 *Atk.* 71, 221.

Upon the principle of equality among the creditors proving under the commiſſion, the privilege of debtors to come in and prove their debts and bankrupts to be diſcharged therefrom, is co-extenſive and commenſurate; therefore a man ſhall not prove a debt, and proceed in an action at law, at the ſame time. However, the court will not abſolutely ſtop him from bringing an action, but put him to his election; and, ſhould he elect to proceed at law, he will ſtill be allowed to prove his debt, for the purpoſe of aſſenting to, or diſſenting from, the certificate; which permiſſion is abſolutely requiſite, to make his remedy at law of any avail, for, ſhould the bankrupt procure his certificate, he will be thereby diſcharged from that action, as well as from all debts contracted before the act of bankruptcy. 1 *Atk.* 83, 119, 220. 1 *P. Wms.* 562.

If the creditor, before he proves his debt, proceeds at law againſt the bankrupt, he cannot be obliged to make his election till a dividend is declared. And, where the creditor has already proceeded at law, he is not at liberty to come in and prove his debt under the commiſſion, without relinquiſhing his proceedings at law; unleſs by order from the great ſeal, for the purpoſe of aſſenting to, or diſſenting from, the certificate. 2 *Black. Rep.* 1317. But the modern determinations, ſupported by ſome of earlier date, have moſtly put the creditor to his election before a dividend, provided a reaſonable time is afforded the creditor to inform himſelf of the bankrupt's affairs. *Cooke B. L.* c. 6. The being choſen aſſignee will not prevent the creditor ſuing the bankrupt at law, if he has not proved his debt; for in that caſe he can only be conſidered as a creditor at large; and, even if he has proved his debt and choſen himſelf aſſignee, he may ſtill elect to proceed at law, and be diſcharged as a creditor under the commiſſion. 1 *Atk.* 153, 221. But a petitioning creditor has not this election.

A debt made void by ſtatute, ought not to be permitted to be proved; as a debt of an uſurious contract; and, though the rule of the court of Chancery is, upon a bill to be relieved againſt demands of uſurious intereſt, not to make void the whole debt, but to make the party pay what is really due, yet, in a commiſſion of bankruptcy, the aſſignees have a right to inſiſt that the whole is void, as an uſurious contract. And, unleſs the aſſignees and creditors ſubmit to pay what is really due, the lord chancellor has not power to order it; and applications of this nature have been frequently refused. 2 *Vez.* 489. 1 *Atk.* 125. *Dougl.* 716.

If the bankrupt's eſtate is in arrear for taxes, the collector, when he comes to prove the debt, muſt produce his authority, that the commiſſioners may judge of the legality of it. Corporations uſually have a clerk or treaſurer, who is the perſon to prove debts due to them; he muſt however produce his appointment under ſeal to the commiſſioners. Every ſecurity that a creditor has for his debt, muſt be produced at the time of his proving, when the commiſſioners will mark them as having been exhibited. In the ſame manner, any perſon acting for another, muſt produce his authority to the commiſſioners, and they will mark them as exhibits. One inhabitant of a pariſh may prove for himſelf and the other inhabitants. 1 *Atk.* 111. *Cooke's B. L.* c. 4.

In caſe of debts uncertain in point of liquidation, as between two merchants in balancing accounts, the matter reſts upon a claim to aſcertain the ſum that was due at the time of the bankruptcy. So, where a creditor cannot aſcertain his debt with certainty ſufficient to enable him to ſwear to it, or is not able in other reſpects ſatisfactorily to ſubſtantiate it; or where the agent of a creditor cannot produce his authority, and in many other caſes where there appears a probable foundation of a demand, though not ſufficiently made out, it is uſual for the commiſſioners to ſuffer a claim to be entered; but that will not entitle the party to a dividend, which he cannot receive without completely proving his debt. If a claim is not ſubſtantiated in a reaſonable time, the commiſſioners may ſtrike it out; and they generally do ſo before a dividend is declared, unleſs ſufficient reaſon is offered to them for prolonging the time; but the creditor is notwithſtanding afterwards at liberty to prove his debt, and receive his ſhare upon any future dividends. However in ſuch caſes where there has not been groſs neglect, the chancellor will make an order that ſuch creditor ſhall be paid his proportion of the firſt dividend out of the money in the aſſignees' hands, upon condition that it does not break in upon any former dividend. 3 *Wilſ.* 271. Aliens as well as denizens may come in as creditors; for all ſtatutes concerning bankrupts extend to aliens. 21 Jac. I. c. 19.

The diſtinction of debts payable *in futuro* on a day certain, and debts depending upon contingency, has given riſe to frequent queſtions, whether the bankrupt's wife or her truſtees ſhould be admitted to prove the ſum ſettled on her by marriage-articles, under a commiſſion againſt her huſband. Lord Hardwicke, on a petition *ex parte* Winchester, (1 *Atk.* 117. *Dav.* 535,) ſtated the diſtinctions of the ſeveral caſes. The firſt head of theſe caſes is where a bond is given by a huſband to pay a ſum of money in his life-time to truſtees, to be laid out in truſt for himſelf and his wife, or children; and in caſe the huſband ſurvives to the uſe of himſelf. If in this caſe the huſband becomes a bankrupt, this being a debt due in his life-time, and before the bankruptcy, the court will let in the truſtees to prove ſuch debt, according to the truſts.

The ſecond head is, where a perſon gives a covenant to pay to truſtees a ſum of money for the benefit of the wife or children after his death; and alſo a judgment by way of collateral ſecurity to ſuch covenant, and afterwards becomes bankrupt; this, being a debt at law, may be proved under the commiſſion.

The third is, where the father gives a bond to his intended ſon-in-law on the marriage of his daughter, to pay a ſum of money after his death, and intereſt in the mean time on particular days and times, and there is a breach of the condition of the bond, and the father becomes bankrupt; this is a legal debt not depending on a contingency, and therefore may be proved.

The fourth head is, where a man covenants, in conſideration of a marriage-portion paid him, for his heirs, executors, and adminiſtrators, to pay to truſtees a ſum of money after his deceaſe, in caſe his wife ſurvives him. This caſe, depending on a contingency, is materially different from the others; becauſe in thoſe there was a remedy at law before the commiſſion iſſued; and it ſeems now to be ſettled, that, on a contingent proviſion for a wife, ſhe cannot be admitted as a creditor. 3 *Wilſ.* 271. *P. Wms.* 497. 2 *Ld. Raym.* 1546. 7 *Vin.* 72. *Dav.* 254, 524. 1 *Atk.* 113. And this though it be particularly conditioned or provided that ſuch debt ſhall be proveable. *Cooke's B. L.* But, notwithſtanding the general rule ſeems to be thus eſtabliſhed, the caſe will be different, if the aſſignees are obliged to come into equity to compel the performance of a truſt; for then, as they require equity, they ſhall be obliged to do equity, and ſecure the ſettlement to the wife. 1 *Atk.* 114. 2 *Vern.* 662.

Contingent debts are ſaid not to be included in ſtat. 7 Geo. I. c. 31, becauſe, it being uncertain whether they will ever become due or not, it is impoſſible to make ſuch abatement of 5l. per cent. as that act directs, and therefore they cannot be within it; the principle therefore, that contingent creditors cannot be admitted to prove their debts, where the act of bankruptcy is prior to the happening of the contingency, is clear and indiſputable. 1 *Atk.* 118. But many queſtions have ariſen as to what debts ſhall be ſaid to be contingent within the meaning of the rule.

One having only cauſe of action cannot come in and prove it as a debt; becauſe the damages that may be given are conſidered merely as contingent; even in caſe of a bond of indemnity, where the condition is broken. 3 *Wilſ.* 270. 2 *Stra.* 1160. And this though the ſurety is called upon and liable to pay the debt, if it is not actually paid. 1 *Term Rep.* 599. So, if a leſſee ploughs up meadow ground, for which he is bound to pay the leſſor a certain ſum of money as a penalty, that penalty cannot be proved as a debt under the commiſſion: nor, if a man be bound in an obligation, in a certain ſum, to perform covenants, and the obligor, before he becomes a bankrupt, breaks thoſe covenants, the obligee cannot prove this as a debt. If a bond by a principal and ſurety has not been forfeited before the ſurety became bankrupt, the debt cannot be proved under his commiſſion, but he may be ſued upon it notwithſtanding his certificate. *Doug.* 155. 3 *Wilſ.* 270. The bankruptcy of the leſſee is no bar to an action on covenant (made before his bankruptcy) brought againſt him for rent due after the bankruptcy. 4 *Term Rep.* 94. But, when judgment is obtained in any action, it then becomes ſuch a debt as may be proved, and the judgment, when ſigned, relates to the verdict. 2 *Black.* 1317.

Where a man undertakes to pay a ſum of money for another, his undertaking alone will not create a debt capable of being proved under a commiſſion; and, if an act of bankruptcy intervenes between the undertaking and the actual payment, it can never be proved, and the creditor can only reſort to the bankrupt perſonally. But, if the party engaging to pay the debt of another is taken in execution for that debt, his impriſonment is conſidered as a payment and ſatisfaction of the debt ſufficient to give him a right of proving under the commiſſion. *Cowp.* 525. 3 *Wilſ.* 13. If the party engaging to ſecure the debt of another himſelf becomes bankrupt before that debt is payable by the principal, the creditor cannot prove under his commiſſion. *Cowp.* 460. Where a man becomes bail for another, it is conſidered as a contingent debt. And, if the bail commit an act of bankruptcy before the judgment, it cannot be proved under the commiſſion. 2 *Stra.* 1043. 3 *Wilſ.* 262.

The general rule as to annuities is, that where one is entitled to an annuity from another, which is not a rent-charge on land, or on a ſpecific part of the grantor's eſtate, but perſonal, to be paid by him, who afterwards becomes bankrupt, it is only a general demand on him and his eſtate; and there is nothing a debt on his eſtate but the arrears of the annuity at the time of the bankruptcy, unleſs the penalty of the annuity-bond has become forfeited; for otherwiſe the payments accruing afterwards became a debt after the bankruptcy, and cannot be proved. But, where there has been a forfeiture prior to the bankruptcy, in order to prevent the injuſtice of admitting the creditor only to prove the arrears, and the great inconvenience that would enſue if the annuity ſhould be received from time to time, as an accruing debt on the eſtate, by which means the diviſion of the eſtate would be perpetual, and there could be no final dividend during the annuitant's life, the court of Chancery puts it in another ſhape of ſetting a value on the annuity, becauſe it was only a general perſonal demand. And, in ſetting this value, conſideration muſt be had of the time the annuitant has enjoyed it. 2 *Vez.* 490. 1 *Atk.* 251. 2 *Black.* 1107.

In caſe of an apprentice where the maſter becomes bankrupt, commiſſioners recommend it to the creditors to allow him a groſs ſum out of the eſtate for the purpoſe of binding him to another maſter; as it would be hard to make him come in as a creditor under the commiſſion; but this, though it is equitable and juſt, muſt be conſidered as an indulgence, and not a right; for the court can only order him to be admitted as a creditor. 1 *Atk.* 149, 261. A bond, though it be not aſſignable at law, may be proved under the commiſſion by the aſſignee; but the aſſignor muſt join in the depoſition that he hath not received the debt or any part thereof, or any ſecurity or ſatisfaction for the ſame. *Cooke's B. L.*

In bills of exchange, and promiſſory notes, there is a double contract; the firſt between the principal debtor and creditor; and alſo an implied contract, that the principal debtor will indemnify the ſurety, ſo that if the creditor, the indorſee, comes upon the ſurety of the indorſor, the indorſor or his aſſignees may come in againſt the original or principal debtor. This is the caſe between principal and ſurety, and is likewiſe the caſe where an indorſor is barely a ſurety, and no conſideration is paid by the original drawer. 1 *Atk.* 123. The holder of a bill of exchange is entitled to prove his debt under the commiſſion againſt the drawer, aceptor, and indorſor, and to receive a dividend from each, upon his whole debt, provided he does not in the whole receive more than 20s. in the pound. 1 *Atk.* 107. But in this caſe, if the creditor has actually received part of his debt under a commiſſion, he can only prove the remainder under another. 2 *P. Wms.* 89, 407. 1 *Atk.* 129. 2 *Vez.* 114, 5. Creditors are not allowed to prove intereſt on notes, or bills, unleſs it is expreſſed in the body of them. But the creditor may prove the full ſum for which the notes were given, notwithſtanding he received 5l. per cent. diſcount. 1 *Atk.* 151. A child, living with the father and earning money for itſelf, may, if the father receives that money, be admitted a creditor under the commiſſion againſt him. 2 *Vez.* 675.

A landlord having a legal right to diſtrain goods while they remain on the premiſes, the iſſuing a commiſſion of bankrupt againſt the tenant, and the meſſenger's poſſeſſion of the tenant's goods, will not hinder him from diſtraining for rent; for it is not ſuch a *cuſtodia legis* as an execution; and even there the law allows the landlord a year's rent. And the aſſignment of the commiſſioners of the bankrupt's eſtate and effects is only changing the property of the goods, and while upon the premiſes they remain liable to be diſtrained. 1 *Atk.* 102. And, as a creditor after proving his debt may elect to abide by ſuch proof, or relinquiſh it and proceed at law, ſo a landlord, who is conſidered in a higher degree than a common creditor, may make his election to wave his proof in his diſtreſs for rent. But particular circumſtances may deprive the landlord of this right; as if he neglects to diſtrain, and ſuffers the goods to be ſold by the aſſignees. 1 *Atk.* 104. 1 *Bro. C. R.* 427. And a landlord may diſtrain before the end of the term by cuſtom, as in Norfolk. 2 *Term. Rep.* 600. A proviſo in a leaſe, that it ſhall be void in caſe of the bankruptcy of the leſſee, is valid. 2 *Term Rep.* 133.

If an executor becomes bankrupt, as he acts *in auter droit*, his bankruptcy does not take away the right of executorſhip; and the legatees or creditors of the teſtator cannot prove under the commiſſion, unleſs the bankrupt has committed a *devaſtavit*. But, though a bankrupt executor may ſtrictly be the proper hand to receive the aſſets, yet, if his aſſignees have received any of the property, the chancellor may appoint a receiver, with whom the aſſignees ſhall account (1 *Atk.* 101); or direct the bankrupt himſelf to be admitted a creditor for what he may be intitled to as executor, and order the dividend to be paid into the bank. *Cooke's B. L.* c. 6. The effects poſſeſſed by a bankrupt as executor, are not liable to the aſſignment of the commiſſioners. 3 *Burr.* 1369. Commiſſioners after a man becomes a bankrupt compute intereſt upon debts no lower than the date of the commiſſion. And a ſpecialty creditor cannot have intereſt beyond the penalty contained in his ſecurity; but a creditor by note carrying intereſt may receive the full amount. 1 *Atk.* 79, 80.

If a bankrupt is a factor, and goods are conſigned to him or his order, which come to his poſſeſſion; though he has the power of immediately ſelling them, and taking the money, in which caſe the conſignor can only come as a general creditor upon his eſtate, yet notwithſtanding the legal property the factor had in, and power over, them, if they remain in ſpecie in his hands, they ſhall be delivered to the principal, who has a lien upon them as his own property; and the bankrupt only as agent and truſtee for him. And, even where the factor had ſold the goods, and taken notes for them, it has been determined that the original owner had a ſpecific lien upon, and was intitled to, the notes. 2 *Vez.* 586. 1 *Atk.* 232.

If the aſſignees miſbehave in the truſt repoſed in them, they may be removed by petition to the chancellor. So, if an aſſignee himſelf becomes bankrupt, that will be a ſufficient ground for his removal. 3 *Atk.* 97. 7 *Vin. Abr.* 77. Or, if the commiſſioners act improperly at the choice of aſſignees. When an aſſignee is removed, he muſt join with the old aſſignee, and the commiſſioners, in making an aſſignment to the new aſſignee. The common practice, where only one aſſignee is removed, is, to make him join with his companion in aſſigning to the new aſſignee, and to the one retained, whereby a man is made to convey to himſelf, which appears abſurd. The moſt feaſible plan ſeems for the old aſſignees to convey to a third perſon, in truſt, that he ſhould immediately re-convey to the old and new appointed aſſignee. *Cooke's B. L.* Aſſignees are in the nature of truſtees, and where they employ an agent to receive or pay money, and he abuſes this confidence, an aſſignee cannot be diſtinguiſhed from any other truſtee, who, if his agent deceive him, muſt anſwer over to the *ceſtui que truſts*. For the chief conſideration of the creditors in the choice of aſſignees is certainly the ability of the perſons, that they may be reſponſible for the ſums they receive from the bankrupt's eſtate. 1 *Atk.* 88. But the negligence of one aſſignee ſhall not hurt another joint aſſignee, where he is not at all privy to any private and perſonal agreement entered into by his brother aſſignee. If an aſſignee becomes a bankrupt, and has applied any of the money received by him in that capacity to his own uſe, the commiſſioners are to be conſidered as ſpecialty creditors; becauſe the aſſignees executed a counterpart of the aſſignment to them, and the agreement, being under hand and ſeal, makes it in the nature of a ſpecialty debt, and therefore they may come upon his real eſtate. 1 *Atk.* 89.

If there is a joint commiſſion againſt two partners, they muſt be each found bankrupts; and, though one of them ſhould die, the commiſſion may ſtill go on; but, if one of the joint traders be dead at the time of the taking out the commiſſion, it abates, and is abſolutely void. *Cooke's B. L.* It was formerly the practice, where there were ſeveral partners, to take out ſeparate commiſſions againſt each, as well as a joint commiſſion; but this has been ſince diſcountenanced, it being the common courſe of the court, upon petition, to make an order for the ſeparate creditors to come in and prove their debts under the joint commiſſion; and that the aſſignees ſhould keep diſtinct accounts of the ſeveral eſtates; and this may be done, becauſe the aſſignment in the caſe of a joint commiſſion is of the whole eſtate. But, on the other hand, where ſeparate commiſſions are taken out againſt joint traders, it ſeems to have been the opinion that joint creditors could not prove their debts under the ſeparate commiſſion, except for the purpoſe of aſſenting to, or diſſenting from, the certificate; but that they muſt proceed to take out a joint commiſſion. *Cooke's B. L.* 1 *Atk.* 183. But it ſeems now to be conſidered, that a joint commiſſion cannot legally be ſupported while there is a ſeparate one ſubſiſting; becauſe, a trader having been declared a bankrupt, the whole of his property is aſſigned under the firſt commiſſion, and till he obtains his certificate he is incapable of trading or contracting for his own benefit. However it is certain, that in practice joint commiſſions are taken out after the parties have been declared bankrupts under ſeparate commiſſions, by which means great expence is ſaved, and the joint effects diſpoſed to better advantage; and therefore, in a fair caſe, and where it can be made appear that the bankrupt's eſtate will be benefitted by proſecuting a joint commiſſion, the lord chancellor, to make it valid, will ſuperſede the prior ſeparate one. *Cowp.* 824. 1 *Atk.* 252. *Cooke's B. L.* c. 1.

Joint creditors are entitled to a diſtribution of the joint or partnerſhip eſtate, without the ſeparate creditors being permitted to participate with them; but, notwithſtanding ſeparate creditors are not entitled to ſhare the dividend of the joint property until the joint creditors have received 20s. in the pound, yet they are, upon petition, let in to prove their reſpective ſeparate debts under the joint commiſſion, paying contribution to the charge of it; and, as the joint or partnerſhip eſtate is in the firſt place to be applied to pay the joint or partnerſhip debts, ſo in like manner the ſeparate eſtate ſhall be in the firſt place applied to pay all the ſeparate debts. This is ſettled as a rule of convenience; and it is reſolved, that if there be a ſurplus of the joint eſtate beſides what will pay the joint creditors, the ſame ſhall be allotted in due proportions to the ſeparate eſtate of each partner, and applied to pay the ſeparate creditors. And, on the other hand, if there be a ſurplus of the ſeparate eſtate beyond what will ſatisfy the ſeparate creditors, it ſhall go to ſupply any deficiency that may remain as to the joint creditors. 1 *Atk.* 68. 2 *Vern.* 706. *Dav.* 373. 2 *P. Wms.* 501.

Where perſons in trade, as A, B, and C, have been connected together in various partnerſhips, and a joint commiſſion taken out againſt them all, an order has been made for keeping diſtinct accounts of the different partners, as well as of the ſeparate eſtates of each partner. But, when there have been various partnerſhips, as A and B, and A and C, and a joint commiſſion is taken out againſt one firm, in which ſome of the parties were not engaged, there can be only the common order for keeping the diſtinct accounts of the joint and ſeparate eſtate. *Cooke's B. L.* c. 6.

On a joint debt, if ſeparate commiſſions are taken out againſt the joint debtors, the creditor may prove his whole debt under each commiſſion, and receive a dividend, ſo as he does not obtain more than 20s. in the whole. Where there is a joint and ſeveral creditor, he muſt, according to the rule of the court now firmly eſtabliſhed, make his election whether he will come in upon the joint or the ſeparate eſtate; that is, which he will come in upon in preference; for, whichever he may elect, he will be entitled to come in upon the ſurplus of the other, if there ſhould be any. And, in order to make his election, he muſt have a reaſonable time to inquire into the ſtate of the different funds; but he is not entitled to defer ſuch election until a dividend be declared. *Cooke's B. L.* c. 6.

An act of bankruptcy by one partner, is to many purpoſes a diſſolution of the partnerſhip, by virtue of the relation in the ſtatutes, which avoids all the acts of a bankrupt from the day of the bankruptcy; and, from the neceſſity of the thing, all his property being veſted in the aſſignees who cannot carry on a trade. But after a diſſolution of partnerſhip by agreement, by an execution, or by a bankruptcy, the partner out of poſſeſſion of the partnerſhip effects has the ſame lien on any new goods brought in which he had upon the old. One partner has not, after a diſſolution, a right to change the poſſeſſion, or to make an actual diviſion of the ſpecific effects; for, one partner may be a creditor of the partnerſhip to ten times the value of all the effects. The other partner in that caſe can only have a right to an account of the partnerſhip, and to the balance due to him, if any, on that account; and no perſon deriving under the partner can be in a better condition than himſelf; his executor ſtands in the very ſame light. So the aſſignees under a commiſſion of bankruptcy againſt one partner muſt be in the ſame ſtate. They can only be tenants in common of an undivided moiety, ſubject to all the rights of the other partner. 4 *Burr.* 2176. *Cowp.* 448. 12 *Mod.* 446.

If a partner is a creditor on the partnerſhip account, he can have no ſatisfaction but out of the ſurplus, which ſhall remain after the joint creditors are paid; for the joint creditors rely upon the oſtenſible ſtate of the fund, and give credit to it accordingly. But lord Hardwicke ſaid, that where there are joint and ſeparate creditors, if one party lends a ſum of money to the partnerſhip, the creditors of his ſeparate eſtate have a right to this in the firſt place. 1 *Atk.* 287. *Vez. jun.* 167. But this has ſince been determined contrary, as where there was a joint commiſſion againſt two partners, and a ſeparate one againſt one of them. The petitioners, aſſignees under the ſeparate commiſſion, petitioned to be admitted creditors under the joint commiſſion, for a ſum of money brought by their bankrupt into the partnerſhip, beyond his ſhare, and as being therefore a creditor on the partnerſhip for that ſum; but refuſed, on the principle that he cannot be a creditor on the partnerſhip in competition with the joint creditors. So, where one partner has taken more than his ſhare out of the joint fund, the joint creditors, as the rule ſeems to be now ſettled, cannot be admitted to prove againſt the ſeparate eſtate of the partner who drew out the money, until his ſeparate creditors are ſatisfied, unleſs it can be ſhewn that the partner acted fraudulently, with a view to benefit his ſeparate creditors, at the expence of the joint creditors. *Cooke's B. L.* c. 13. See PARTNERSHIP.

One partner may be a creditor of another, and may, if he continues ſolvent, prove his debt under a ſeparate commiſſion. 1 *Atk.* 225. 2 *C. R.* 226. If there be two partners, and one of them becomes bankrupt, and, on a ſeparate commiſſion being ſued out againſt him, his certificate is allowed; this does not only diſcharge the bankrupt of what he owed ſeparately, but alſo of what he owed jointly, and on the partnerſhip account; becauſe, by the act of parliament, the bankrupt, upon making a full diſcovery, and obtaining his certificate, is to be diſcharged of all debts. 3 *P. Wms.* 24. Where two partners are bankrupts, and a joint commiſſion is taken out againſt them, if they obtain an allowance of their certificate, this will bar as well their ſeparate as their joint creditors. Before the ſtatute 10 Ann. c. 15, if there were two partners, and only one party became bankrupt, and a ſeparate commiſſion was taken out againſt him; there was no doubt but the diſcharge of that bankrupt diſcharged him from all debts which he owed in his joint as well as private capacity; but the great queſtion was, whether, by ſuch diſcharge of the bankrupt, the partner of the bankrupt ſhould likewiſe be diſcharged from ſuch debts as he was diſcharged of; and therefore that ſtatute has enacted, that the partner ſhall not be diſcharged.

CUSTOMARY FORMS under a COMMISSION of BANKRUPT.

The firſt ſtep to be taken towards procuring a commiſſion of bankruptcy, is for the creditor to make an affidavit of his debt before a maſter in chancery; or, if he reſides altogether in the country, before a maſter extraordinary there, to be filed in the ſecretary of bankrupts' office in London, and exhibited to the commiſſioners at their firſt meeting. The following is the form of an affidavit:

"A. B. of, &c. maketh oath, that Henry Moreton of London, in the county of Middleſex, ſhop-keeper, is juſtly and truly indebted unto him, this deponent, and to Joſeph Payne, his partner, in the ſum of 100l. and upwards; for goods ſold and delivered by this deponent, and his ſaid partner, to and for the uſe of the ſaid Henry Moreton; and this deponent farther ſaith, that the ſaid Henry Moreton is become a bankrupt, within the true intent and meaning of ſome or one of the ſtatutes made, and now in force concerning bankrupts, as this deponent hath been informed and believes. Sworn, &c."

When the affidavit is ſworn, it is carried to the ſecretary of bankrupts' office, where the party ſuing for the commiſſion enters into the bond. The clerk of the bankrupts fills up a blank petition in the name of the perſon that makes the affidavit; and annexes the affidavit and bond to the petition, when he prefers the ſame to the lord chancellor. This petition is anſwered in a few days, and the petitioning creditor has a commiſſion without any farther trouble.

A COMMISSION of BANKRUPT.

"GEORGE the Third, by the grace of God, of Great Britain, France, and Ireland, king, defender of the faith, &c. to our truſty and well-beloved James Burrough, Arthur Onſlow, James Blackſtone, Charles Short, Eſqrs. and David Rees, Gent. greeting. Whereas we are informed that Henry Moreton, of, &c. uſing and exerciſing the trade of a merchant by way of bargaining, exchange, bartering, and chevizance; ſeeking his trade and living, by buying and ſelling; about —— ſince, did become bankrupt within the ſeveral ſtatutes made againſt bankrupts, to the intent to defraud and hinder Joſeph Payne of, &c. and other his creditors of their juſt debts and duties to them due and owing: We, minding the due execution as well of the ſtatute touching orders for bankrupts, made in the parliament begun and holden at Weſtminſter, the 2d day of April, in the thirteenth year of the reign of Elizabeth, late queen of England, made and provided; as of the ſtat. [&c. mentioning ſtats. 1 Jac. I. 21 Jac. I. and 5 Geo. II.] upon truſt of the wiſdom, fidelity, diligence, and provident circumſpection, which we have conceived in you, do, by theſe preſents, name, aſſign, appoint, conſtitute, and ordain, you our ſpecial commiſſioners; Hereby giving full power and authority unto you, four or three of you, to proceed according to the ſaid ſtatutes, and all other ſtatutes in force concerning bankrupts; not only concerning the ſaid bankrupt, his body, lands, tenements, freehold, and cuſtomary, goods, debts, and all other things whatſoever; but alſo concerning all other perſons, who by concealment, claim, or otherwiſe, do, or ſhall offend, touching the premiſſes, or any part thereof, contrary to the true intent and meaning of the ſaid ſtatutes; And to do and execute all and every thing and things whatſoever, as well for and towards ſatisfaction and payment of the ſaid creditors; as towards and for all other intents and purpoſes, according to the ordinance, and proviſion of the ſame ſtatutes. Willing and commanding you, four or three of you, to proceed to the execution and accompliſhment of this our commiſſion, according to the true intent and meaning of the ſame ſtatutes, with all diligence and effect. Witneſs ourſelf at Weſtminſter, the —— of —— in the —— year of our reign. J. YORKE."

Having got the commiſſion, the petitioning creditor muſt employ one of the meſſengers to ſummon a meeting of the major part of the commiſſioners to open the ſame; when the petitioning creditor muſt come prepared, to prove his debt, and the party a bankrupt, within the ſtatutes.

OATH to be adminiſtered by the Commiſſioners to Witneſſes, upon their Examination.

"YOU are here produced, as witneſſes, by virtue of a commiſſion out of the high court of Chancery, to us and and others directed, to be by us examined, concerning the bankruptcy of Henry Moreton, of, &c. Now to all ſuch queſtions and interrogatories as ſhall be aſked you, by virtue of this commiſſion of bankrupt, concerning the ſaid Henry Moreton, his trade or profeſſion, his abſconding, and other acts which he hath done or ſuffered, by which he may be diſcovered to be a bankrupt, and alſo concerning his lands and tenements, goods and chattels, debts and duties, frauds and concealments, and other matters and things, in obedience to the ſaid commiſſion, and purſuant to the ſeveral ſtatutes made concerning bankrupts, you, and every of you ſhall true and direct anſwer make, and ſwear the truth, the whole truth, and nothing but the truth. So help you God."

All the depoſitions muſt be ſigned by the witneſſes. If the party is a Quaker, then inſtead of ſwear, ſay, "You ſhall ſolemnly, ſincerely, and truly, declare and affirm."

Immediately upon the commiſſioners' declaring the party a bankrupt, they iſſue their warrant for ſeizure of his effects; and the meſſenger, by virtue thereof, ſeizes the effects, and continues to keep poſſeſſion until the commiſſioners have executed the aſſignment. The application to enlarge the time for the bankrupt's ſurrender, muſt be by petition to the great ſeal, ſix days at leaſt before the laſt ſitting appointed in the Gazette; this petition may be either in the name of the bankrupt, or of his aſſignees. It is uſual for the commiſſioners to recommend, and the creditors to agree, to return the bankrupts their rings, monies, &c. particularly the jewels, &c. of their wives. If the bankrupt happens to be a foreigner, and does not underſtand Engliſh, his Engliſh examination muſt be interpreted, and read to him in the language he underſtands, by a perſon verſed in both languages, who muſt be firſt ſworn to interpret truly; of which oath and interpretation there muſt be a memorandum made and annexed to the bankrupt's examination. If the bankrupt does not ſurrender himſelf to the commiſſioners by twelve o'clock at night of the laſt day given, the meſſenger warns him ſo to do, by a proclamation made by him in the middle of Guildhall; the commiſſioners continuing ſitting till that time.

FORM of a BANKRUPT'S CERTIFICATE.

To the Right Honourable the Lord High Chancellor of GREAT BRITAIN.

"WE, whoſe names and ſeals are hereunto ſubſcribed

and ſet, being the major part of the commiſſioners, named and authoriſed in and by a commiſſion of bankruptcy, awarded and iſſued againſt Henry Moreton, of, &c. (as deſcribed in the commiſſion,) bearing date at Weſtminſter, the 8th day of, &c. directed to James Burrough, &c. do humbly certify to your lordſhip, that the major part of the commiſſioners by the ſaid commiſſion authoriſed, having begun to put the ſaid commiſſion into execution, did find that the ſaid Henry Moreton became a bankrupt ſince the 10th of May, 1797, and before the date and ſuing forth of the ſaid commiſſion, within the true intent and meaning of the ſtatutes made, and now in force concerning bankrupts, or ſome of them; and did thereupon declare and adjudge him a bankrupt accordingly. And we further humbly certify to your lordſhip, that, the ſaid Henry Moreton being ſo declared a bankrupt, the major part of the commiſſioners by the ſaid commiſſion authoriſed, purſuant to the directions of the act of parliament made in the 5th year of the reign of his late majeſty king George II. intitled 'An act to prevent the committing of frauds by bankrupts,' did cauſe due notice to be given and publiſhed in the London Gazette of ſuch commiſſion being iſſued, and of the times and places of three ſeveral meetings of the ſaid commiſſioners, within forty-two days next after ſuch notice (the laſt of which meetings was appointed to be on the forty-ſecond day); at which time the ſaid Henry Moreton was required to ſurrender himſelf to the ſaid commiſſioners named in the ſaid commiſſion, or the major part of them, and to make a full diſcloſure and diſcovery of his eſtate and effects; and the creditors of the ſaid Henry Moreton were deſired to come prepared, to prove their debts, and to aſſent to or diſſent from the making this certificate. And we further humbly certify to your lordſhip, that ſuch three ſeveral meetings of the major part of the commiſſioners by the ſaid commiſſion authoriſed, were had purſuant to ſuch notice ſo given and publiſhed; and that at one of thoſe meetings the ſaid Henry Moreton did ſurrender himſelf to the major part of the commiſſioners, by the ſaid commiſſion authoriſed, and did ſign and ſubſcribe ſuch ſurrender, and did ſubmit to be examined from time to time upon oath, by and before the major part of the commiſſioners, by the ſaid commiſſion authoriſed: and in all things to conform to the ſeveral ſtatutes made and now in force concerning bankrupts; and particularly to the ſaid act made in the 5th year of his late majeſty's reign. And we further humbly certify to your lordſhip, that, at the laſt of the ſaid three meetings, the ſaid Henry Moreton finiſhed his examination, before the major part of the ſaid commiſſioners, by the ſaid commiſſion authoriſed, according the directions of the ſaid laſt-mentioned act, and, upon ſuch his examination, made a full diſcloſure and diſcovery of his eſtate and effects; and in all things conformed himſelf to the ſeveral ſtatutes made and now in force concerning bankrupts, and particularly according to the directions of the ſaid ſtatute made in the 5th year of his late majeſty's reign; and there doth not appear to us any reaſon to doubt of the truth of ſuch diſcovery, or that the ſame is not a full diſcovery of all the eſtate and effects of the ſaid Henry Moreton. And we further humbly certify to your lordſhip, that the creditors, whoſe names or marks are ſubſcribed to this certificate, are full four parts in five in number and value of the creditors of the above-named Henry Moreton, who are creditors for not leſs than twenty pounds reſpectively, and who have duly proved their debts under the ſaid commiſſion; and that it doth appear to us by due proof by affidavit in writing, that ſuch ſeveral ſubſcribing creditors, or ſome perſon by them reſpectively duly authoriſed thereunto, did, before our ſigning hereof, ſign this certificate, and teſtify their conſent to our ſigning the ſame, and to the ſaid Henry Moreton having ſuch allowance and benefit, as by the ſaid laſt-mentioned act are allowed to bankrupts, and to the ſaid Henry Moreton being diſcharged from his debts, in purſuance of the ſame act. In witneſs whereof we have hereunto ſet our hands and ſeals, this —— day of —— in the —— year of the reign of, &c. and in the year of our Lord 1797.
James Burrough.
Arthur Onslow.
James Blackstone.

We the creditors of the above-named Henry Moreton, whoſe names or marks are hereunder ſubſcribed, do hereby teſtify and declare our conſent, that the major part of the commiſſioners, by the above-mentioned commiſſion authoriſed, may ſign and ſeal the certificate above-written; and that the ſaid Henry Moreton may have ſuch allowance and benefit as are given to bankrupts by the act of parliament made in the 5th yeart of the reign of his late majeſty king George II. intituled, "An act to prevent the committing of frauds by bankrupts;" and be diſcharged from his debts in purſuance of the ſame act.
(The creditor's names) A. B. C. D. &c."

If any perſon ſign the bankrupt's certificate by virtue of a letter of attorney, ſuch letter of attorney muſt be left at the bankrupts' office. The certificate, together with the affidavit of ſeeing the creditors ſign it, and alſo letters of attorney, (if any ſuch there be,) muſt be lodged with the ſecretary of bankrupts; who will thereupon give the meſſenger an authority to the printer of the Gazette, to inſert an advertiſement therein, ſignifying that the acting commiſſioners have certified to the great ſeal, that the bankrupt hath conformed, and that the certificate will be allowed and confirmed, unleſs cauſe ſhewn to the contrary, within twenty-one days from the date of the ſaid advertiſement. If no cauſe is ſhewn within the twenty-one days, againſt the allowance of the certificate, the lord chancellor will allow the ſame, by the following ſubſcription on the ſaid certificate:

"—— day of —— 1798.

"WHEREAS the uſual notice hath been given in the London Gazette, of —— the —— day of —— laſt, and none of the creditors of the above-named Henry Moreton have ſhewn any cauſe to the contrary: I do allow and confirm this certificate. Loughborough, C."

Certificate for a Judge or Juſtice of Peace, to grant his Warrant for apprehending and committing a Bankrupt.

"In the Matter of Henry Moreton, a Bankrupt.

WE whoſe names are hereunto ſubſcribed, and ſeals ſet, do hereby certify, that a commiſſion of bankrupt, under the great ſeal of Great Britain, grounded upon the ſeveral ſtatutes made and now in force concerning bankrupts, bearing date at Weſtminſter, the —— day of February, inſtant, hath been awarded and iſſued againſt Henry Moreton, of, &c. and directed to James Burrough, &c. thereby giving full power and authority to four or three of them to execute the ſame. And we do further certify, that we, being the major part of the commiſſioners, by the ſaid commiſſion authoriſed, have proceeded in the execution of the ſaid commiſſion, and have found upon the due examination of witneſſes, and other good proof upon oath before us had and taken, that the ſaid Henry Moreton, before the date and ſuing forth of the ſaid commiſſion, became bankrupt to all intents and purpoſes within the compaſs, true intent, and meaning, of the ſeveral ſtatutes made and now in force concerning bankrupts, or within ſome or one of them, before the date and ſuing forth of the ſaid commiſſion. Given under our hands and ſeals, this —— day of February, in the year of our Lord 1798.
Witneſs Joseph Best. James Blackstone. (L. S.)
Arthur Onslow. (L. S.)
Charles Short. (L. S.)"

The execution of this certificate muſt be proved by the ſubſcribing witneſs before the judge or juſtice, previous to his granting his warrant. It is uſual for the aſſignees to give notice of the time and place they intend to pay the dividends; and, if by the aſſignees, the ſolicitor ſigns an authority for that purpoſe.

Writ of Supersedeas.

"GEORGE the Third, by the grace of God, of Great Britain, France, and Ireland, king, defender of the faith, and ſo forth: To our truſty and well-beloved James Burrough, Arthur Onſlow, James Blackſtone, Charles Short, Eſqrs. and David Rees, Gent. greeting: Whereas we being informed that Henry Moreton, of, &c. uſing and exerciſing the trade of merchandize, by way of bargaining, exchange, bartering, cheviſance, ſeeking his trade of living by buying and ſelling, did become bankrupt within the ſeveral ſtatutes made againſt bankrupts, to the intent to defraud and hinder Joſeph Payne, of, &c. and others, his creditors, of their juſt debts and duties, to them due and owing; and we, minding the due execution of the ſeveral ſtatutes made againſt bankrupts, did, by our commiſſion, under the great ſeal of Great Britain, bearing date at Weſtminſter, the —— day of —— in the —— year of our reign, name, aſſign, appoint, conſtitute, and ordain, you our ſpecial commiſſioners, thereby giving, &c. [here recite the original commiſſion to, 'diligence and effect;' then add,] Now foraſmuch as the ſaid Henry Moreton, the bankrupt, by his humble petition, exhibited to our lord high chancellor of Great Britain, for the reaſons therein contained, prayed that the ſaid commiſſion might be ſuperſeded, whereunto we graciouſly inclining, do, by theſe preſents, will and command you, and every of you, to ſtay and ſurceaſe all further proceedings upon the ſaid commiſſion, and that you ſuperſede the ſame accordingly, as our ſpecial truſt is in you repoſed. Witneſs ourſelves at Weſtminſter, the —— day of —— in the —— year of our reign. J. Yorke."

When this writ is obtained, the commiſſioners muſt be ſerved therewith, by delivering to each of them a copy, and at the ſame time ſhewing them reſpectively the original writ under ſeal, and then the proceedings are at an end; but it is uſual to give notice thereof in the Gazette. Thus the event of a commiſſion of bankrupt, if conducted with integrity, as the law intends, is evidently calculated to anſwer every juſt and good purpoſe that can be deviſed under circumſtances of inſolvency; and ſets at nought the futile plans of modern theoriſts, ſome of which are marked with cruelty, whilſt others ſavour too much of the depraved cuſtoms of arbitrary governments. In Pegu, and other countries of Aſia, the creditor is entitled to diſpoſe of the debtor himſelf, and likewiſe of his wife and children, inſomuch that he may even violate, with impunity, the chaſtity of the debtor's wife; but by ſo doing the debt is conſidered by the law to be diſcharged.

To Bankrupt, *v. a.* To break; to diſable one from ſatisfying his creditors.—We caſt off the care of all future thrift, becauſe we are already *bankrupted. Hammond.*

BANK'RUPTCY, *ſ.* The ſtate of a man broken, or bankrupt. The act of declaring one's ſelf bankrupt; as, he raiſed the clamours of his creditors by a ſudden *bankruptcy.*

BANKS (Sir John), a learned Engliſh judge, and chief baron of the Common Pleas in the reign of Charles I. was born in 1589, and died in 1644.

Banks (John), a dramatic writer, was bred to the law, and belonged to the ſociety of Gray's Inn; but, this profeſſion not ſuiting his natural diſpoſition, he quitted it for the ſervice of the muſes. His turn was entirely to tragedy; his merit in which is of a peculiar kind. For at the ſame time that his language is extremely unpoetical, and his numbers uncouth and unharmonious; nay, even his characters very far from being ſtrongly marked or diſtinguiſhed, and his epiſodes extremely irregular: yet it is impoſſible to avoid being deeply affected at the repreſentation, and even at the reading, of them. This is owing to a happy choice of his ſubjects; which are all borrowed from hiſtory, and moſt of them from circumſtances in the annals of our own country, which we are apt to receive with a kind of partial prepoſſeſſion, and a pre-determination to be pleaſed. He has indeed but little varied from the ſtrictneſs of hiſtorical facts; yet he ſeems to have made it his conſtant rule to keep the ſcene perpetually alive, and never ſuffer his characters to droop. His tragedies are, Albion Queens, Cyrus the Great, Deſtruction of Troy, Innocent Uſurper, Iſland Queens, Rival Kings, Virtue betrayed, and Unhappy Favourite. The Albion Queens was rejected by the managers in 1684; but was acted by queen Anne's command in 1706, with great applauſe, and has been ſeveral times revived. The Unhappy Favourite continued until very lately a ſtock tragedy at the theatres; but gives way at preſent to the later tragedies from the ſame ſtory, by Jones and Brooke. Neither the time of the birth, nor that of the death, of this author, are aſcertained. His remains lie interred in the church of St. James's, Weſtminſter.

Banks Port, a bay on the weſt coaſt of North America. Lat. 56. 40. N. lon. 185. W. Greenwich.

Banks's Island, a ſmall iſland in the South Sea, diſcovered by captain Cook in 1770. It is of a circular figure, and about twenty-four leagues in compaſs: it is ſufficiently high to be ſeen at the diſtance of twenty-one leagues; and the land has a broken irregular ſurface, with the appearance of barrenneſs rather than fertility. It is, however, inhabited; as ſome ſtraggling ſavages were obſerved upon it. Lat. 43. 32. S. lon. 286: 30. W. Greenwich.

Banks's Island, an iſland in the North Pacific Ocean, near the weſt coaſt of North America: about ſixty miles long, and five broad. Lat. 53. 30. N. lon. 129. 45. to 130. 10. W. Greenwich.

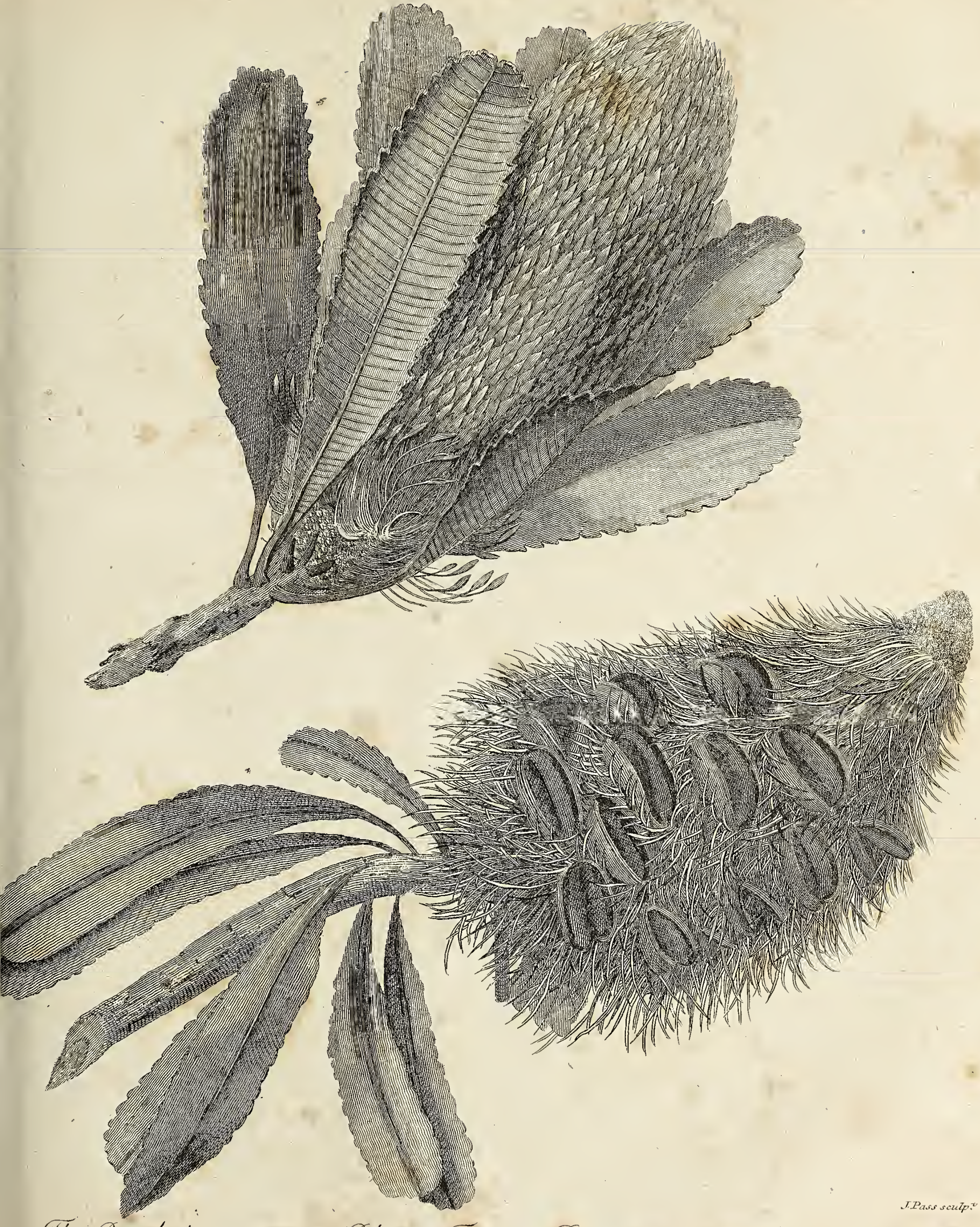
BANKSE'A SPECIO'SA. See Costus Speciosus.

BANK'SIA, *ſ.* [So named by Linnæus in honour of Sir Joſeph Banks, Bart. preſident of the Royal Society, who firſt diſcovered it in his voyage with captain Cook.] In botany, a genus of the claſs tetrandria, order monogynia, natural order aggregatæ. The generic characters are—Calyx: perianthium one-leafed, four-cleft, inferior. Corolla: one-petalled; tube cylindric, very ſhort; border very long, four-parted; parts linear, lanceolate at the tip, internally hollowed by a little cavity, acute. Stamina: filaments none; antheræ four, lanceolate, ſeſſile in the cavity of the parts of the corolla. Piſtillum: germ ſuperior, minute; ſtyle filiform, ſtiff, longer than the corolla; ſtigma pyramidate, acute. Pericarpium: capſule ovate or globoſe, woody, one-celled, two-valved. Seeds two, obovate, convex on one ſide, flat on the other, terminated by a very large membranaceous veinleſs wing. —*Eſſential Character.* Calyx four-cleft, inferior. Corolla four-parted; tube very ſhort; border very long, linear-lanceolate. Antheræ ſeſſile in the cavity of the parts of the corolla. Capſule two-ſeeded, one (or two) celled, two-valved.

Species. 1. Bankſia ſerrata, or ſerrate-leaved bankſia: leaves linear, attenuated into the petiole, equally ſerrate, truncate at the end with a point. This is the handſomeſt ſpecies of the genus. The leaves are at the ends of the branches, confluent, ſcattered, ſeven or eight inches long, narrow, ſmooth, coriaceous, flat, ſpreading much, ſurrounding the ament, which is very large, thick, columnar, obtuſe, erect. Flowers much ſpreading, aſcending, the borders pubeſcent on the outſide and hoary. It is thus deſcribed in Mr. White's voyage. Trunk thick and rugged. Leaves alternate, ſtanding thick about the ends of the branches on ſhort petioles, obtuſe, ſtrongly ſerrate, of a bright green colour above, beneath opake and whitiſh, with a ſtrong rib running through their middle. A very large cylindrical ſpike of flowers terminates each branch: moſt of theſe are abortive, a few only in each ſpike producing ripe ſeed. The ſtyle, growing more rapidly than the corolla, is held in a curved poſition by it. The capſules are covered with thick down. In the third figure, the leaves are not well repreſented. The flowers and fruits are collected into a large globular ament.

2. Bankſia integrifolia, or entire-leaved bankſia: leaves wedge-form, quite entire, white-tomentoſe underneath; they

BANKSIA.



J. Pass sculp.t

1. The Banksia serrata in Bloom. 2. The ripe Pericarpium, with the capsules open.

London. Published as the Act directs. June 22.1807. by J. Wilkes.

they are ſubverticillate at the ends of the twigs. The flowers and fruits are collected into a cylindric ament; and, before they are ripe, are pubeſcent with a nap of ſnowy whiteneſs.

3. Bankſia ericæfolia, or heath-leaved bankſia: leaves approximating, aceroſe, truncate-emarginate, ſmooth. The leaves of this are very ſmall, but more abundant than in the foregoing ſort.

4. Bankſia dentata, or tooth-leaved bankſia: leaves oblong, attenuated into the petiole, curved, flexuoſe-toothed; teeth ending in a ſpinule, white underneath. The flowers in this ſpecies are ſmaller than in the others.

5. Bankſia pyriformis, or pear-fruited bankſia: flowers ſolitary; capſules ovate, pubeſcent; leaves lanceolate, very entire, ſmooth. The capſules are larger than in any other known ſpecies, being three inches long: they are in the ſhape of a pear inverted, woody, very thick, covered with a ſhort aſh-coloured nap, reſembling that of a peach: they are one-celled, and open longitudinally on the lower ſide. There is no receptacle, except a filiform umbilical chord extending from the bottom of the capſule to the outer ſide of the ſeed. There are two ſeeds, of a rufous cinnamon colour, convex on one ſide, flat on the other, with a very large, membranaceous, veinleſs, wing.

6. Bankſia gibboſa, or gibbous-fruited bankſia: flowers ſolitary; capſules ovate-gibbous, wrinkled; leaves columnar. The leaves are perfectly cylindrical, about two inches long, and one line in diameter, pale-green and ſmooth.

7. Bankſia muſculiformis, or muſcle-fruited bankſia: flowers ſolitary; capſules ovate-conical, muſcle-ſhaped, pointed, with tubercles on the outſide; leaves obovate, emarginate. Leaves alternate, from ſix to eight inches long, and three broad. Flowers in a ſhort ſimple raceme, in which only one or two fruits ripen. Seeds two, dark bay.

8. Bankſia ſpinuloſa, or prickly-leaved bankſia: leaves linear, revolute, with a little ſharp point, and with ſpinous denticulations towards the top. Stem woody, branched; the branches commonly three or more together, curved upwards. Leaves irregularly ſcattered, cloſely covering the branches, on very ſhort footſtalks, but little ſpreading, from an inch and a half to two inches in length, very narrow, revolute in the margin, green and ſmooth above, white and downy beneath, ending very abruptly, tipped with three little ſpines, and having ſeveral of the ſame kind hooked upwards, in the margin, particularly towards the top: the young leaves are very downy. Flowers thick ſet in a cylindrical erect ſpike, ariſing from the divarications of the branches. The inhabitants of New South Wales call it *wattangre*. All theſe plants are natives of that country, except the ſeventh, which Rumphius obſerved in Amboyna in 1693.

Propagation and Culture. Some of the ſpecies have flowered and ſeeded here. They have not yet been increaſed any other way but by ſeeds. Theſe, and the plants in general from the South Seas, are hardy conſidering their climate, and may be treated pretty much in the ſame manner with the Cape plants. They covet abundance of air, and flouriſh beſt near the front of the dry ſtove.

BANKSIA FORST. See PIMELEA.

BANN, a river of Ireland, which riſes in the county of Dromore, about eight miles eaſt of Newry, paſſes through Lough Neagh, and runs into the North Sea, about four miles north-weſt of Coleraine.

BANNALEC', a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Quimperle: two leagues and a quarter north-weſt of Quimperle, and one and three quarters ſouth-eaſt of Roſporden.

BAN'NER, *ſ.* [*banniere*, Fr. *banair*, Welſh.] A flag; a ſtandard; a military enſign. A ſtreamer born at the end of a lance, or elſewhere:

All in a moment through the gloom were ſeen
Ten thouſand *banners* riſe into the air,
With orient colours waving. *Milton.*

We find a multiplicity of opinions concerning the etymology of the word *banner*; ſome deriving it from the Latin *bandum*, 'a band or flag;' others from the word *bann*, 'to ſummon the vaſſals to appear in arms;' others again from the German *ban*, 'a field or tenement,' becauſe landed men alone were allowed a banner: and, finally, there are ſome who think it is a corruption of *panniere* from *pannus*, 'cloth,' becauſe banners were originally made of cloth.

The BANNER of FRANCE was the largeſt and richeſt of all the flags borne by the ancient kings in their great military expeditions. St. Martin's cap was in uſe 600 years as the banner of France; it was made of taffety, painted with the image of that ſaint, and laid one or two days on his tomb to prepare it for uſe. About the year 1100 came in a more pompous apparatus. The banner royal was faſtened to the top of a maſt, or ſome tall tree, planted on a ſcaffold, borne on a carriage drawn by oxen, covered with velvet houſings, decorated with devices or cyphers of the prince reigning. At the foot of the tree was a prieſt, who ſaid maſs early every morning. Ten knights mounted guard on the ſcaffold night and day, and as many trumpets at the foot of the tree never ceaſed flouriſhing, to animate the troops. This cumberſome machine, the mode of which was brought from Italy, continued in uſe about 130 yers. Its poſt was in the centre of the army. And here it was that the chief feats were performed, to carry off and defend the royal banner; for there was no victory without it, nor was any army reputed vanquiſhed till they had loſt their banner.

BANNER, of mother church, was a croſs given to a felon or murderer, who having reached a church or churchyard, before he was apprehended, could not be taken out thence to take his trial at law, but having confeſſed his crime before the juſtice or coroner, and abjured the kingdom, was to carry this croſs in his hand through the highways, till he was got out of the king's dominion; but this privilege, and the uſe of ſanctuaries, was taken away in the 21ſt of James I.

BAN'NERETS, *ſ.* [The word ſeems formed from *banner*, 'a ſquare flag;' or from *band*, which anciently denoted a flag.] An ancient order of knights, or feudal lords; who, poſſeſſing ſeveral large fees, led their vaſſals to battle under their own flag or banner, when ſummoned thereto by the king. Bannerets are alſo called in ancient writers *milites vexilliferi*, and *vexillarii*, *banerarii*, *banarii*, *banderiſii*, &c.

Anciently there were two kinds of knights, *great* and *little*; the firſt whereof were called *bannerets*, the ſecond *bachelors*; the firſt compoſed the upper, the ſecond the middle, nobility. The banneret was a dignity allowed to march under his own flag, whereas the *bachelarius eques* followed that of another. To be qualified for a banneret, the party was required to be a gentleman of family, and muſt have a power to raiſe a certain number of armed men, with eſtate enough to ſubſiſt at leaſt twenty-eight or thirty men. This muſt have been very conſiderable in thoſe days; becauſe each man, beſides his ſervant, had two horſemen to wait on him armed, the one with a croſsbow, the other with a bow and hatchet. As he was not allowed to be a baron who had not above thirteen knights fees, ſo he was not admitted to be a banneret if he had leſs than ten.

Banneret, according to Spelman, was a middle order between a baron and a ſimple knight; called ſometimes alſo *vexillarius minor*; to diſtinguiſh him from the greater, that is, from the baron, to whom alone properly belonged the *jus vexilli*, or privilege of the ſquare flag. Hence the banneret was alſo called *bannerettus*, *quaſi baro minor*; a word frequently uſed by Engliſh writers in the ſame ſenſe as banneret was by the French, though neither of them occur before the time of Edward II.

Some will have bannerets to have originally been perſons who had ſome portion of a barony aſſigned them; and enjoyed it under the title or *baro proximus*, and that with the ſame prerogatives as the baron himſelf. Some again find the origin of bannerets in France, others in Brittany, others in England. Theſe laſt attribute the inſtitution of bannerets to Conan, lieutenant of Maximus, who commanded the Roman legions in England under the empire of Gratian in 383. This general, ſay they, revolting, divided England into forty cantons, and in theſe cantons diſtributed forty knights; to whom he gave a power of aſſembling, on occaſion, under their ſeveral banners, as many of the effective men as were found in their reſpective diſtricts: whence they are called *bannerets*. However this be, it appears from Froiſſart, &c. that anciently ſuch of the military men as were rich enough to raiſe and ſubſiſt a company of armed men, and had a right to do ſo, were called *bannerets*. Not, however, that theſe qualifications rendered them knights, but only bannerets; the appellation of *knight* being only added thereto, becauſe they were ſimple knights before.

Bannerets were ſecond to none but knights of the garter. They were reputed the next degree below the nobility; and were allowed to bear arms with ſupporters, which none elſe may under the degree of a baron. In France, it is ſaid, the dignity was hereditary; but in England it died with the perſon that gained it. The order dwindled on the inſtitution of baronets by king James I. and at length became extinct. But it was again revived by his preſent majeſty George III. in the perſon of captain Trollope and another, after the victory obtained over the Dutch on the 11th of October 1797.

The form of the banneret's creation was this. On a day of battle, the candidate preſented his flag to the king or general; who, cutting off the train or ſkirt thereof, and making it a ſquare, returned it again, the proper banner of bannerets; who are hence ſometimes called *knights of the ſquare flag*. There ſeem to have been bannerets created either in a different manner, or by others than the ſovereign; ſince king James, in the patent of baronets, gives them precedence to all knights bannerets, except ſuch as are created by the king himſelf in the field; which implies, either that there are ſome of this order created out of the field, or by inferior perſons.

Banneret was alſo the name of an officer or magiſtrate of Rome towards the cloſe of the 14th century. The people of that city, and throughout the territory of the church, during the diſputes of the anti-popes, had formed a kind of republican government; where the whole power was lodged in the hands of a magiſtrate called *ſenator*, and twelve heads of quarters called *bannerets*, by reaſon of the banners which each raiſed in his diſtrict.

BAN'NEROL, more properly Banderol, *ſ.* [from *banderole*, Fr.] A little flag or ſtreamer.—King Oſwald had a *bannerol* of gold and purple ſet over his tomb. *Camden.*

BANNIAN', *ſ.* A man's undreſs, or morning gown, ſuch as is worn by the Banians in the Eaſt Indies.

BAN'NIMUS, *ſ.* The form of an expulſion of any member from the univerſity of Oxford, by affixing the ſentence in ſome public places, as a denunciation or promulgation of it. And the word *banning* is taken for an exclamation againſt, or curſing of, another.

BAN'NITUS, *ſ.* An outlaw, or baniſhed man. So, *bannitus fortis* was a ſtout deſperado, called in our ancient vagrant acts a *valiant beggar*, the ſame as is ſtigmatiſed by our preſent vagrant act with the appellation of *incorrigible rogue*.

BAN'NOCK, *ſ.* A kind of oaten or peaſe-meal cake mixed with water, and baked upon an iron plate over the fire; uſed in the northern counties, and in Scotland.

BANNOCKBURN', a village of Scotland, in the county of Stirling, where a battle was fought between the Engliſh and Scots, on the 25th of June 1314, in which the Engliſh were defeated with great loſs: here too James III. king of Scotland, in the year 1487, was defeated by his ſubjects, wounded, and ſoon after murdered by a prieſt taking his confeſſion: two miles ſouth of Stirling. For particulars of this famous battle, ſee Scotland.

BAN'NOW, a ſeaport town of Ireland, in the county of Wexford, near the ſouth-eaſt coaſt of Ireland, eleven miles eaſt-ſouth-eaſt of Waterford. Lat. 52. 12. N. lon. 6. 50. W. Greenwich.

BAN'NUM, or Banleuga, *ſ.* The utmoſt bounds of a manor, or town; ſo uſed 47 Hen. III. *Rot.* 44, &c. *Banleuga de Arundel* is taken for all that is comprehended within the limits or lands adjoining, and ſo belonging to the caſtle or town. *Seld. Hiſt. of Tythes, p.* 75.

BANONCOURT', a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of St. Mihiel, one league and a half north of St. Mihiel.

BANOY', *ſ.* The name given, by the people of the Philippine iſlands, to a kind of hawk, ſomewhat larger than our ſparrow-hawk, and of a yellowiſh colour on the back and wings, and white under the belly. It is the moſt common of all the kinds of hawk in that part of the world, and is a very voracious bird.

BAN'QUET, *ſ.* [*banquet*, Fr. *banchetto*, Ital. *vanqueto*, Span.] A feaſt; an entertainment of meat and drink.

At that taſted fruit,
The ſun, as from Thyeſtean *banquet*, turn'd
His courſe intended. *Milton.*

Banquet, *ſ.* in the menage, that ſmall part of the branch of a bridle that is under the eye; which being rounded like a ſmall rod, gathers and joins the extremities of the bit to the branch, in ſuch a manner that the banquet is not ſeen, but covered by the cope, or that part of the bit that is next the branch.

Banquet, or Banquette, in fortification, a little foot-bank, or elevation of earth, forming a path which runs along the inſide of a parapet, upon which the muſketeers get up, in order to diſcover the counterſcarp, or to fire on the enemy in the moat or in the covert-way.

To Banquet, *v. a.* To treat any one with feaſts.—They were *banquetted* by the way, and the nearer they approached, the more encreaſed the nobility. *Sir J. Hayward.*

To Banquet, *v. n.* To feaſt; to fare daintily.—So long as his innocence is his repaſt, he feaſts and *banquets* upon bread and water. *South.*

I purpos'd to unbend the evening hours,
And *banquet* private in the women's bow'rs. *Prior.*

BAN'QUETER, *ſ.* A feaſter; one that lives deliciouſly. He that makes feaſts.

BAN'QUET-HOUSE, or Banqueting-room, *ſ.* A houſe or room where banquets are kept.—You cannot have a perfect palace, except you have two ſides; a ſide for the *banquet*, and a ſide for the houſehold; the one for feaſts and triumphs, and the other for dwelling. *Bacon.*

The ancient Romans ſupped in the atrium, or veſtibule, of their houſes; but in after-times, magnificent ſaloons, or banqueting-rooms, were built, for the more commodious and ſplendid entertainment of their gueſts. Lucullus had ſeveral of theſe, each diſtinguiſhed by the name of ſome god; and there was a particular rate of expence appropriated to each. Plutarch relates with what magnificence he entertained Cicero and Pompey, who went with deſign to ſurpriſe him, by telling only a ſlave who waited, that the cloth ſhould be laid in the Apollo. The emperor Claudius, among others, had a ſplendid banqueting-room named *Mercury*. But every thing of this kind was outdone by the luſtre of that celebrated banqueting-houſe of Nero, called *domus aurea*; which, by the circular motion of its partitions and ceilings, imitated the revolution of the heavens, and repreſented the different ſeaſons of the year, which changed at every ſervice, and ſhowered down flowers, eſſences, and perfumes, on the gueſts.

BAN'STICKLE, *ſ.* in ichthyology. See Gasterosteus.

BANSWA'LEH, a diſtrict of Hindoſtan, ſituated on the ſouth-weſt part of Malwa.

BANSWA'RA, a town of Hindoſtan, in the county of Tellingana, twenty miles from Indelovoy.

BANSWA'RAH, a town of Indoſtan, in the country of Malwah, ſeventy-five miles W. of Ougein, 105 E.N.E. of Amedabad. Lat. 23. 25. N. lon. 74. 25. E. Greenwich.

BAN'TAM, a ſea-port town on the north-weſt part of the iſland of Java, and capital of a kingdom; once a flouriſhing place, trading with merchants of all nations, before the Dutch obtained the excluſive trade. The town lies low, at the foot of a mountain, and watered by three rivers, two of which run round, and the other through, the town: the walls are of brick, with cannons placed at the angles, and two towers: the gates are not ſtrong, the town conſiſts only of three ſtreets, not paved, but covered with coarſe ſand: the houſes are ſurrounded with cocoa-trees, they are built with ſtraw and roſe-wood, ſupported by carved pillars, and covered with palm-leaves: the palace is large, but without taſte, and without magnificence. Before the monopoly by the Dutch, Bantam was a good mart for all the commodities of India: they annually exported three millions pounds of pepper. Lat. 6. 20. S. lon. 105. 24. E. Greenwich.

Bantam-work, a kind of painted or carved work, reſembling that of Japan, only more gaudy. There are two ſorts of bantam, as well as of Japan work. As, in the latter, ſome are flat, lying even with the black, and others high and emboſſed; ſo, in Bantam work, ſome are flat, and others in-cut, or carved into the wood, as we find in many large ſkreens: with this difference, that the Japan artiſts work chiefly in gold and other metals; and thoſe of Bantam generally in colours, with a ſmall ſprinkling of gold. For the carved or in-cut kind, the method of performing it is thus: The wood is to be primed with whiting and ſize, till near a quarter of an inch thick; then it is to water-plained, i. e. rubbed with a fine wet cloth, and, ſome time after, rubbed very ſmooth, the blacks laid on, varniſhed up with a good body, and poliſhed well, though with a gentle hand. This done, the deſign is to be traced out with vermillion and gum-water, exactly in the manner wherein it is intended to be cut; the figures, trees, buildings, &c. in their due proportion: then the graver is applied, with other tools, differing according to the workman's fancy: with theſe he cuts deep or ſhallow, as found convenient, but never deeper than the whiting lies, the wood being never to feel the edge of the inſtrument. Lines, or parts of the black, are ſtill to be left for the draperies, and for the diſtinction of one thing from another; the rule being to cut where the white is, and leave the black untouched. The colours are then laid into the cut-work: after this, the gold is laid in thoſe places where the deſign requires; for which purpoſe, a ſtrong thick gum-arabic water is laid with a pencil on the work; and, while this remains wet, leaf-gold is cut with a ſharp ſmooth-edged knife, ſhaped to the bigneſs and figure of the places were they are to be laid. Theſe, being taken up with a little cotton, are preſſed cloſe to the gum-water, which affords a rich luſtre. The work thus finiſhed, they clear up the black with oil, taking care not to touch the colours. The European workmen uſe braſs-duſt inſtead of gold, which is leſs bright and beautiful.

BAN'TELN, a town of Germany, in the circle of Lower Saxony, and principality of Calenberg. In it is a valuable carpet manufacture.

To BAN'TER, *v. a.* [a barbarous word, without etymology, unleſs it be derived from *badiner*, Fr.] To play upon; to rally; to turn to ridicule; to ridicule.—It is no new thing for innocent ſimplicity to be the ſubject of *bantering* drolls. *L'Eſtrange.*

Banter, *ſ.* Ridicule; raillery.—Metaphyſics are ſo neceſſary to a diſtinct conception, ſolid judgment, and juſt reaſoning on many ſubjects, that thoſe, who ridicule it, will be ſuppoſed to make their wit and *banter* a refuge and excuſe for their own lazineſs. *Watts.*

BAN'TERER, *ſ.* One that banters; a droll.—What opinion have theſe religious *banterers* of the divine power? or what have they to ſay for their mockery and contempt? *L'Eſtrange.*

BANT'LING, *ſ.* [If it has an etymology, it is perhaps corrupted from the old word *bairn, bairnling.*] A little child: *a low word.*

BANTON', or Batan, one of the ſmaller Philippine iſlands.

BANT'RY, a town of Ireland, in the county of Cork, ſituated on the eaſt coaſt of a bay, to which it gives name, on the ſouth coaſt of Ireland, about twenty-four miles in length, and four in breadth: which lately attracted notice, in conſequence of the French coming up and anchoring there, attempting to land a body of troops, in January, 1797. It is forty miles ſouth-weſt of Cork, and thirty-ſix weſt of Kinſale.

BAN'UB, a town of Egypt, fifty-two miles weſt-north-weſt of Manſora.

BAN'VILLE, a town of France, in the department of the Calvados, three leagues north-north-weſt of Caen, and two and three quarters eaſt of Bayeux.

BAN'ZA, a town of Africa, in the kingdom of Congo, now called *St. Salvador.*

BANZ'KOW, a town of Germany, in the circle of Lower Saxony, and county of Schwerin.

BAOBAB', *ſ.* The name given by Proſper Alpinus to the African calabaſh-tree, ſince called Adansonia. See that article.

BAOL, or Baul, a kingdom of Africa, in the country of Senegal, about eighty leagues long, and twenty-four wide.

BAOOM', or Apoom, one of the new diſcovered iſlands in the Southern Pacific Ocean. Lat. 16. 26. S. lon. 186. 17. W. Greenwich.

BAONS' (Les), a town of France, in the department of the Lower Seine, two leagues and a half N. of Caudebec.

BAPAU'ME, a town of France, and principal place of a diſtrict, in the Straits of Calais. It contains about 4500 inhabitants: three poſts ſouth of Arras, and nineteen and a quarter north of Paris.

BAP'TÆ, the prieſts of Cotytto, the goddeſs of uncleanneſs; ſo called becauſe they bathed themſelves in the moſt effeminate manner.

BAPTA'CA, a town of North America, in the country of New Navarre, forty-five miles eaſt-ſouth-eaſt of Gaſa Grand.

BAP'TISM, *ſ.* [from βαπτιζω, of βαπτω, to dip, or waſh.] An external ablution of the body, with a certain form of words, which operates and denotes an internal ablution or waſhing of the ſoul from original ſin. Baptiſm is known, in eccleſiaſtical writers, by divers other names and titles. Sometimes it is called *palingeneſia*, or 'laver of regeneration;' ſometimes *ſalus*, or 'life and ſalvation; ſometimes σφραγις, *ſignaculum Domini*, and *ſignaculum fidei*, or 'the ſeal of faith;' ſometimes abſolutely *myſterium* and *ſacramentum*; ſometimes 'the ſacrament of faith;' ſometimes *viaticum*, from its being adminiſtered to departing perſons; ſometimes *ſacerdotium laici*, or 'the lay prieſthood,' becauſe allowed, in caſes of neceſſity, to be conferred by laymen: ſometimes it is called the *great circumciſion*, becauſe it was imagined to ſucceed in the room of circumciſion, and to be a ſeal of the Chriſtian covenant, as that was the ſeal of the covenant made with Abraham: ſo, in regard that baptiſm had Chriſt for its author, and not man, it was anciently known by the name of Δωρον and χαρισμαΚυριȣ, 'the gift of the Lord:' ſometimes it was ſimply called δωρον, without any other addition, by way of eminence, becauſe it was both a gratuitous and ſingular gift of Chriſt: in reference to the making men complete members of Chriſt's body, the church, it had the name of τελειωσις, and τελειη, the 'conſecration and conſummation; becauſe it gave men the perfection of Chriſtians, and a right to partake of the Το Τελειον, which was the *Lord's Supper*: it had alſo the name of μυησις and μυσταγωγια, the *initiation*, becauſe it was the admittance of men to all the ſacred rites and myſteries of the Chriſtian religion.

Baptiſm has been ſuppoſed by many learned authors to have had its origin from the Jewiſh church, in which, as they maintain, it was the practice long before Chriſt, to baptize proſelytes or converts to their faith, as part of the ceremony of their admiſſion; a practice which, according to ſome, obtains among them to this day; a perſon turning Jew, is firſt circumciſed, and, when healed, is bathed, or baptized, in water, in preſence of their rabbins; after which he is reputed a good Jew. Others, however, inſiſt that the Jewiſh proſelyte baptiſm is not by far ſo ancient, and that John the Baptiſt was the firſt adminiſtrator of baptiſm among the Jews. The learned Grotius is of opinion, that the rite of baptiſm had its origin from the time of the deluge; immediately after which, he thinks, it was inſtituted in memory of the world having been purged by water. Some learned men think it was added to circumciſion, ſoon after the Samaritan ſchiſm, as a mark of diſtinction to the orthodox Jews. Spencer, who is fond of deriving the rites of the Jewiſh religion from the ceremonies of the pagans, lays it down as a probable ſuppoſition, that the Jews received the baptiſm of proſelytes from the neighbouring nations, who were wont to prepare candidates for the more ſacred functions of their religion by a ſolemn ablution; that, by this affinity of ſacred rites, they might draw the Gentiles to embrace their religion, and that the proſelytes might the more eaſily comply with the tranſition from Gentiliſm to Judaiſm. In confirmation of this opinion, he obſerves, firſt, that there is no divine precept for the baptiſm of proſelytes, God having enjoined only the rite of circumciſion for the admiſſion of ſtrangers into the Jewiſh religion. Secondly, that, among foreign nations, the Egyptians, Perſians, Greeks, Romans, and others, it was cuſtomary that thoſe who were to be initiated into their myſteries, or ſacred rites, ſhould be firſt purified by dipping their whole body in water. That learned writer adds, as a farther confirmation of his opinion, that the cup of bleſſing likewiſe, added to the paſchal ſupper, ſeems plainly to have been derived from a pagan original: for the Greeks, at their feaſts, had one cup, called ποτηριον αγαθȣ δαιμονος, 'the cup of the good demon or god,' which they drank at the concluſion of their entertainment, when the table was removed. Since then, a rite of Gentile origin was added to one of the Jewiſh ſacraments, viz. the paſſover, there can be no abſurdity in ſuppoſing, that baptiſm, which was added to the other ſacrament, namely circumciſion, might be derived from the ſame ſource. In the laſt place, he obſerves, that Chriſt, in the inſtitution of the ſacraments, paid a peculiar regard to thoſe rites which were borrowed from the Gentiles: for, rejecting circumciſion and the paſchal ſupper, he adopted into his religion baptiſm and the ſacred cup; thus preparing the way for the converſion and reception of the Gentiles into his church.

If baptiſm be indeed practiſed by the Jews, it is ſuppoſed to imply a regeneration, whereby the proſelyte is rendered a new man, and of a ſlave becomes free. The effect of it was that of cancelling all former relations; ſo that thoſe who were before akin to the perſon, after the ceremony ceaſed to be ſo. It is to this ceremony Chriſt is ſuppoſed to have alluded, in his expreſſion to Nicodemus, that it was neceſſary he ſhould be born again, in order to become his diſciple. The neceſſity of baptiſm to ſalvation is grounded on thoſe two ſayings of our Saviour: *He that believeth, and is baptized, ſhall be ſaved*; and, *Except a man be born of water, and of the Spirit, he cannot enter into the kingdom of God.* The ancients did not generally think the mere want of baptiſm, where the procuring of it was impracticable, excluded men abſolutely from the hopes of eternal ſalvation. Some few of them, indeed, are pretty ſevere upon infants dying without baptiſm; and ſome others ſeem alſo, in general terms, to deny eternal life to adult perſons dying without it: but, when they interpret themſelves, and ſpeak more diſtinctly, they make ſome allowances, and except ſeveral caſes, in which the want of baptiſm may be ſupplied by other means. Such are, martyrdom, which commonly goes by the name of *ſecond baptiſm in men's own blood*, in the writings of the ancients; becauſe of the power and efficacy it was thought to have to ſave men by the inviſible baptiſm of the Spirit, without the external element of water. Faith and repentance were alſo eſteemed a ſupplement to the want of baptiſm, in ſuch catechumens as died while they were piouſly preparing themſelves for baptiſm. Conſtantly communicating with the church was thought to ſupply the want of baptiſm, in perſons who had been admitted to communion, on a preſumption of their being duly baptized, though the contrary afterwards appeared. For infants dying without baptiſm, the caſe was thought more dangerous; as here no perſonal faith, repentance, or the like, could be pleaded, to ſupply the defect, and waſh away original ſin: on this account, they who ſpoke moſt favourably of them, as Greg. Nazianzen, and Severus biſhop of Antioch, only aſſigned them a middle ſtate. But the Latins, as St. Auguſtin, Fulgentius, Marius Mercator, &c. who never received the opinion of a middle ſtate, concluded, as they could not be received into heaven, they could not be ſaved. Pelagius, and his followers, who denied original ſin, aſſerted, that they might be admitted to eternal life and ſalvation, though not to the kingdom of heaven; between which they diſtinguiſhed. Where the fault was not on the ſide of the child, nor his parents, but of the miniſter, or where any unavoidable accident rendered baptiſm abſolutely impoſſible, Hincmar, and others, make an exception, in holding the child ſaved, even though baptiſm may not have taken place.

The ceremony of receiving baptiſm is not limited to any time or age of life. Some indeed have contended for its being adminiſtered like circumciſion, preciſely on the eighth day, as Greg. Nazianzen; whilſt others would have it deferred till the child is three years of age, and able to hear the myſtic words, and make anſwer thereto, though he may not underſtand them. In the canon law we find various injunctions againſt deferring the baptiſm of infants beyond the thirty-ſeventh day, thirtieth day, and the 9th day; ſome of them under pecuniary fines and penalties.

Salmaſius, and Suicerus from him, deliver it as authentic hiſtory, that, for the two firſt ages, no one received baptiſm, who was not firſt inſtructed in the faith and doctrine of Chriſt, ſo as to be able to anſwer for himſelf, that he believed; becauſe of thoſe words, *He that believeth, and is baptized*; which, in effect, is to ſay, that no infant, for the firſt two ages, was ever admitted to Chriſtian baptiſm. But, afterwards, they own, that pædo-baptiſm came in, upon the opinion that baptiſm was neceſſary to ſalvation.

But Voſſius, Dr. Forbes, Dr. Hammond, Mr. Walker, and eſpecially Mr. Wall, who has exactly conſidered the teſtimony and authority of almoſt every ancient writer upon this ſubject, endeavour to evince, that infants were baptized even in the apoſtolical age. It is certain, Tertullian pleads ſtrongly againſt giving baptiſm to infants; which ſhews, at leaſt, that there was ſome ſuch practice in his age, though he diſapproved of it. It is certain, the ordinary ſubjects of this ſacrament, in the firſt ages, were converts from Judaiſm and Gentiliſm, who, before they could be admitted to baptiſm, were obliged to ſpend ſome time in the ſtate of catechumens, to qualify them to make their profeſſions of faith, and a Chriſtian life, in their own perſons: for, without ſuch perſonal profeſſions, there was ordinarily no admiſſion of them to the privilege of baptiſm. Thoſe baptized in their ſick beds were called *clinici*; and were held in ſome reproach, as not being reputed true Chriſtians. Hence ſeveral cenſures, in councils and eccleſiaſtical writers, of clinic baptiſm. This clinic baptiſm was not ſufficient to qualify the perſon, in caſe of recovery, for ordination. Some had their baptiſm put off by way of puniſhment, when they fell into groſs and ſcandalous crimes, which were to be expiated by a longer courſe of diſcipline and repentance. This was ſometimes five, ten, twenty, years, or more; or even to the hour of death, if their crimes were very notorious.

In the early ages of the church, there was no ſtated time or place for the reception of baptiſm. Afterwards, Eaſter, Whitſuntide, and Epiphany, became ſolemn ſeaſons, out of which baptiſm was not adminiſtered, except in caſes of neceſſity. The catechumens, who were to receive it at theſe times, were called *competentes:* and to theſe it is that St. Cyril addreſſes his catecheſes. In the apoſtolical age, and ſome time after, before churches and baptiſteries were generally erected, they baptized in any place where they had any convenience; as John baptized in Jordan, and Philip baptized the eunuch in the wilderneſs, and Paul the jailor in his own houſe. But, in after-ages, baptiſteries were built adjoining to the church; and then rules were made, that baptiſm ſhould ordinarily be adminiſtered no where but in theſe buildings. Juſtinian, in one of his novels, refers to ancient laws, appointing that none of the ſacred myſteries of the church ſhould be celebrated in private houſes. Men might have private oratories for prayer in their own houſes; but they were not to adminiſter baptiſm or the euchariſt in them, unleſs by a particular licence from the biſhop of the place. Such baptiſms are frequently condemned in the ancient councils, under the name παραβαπτισματα, 'baptiſms in private conventicles.'

The following were the attendant ceremonies and manner of baptiſm in the ancient church: The perſon to be baptized, if an adult, was firſt examined by the biſhop or officiating prieſt, who put ſome queſtions to him; as, firſt, Whether he abjured the devil and all his works? ſecondly, Whether he gave a firm aſſent to all the articles of the Chriſtian faith? to both which he anſwered in the affirmative. If the perſon to be baptized was an infant, theſe interrogatories were anſwered by his *ſponſores,* or godfathers. Whether the uſe of ſponſors was as old as the apoſtles' days, is uncertain: perhaps it was not, ſince Juſtin Martyr, ſpeaking of the method and form of baptiſm, ſays not a word of them. After the queſtions and anſwers, followed exorciſm; the manner and end of which was this: The miniſter laid his hands on the perſon's head, and breathed in his face, implying thereby the driving away or expelling of the devil from him, and preparing him for baptiſm, by which the good and holy ſpirit was to be conferred upon him. After exorciſm, followed baptiſm itſelf: and firſt the miniſter, by prayer, conſecrated the water for that uſe. The water being conſecrated, the perſon was baptized "in the name of the Father, and of the Son, and of the Holy Ghoſt;" by which "dedication of him to the bleſſed Trinity, the perſon (ſays Clemens Alexandrinus) is delivered from the corrupt trinity, the devil, the world, and the fleſh." In performing the ceremony of baptiſm, the uſual cuſtom (except in clinical caſes, or where there was ſcarcity of water) was to immerſe and dip the whole body. Thus St. Barnabas, deſcribing a baptized perſon, ſays, "We go down into the water full of ſin and filth, but we aſcend bearing fruit in our hearts." And this practice of immerſing the whole body was ſo general, that we find no exceptions made in reſpect either to the tenderneſs of infants, or the baſhfulneſs of the other ſex, unleſs in caſe of ſickneſs, or other diſability. But, to prevent any indecency, men and women were baptized apart. To which end, either the baptiſteries were divided into two apartments, one for the men, the other for the women, as Bingham has obſerved; or the men were baptized at one time, and the women at another, as is ſhewn by Voſſius, from the Ordo Romanus, Gregory's Sacramentarium, &c. And there was anciently an order of deaconeſſes, one part of whoſe buſineſs was to aſſiſt at the baptiſm of women. The precautions, however, rather indicate a ſcrupulous attention to delicacy, than imply any indecency in the circumſtance of immerſion itſelf. From the candidates being immerſed, there is at leaſt no reaſon to infer that they were naked. The preſent Baptiſts never baptize naked, though they always immerſe. After immerſion, followed the unction; by which, ſays St. Cyril, was ſignified that they were now cut off from the wild olive, and were ingrafted into Chriſt, the true olive-tree; or elſe to ſhew that they were now to be champions for the goſpel, and were anointed thereto, as the athletæ were againſt their ſolemn games. With this anointing was joined the ſign of the croſs, made upon the forehead of the perſon baptized; which, being done, he had a white garment given him, to denote his being waſhed from the defilements of ſin, or in alluſion to that of the apoſtle, "as many as are baptized in Chriſt have put on Chriſt." From this cuſtom the feaſt of Pentecoſt, which was one of the annual ſeaſons of baptiſm, came to be called *Whitſunday*, i. e. *White-Sunday*. This garment was afterwards laid up in the church, that it might be an evidence againſt ſuch perſons as violated or denied that faith which they had owned in baptiſm. When the baptiſm was performed, the perſon baptized, according to Juſtin Martyr, "was received into the number of the faithful, who then ſent up their public prayers for all men, for themſelves, and for thoſe who had been baptized." The ordinary miniſters, who had the right of adminiſtering this ſacrament, that is, of applying the water to the body, and pronouncing the formula, were preſbyters or biſhops; though, on extraordinary occaſions, laymen were admitted to perform the ceremony.

In the Romiſh church, the preſent form of adminiſtering baptiſm is the following: When a child is to be baptiſed, the perſons who bring it wait for the prieſt at the door of the church, who comes thither in his ſurplice and purple ſtole, attended by his clerks. He begins with queſtioning the godfathers, whether they promiſe, in the child's name, to live and die in the true catholic and apoſtolic faith, and what name they would give the child. Then follows an exhortation to the ſponſors; after which the prieſt, calling the child by its name, aſks it as follows: *What doſt thou demand of the church?* The godfather anſwers, *Eternal life.* The prieſt goes on: *If you are deſirous of obtaining eternal life, keep God's commandments, thou ſhalt love the Lord thy God, &c.* After which he breathes three times in the child's face, ſaying, *Come out of this child, thou evil ſpirit, and make room for the Holy Ghoſt.* This ſaid, he makes the ſign of the croſs on the child's forehead and breaſt, ſaying, *Receive the ſign of the croſs on thy forehead, and in thy heart.* Then, taking off his cap, he repeats a ſhort prayer; and, laying his hand gently on the child's head, repeats a ſecond prayer: which ended, he bleſſes ſome ſalt; and, putting a little of it in the child's mouth, pronounces theſe words, *Receive the ſalt of wiſdom.* All this is performed at the church door. The prieſt, with the godfathers and godmothers, coming into the church, and advancing towards the font, repeat the Apoſtle's Creed and the Lord's Prayer. Being come to the font, he exorciſes the evil ſpirit again; and taking a little of his own ſpittle, with the thumb of his right hand, rubs it on the child's ears and noſtrils, repeating, as he touches the right ear, the ſame word *(Ephatha, be thou opened)* which our Saviour made uſe of to the man born deaf and dumb. Laſtly, they ſtrip it below the ſhoulders, during which the prieſt prepares the oils, &c. The ſponſors then hold the child over the font, obſerving to turn it due eaſt and weſt: whereupon the prieſt aſks the child, *Whether he renounces the devil and all his works?* and, the godfather having anſwered in the affirmative, the prieſt anoints the child between the ſhoulders in the form of a croſs. Then, taking ſome of the conſecrated water, he pours part of it thrice on the child's head, at each perfuſion calling on one of the Perſons of the Holy Trinity. The prieſt concludes the ceremony of baptiſm with an exhortation. The Romiſh church allows midwives, in caſes of danger, to baptize a child before it comes entirely out of its mother's womb: where it is to be obſerved, that ſome part of the body of the child muſt appear before it can be baptized, and that it is baptized on the part which firſt appears. If it be the head, it is not neceſſary to re-baptize the child; but, if only a foot or hand appears, it is neceſſary to repeat baptiſm. A ſtill-born child, thus baptized, may be buried in conſecrated ground. The Greek church differs from the Romiſh, as to the rite of baptiſm, chiefly, in performing it by immerſion, or plunging the infant all over in the water.

The forms of adminiſtering baptiſm among us being too well known to require a particular deſcription, we ſhall only mention one or two of the more material differences between the form, as it ſtood in the firſt liturgy of king Edward, and that in the Engliſh Common Prayer-Book at preſent. Firſt, the form of conſecrating the water did not make a part of the office in king Edward's liturgy, as it does in the preſent, becauſe the water in the font was changed, and conſecrated, but once a month. The form likewiſe itſelf was ſomething different from that now uſed; and was introduced with a ſhort prayer, that "Jeſus Chriſt, upon whom (when he was baptized) the Holy Ghoſt came down in the likeneſs of a dove, would ſend down the ſame Holy Spirit, to ſanctify the fountain of baptiſm;" which prayer was afterwards left out, at the ſecond review. By king Edward's firſt book, the miniſter is to dip the child in the water thrice; firſt, dipping the right ſide; ſecondly, the left; the third time, dipping the face toward the font. This trine immerſion was a very ancient practice in the Chriſtian church, and uſed in honour of the Holy Trinity; though ſome later writers ſay, it was done to repreſent the death, burial, and reſurrection, of Chriſt, together with his three days continuance in the grave. Afterwards, the Arians making an ill uſe of it, by perſuading the people that it was uſed to denote that the three Perſons in the Trinity were three diſtinct ſubſtances, the orthodox left it off, and uſed only one ſingle immerſion.

By the firſt common-prayer of king Edward, after the child was baptized, the godfathers and godmothers were to lay their hands upon it, and the miniſter was to put on him the white veſtment commonly called the *chryſome*; and to ſay, "Take this white veſture, as a token of the innocency, which, by God's grace, in this holy ſacrament of baptiſm, is given unto thee; and for a ſign, whereby thou art admoniſhed, ſo long as thou liveſt, to give thyſelf to innocence of living, that after this tranſitory life thou mayeſt be partaker of the life everlaſting. Amen." As ſoon as he had pronounced theſe words, he was to anoint the infant on the head, ſaying, "Almighty God, the father of our Lord Jeſus Chriſt, who hath regenerated thee by water and the Holy Ghoſt, and hath given unto thee remiſſion of all thy ſins; may he vouchſafe to anoint thee with the unction of his Holy Spirit, and bring thee to the inheritance of everlaſting life. Amen." This was manifeſtly done in imitation of the practice of the primitive church.

Sprinkling children, inſtead of dipping them in the font, a cuſtom which at firſt was allowed only in caſe of the weakneſs or ſickneſs of the infant, has now ſo far prevailed, that immerſion is at length quite excluded. What principally tended to confirm the practice of affuſion or ſprinkling, was, that ſeveral of our Proteſtant divines, flying into Germany and Switzerland during the bloody reign of queen Mary, and returning home when Elizabeth came to the crown, brought back with them a great zeal for the Proteſtant churches beyond ſea, where they had been ſheltered and received; and having obſerved, that, at Geneva and ſome other places, baptiſm was adminiſtered by ſprinkling, they thought they could not do the church of England a greater ſervice than by introducing a practice dictated by ſo great an oracle as Calvin. This, together with the coldneſs of our northern climate, was what contributed to baniſh entirely the practice of dipping infants in the font.

A great difference of opinions has exiſted concerning the effects of baptiſm, and theſe it would be endleſs to enumerate. The Remonſtrants and Socinians reduce baptiſm to a mere ſign of divine grace. The Romaniſts, on the contrary, exalt its power; holding, that all ſin is entirely taken away by it; that it abſolutely confers the grace of juſtification, and conſequently grace *ex opere operato.* Some alſo ſpeak of an indelible character impreſſed on the ſoul by it, called *character dominicus*, and *character regius:* but this is held, by others, a mere chimera; for that the ſpiritual character, conferred in regeneration, may eaſily be effaced by mortal ſin. Dodwell maintains, that it is by baptiſm the ſoul is made immortal; ſo that thoſe who die without it will not riſe again. It muſt be added, he reſtrains this effect to epiſcopal baptiſm alone. From the effects ordinarily aſcribed to baptiſm, even by ancient writers, it ſhould ſeem, that the ceremony is as much of heathen as Jewiſh origin; ſince Chriſtians do not reſtrain the uſe of it, like the Jews, to the admiſſion of new members into the church, but hold, with the heathens, a virtue in it for remitting and waſhing away ſins. The bramins are ſtill ſaid to baptize with this latter view, at certain ſeaſons, in the river Ganges; to the waters whereof they have annexed a cleanſing or ſanctifying quality; and hence it is that they flock from all parts, even of Tartary, driven by the expectation of their being eaſed of their load of ſins. But, in this point, many Chriſtians ſeem to have gone beyond the folly of the heathens. It was only the ſmaller ſins of infirmity which theſe latter held to be expiable by waſhing; for crimes of a blacker dye, they allowed no water could efface them, no purgation could diſcharge them. The Chriſtian doctrine of a total remiſſion of ſins by baptiſm could not fail, therefore, to ſcandalize many among the heathens, and furniſhed Julian an occaſion of ſatirizing Chriſtianity itſelf: "Whoever (ſays he) is guilty of rapes, murders, ſacrilege, or any abominable crime, let him be waſhed with water, and he will become pure and holy."

Baptiſm, in the ancient church, was frequently conferred on Jews by violence: but the church itſelf never ſeems to have allowed of force on this occaſion. By a canon of the fourth council of Toledo, it is expreſsly forbid to baptize any againſt their inclinations. That which looks moſt like force in this caſe, allowed by law, were two orders of Juſtinian; one of which appoints the heathens, and the other Sarmaritans, to be baptized, with their wives and children and ſervants, under pain of confiſcation. By the ancient laws, baptiſm was not to be conferred on image-makers, ſtage-players, gladiators, *aurigæ* or public drivers, magicians, or even ſtrolling beggars, till they quitted ſuch profeſſions. Slaves were not allowed the privilege of baptiſm without the teſtimony and conſent of their maſters; excepting the ſlaves of Jews, heathens, and heretics; who were not only admitted to baptiſm, but, in conſequence thereof, had their freedom. Voſſius has a learned and elaborate work *de Baptiſmo*, wherein he accurately diſcuſſes all the queſtions concerning baptiſm according to the doctrine of the ancients.

BAPTISM by FIRE, ſpoken of by St. John the Baptiſt, has occaſioned much conjecture. The generality of the fathers held, that believers, before they enter paradiſe, are to paſs through a certain fire, which is to purify them from all pollutions remaining on them unexpiated. Others, with St. Baſil, underſtood it of the fire of hell; others think it to be that of tribulation and temptation. Others, with St. Chryſoſtom, will have it denote an abundance of grace. Others ſuppoſe it to mean the deſcent of the Holy Ghoſt on the apoſtles, in the form of fiery tongues. Laſtly, others maintain, that the word *fire* here is an interpolation; and that we are only to read the text, *He that ſhall come after me will baptize you with the Holy Ghoſt.* In reality, it is not found in divers manuſcript copies of St. Matthew. The ancient Selcucians and Hermians, underſtanding the paſſage literally, maintained, that material fire was neceſſary in the adminiſtration of baptiſm. But we do not find how or to what part of the body they applied it, or whether they were ſatisfied with obliging the perſon baptized to paſs thro' the fire. Valentinus rebaptized all who had received water-baptiſm, and conferred on them the baptiſm of fire:

Bis docuit tingi, traductoque corpore flamma.
Tertull. Carm contra Marc. l. 1.

Heracleon, cited by Clemens Alexandrinus, ſays, that ſome applied a red-hot iron to the ears of the perſon baptized, as if to impreſs ſome mark upon him.

BAPTISM of the DEAD, a cuſtom which anciently prevailed among ſome people in Africa, of giving baptiſm to the dead. The third council of Carthage ſpeaks of it as a thing that ignorant Chriſtians were fond of. Gregory Nazianzen alſo takes notice of the ſame ſuperſtitious opinion prevailing among ſome who delayed to be baptized. In his addreſs to this kind of men, he aſks, whether they ſtayed to be baptized after death? Philaſtrius alſo notes it as the general error of the Montaniſts or Cataphrygians, that they baptized men after death. The practice ſeems to be grounded on a vain opinion, that, when men had neglected to receive baptiſm in their life-time, ſome compenſation might be made for this default by receiving it after they were dead.

Baptiſm of the dead was alſo a ſort of vicarious baptiſm, formerly in uſe, when, a perſon dying without baptiſm, another was baptized in his ſtead. St. Chryſoſtom tells us, this was practiſed among the Marcionites with a great deal of ridiculous ceremony; which he thus deſcribes. After any catechumen was dead, they hid a living man under the bed of the deceaſed; then, coming to the dead man, they aſked him, whether he would receive baptiſm? and, he making no anſwer, the other anſwered for him, and ſaid, he would be baptized in his ſtead: and ſo they baptized the living for the dead. Epiphanius aſſures us, the like was alſo practiſed among the Corinthians. This practice they pretended to found on the apoſtle's authority; alleging that the text of St. Paul for it, *If the dead riſe not at all, what ſhall they do who are baptized for the dead?* a text which has given occaſion to a great variety of different ſyſtems and explications. Boſius enumerates no leſs than nine different opinions among learned divines concerning the ſenſe of the phraſe *being baptized for the dead.* St. Ambroſe and Walafred Strabo ſeem clearly of opinion, that the apoſtle had reſpect to ſuch a cuſtom then in being; and ſeveral moderns have given into the ſame opinion, as Baronius, Joſ. Scaliger, Juſtellus, and Grotius. Several among the Roman Catholics, as Bellarmine, Salmeron, Menochius, and a number of ſchoolmen, underſtand it of the baptiſm of tears, and penance, and prayers, which the living undergo for the dead; and thus allege it as a proof of the belief of purgatory in St. Paul's time.

Hypothetical BAPTISM, that formerly adminiſtered in certain doubtful caſes, with this formula: "If thou art baptized, I do not rebaptize; if thou art not, I baptize thee in the name of the Father, &c." This ſort of baptiſm, enjoined by ſome ancient conſtitutions of the Engliſh church, is now fallen into diſuſe.

Solemn BAPTISM, that conferred at ſtated ſeaſons; ſuch, in the ancient church, were the *paſchal baptiſm*, and that at Whitſuntide. This is ſometimes alſo denominated *general baptiſm.*

Lay BAPTISM, we find to have been permitted by both the Common Prayer Books of king Edward and that of queen Elizabeth, when an infant is in immediate danger of death, and a lawful miniſter cannot be had. This was founded upon the notion of the impoſſibility of ſalvation without the ſacrament of baptiſm: but afterwards, when they came to have clearer notions of the ſacraments, it was unanimouſly reſolved in a convocation, held in the year 1575, that even private baptiſm, in a caſe of neceſſity, was only to be performed by a lawful miniſter.

BAPTISM is applied, abuſively, to certain ceremonies uſed in giving names to things inanimate. The ancients knew nothing of the cuſtom of giving baptiſm to inanimate things, as bells, ſhips, and the like, by a ſuperſtitious conſecration of them. The firſt notice we have of this is in the Capitulars of Charles the Great, where it is only mentioned to be cenſured: but, afterwards, it crept into the Roman offices by degrees. Baronius carries its antiquity no higher than the year 968, when the greateſt bell of the church of Lateran was chriſtened by pope John III. At laſt it grew to that ſuperſtitious height, as to be complained of in the *Centum Gravamina* of the German nation, drawn up in the public diet of the empire held at Nuremberg anno 1581; where (after having deſcribed the ceremony of baptizing a bell, with godfathers, who make reſponſes as in baptiſm, and give it a name, and clothe it with a new garment as Chriſtians were uſed to be clothed, and all this to make it capable of driving away tempeſts and devils) they conclude againſt it, as not only a ſuperſtitious practice, but contrary to the Chriſtian religion, and a mere ſeduction of the ſimple and undiſcerning multitude.

BAPTISM, in the ſea-language, a ceremony in long voyages on-board merchant-ſhips, practiſed both on perſons and veſſels who paſs the tropic or line for the firſt time. The baptizing the veſſels is ſimple, and conſiſts only in waſhing them throughout with ſea-water: that of the paſſengers is more myſterious. The oldeſt of the crew, that has paſſed the tropic, or line, comes with his face blackened, a groteſque cap on his head, and a book in his hand, followed by the reſt of the ſeamen dreſſed like himſelf, each having ſome kitchen utenſil in his hand, with drums beating; he places himſelf on a ſeat on the deck, at the foot of the main maſt. At the tribunal of this mock magiſtrate each paſſenger, not yet initiated, ſwears he will take care the ſame ceremony be obſerved, whenever he is in the like circumſtances: then, by giving a little money by way of gratification, he is diſcharged with a little ſprinkling of water; otherwiſe he is heartily drenched with ſtreams of water poured upon him; and the ſhip-boys are incloſed in a cage, and ducked at diſcretion. The ſeamen, on the baptizing a ſhip, pretend to a right of cutting off the beak-head, unleſs the captain redeems it by giving them money.

BAPTIS'MAL, *adj.* Of or pertaining to baptiſm.—When we undertake the *baptiſmal* vow, and enter on their new life, it would be apt to diſcourage us. *Hammond.*

BAPTISMAL VOW or COVENANT, a profeſſion of obedience to the laws of Chriſt, which perſons in the ancient church made before baptiſm. It was an indiſpenſable part of the obligation on catechumens, before they were admitted to the ceremony of regeneration.

BAPTISMAL PRESENTS, are in uſe in Germany, made by the ſponſors to the infant, conſiſting of money, plate, or ſometimes even fiefs of lands; which by the laws of the country are to be kept for the child till of age, the parents having only the truſt, not the right, of diſpoſing of them. An anonymous author has publiſhed a diſcourſe expreſs on this occaſion, intitled, *De pecunia luſtrica.*

BAP'TIST, *ſ.* [*baptiſte*, Fr. βαπτιστης, Gr.] He that adminiſters baptiſm.

BAPTIST (John Monnoyer), a painter of flowers and fruit, was born at Liſle in 1635, and educated at Antwerp, where he perfected himſelf in the knowledge of his art, and in his firſt years was intended for a painter of hiſtory: but, finding his genius more ſtrongly inclined to the painting of flowers, he applied his talents to thoſe ſubjects, and in that ſtyle became one of the greateſt maſters. His pictures are not ſo exquiſitely finiſhed as thoſe of Van Huyſum, but his compoſition and colouring are in a bolder ſtyle. His flowers have a remarkable freedom and looſeneſs, as well in the diſpoſition as in penciling; with a tone of colouring that is lively, admirable, and nature itſelf. Hence his compoſitions are eaſily known, and as eaſily diſtinguiſhed from the performances of others. He died in the year 1699.

BAPTISTE'RIUM, *ſ.* [from βαπτω, to immerge.] A bath or repoſitory of water to waſh the body.

BAP'TISTERY, *ſ.* [*baptiſterium*, Lat.] The place where the ſacrament of baptiſm is adminiſtered.

In the ancient church it was one of the exedræ or buildings diſtinct from the church itſelf; and conſiſted of a porch or anti-room where the perſons to be baptized made their confeſſion of faith, and an inner-room where the ceremony of baptiſm was performed. Thus it continued till the ſixth century, when the baptiſteries began to be taken into the church-porch, and afterwards into the church itſelf. The ancient baptiſteries were commonly called φωτιστηρια, q. d. 'places of illumination;' an appellation ſometimes given to baptiſm. Or they might have the name for another reaſon, becauſe they were the places of an illumination, or inſtruction, preceding baptiſm: for here the catechumens ſeem to have been trained up, and inſtructed in the firſt rudiments of the Chriſtian faith. Theſe baptiſteries were anciently very capacious; becauſe, as Dr. Cave obſerves, the ſtated times of baptiſm returning but ſeldom, there were uſually great multitudes to be baptized at the ſame time: and then the manner of baptizing, by immerſion, or dipping under water, made it neceſſary to have a large font likewiſe. In Venantius Fortunatus, it is called *aula baptiſmatis*, the 'large hall of baptiſm;' which was always kept ſhut during Lent, and the door ſealed up with the biſhop's ſeal, not to be opened till Maunday-Thurſday.

The baptiſtery was always reputed a ſacred place. In the Roman order, we find the ceremonies uſed in the conſecration of the baptiſteries: they were to be built of a round figure, and diſtinguiſhed with the image of St. John the Baptiſt; over the baſon or font was a figure of a dove in gold or ſilver; to repreſent the Holy Ghoſt. It is an obſervation of ſome learned men, that anciently there was but one baptiſtery in a city, and that at the biſhop's church; and that afterwards they were ſet up in pariſh churches, with the ſpecial allowance of the biſhop.

BAP'TISTS, *ſ.* [from βαπτιζω, I baptize.] A denomination of Chriſtians, diſtinguiſhed by their particular opinions reſpecting the mode and the ſubjects of baptiſm. Inſtead of adminiſtering the ordinance by ſprinkling or pouring water, they maintain that it ought to be adminiſtered only by immerſion. Such, they inſiſt, is the meaning of the word βαπτιζω; ſo that a command to baptize is a command to immerſe. Thus it was underſtood by thoſe who firſt adminiſtered it. John the Baptiſt, and the apoſtles of Chriſt, adminiſtered it in Jordan and other rivers and places where there was much water. Both the adminiſtrators and the ſubjects are deſcribed as going into, and coming out of, the water; and the baptized are ſaid to be buried in baptiſm, and to be raiſed again: which language could not, they ſay, be properly adopted on ſuppoſition of the ordinance being adminiſtered in any other manner than by immerſion. Thus alſo, they affirm, it was in general adminiſtered in the primitive church. Thus it is now adminiſtered in the Ruſſian and Greek church: and thus it is, at this day, directed to be adminiſtered in the church of England, to all who are thought capable of ſubmitting to it in this manner. With regard to the ſubjects of baptiſm, the Baptiſts ſay, that this ordinance ought not to be adminiſtered to children or infants at all, nor to grown-up perſons in general; but to adults only of a certain character and deſcription. Our Saviour's commiſſion to his apoſtles, by which Chriſtian baptiſm was inſtituted, is to go and teach all nations, baptizing them: that is, ſay they, not to baptize all they meet with; but firſt to inſtruct them—to teach all nations, or to preach the goſpel to every creature—and whoever receives it, him to baptize in the name of the Father, and of the Son, and of the Holy Ghoſt. To ſuch perſons, and to ſuch only, baptiſm appears to have been adminiſtered by the apoſtles, and the immediate diſciples of Chriſt. They are deſcribed as repenting of their ſins, as believing in Chriſt, and as having gladly received the word. Without theſe qualifications, Peter acquaints thoſe who were converted by his ſermon, that he could not have admitted them to baptiſm. Philip holds the ſame language in his diſcourſe with the eunuch; and Paul treats Lydia, the jailor, and others, in the ſame manner. Without theſe qualifications, Chriſtians in general think it wrong to admit perſons to the Lord's ſupper; and, for the ſame reaſons, without theſe qualifications, at leaſt a profeſſion of them, the Baptiſts think it wrong to admit any to baptiſm. Wherefore they withhold it, not only from the impenitently vicious and profane, and from infidels who have no faith; but alſo from infants and children, who have no knowledge, and are incapable of every action civil and religious. They further inſiſt, that all poſitive inſtitutions depend entirely upon the will and declaration of the inſtitutor; and therefore, that reaſoning by analogy from abrogated Jewiſh rites is to be rejected, and the expreſs commands of Chriſt reſpecting the mode and ſubjects of baptiſm ought to be our only rule.

The Baptiſts in England form one of the denominations of Proteſtant diſſenters. They ſeparate from the eſtabliſhment for the ſame reaſons as their brethren of the other denominations do; and from additional motives derived from their particular tenets reſpecting baptiſm. The conſtitution of their churches, and their modes of worſhip, are congregational or independent: in the exerciſe of which they are protected, in common with other diſſenters, by the act of toleration. Before this act, they were liable to pains and penalties as nonconformiſts, and often for their peculiar ſentiments as Baptiſts. A proclamation was iſſued againſt them, and many were burnt in Smithfield in 1538. They bore a conſiderable ſhare in the perſecutions of the laſt and of the preceding centuries; and, as it ſhould ſeem, in thoſe of ſome centuries before; for there were ſeveral among the Lollards and the followers of Wickliff, who diſapproved of infant-baptiſm. There were many of this perſuaſion among the Proteſtants and reformers abroad. In Holland, Germany, and the north, they went by the names of ANABAPTISTS, and MENNONITES; and, in Piedmont and the ſouth, they were found among the ALBIGENSES and WALDENSES. See thoſe articles.

The Baptiſts ſubſiſt under two denominations: the *particular* or Calviniſtical, and the *general* or Arminian. The former is by far the moſt numerous. Some of both denominations allow of *mixed communion*, viz. of perſons who have been ſprinkled in their infancy, and therefore unbaptized in the view of the Baptiſts; others diſallow it; and ſome of them obſerve the ſeventh day of the week as the ſabbath, apprehending the law that enjoined it not to have been repealed by Chriſt or his apoſtles. But a difference of opinion reſpecting theſe and other matters is not peculiar to the Baptiſts: it is common to all Chriſtians, and to all bodies of men who think and judge for themſelves.

The Baptiſts of the United States of America are, with ſome exceptions, upon the Calviniſtic plan as to doctrines, and independents as to church government and diſcipline. Except thoſe who are ſtyled *open-communion Baptiſts*, of whom there is but one aſſociation, they refuſe to communicate in the ordinance of the Lord's ſupper with other denominations; becauſe they hold that immerſion only is the true baptiſm, and that baptiſm is neceſſary to communion; it is therefore inconſiſtent, in their opinion, to admit unbaptized perſons to join with them in this ordinance; though they allow miniſters of other denominations to preach to their congregations, and to aſſiſt in ordaining their miniſters. They have regular college eſtabliſhments, and maintain a conſtant communication with each other by means of annual and half-yearly aſſociations. And, according to an account taken by Mr. John Aſplund, a miniſter of the baptiſt denomination, who travelled thro' the United States, to aſcertain their number and ſtate, in 1793, the number of their churches, miniſters, and church-members, is as follows:

STATES.	CHURCHES.	MINISTERS.		MEMBERS.
		ordained.	*licenſed.*	
In New Hampſhire	32	23	17	1732
Maſſachuſetts	107	95	31	7116
Rhode Iſland	38	37	39	3502
Connecticut	55	44	21	3214
Vermont	34	21	15	1610
New York	57	53	30	3987

STATES.	CHURCHES.	MINISTERS.		MEMBERS.
		ordained.	*licenſed.*	
In New Jerſey	26	20	9	2279
Pennſylvania	28	26	7	1231
Delaware	7	9	1	409
Maryland	12	8	3	776
Virginia	207	157	109	20157
Kentucky	42	40	21	3105
Weſtern Territory	1	—	—	30
North Carolina	94	81	76	7742
Deceded Territory	18	15	6	889
South Carolina	68	48	28	4012
Georgia	42	33	9	3184
Total	868	710	422	64975

To this account, it is preſumed, about 2500 members, and forty-five churches, ought to be added; making the whole number of their churches in America about 910, and the members about 67,000. But at leaſt three times as many attend their meetings for public worſhip as have joined their churches, which, we may ſuppoſe, are in principle Baptiſts; theſe will make the whole number of that denomination in United States 201,000, or a twenty-fifth part of the inhabitants. The leading principles of the American Baptiſts are, The imputation of Adam's ſin to his poſterity; the inability of man to recover himſelf; effectual calling by ſovereign grace; juſtification by the imputed righteouſneſs of Chriſt; baptiſm by immerſion, and that on profeſſion of faith and repentance; congregational churches, their independency, and reception into them, upon evidence of ſound converſion.

To BAPTI'ZE, *v.a.* [*baptiſer*, Fr. from *βαπτίζω*, Gr.] To chriſten; to adminiſter the ſacrament of baptiſm.—Let us reflect that we are Chriſtians; that we are called by the name of the Son of God, and *baptized* into an irreconcileable enmity with ſin, the world, and the devil. *Rogers.*

BAPTI'ZER, *ſ.* One that chriſtens; one that adminiſters baptiſm.

BAR, *ſ.* [*barre*, Fr.] A piece of wood, iron, or other matter, laid croſs a paſſage to hinder entrance.—And he made the middle *bar* to ſhoot through the boards from the one end to the other. *Exodus.*—A bolt; a piece of iron or wood faſtened to a door, and entering into the poſt or wall, to hold the door cloſe.—The fiſh-gate did the ſons of Haſſenaah build, who alſo laid the beams thereof, and ſet up the doors thereof, the locks thereof, and the *bars* thereof. *Nehemiah.*—Any obſtacle which hinders or obſtructs; obſtruction.—I brake up for it my decreed place, and ſet *bars* and doors, and ſaid, Hitherto ſhalt thou come, and no farther. *Job.*—A rock, or bank of ſand, at the entrance of a harbour or river, which ſhips cannot ſail over at low water. Any thing uſed for prevention, or excluſion:

Which Salique land the French unjuſtly gloze to be
The founder of this law, and female *bar*. *Shakeſpeare.*

The place where cauſes at law are tried, or where criminals are judged; ſo called from the *bar* placed to hinder crowds from incommoding the court:

Some at the *bar* with ſubtlety defend,
Or on the bench the knotty laws untie. *Dryden.*

An incloſed place in a tavern or coffee-houſe, where the houſekeeper ſits and receives reckonings.—I was under ſome apprehenſion that they would appeal to me; and therefore laid down my penny at the *bar*, and made the beſt of my way. *Addiſon.*—Any thing by which the compages or ſtructure is held together.—I went down to the bottoms of the mountains: the earth, with her *bars*, was about me for ever. *Jonah.*—Any thing which is laid acroſs another, as *bars* in heraldry.

BAR, in law, is a plea or peremptory exception of a defendant, ſufficient to deſtroy the plaintiff's action. In real actions, a general releaſe, or a fine, may be pleaded to bar the plaintiff's title. In perſonal actions, an accord, arbitration, conditions performed, non-age of the defendant, may be pleaded in bar. So the ſtatute of limitation may be pleaded in bar, or the time limited by law, beyond which no plaintiff can lay his cauſe of action. 3 *Blackſt.* 306. In criminal caſes, there are eſpecially four pleas in bar, which go to the merits of the indictment, and give a reaſon why the priſoner ought not to anſwer it at all, nor put himſelf upon his trial for the crime alleged. And theſe are, 1. A former *acquittal*, grounded on this univerſal maxim of the common law, that no man ſhall be brought into jeopardy of his life more than once for the ſame offence. 2. A former *conviction*; though no judgment was given, nor perhaps will be given; and this depends on the ſame principle as the former, that no man ought to be twice brought in danger of his life for one and the ſame crime. 3. A former *attainder*; for, being dead in law by ſuch firſt attainder, he hath forfeited all he had, and it would be ſuperfluous to attaint him a ſecond time. 4. A *pardon*; which at once deſtroys the end and purpoſe of the indictment, by remitting that puniſhment which the proſecution is calculated to inflict. 4 *Black.* 329.

BAR, in muſic, a ſtroke drawn perpendiculary acroſs the lines, including between each two a certain quantity or meaſure of time, which is various as the time of the muſic is either triple or common. In common time, between each two bars is included the meaſure of four crotchets; in triple, three. The principal uſe of bars is to regulate the beating of time in a concert. The uſe of bars is not to be traced higher than the time when the Engliſh tranſlation of Adrian le Roy's book on the Tablature was publiſhed, viz. the year 1574; and it was long after that before the uſe of bars became general. Barnard's cathedral muſic, printed in 1641, is without bars; but bars are to be found throughout in the Ayres and Dialogues of Henry Lawes publiſhed in 1653; from whence it may be inferred that we owe to Lawes this improvement.

BAR, in African traffic, is uſed for a denomination of price; payment being formerly made to the negroes almoſt wholly in iron bars.

BAR of GOLD or SILVER, is a lump or wedge from the mines, melted down into a ſort of mould, and never wrought.

BARS of a HORSE, the upper part of the gums between the tuſks and grinders, which bears no teeth, and to which the bit is applied, and, by its friction, the horſe governed.

BAR, a town of Arabia, fifty-ſix miles S. E. of El Catif.

BAR, a town of Hindoſtan, in the country of Bahar, on the ſouth ſide of the Ganges, fifteen miles north of Bahar, and thirty eaſt-ſouth-eaſt of Patna.

BAR, a very ſtrong city of Podolia, in Poland, upon the river Kiow. Lat. 50. 6. N. lon. 28. 30. E.

BAR (Le), a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Graſſe, four miles north-eaſt of Graſſe.

BAR (Duchy), before the revolution, a country of France, ſituated to the weſt of Lorraine, thirty-two leagues long, and ſixteen wide. The aſpect of the country is various, and divided into hills and plains: wood, wine, corn, game, and fiſh, abound. It takes its name from the caſtle of Bar, and was erected into a county by the emperor Otho; but it is not known at what time it was raiſed to a duchy.

BAR-SUR-AUBE, a town of France, and the principal place of a diſtrict, in the department of the Aube: before the revolution the ſeat of a governor. It is twenty-five poſts and a half ſouth-ſouth-eaſt of Paris. Lat. 48. 14. N. lon. 22. 22. E. Ferro.

BAR-SUR-SEINE, a town of France, and principal place of a diſtrict, in the department of the Aube, ſituated at the foot of a mountain, on the Seine. It has three gates, a college, and a hoſpital; and is five leagues and a half ſouth-eaſt of Troyes. Lat. 48. 7. N. lon. 22. 2. E. Ferro.

BAR-LE-DUC, a town of France, and principal town of a diſtrict, in the department of the Meuſe: before the revolution, it was the capital of the duchy of Bar. It is a conſiderable town, divided into Upper and Lower; the ſeparation being formed by a caſtle, called *Bar*, (and was as it were a barrier between France and Lorraine,) the walls and towers of which were demoliſhed by Louis XIV. The river Ornain runs through the lower part of the town. They compute about 8000 inhabitants in the whole. It is ſeven leagues ſouth-ſouth-eaſt of St. Menehould, and nine and a half weſt of Toul. Lat. 48. 47. N. lon. 22. 50. E. Ferro.

Bar-master, among miners, the perſon who keeps the gage, or diſh, for meaſuring the ore.

Bar-shot, two half bullets joined together by an iron bar; uſed in ſea-engagements for cutting down the maſts and rigging.

To Bar, *v. a.* To faſten or ſhut any thing with a bolt, or bar.—When you *bar* the window-ſhutters of your lady's bed-chamber at nights, leave open the ſaſhes to let in air. *Swift.*—To hinder; to obſtruct:

When law can do no right,
Let it be lawful, that law *bar* no wrong. *Shakeſpeare.*

To prevent; to exclude; to make impracticable.—The houſes of the country were all ſcattered, and yet not ſo far off as that it *barred* mutual ſuccour. *Sidney.*—To detain, by excluding the claimants: with *from*:

Hath he ſet bounds between their love and me?
I am their mother; who ſhall *bar* them *from* me? *Shakeſ.*

To ſhut out: with *from*:

Our hope of Italy not only loſt,
But ſhut from ev'ry ſhore, and *barr'd from* ev'ry coaſt.
Dryden.

To exclude from uſe, right, or claim; with *from* before the thing.—God hath abridged it, by *barring* us *from* ſome things of themſelves indifferent. *Hooker.*—To prohibit.—What is a greater pedant than a mere man of the town? *Bar* him the playhouſes, and you ſtrike him dumb. *Addiſon.*—To except; to make an exception:

Nay, but I *bar* to-night; you ſhall not gage me
By what we do to-night. *Shakeſpeare.*

In law, to hinder the proceſs of a ſuit.—If a biſhop be a party to a ſuit, and excommunicates his adverſary, ſuch excommunication ſhall not diſable or *bar* his adverſary. *Ayliffe.*

To Bar a Vein, in farriery, a vulgar term, ſignifying an operation performed upon the veins of the legs and other parts of a horſe. It is ſometimes performed in a diſeaſe called the *blood ſpavin*, which conſiſts in a varicoſe ſtate or morbid enlargement of the veins of the part. It is done by dividing the ſkin above it, diſengaging the vein, and tying it both above and below, ſo as to obliterate it entirely.

BA'RA, a ſmall iſland in the Adriatic, oppoſite to Brunduſium: now *Pharos* of Mela. Alſo a frith or arm of the ſea of Britannia Secunda; ſuppoſed to be Murray frith. *Ptolemy.*

Bara, one of the Hebrides. See Barra.

Bara, the name of a feſtival celebrated with much magnificence at Meſſina, repreſenting the aſſumption of the Virgin. The *bara*, though uſed as the general denomination of this feſtival, ſignifies a machine fifty feet high, at the top of which a young girl of fourteen, repreſenting the Virgin, ſtands upon the hand of an image of Chriſt. Round him turn vertically, in a circle, twelve little children which repreſent the ſeraphims; below them, in another circle, which turns horizontally, are twelve more repreſenting the cherubims: below theſe a ſun turns vertically, with a child at the extremity of each of the four principal radii of his circle, who aſcend and deſcend with his rotation, yet ſtill ſtand upright. Below the ſun is the loweſt circle, about ſeven feet from the ground, in which twelve boys turn horizontally without interruption; theſe are intended for the twelve apoſtles, who are ſuppoſed to ſurround the tomb of the Virgin at the moment when ſhe aſcends into heaven. This complicated machine is drawn by a number of monks, all uniformly dreſſed and choſen on this ſuperſtitious occaſion.

Bara Mareka, *ſ.* in botany. See Dolichos.

Bara Picklet, bread made of fine flour kneaded with barm, which makes it very light and ſpongy: *bara* being the Welſh for bread. In the north of England it is formed into flat cakes, which are called *picklets*.

BARAB'BAS, [בראבא Syr. of בי a ſon, and אבא a father; the father's ſon.] A notorious malefactor, whom the Jews prayed might be releaſed when they demanded Chriſt to be crucified.

BARABIA'CO, a town of Italy, in the Milaneſe, ſituated on the Colona, twelve miles weſt of Milan.

BARABIN'ZIANS, a tribe of Tartars, living on both ſides the river Iris. They derive their name from the Barabaian deſert, whoſe lakes ſupply them abundantly with fiſh, on which, and their cattle, they chiefly ſubſiſt. They have plenty of game and wild-fowl, particularly ducks and puffins. Moſt of them are heathens, but Mahometaniſm daily gains ground among them. Some of them pay tribute to Ruſſia, and others to the khan Taiſha.

BARA'CE, a town of France, in the department of the Mayne and Loire, and chief place of a canton, in the diſtrict of Chateauneuf: four leagues north-north-eaſt of Angers, and two eaſt-ſouth-eaſt of Chateauneuf.

BARACO'A, a ſea-port town of the iſland of Cuba, ſeventeen leagues north-eaſt of St. Jago. Lat. 21. 4. N. lon. 76. 10. W. Greenwich.

BARAFAT', a town of Africa, in the kingdom of Fonia, ſituated on a peninſula formed by the river Gambia and two other rivers.

BA'RAK, [ברק Heb. i. e. lightning.] A proper name of men.

BARALIP'TON, *ſ.* among logicians, a term denoting the firſt indirect mode of the firſt figure of ſyllogiſm. A ſyllogiſm in baralipton, is when the two firſt propoſitions are general, and the third particular, the middle term being the ſubject in the firſt propoſition, and the predicate in the ſecond. The following is of this kind:

BA. Every evil ought to be feared;
RA. Every violent paſſion is an evil;
LIP. Therefore ſomething that ought to be feared is a violent paſſion.

BARALLOT'S, a ſect of heretics at Bologna in Italy, who had all things in common, even their wives and children. Their facility in complying with all manner of debauchery, procured them the name *obedientes*, 'compliers.'

BARAN'CA-DEL-MELAM'BO, a ſea-port town of South America, in the country of Terra Firma, at the mouth of the river Magdelana, with a good harbour. It is twenty-five leagues north-eaſt of Carthagena. Lat. 11. 39. N. lon. 75. 8. W. Greenwich.

BARAN'CAS (Las), a town of North America, in the province of New Mexico, forty-five miles ſouth-ſouth-eaſt of Santa Fé.

BARA'NEI STA'NITZ, a town or ſettlement of Siberia, on the Lena, fifty-two miles north-eaſt of Vitimſkoi. Lat. 54. 50. N. lon. 131. 0. E. Ferro.

BARAN'GI, *ſ.* officers among the Greeks of the lower empire, whoſe buſineſs it was to keep the keys of the city gates where the emperor reſided. Codinus ſays, *barangi* were thoſe who ſtood guard at the door of the emperor's bed-chamber and dining-room. Codinus and Curopalata obſerve, that the name is Engliſh, formed from *bar*, to ſhut; and that the barangi were Engliſhmen by country; Anglo-Danes, who, being driven out of England, were received into the ſervice of the emperor of Conſtantinople, and made guards or protectors of his perſon: whence they are called in Latin, by Cujacius, *protectores*; by others, *ſecurigeri*, as being armed with a battle-axe, *ſecuris*. Codinus adds, that they ſtill ſpoke the Engliſh tongue. Anna Comnena ſays, the barangi came from the iſland Thule; by which is, doubtleſs, meant our iſland. Yet

Nicetas makes them Germans; a miſtake eaſy to be made at that diſtance, conſidering the relation the Anglo-Saxons bore to Germany. There were barangi as early as the emperor Michael Paphlagonius, in the year 1035, as appears from Cedrenus; but they were then only common ſoldiers, not a life-guard. Their commander was called ακολȣθος, as importing a perſon who always followed the emperor.

BARANIL'LO, a town of Italy, in the kingdom of Naples, and comtat of Moliſe, nine miles ſouth-ſouth-eaſt of Moliſe.

BARANOW', a town of Poland, in the palatinate of Sandomir, ſixteen miles ſouth of Sandomir.

BARANOW'KA, a town of Poland, in the palatinate of Volhynia, forty miles north-north-eaſt of Conſtantinow.

BARANWAHR', a town of Lower Hungary, in a county of the ſame name, taken by the emperor of Germany from the Turks in 1684. It is ſeated between Buda and Belgrade, in lat. 46. 0. N. lon. 20. 5. E.

BARANZA'NO, a celebrated Italian philoſopher, and mathematical writer, died in France in 1622.

BARA'O, a town of Spain, in Arragon, two leagues from Jaca.

BARAS'ZE, a town of Poland, in the palatinate of Volhynia, thirty-ſix miles north-north-weſt of Zytomiers.

BARA'THRUM, *ſ.* [βαραθρον, Gr. from באר a well, and אתר Heb. a place.] Any cavity or hollow place. It was alſo the name of a deep dark pit at Athens, into which condemned perſons were caſt headlong. It had ſharp ſpikes at the top, that no man might eſcape out; and others at the bottom, to pierce and torment ſuch as were caſt in. Its depth and capaciouſneſs made it to be applied proverbially to a covetous perſon: to a glutton, called *barathro* by Lucretius, and *barathrum*, in the ſame ſenſe, by Horace; and for a common proſtitute, by Plautus.

BARATIER' (John Philip), a moſt extraordinary inſtance of the early and rapid exertion of mental faculties. This ſurpriſing genius was the ſon of Francis Baratier, miniſter of the French church at Schwobach near Nuremberg, where he was born January 10, 1721. The French was his mother-tongue, with ſome words of High Dutch; and, by means of his father inſenſibly talking Latin to him, it became as familiar to him as the reſt: ſo that, without knowing the rules of grammar, he at four years of age talked French to his mother, Latin to his father, and High Dutch to the maid and neighbouring children, without mixing or confounding the reſpective languages. About the middle of his fifth year he acquired Greek in like manner; ſo that in fifteen months he perfectly underſtood all the Greek books in the Old and New Teſtament, which he tranſlated into Latin. When five years and eight months old, he entered upon Hebrew; and in three years more was ſo expert in the Hebrew text, that, from a Bible without points, he could give the ſenſe of the original in Latin or French; or tranſlate extempore the Latin or French verſions into Hebrew. He compoſed a dictionary of rare and difficult Hebrew words; and, about his tenth year, amuſed himſelf for twelve months with the rabinical writers. With theſe he intermixed a knowledge of the Chaldaic, Syriac, and Arabic; and acquired a taſte for divinity and eccleſiaſtical antiquity, by ſtudying the Greek fathers of the firſt four ages of the church. In the midſt of theſe occupations, a pair of globes coming into his poſſeſſion, he could in eight or ten days reſolve all the problems on them; and, in January 1735, he deviſed his project for the diſcovery of the longitude, which he communicated to the Royal Society of London, and the Royal Academy of Sciences at Berlin. In June 1731, he was matriculated in the univerſity of Altorf; and, at the cloſe of 1732, he was preſented by his father at the meeting of the reformed churches of the circle of Franconia; who, aſtoniſhed at his wonderful talents, admitted him to aſſiſt in the deliberations of the ſynod; and, to preſerve the memory of ſo ſingular an event, it was regiſtered in their acts. In 1734, the marcgrave of Brandenburgh Anſpach granted this young ſcholar a penſion of fifty florins; and, his father receiving a call to the French church at Stetin in Pomerania, young Baratier was, on the journey, admitted maſter of arts. At Berlin he was honoured with ſeveral converſations with the king of Pruſſia, and was received into the royal academy. Towards the cloſe of his life he acquired a conſiderable taſte for medals, inſcriptions, and antiquities; metaphyſical inquiries, and experimental philoſophy. He wrote ſeveral eſſays and diſſertations; made aſtronomical remarks, and laborious calculations; took great pains towards a hiſtory of the hereſies of the anti-trinitarians, and of the thirty years war in Germany: his laſt publication, which appeared in 1740, was on the ſucceſſion of the biſhops of Rome. The final work he engaged in, and for which he had gathered large materials, was Inquiries concerning the Egyptian Antiquities. But the ſubſtance of this blazing meteor was now almoſt exhauſted: he was always weak and ſickly; and died October the 5th, 1740, aged nineteen years eight months and ſixteen days. He publiſhed eleven different pieces, and left twenty-ſix manuſcripts on various ſubjects, the contents of which may be ſeen in his life written by M. Formey profeſſor of philoſophy at Berlin.

BARAT'Z (Turkiſh), *ſ.* letters-patent granted by the Turkiſh emperors to the Greek patriarch biſhops, for the exerciſe of their eccleſiaſtical functions. This baratz gives the biſhops full power and authority to eſtabliſh and depoſe the inferior clergy, and all other religious perſons; to grant licences for marriages, and iſſue out divorces; to collect the revenues belonging to the churches; to receive the pious legacies bequeathed to them; in ſhort, to enjoy all the privileges and advantages belonging to their high ſtation: and all this (as it is expreſſed in the baratz itſelf) "according to the vain and idle ceremonies of the Chriſtians."

BARAVEL', one of the Ladrone iſlands. Lat. 12. 44. N. lon. 142. 28. E. Greenwich.

BARAVO'E, a bay and village, on the north-eaſt coaſt of the iſland of Shetland.

BARAWNAY', a town of Hindoſtan, in the Candeiſh country, forty-five miles north-eaſt of Burampour, and ſeventy-four ſouth-ſouth-eaſt of Indore.

BARB, *ſ.* [*barba*, Lat. a beard.] Any thing that grows in the place of a beard.—The barbel is ſo called, by reaſon of the *barb* or wattels at his mouth, or under his chaps. *Walton.*—The points that ſtand backward in an arrow, or fiſhing-hook, to hinder them from being extracted:

Nor leſs the Spartan fear'd, before he found
The ſhining *barb* appear above the wound. *Pope.*

The armour for horſes.—Their horſes were naked, without any *barbs*; for, albeit many brought *barbs*, few regarded to put them on. *Hayward.*

BARB, *ſ.* [contracted from *Barbary.*] A Barbary horſe.—Horſes brought from Barbary, are commonly of a ſlender light ſize, and very lean, uſually choſen for ſtallions. *Barbs*, it is ſaid, may die, but never grow old; the vigour and mettle of *barbs* never ceaſe but with their life. *Farrier's Dictionary.*

To BARB, *v. a.* To ſhave; to dreſs out the beard.—Shave the head, and tie the beard, and ſay it was the deſire of the penitent to be ſo *barbed* before his death. *Shakeſ.* To furniſh horſes with armour:

On *barbed* ſteeds they rode, in proud array,
Thick as the college of the bees in May. *Dryden.*

To jag arrows with hooks:

The twanging bows
Send ſhow'rs of ſhafts, that on their *barbed* points
Alternate ruin bear. *Phillips.*

BAR'BA, *ſ.* [from *barbarus*, Lat. becauſe wild nations are uſually unſhaven; *bard*, Sax. *barf*, Welſh.] The beard. Alſo the four leſſer claws of the polypus, from its repreſenting a beard. Some vegetables have the ſpecific name of *barba*, whoſe ramifications are buſhy like a beard; as, *barba*

barba Jovis Jupiter's beard or the ſilver buſh, *barba hirci* goat's beard, &c. Alſo a woolly ſubſtance covering the ſurface of plants.

Barba, a town of North America, in the county of Mexico, and province of Coſta Rica, twenty-two miles ſouth-ſouth-weſt of Cartago.

Barba Capræ, *ſ.* in botany. See Spiræa.

Barba Jovis. See Amorpha, Anthyllis, Cytisus, Ebenus, and Proralea.

BAR'BACAN, or Barbican, *ſ.* [*barbacane*, Fr. *barbacana*, Span.] An outer defence or fortification to a city or caſtle, uſed eſpecially as a fence to the city or walls; alſo, an aperture made in the wall of a fortreſs, to fire through upon the enemy. *Barbacan* is alſo uſed to denote a fort at the entrance of a bridge, or the outlet of a city, having a double wall with towers.

BARBA'DOES, one of the Charaibean, or Caribbee iſlands, and the moſt eaſtern of the Weſt India iſlands; it is ſaid, was firſt diſcovered by the Portugueſe, from whom it received its preſent name; the Portugueſe, however, made no ſettlement, only furniſhing it with a breed of ſwine for future navigators. It had no inhabitants, and was much overgrown with wood, when it was viſited by the crew of an Engliſh ſhip in the year 1605, who took poſſeſſion of it in the name of king James: they found pigs, pigeons, and parrots, and the ſea abounded with fiſh. Some years afterwards a ſettlement was made by Sir W. Courteen, a merchant of London; and, in the year 1624, the foundation of Jameſtown was laid. The earl of Marlborough obtained a grant of this iſland to himſelf and heirs in perpetuity, and was moſt probably the patron of this firſt ſettlement. The earl of Carliſle, who was at the ſame time engaged in the eſtabliſhment of a colony in the iſland of St. Chriſtopher, laid a claim to it, and in the firſt year of Charles I. obtained a grant of all the Charaibean iſlands, including alſo Barbadoes; this being diſputed by the earl of Marlborough, was at laſt ſettled by an engagement of the earl of Carliſle to pay to the earl of Marlborough and his heirs for ever the yearly ſum of 300 pounds, but the intereſt of the merchant who formed the ſettlement was forgotten. The new proprietor diſtributed lands to ſuch perſons as choſe to receive grants on the terms propoſed: a ſociety of merchants accepted 10,000 acres on conditions that promiſed great advantage to the proprietor: a perſon appointed to preſide, with ſixty-four perſons, each of whom was authorized to take up 100 acres of land, arrived in the iſland in the year 1628, at which time Courteen's ſettlement began to flouriſh; but they declared it an encroachment and uſurpation, and Sir William Tufton arriving the year following, as chief governor, with a force ſufficient, he compelled the friends of Courteen to ſubmit. During the civil war, Barbadoes took a decided part in favour of the unfortunate Charles I. The republic parliament, angry with the inhabitants of Barbadoes, ſent out a fleet under Sir George Ayſcue in 1651, and ſucceeded ſo far as to get the republic acknowledged, but at the ſame time it was agreed that the juriſdiction of the iſland ſhould be continued in the governor, council, and aſſembly, according to the cuſtom of the iſland; the aſſembly to be choſen by the freeholders; and no taxes to be levied on the inhabitants without their conſent in a general aſſembly. The parliament had intended an act, by which all foreign veſſels were to be prohibited from trading with the Engliſh plantations, and no goods to be imported into England, or any of its dependencies, in any other than Engliſh bottoms, or in ſhips of that nation of which the merchandize imported was the growth or manufacture; and thus aroſe the famous navigation act, for immediately after the reſtoration, the plan was adopted by Charles II. with this addition, that the maſter and three-fourths of the ſeamen ſhould be Engliſh ſubjects. The proprietary government was diſſolved, the legiſlation of the iſland veſted in the crown, and a duty of four and a half per cent. to be paid in ſpecie, laid on all dead commodities, the growth of the iſland, ſhipped to any part of the world. Barbadoes is twenty-one miles long, and fourteen broad, and contains 106,470 acres of land, moſt part of which is cultivated. The ſoil in the low lands is black; in the ſhallow parts inclining to red; on the hills chalky; and near the ſea-coaſt moſtly ſandy. In the year 1670, we are aſſured, that Barbadoes contained 50,000 whites, and 100,000 black inhabitants; perhaps this account may be exaggerated, but by an authentic account, the number of whites in the year 1724, was no more than 18,295: and in the year 1753, the number of blacks was 69,870. In the year 1786, there were 16,167 whites, 838 free people of colour, and 62,115 negroes. On an average, from the year 1740 to 1748, the exports were 13,948 hogſheads of ſugar, of 15 cwt. each; 12,881 puncheons of rum, of 100 gallons each; ſixty hogſheads of molaſſes; 4667 bags of ginger; 600 bags of cotton; and 327 gourds of aloes. But ſince that time this iſland has been much on the decline. The exports on an average for 1784, 1785, 1786, were only 9554 hogſheads of ſugar, 5448 puncheons of rum, 6320 bags of ginger, and 8331 bags of cotton, beſides ſmaller articles, as aloes, ſweetmeats, &c. That the dreadful ſucceſſion of hurricanes, with which it has pleaſed the Almighty to viſit this, and the other Weſt Indian iſlands, within the laſt twelve years, has contributed to this great defalcation, cannot be doubted. The capital of this iſland was ſcarce riſen from the aſhes to which it had been reduced by two dreadful fires, when it was torn from its foundation, and the whole country made a ſcene of deſolation, by the ſtorm of the 10th of October, 1780, in which no leſs than 4326 of the inhabitants (blacks and whites) miſerably periſhed, and the damage to the country was computed at 1,320,564l. 15s. ſterling. When Barbadoes was firſt ſettled, ſome of the planters, for the convenience of carriage to the ſea-ſide, at firſt procured camels; which undoubtedly would in all reſpects have been preferable to horſes for their ſugar and other works; but the nature of the climate diſagreeing with that animal, it was found impoſſible to preſerve the breed. They then applied for horſes to Old and New England: from the former they had thoſe that were fit for ſhow and draught; from the latter thoſe that were proper for mounting their militia, and for the ſaddle. They had likewiſe ſome of an inferior breed from Curaſſao, and other ſettlements. They are reported to have had their firſt breed of black cattle from Bonaviſta and the iſle of May; they now breed upon the iſland, and often do the work of horſes. The hogs of Barbadoes are finer eating than thoſe of Britain, but the ſheep are not near ſo good. They likewiſe have goats, which when young are excellent food. A variety of birds are produced in Barbadoes, of which the humming bird is the moſt remarkable. Wild fowl do not often frequent this iſland; but ſometimes teal are found near their ponds. The tame pigeons, pullets, ducks, and poultry of all kinds, that are bred at Barbadoes, are accounted more delicious than thoſe of Europe. Their rabbits are ſcarce; they have no hares; and if they have deer of any kind, they are kept as curioſities. The mullets, and other ſea-fiſh, caught here are excellent; and the green turtle is perhaps the greateſt delicacy that ancient or modern luxury can boaſt of. At Barbadoes this delicious ſhell-fiſh ſeldom ſells for leſs than a ſhilling a pound, and often for more. There is found in this iſland a kind of land-crab which feeds on herbs and roots, and ſhelters itſelf in houſes and hollows of trees, and is excellent food. Flying fiſh are likewiſe ſold in the markets.

Barbadoes is divided into five diſtricts, and eleven pariſhes; and contains four towns, Bridgetown, Oſtins or Charleſtown, St. James's, and Spaights-town. The governor's chief reſidence is at Pilgrims, near Bridgetown: his ſalary 2000l. a year. The climate is very hot, but the air pure; and the heat is moderated by the conſtant trade-winds. Its products are, beſides thoſe mentioned above, tamarinds, figs, aloes, bananoes, cedar, maſtich, cacao, papas, guavas, and all other Weſt India fruits. Lat. 13. 10. N. lon. 59. W. Greenwich.

Barbadoes Baſtard-cedar. See Cedrela.

Barbadoes Cherry. See Malpighia.

Barbadoes Gooſeberry. See Cactus Pereskia.

Barbadoes Tar, (*Petroleum Barbadenſe,*) a mineral fluid of the nature of the thicker fluid bitumens, of a nauſeous bitter taſte, and very ſtrong and diſagreeable ſmell, found in many parts of America trickling down the ſides of the mountains, and ſometimes floating on the ſurface of the waters. It is viſcid, brown, black, or reddiſh; is not ſoluble in ardent ſpirit; eaſily melts; burns with much ſmoke; and contains a portion of acid of amber. It has been found very beneficial in coughs and other diſorders of the breaſt and lungs, and it is on this account that a ſolution of the flowers of ſulphur in this fluid, is included in the reviſed pharmacopœia of the London College, under the name of *petroleum ſulphuratum.*

Barabados Wild Olive. See Bontia.

BARBA'NA, a town of Iſtria, ſeven miles north-north-eaſt of Pola.

BARBA'NO, a ſmall iſland in the northern part of the Adriatic, near the coaſt of Friuli. Lat. 45. 45. N. lon. 31. 14. E. Ferro.

BAR'BARA, [Lat. foreign or ſtrange.] A proper name of Women.

Barbara, among logicians, the firſt mode of the firſt figure of ſyllogiſms. A ſyllogiſm in barbara is one whereof all the propoſitions are univerſal and affirmative; the middle term being the ſubject of the firſt propoſition, and attribute in the ſecond.

Ex. Bar. Every wicked man is miſerable;
ba. All tyrants are wicked men;
ra. Therefore all tyrants are miſerable.

BAR'BAREA, *ſ.* in botany. See Dentaria and Eryſimum.

BARBA'RIAN, *ſ.* [*barbarus,* Lat. It ſeems to have ſignified at firſt only a *foreigner;* but, in time, implied ſome degree of wildneſs or cruelty.] A man uncivilized; untaught; a ſavage:

Proud Greece all nations elſe *barbarians* held,
Boaſting, her learning all the world excell'd. *Denham.*

A foreigner. A brutal monſter; a man without pity: a term of reproach:

Thou fell *barbarian!*
What had he done? what could provoke thy madneſs
T' aſſaſſinate ſo great, ſo brave, a man? *A. Philips.*

Barbarian, *adj.* Belonging to barbarians; ſavage:

Some felt the ſilent ſtroke of mould'ring age,
Barbarian blindneſs. *Pope.*

BARBA'RIC, *adj.* [*barbaricus,* Lat. in a different ſenſe, it means in Latin *wrought, fretted.*] Foreign; far-fetched:

The gorgeous Eaſt, with richeſt hand,
Show'rs on her kings *barbaric* pearls and gold. *Milton.*

BAR'BARISM, *ſ.* [*barbariſmus,* Lat.] A form of ſpeech contrary the purity and exactneſs of any language.—The language is as near approaching to it, as our modern *barbariſm* will allow; which is all that can be expected. *Dryden.*—Ignorance of arts; want of learning.—The genius of Raphael having ſucceeded to the times of *barbariſm* and ignorance, the knowledge of painting is now arrived to perfection. *Dryden.*—Brutality; ſavageneſs of manners; incivility.—Moderation ought to be had in tempering and managing the Iriſh, to bring them from their delight of licentious *barbariſm* unto the love of goodneſs and civility. *Spenſer.*—Cruelty; barbarity; unpitying hardneſs of heart: *not now in uſe.*

They muſt perforce have melted,
And *barbariſm* itſelf have pitied him. *Shakeſpeare.*

BARBA'RITY, *ſ.* Savageneſs; incivility. Cruelty; inhumanity.—And they did treat him with all the rudeneſs, reproach, and *barbarity,* imaginable. *Clarendon.*—Barbariſm; impurity of ſpeech.—Latin expreſſes that in one word, which either the *barbarity* or narrowneſs of modern tongues cannot ſupply in more. *Dryden.*

BARBAROS'SA (Aruch, or Horuc, and Hayradie), two famous corſairs, the ſons of a potter in the iſle of Leſbos; who, turning pirates, carried on their depredations with ſuch ſucceſs and conduct, that they were ſoon poſſeſſed of twelve galleys, beſides ſmaller veſſels. Of this fleet Horuc the elder brother, called *Barbaroſſa* from the redneſs of his beard, was admiral, and Hayradin the ſecond in command; they called themſelves the *friends of the ſea,* and the *enemies of all who ſailed upon it;* and their names became terrible from the ſtraits of Dardanelles to thoſe of Gibraltar. With ſuch a power they wanted an eſtabliſhment; and the opportunity of ſettling themſelves offered in 1516, by the inconſiderate application of Eutemi king of Algiers to them for aſſiſtance againſt the Spaniards. Horuc, leaving his brother to command the fleet, carried 5000 men to Algiers, where he was received as their deliverer; and, ſecretly murdering the prince he came to aid, cauſed himſelf to be proclaimed king in his ſtead. To this uſurpation he added the conqueſt of Tremecen; when his exploits and piracies induced the emperor Charles V. to furniſh the marquis de Gomarez governor of Oran with troops to ſuppreſs him; by whom he was defeated and killed near Tremecen. His brother Hayradin, known alſo by the name of *Barbaroſſa,* aſſumed the ſceptre at Algiers with the ſame abilities, and with better fortune; for the Spaniards, ſufficiently employed in Europe, giving him no diſturbance, he regulated the interior police of his kingdom with great prudence, carried on his naval operations with vigour, and extended his conqueſts on the continent of Africa. He put his dominions under the protection of the grand ſignior, Solyman the Magnificent; and obtained the command of the Turkiſh fleet. With ſo powerful a protector, he acquired the kingdom of Tunis in a manner ſimilar to that by which his brother gained Algiers. Since the time of the Barbaroſſas, Algiers has been underſtood to be dependent on the Porte; but this dependence is little more than merely nominal. See Algiers.

BAR'BAROUS, *adj.* [*barbare,* Fr. βαρβαρος, Gr.] Stranger to civility; ſavage; uncivilized:

Thou art a Roman; be not *barbarous.* *Shakeſpeare.*

Ignorant; unacquainted with arts.—They who reſtored painting in Germany, not having thoſe reliques of antiquity, retained that *barbarous* manner. *Dryden.*—Cruel; inhuman.—By their *barbarous* uſage, he died within a few days, to the grief of all that knew him. *Clarendon.*

BAR'BAROUSLY, *adv.* Ignorantly; without knowledge or arts. In a manner contrary to the rules of ſpeech. Cruelly; inhumanly.

BAR'BAROUSNESS, *ſ.* Incivility of manners.—Excellencies of muſic and poetry are grown to be little more, but the one fiddling, and the other rhiming; and are indeed very worthy of the ignorance of the friar, and the *barbarouſneſs* of the Goths. *Temple.*—Impurity of language. Cruelty.

BAR'BARUS (Francis), a noble Venetian, and a man of great fame in the 15th century, not only for learning, but likewiſe for a ſkilful addreſs in the management of public affairs. He is author of a book *De Re Uxoria,* and ſome excellent ſpeeches.

Barbarus (Hermolaus), grandſon of the preceding, one of the moſt learned men in the 15th century. The public employments he was entruſted with early, did not prevent him from cultivating polite learning with great application. As he was very ſkilful in the Greek, he undertook the moſt difficult tranſlations, and began with a famous paraphraſe upon Ariſtotle. He then attempted Dioſcorides, whoſe text he corrected, and added a commentary. But of all his works, none gained him ſo much reputation as that which he made upon Pliny; he corrected in him above 5000 paſſages, and occaſionally reſtored 300 in Pomponius Mela. Pope Innocent VIII. to whom he was ambaſſador, conferred the patriarchate of Aquileia upon him.

BARBARUS (Daniel), of the ſame family with the preceding, was alſo patriarch of Aquileia, and famous for his learning. He was ambaſſador from Venice to England; and was one of the fathers of the council of Trent, wherein he ſhewed great zeal for the intereſt of the pope. He wrote, 1. A Commentary upon Vitruvius. 2. *Catena Græcorum Patrum in quinquaginta Pſalmos Latine verſa.* 3. *La Prattica della Perſpectiva.* He died in 1569, at forty-one years of age.

BAR'BARY, a very extenſive country of Africa, comprehending the ſtates of Morocco and Fez, Algiers, Tunis, Tripoli, and Barca. It forms the northern boundary of Africa, in its fulleſt extent; and ſtretches from Egypt on the eaſt, to the Atlantic Ocean on the weſt, including thirty-five degrees of longitude, or from ten degrees weſt to twenty-five degrees eaſt. Its northern part forms the ſouthern ſhore of the Mediterranean Sea, and is of a very irregular ſhape; in ſome parts approaching to the thirtieth degree of north latitude, and in others reaching beyond thirty-ſeven degrees. It is bounded on the ſouth by Sahara, or the great deſert; and is 1200 miles in length, and 320 in breadth; but the breadth is leſs or more in different places. On the Atlantic are the kingdoms of Morocco and Fez, and on the Mediterranean are Algiers, Tunis, Tripoli, and Barca. The northern parts of this country were probably firſt peopled by the Egyptians; but the early periods of the hiſtory of this extenſive region are involved in the greateſt obſcurity. The Phenicians very early ſent colonies hither, and built Utica and Carthage about 137 years before the foundation of Rome. Carthage was ſituated near the ſpot where Tunis now ſtands. The Carthagenians ſoon became powerful and wealthy by trade; and, finding the country divided by many petty princes, they either ſubdued them or made them tributary. As they advanced in power, moſt of the iſlands in the Mediterranean became ſubject to them; and the rich and extenſive kingdom of Spain alſo fell under their dominion. At length, the ambitious views of Carthage brought on a war with Rome; and they were finally ſubdued by that warlike people, 146 years before Chriſt.

Concerning the origin of the word Barbary, there are many conjectures. According to ſome, the Romans, after they had conquered the country, gave it that name out of contempt, according to their uſual cuſtom of calling all other people but themſelves *Barbarians*. Marmol, on the contrary, derives the word from *Berber*, a name given by the Greeks and Arabs to its ancient inhabitants, and which Bruce ſays ſignified *ſhepherd*; which was the original occupation of the natives, particularly in the interior, and near the mountains of Atlas. Others, however, derive it from the Arabic word *bar*, ſignifying a deſert, twice repeated; which was given by one Africus, a king of Arabia, from whom the whole continent of Africa is ſaid by ſome to have taken its name. According to them, this king being driven out of his own dominions, and cloſely purſued by his enemies, his retinue called out to him *Bar, bar*; that is, 'To the deſert, To the deſert;' from which the country was afterwards called *Barbary*.

Among the Romans this territory was divided into the provinces of Mauritania, Africa Propria, &c. and they continued abſolute maſters of it from the reign of Julius Cæſar, till the year of Chriſt 428. At that time Bonifacius, the Roman governor of theſe provincs, having through the treachery of Ætius been forced to revolt, called to his aſſiſtance Genſeric king of the Vandals, who had been ſome time ſettled in Spain. The terms offered, according to Procopius, were, that Genſeric ſhould have two-thirds, and Bonifacius one-third, of Africa, provided they could maintain themſelves againſt the Roman power; to accompliſh which, they were to aſſiſt each other to the utmoſt. This propoſal was inſtantly complied with; and Genſeric ſet ſail from Spain in May 428, with an army of 80,000 men, according to ſome, or only 24,000 according to others, with their wives, children, and all their effects. In the mean time the empreſs Placidia, having diſcovered the cauſe of Bonifacius's revolt, wrote a kind and obliging letter to him, in which ſhe aſſured him of her favour and protection, exhorting him to return to his duty, and exert his uſual zeal for the welfare of the empire, by driving out the Barbarians, whom the malice of his enemies had obliged him to call in for his own ſafety and preſervation. Bonifacius complied with this requeſt, and offered the Vandals conſiderable ſums if they would return to Spain. But Genſeric, already maſter of the greateſt part of the country, firſt returned an evaſive anſwer, and then, falling unexpectedly on him, cut moſt of his men in pieces, and obliged Bonifacius to fly to Hippo, which place he inveſted in May 430. The ſiege laſted till July the following year; when the Vandals were forced, by a famine that began to rage in their camp, to drop the enterprize, and retire. Soon after, Bonifacius having received two reinforcements, one from Rome, and the other, under the conduct of the celebrated Aſpar, from Conſtantinople, it was reſolved by the Roman generals to offer the enemy battle. The Vandals readily accepted the challenge: a bloody engagement enſued, in which the Romans were utterly defeated, a prodigious number of them taken, and the reſt obliged to ſhelter themſelves among the rocks and mountains. Aſper, who commanded the eaſtern troops, eſcaped with difficulty to Conſtantinople, and Bonifacius was recalled to Italy. Upon their departure, the Vandals over-ran all Africa, committing every where the moſt terrible ravages; which ſtruck the inhabitants of Hippo with ſuch terror, that they abandoned their city, which was plundered and burnt by the victorious enemy; ſo that Cirtha and Carthage were now the only ſtrong places poſſeſſed by the Romans.

In 435, Genſeric, probably being afraid of an attack by the united forces of the eaſtern and weſtern empires, concluded a peace with the Romans, who yielded to him part of Numidia, the province of Proconſularis, and Byzacene; for which, according to Proſper, he was to pay an yearly tribute to the emperor of the eaſt. Genſeric delivered up his ſon Hunneric by way of hoſtage; but ſo great was the confidence which the Romans placed in this barbarian, that they ſent back his ſon. Of this they had ſoon reaſon to repent; for in 439, the Romans being engaged in a war with the Goths, Genſeric embraced the opportunity to ſeize upon the city of Carthage; by which he conſiderably enlarged his African dominions. Genſeric now made Carthage the ſeat of his empire; and in 440 he attacked the iſland of Sicily, where he ravaged the open country, and laid ſiege to Palermo. But, not being able to reduce that place, he returned to Africa with an immenſe booty, and a vaſt number of captives. Being now become formidable to both empires, Theodoſius emperor of the eaſt reſolved to aſſiſt Valentinian emperor of Rome, againſt ſo powerful an enemy. Accordingly, he fitted out a large fleet of ſhips; and putting on-board the flower of his army, under the conduct of Arcovindas, Anſilus, and Germanus, he ordered them to land in Africa; and, joining the weſtern forces there, to drive Genſeric out of the countries he had ſeized. But, Genſeric in the mean time pretending a deſire to be reconciled with both empires, he amuſed the Roman general with propoſals of peace, till the ſeaſon for action was over; and, next year, Theodoſius being obliged to recal his forces to oppoſe the Huns, Valentinian was obliged to conclude a peace with the Vandals; and this he could obtain on no other terms than yielding to them the quiet poſſeſſion of the countries they had ſeized.

So powerful was Genſeric now become, or rather ſo reduced was the Roman empire, that in 455 he took and plundered the city of Rome; (which ſee under the article ROME;) and, after his return to Africa, he made himſelf maſter of the remaining countries held by the Romans in that part of the world. Afterwards Avitus, who had ſucceeded Valentinian, diſpatched ambaſſadors to

Genſeric, putting him in mind of the treaty he had concluded with the Roman empire in 442; and threatening, if he did not obſerve the articles at that time agreed upon, to make war upon him, not only with his own forces, but with thoſe of his allies the Viſigoths, who were ready to paſs over into Africa. To this Genſeric was ſo far from paying any regard, that he immediately put to ſea with a fleet of ſixty ſhips; but, being attacked by the Roman fleet under Ricimer, he was utterly defeated, and forced to fly back into Africa: he returned, however, ſoon after, with a more powerful fleet, committing great ravages on the coaſt of Italy: but in a ſecond expedition he was not attended with ſo much ſucceſs; the Romans falling unexpectedly upon his men, while buſied in plundering the country, put great numbers of them to the ſword, and among the reſt the brother-in-law of Genſeric. Majorianus, at that time emperor, now reſolved to paſs over into Africa, and attempt the recovery of that country. For this purpoſe he made preparations; but his fleet being ſurpriſed and defeated by the Vandals, through the treachery, it is ſaid, of ſome of his commanders, the enterpriſe miſcarried. Majorianus, however, perſiſted in his reſolution; and would probably have ſucceeded, had he not been murdered by Ricimer. After his death, Genſeric committed what ravages he pleaſed, and even made deſcents on Peloponneſus and the iſlands belonging to the emperor of Conſtantinople. To revenge this affront, Leo made vaſt preparations for the invaſion of Barbary, inſomuch, that, according to Procopius, he laid out 130,000 pounds weight of gold in the equipment of his army and navy. The forces employed were ſufficient for expelling the Vandals, had they been much more powerful than they were; but the command being given to Baſiliſcus, a covetous and ambitious man, the fleet was utterly defeated through his treachery, and all theſe vaſt preparations came to nothing. By this defeat the power of the Vandals in Africa became fully eſtabliſhed, and Genſeric made himſelf maſter of Sicily, and of all the other iſlands between Italy and Africa, without oppoſition from the weſtern emperors, whoſe power was entirely aboliſhed in the year 476. Thus was the Vandalic monarchy in Barbary founded by Genſeric, between the years 428 and 468. If we contemplate that prince's government in his new dominions, it preſents no very agreeable aſpect. Being himſelf an abſolute barbarian, and an utter ſtranger to every uſeful art, he did not fail to deſtroy all the monuments of Roman greatneſs which were ſo numerous in the country he had conquered. Whatever noble ſtructures the Romans had been at ſuch an immenſe expence to erect, in order to eternize their glory in this country, the Vandals were now at no leſs pains to reduce into heaps of ruins. Beſides this devaſtation, Genſeric made his dominions a ſcene of blood and ſlaughter, by perſecuting the orthodox Chriſtians; being himſelf a zealous Arian. He died in 477, after a reign of ſixty years; and was ſucceeded by his ſon Hunneric.

The new king proved a greater tyrant than his father, perſecuting the orthodox Chriſtians with the utmoſt fury; and, during his ſhort reign of ſeven years and an half, deſtroyed more than Genſeric had done in all his lifetime. He is ſaid to have died in the ſame manner as the hereſiarch Arius; prior to which his fleſh had been rotting upon his bones, and crawling with worms, ſo that he looked more like a dead carcaſe than a living man. Concerning his ſucceſſors Gutamund, Thraſamund, and Hilderic, we find nothing remarkable, except that they ſometimes perſecuted, and ſometimes were favourable to, the orthodox; and by his favour for them the laſt king was depoſed. For, having publiſhed, in the beginning of his reign, a manifeſto, wherein he repealed all the acts of his predeceſſors againſt the orthodox, a rebellion was the conſequence. At the head of the malcontents was Gilimer, or Gildemar, a prince of the blood-royal, who became ſo powerful as to depoſe Hilderic in the ſeventh year of his reign; after which he cauſed the unhappy monarch with all his family to be cloſely confined, and was himſelf crowned king of the Vandals at Carthage.

Gilimer proved a greater tyrant than any that had gone before him; inſomuch that he was held in univerſal abhorrence, when the Greek emperor Juſtinian projected an invaſion of Barbary. Notwithſtanding he was at that time engaged in a war with Perſia, he ſent a powerful fleet and army to Africa, under the command of the celebrated general Beliſarius, who was for that reaſon recalled from Perſia. So much was Gilimer taken up with his own pleaſures, that he knew little or nothing of the formidable preparations that were making againſt him. On the arrival of Beliſarius, however, he was conſtrained to put himſelf in a poſture of defence. The management of his army he committed to his two brothers Gundimer and Gelamund, who attacked the Romans at the head of a numerous army. The engagement was long and bloody; but the Vandals were defeated, and the two princes ſlain. Gilimer, grown deſperate at this news, ſallied out at the head of his corps de reſerve, reſolving to renew the attack with the utmoſt vigour; but by his own indiſcretion he loſt a fair opportunity of defeating the Romans. For no ſooner did they perceive Gilimer haſtening after them at the head of a freſh army, than they betook themſelves to flight; and the greateſt part were diſperſed in ſuch a manner, that, had the king purſued them, they muſt have been totally cut off. Inſtead of this, however, meeting with the body of one of his ſlain brothers, he ſpent his time in idle lamentations, and in burying the corpſe with pomp and dignity. By this means Beliſarius had an opportunity of rallying his men; which he did ſo effectually, that, coming unexpectedly upon Gilimer, he gained a new and complete victory over him. This defeat was followed by the loſs of Carthage, which the barbarians had been at no pains to put into a ſtate of defence. Gilimer, having in vain endeavoured to obtain aſſiſtance from the Moors and Goths, was now obliged to recal his brother Tzaſon from Sardinia. The meeting between them was very mournful; but they ſoon came to a reſolution of making one deſperate attempt to regain the loſt kingdom. This brought on another engagement, in which Tzaſon was killed with 800 of his choiceſt men, while the Romans loſt no more than fifty; after which Beliſarius, moving ſuddenly forward at the head of his army, fell upon the camp of the Vandals. Gilimer, without ſtaying to give any orders to his army, fled towards Numidia, in the utmoſt conſternation. His flight was not immediately known among his troops; but, when it was, they abandoned their camp to the Romans, who plundered it, and maſſacred all they found in it, except the women, whom they carried away captives.

Thus a total end was put to the power of the Vandals in Barbary, and the Romans once more became maſters of this country. The Vandal inhabitants were permitted to remain, on condition of exchanging the hereſy of Arius for the orthodox faith. As for Gilimer, he took ſhelter at Medamus, a town ſituated on the top of the Pappuan mountain, and almoſt inacceſſible by reaſon of its height and ruggedneſs. The ſiege of this place was committed to Pharas, an officer of great experience, who having ſhut up all avenues to the town, the unhappy Gilimer was reduced to the greateſt ſtraits. Pharas being appriſed of the diſtreſs he was in, wrote him a friendly and pathetic letter, earneſtly exhorting him to ſurrender. This Gilimer poſitively declined; and concluded his anſwer with a requeſt, that Pharas would ſend him a loaf of bread, a ſponge, and a lute. This ſtrange requeſt ſurpriſed Pharas; but it was explained by the meſſenger, who told him that the king had not taſted bread ſince his arrival on that mountain, and earneſtly longed to eat a morſel before he died; the ſponge he wanted to allay a tumour on one of his eyes; and the lute, on which he had learned to play, was to aſſiſt him in ſetting ſome elegiac verſes he had compoſed on the ſubject of his misfortunes, to a ſuitable tune.

Pharas could not refrain from tears, and immediately diſpatched the meſſenger with the things he wanted. Gilimer had ſpent near three winter months on the ſummit of this inhoſpitable mountain, his miſery hardening him ſtill more againſt the thoughts of ſurrendering, when a melancholy ſcene in his own family at once reſolved him to it. This was a violent ſtruggle between two boys, one of them his ſiſter's ſon, about a piece of dough laid on the coals; which the one ſeized upon, burning hot as it was, and clapped it into his mouth; but the other by dint of blows forced it out and ate it from him. This quarrel, which would have ended fatally had not Gilimer interpoſed, made ſo deep an impreſſion upon him, that he diſpatched a meſſenger to Pharas, acquainting him that he was willing to ſurrender with all his effects, upon the conditions offered, as ſoon as he was aſſured that they were accepted by Beliſarius. Pharas loſt no time to get them ratified and ſent back to him; after which Gilimer was conducted to Beliſarius, who gave him a very kind reception. Gilimer was afterwards brought before Juſtinian in golden chains, whom he beſought in the moſt ſubmiſſive manner to ſpare his life. This was generouſly granted by the emperor; who alſo allowed him a penſion to live upon as a private gentleman. But his ſpirits and heart were too much broken to enjoy the ſweets of private life; inſomuch that he died in the year 534, the firſt of his captivity, and five years after he had been raiſed to the throne.

Barbary being thus reduced by the arms of Juſtinian, it continued a province of the eaſtern Roman empire, and received its laws from Conſtantinople, until it was taken by the Saracen army, in the khalifat of Omar, as already related under the article ARABIA, p. 11, of this volume. It continued ſubject to the khalifs of Arabia and Bagdad till the reign of Harun al Raſhid, who having appointed Ibrahim Ebn Aglab governor of the weſtern parts of his empire, that prefect took the opportunity, firſt of aſſuming greater powers to himſelf than had been granted by the khalif, and then erecting a principality altogether independent of him. The race of Aglab continued to enjoy this new principality peaceably, till the year of the Hegira 297, during which time they made ſeveral deſcents on the iſland of Sicily, and conquered part of it. About this time, Obeidallah rebelled againſt the houſe of Aglab, and aſſumed the title of khalif of Kairwan (the ancient Cyrene, and reſidence of the Aglabite princes.) To give the greater weight to his pretenſions, he took the ſurname of Al Mohdi, or Al Mahedi, the director. According to ſome, alſo, he pretended to be deſcended from Ali Ebn Abu Taleb, and Fatema the daughter of Mahomet: for which reaſon, ſay they, the Arabs called him and his deſcendants *Fatemites*. He likewiſe encouraged himſelf and his followers by a tradational prophecy of Mahomet, that at the end of 300 years the ſun ſhould riſe out of the weſt. Having at length driven the Aglabites into Egypt, where they became known by the name of *Magrebians*, he extended his dominions in Africa and Sicily, making Kairwan the place of his reſidence.

In the 300th year of the Hegira, Habbaſah, one of Al Mohdi's generals, overthrew the khalif Al Mokhtader's forces in the neighbourhood of Barca, and made himſelf maſter of that city. After which he reduced Alexandria, and was making great progreſs in the conqueſt of the whole country, when Al Mokhtader diſpatched againſt him his two generals Takin and Al Kaſem, with an army of 100,000 men. Habbaſah, being informed that the khalif's troops were in motion, advanced at the head of his army to give them battle, and at laſt came up with them in an iſland called by the Arabs *Ard al Kamſin*. Here he attacked them with incredible bravery, notwithſtanding their forces were much ſuperior to his own, but the approach of night obliged both generals to retreat. The action was by no means deciſive, though extremely bloody, the khalif's generals having loſt 20,000 men, and Habbaſah 10,000. The latter, however, durſt not renew the fight, but ſtole off in the night, ſo that Al Mokhtader in effect gained a victory. In the 302d year of the Hegira, Habbaſah returned, poſſeſſed himſelf of Alexandria a ſecond time, defeated a body of the khalif's forces, and killed 7000 of them upon the ſpot. What farther progreſs he made at that time we are not certainly told; but in the 307th year of the Hegira, Abul Kaſem, ſon to the Fatemite khalif Al Mohdi, again entered Egypt with an army of 100,000 men. At firſt he met with extraordinary ſucceſs, and over-ran a conſiderable part of that fine country. He made himſelf maſter of Alexandria, Al Tayum, Al Banaſa, and the iſle of Al Aſhmaryin, penetrating even to Al Jizah, where the khalif's army under the command of Munes was poſted to oppoſe him. In this country he found means to maintain himſelf till the 308th year of the Hegira, when he was entirely defeated by Munes, who became maſter of all his baggage, as well as of the plunder he had acquired; and this obliged him to fly to Kairwan with the ſhattered remains of his army, where he remained without making any farther attempt on Egypt.

Al Mohdi reigned twenty-four years; and was ſucceeded by his ſon Abul Caſem above-mentioned, who then took the ſurname of *Al Kayem Mohdi*. During his reign we read of nothing remarkable, except the revolt of Yezid Ebn Condat, a man of mean extraction, but who, having been elevated to the dignity of chancellor, found means to raiſe ſuch a ſtrong party, that the khalif was obliged to ſhut himſelf up in the caſtle of Mohedia. Yezid, at the head of a powerful army, ſoon reduced the capital of Kairwan, the cities of Al Rakkada and Tunis, and ſeveral other fortreſſes. He was no leſs ſucceſsful in defeating a conſiderable number of troops which Al Kayem had ſent againſt him; after which he cloſely beſieged the khalif in the caſtle where he had ſhut himſelf up. The ſiege continued ſeven months; during which time the place was reduced to ſuch ſtraits, that the khalif muſt either have ſurrendered or been ſtarved, when death put an end to his anxiety in the 12th year of his reign, and 334th of the Hegira.

Al Kayen was ſucceeded by his ſon Iſhmael, who took the title of *Al Manſur*. This khalif thought proper to conceal the death of his father, till he had made the preparations neceſſary for reducing the rebels. In this he was ſo ſucceſsful, that he obliged Yezid to raiſe the ſiege of Mohedi the ſame year; and in the following gave him two ſignal overthrows, obliging him to ſhut himſelf up in the fortreſs of Kothama, or Cutama, where he beſieged him in his turn. Yezid defended the place with deſperate bravery; but, finding the garriſon at laſt obliged to capitulate, he eſcaped privately. Al Manſur diſpatched a body of forces in purſuit of him; who overtook, and brought him back in fetters; but not till after a vigorous defence, in which Yezid received ſeveral wounds, of which he died in priſon. After his death, Al Manſur cauſed his body to be flayed, and his ſkin ſtuffed and expoſed to public view. Al Manſur died after a reign of ſeven years and ſixteen days, in the 341ſt of the Hegira.

Al Manſur was ſuceeded by his ſon Abu Zammin Moad, who aſſumed the ſurname of *Al Moaz Ledinillah*. He was a warlike prince, and maintained a bloody conteſt with Abdalrahman, khalif of Andaluſia. In the 347th year of the Hegira, beginning March 25th, 958, Al Moez ſent a powerful army to the weſtern extremity of Africa, under the command of Abul Haſan Jawhar, one of his ſlaves, whom he had advanced to the dignity of vizir. Jawhar firſt advanced to Tahart, which he beſieged ineffectually. From thence he marched to Fez, and made the proper diſpoſition for attacking that city. But finding that Ahmed Ebn Becr, the emir of the place, was reſolved to defend it to the laſt, he thought proper to abandon the enterpriſe. However, having traverſed all the tract between that capital and the Atlantic ocean, he again ſat down before Fez, and took it by ſtorm the following year. But the greateſt atchievement of this khalif was his conqueſt of Egypt, and the removal of the khalifat to that country. This conqueſt, though long projected, he did not attempt till the year of the Hegira 358. Having then made all neceſſary preparations, he committed the care of that expedition to a faithful and experienced general called *Giafar* or *Jaafar*; but in the mean time, this enterpriſe did not divert Al Moez from the care of his other conqueſts, particularly thoſe of Sicily and Sardinia: to the laſt of which he ſailed in the year of the Hegira 361, continuing a whole year in it, and leaving the care of his African dominions to an experienced officer named Yuſef Ben Zeiri. He ſailed the following year for Tripoli, where he received the agreeable news that his general had made himſelf maſter of Alexandria. He immediately embarked for that city, leaving the government of his African dominions in the hands of his truſty ſervant Yuſef above-mentioned, and, arriving ſafely at that port, was received with every demonſtration of joy. Here he began to lay the foundation of his new Egyptian dynaſty, which was to put a final end to the old one of Kairwan, after it had continued about ſixty-five years.

From the era of the departure of Al Moez, we may date the commencement of the preſent abject and degenerated policy in the government of Barbary. Al Moez, indeed, for a time, preſerved his dominions of Kairwan, or Africa Proper; but the ambition or avarice of the governors he appointed ſuffered them to run quickly to decay. And, theſe governors in a ſhort time ſhaking off all controul, they ſoon began to ſet up for themſelves, licenſing and abetting every kind of lawleſs depredation, until the deſert became filled with banditti, and the whole maritime coaſt, from the Egyptian confines to the pillars of Hercules, now named Gibraltar, ſwarmed with pirates, inſomuch that they have ſince been diſtinguiſhed by the title of the *Piratical States*; for the more immediate and particular hiſtory of which, ſee ALGIERS, MOROCCO, FEZ, TUNIS, and TRIPOLI.

Theſe ſtates, under the Roman empire, were juſtly denominated the *garden of the world*; and to have a reſidence of there, was conſidered as the higheſt ſtate of luxury. The produce of their ſoil formed thoſe magazines, which furniſhed all Italy, and great part of the Roman empire, with corn, wine, and oil. Though the lands are now uncultivated, through the oppreſſion and barbarity of their conſtitution, yet they are ſtill fertile, not only in the above commodities, but in dates, figs, raiſins, almonds, apples, pears, cherries, plums, citrons, lemons, oranges, pomegranates, &c. Excellent hemp and flax grow on their plains; and, by the report of Europeans, who have lived there for ſome time, the country abounds with all that can add to the pleaſures of life. Neither the elephant nor the rhinoceros are to be found in the ſtates of Barbary; but their deſerts abound with lions, tigers, leopards, hyænas, and monſtrous ſerpents. The Barbary horſes were formerly very valuable, and thought equal to the Arabian; and, though their breed is now ſaid to be decayed, yet ſome very fine ones are occaſionally imported into England. Dromedaries, aſſes, mules, and kumrahs, a moſt ſerviceable creature, begot by an aſs upon a cow, are their beaſts of burden; but from the ſervice of the camel they derive the greateſt advantages. This uſeful quadruped enables the African to perform his long and toilſome journies acroſs that continent. The camel is, therefore, (ſays Mr. Bruce,) emphatically called the *ſhip of the deſert*. Their cows are but ſmall, and barren of milk; their ſheep yield but indifferent fleeces, but are very large, as are their goats. Bears, porcupines, foxes, apes, hares, rabbits, ferrets, weaſels, moles, cameleons, and all kinds of reptiles, are found here. Beſides vermin, ſays Dr. Shaw, in his Travels through Barbary, the apprehenſions we were under of being bitten or ſtung by the ſcorpion, the viper, or the venomous ſpider, rarely failed to interrupt our repoſe; a refreſhment ſo very grateful and ſo highly neceſſary to a weary traveller. Partridges and quails, eagles, hawks, and all kinds of wild-fowl, are found on this coaſt; and of the ſmaller birds, the caſpa-ſparrow is remarkable for its beauty, and the ſweetneſs of its note, which is thought to exceed that of any other bird; but it cannot live out of its own climate. The ſeas and bays of Barbary abound with the fineſt and moſt delicious fiſh of every kind, and were preferred by the ancients to thoſe of Europe.

The whole of Barbary is ſituated under the temperate zone. All the coaſt and mountains on the ſide of the Mediterranean, from the Straits of Gibraltar to Egypt, are rather cold than hot, and ſnow falls at certain times of the year: the rainy ſeaſon commences about the middle of October throughout all the country; the months of December and January are more ſevere, nevertheleſs the cold is not ſo great as to render a fire neceſſary: the cold diminiſhes from January, and the ſeaſon is then ſo inconſtant, that it often changes three or four times a day; the weſt and north winds blow with violence during the month of March. In April all the trees begin to bloom, and at the end of the ſame month they gather ripe cherries, in Fez, Algiers, and Tunis, and in ſome parts of Morocco. The inhabitants conſiſt of three different races of men: the Africans, natives; Turks, who come to ſeek their fortunes; and Arabians, who chiefly dwell in the deſerts. The Africans again are divided into whites and blacks: the former of which are thoſe who inhabit the ſeaports, and country along the coaſt; and the latter thoſe who reſide in the interior parts. In this country all foreigners are allowed the open profeſſion of their religion, but the inhabitants of the ſtates are Mahometans; and many ſubjects of Morocco follow the tenets of the Hamed, a modern ſectary, and an enemy to the ancient doctrine of the khalifs. All of them have much reſpect for idiots; whoſe protection in ſome caſes ſcreens offenders from puniſhment for the moſt notorious crimes. In the main, however, the Moors of Barbary, as the inhabitants of theſe ſtates are now promiſcuouſly called, (becauſe the Saracens firſt entered Europe from Mauritania, the country of the Moors,) have adopted the very worſt parts of the Mahometan religion, and ſeem to have retained only as much of it as countenances their vices. Adultery in women is puniſhed with death; but, though the men are indulged with a plurality of wives and concubines, they commit the moſt unnatural crimes with impunity. As the ſtates of Barbary poſſeſs thoſe countries that formerly went by the name of Mauritania and Numidia, the ancient African language is ſtill ſpoken in ſome of the inland countries, and even by ſome inhabitants of the city of Morocco. In the ſea-port towns, and maritime countries, a baſtard kind of Arabic is ſpoken; and ſea-faring people are no ſtrangers to that medley of living and dead languages, Italian, French, Latin, &c. that is ſo well known in all the ports of the Mediterranean, by the name of *Lingua Franca*.

Theſe ſtates, which formerly contained Carthage, and the pride of the Phœnician, Greek, and Roman, works, are replete with the moſt curious remains of antiquity. Some memorials of the Mauritanian and Numidian greatneſs are ſtill to be met with, and many ruins of cities which bear evidences of their ancient grandeur and populouſneſs. Theſe point out the old Julia Cæſarea of the Romans, which was little inferior in magnificence to Carthage itſelf. A few of the aqueducts of Carthage are ſtill remaining, but no veſtige of its walls. The ſame is the fate of Utica, famous for the retreat and death of Cato; and ſo overrun is the country with barbariſm, that their very ſcites are not known, even by their ruins, amphitheatres, and other public buildings, which remain ſtill in tolerable preſervation. Beſides thoſe of claſſical antiquity, many Saracen monuments, of the moſt ſtupendous magnificence, are likewiſe found in this vaſt tract; theſe were erected under the khalifs of Bagdad, and the ancient kings of the country, before it was ſubdued by the Turks, or reduced to its preſent form of government. Their walls form the principal fortifications in the country, both inland and maritime. We know of few or no natural curioſities belonging to this counry, except its ſalt-pits, which in ſome places take up an area of ſix miles. Dr. Shaw mentions ſprings found here that are ſo hot as to boil a large piece of mutton very tender in a quarter of an hour.

The lower ſubjects of theſe ſtates know very few imaginary wants, and depend partly upon their piracies to be ſupplied with neceſſary utenſils and manufactures; ſo that their exports conſiſt chiefly of leather, fine mats, embroidered handkerchiefs, ſword-knots, and carpets, which are cheaper and ſofter than thoſe in Turkey, though not ſo good in other reſpects. As they leave almoſt all their commercial affairs to the Jews and Chriſtians ſettled among them, the latter have eſtabliſhed ſilk and linen works, which ſupply the higher ranks of their own ſubjects. They have no ſhips that, properly ſpeaking, are employed in commerce; ſo that the French and Engliſh carry on the greateſt part of their trade. Their exports, beſides thoſe already mentioned, conſiſt of oſtrich-feathers, copper, tin, wool, hides, honey, wax, dates, raiſins, olives, almonds, gum-arabic, and ſandrac. The inhabitants of Morocco are likewiſe ſaid to carry on a conſiderable trade by caravans to Mecca, Medina, and ſome inland parts of Africa, from whence they bring back vaſt numbers of negroes, who ſerve in their armies, and are ſlaves in their houſes and fields. In return for their exports, the Europeans furniſh them with timber, artillery of all kinds, gunpowder, and whatever they want, either in their public or private capacities. The duties paid by the Engliſh in the ports of Morocco, are but half thoſe paid by other Europeans. It is a general obſervation, that no nation is fond of trading with theſe ſtates, not only on account of their capricious deſpotiſm, but the villainy of their individuals, both natives and Jews, many of whom take all opportunities of cheating, and when detected are ſeldom puniſhed.

In this country, no regular form of government can be ſaid to exiſt. The emperors have for ſome ages been parties, judges, and even executioners with their own hands, in all criminal matters; nor is their brutality more incredible than the ſubmiſſion with which their ſubjects bear it. In the abſence of the emperor, every military officer has the power of life and death, and it is ſeldom that they mind the form of a judicial proceeding. Some veſtiges, however, of the khalifate government ſtill continue; for in places where no military officer reſides, the mufti or high-prieſt is the fountain of all juſtice, and under him the cadis, or civil officers, act as our juſtices of the peace. Though the emperors are not immediately ſubject to the Porte, yet they acknowledge the grand ſignior to be their ſuperior, and pay him a diſtinct allegiance, as the chief repreſentative of Mahomet.

It is very remarkable, that though the Carthagenians, who inhabited Barbary, had greater fleets and a more extenſive commerce than any other nation, or than all the people upon the face of the earth, when that ſtate flouriſhed, the preſent inhabitants had ſcarcely any merchant-ſhips belonging to them, or indeed any other than what Sallee, Algiers, Tunis, and Tripoli, fit out for piracy; which, though increaſed ſince the laſt attack of the Spaniards, are now but few and ſmall, in compariſon with their neighbours; and ſome years ago they did not exceed ſix ſhips, from thirty-ſix to fifty guns each. The admiral's ſhip belongs to the government; the other captains are appointed by private owners, but ſubject to military law. Is it not ſurpriſing, that, with ſuch a contemptible fleet, theſe infidels not only haraſs the nations of Europe, but oblige them to pay a kind of tribute by way of preſents?

BARBASO'TE, a ſea-port town of Africa, in the kingdom of Fez, a little to the weſt of Ceuta.

BARBATEL'LI (Bernardino), called *Pochetti*, a painter of hiſtory, fruit, animals, and flowers, was born at Florence in 1542. He was the diſciple of Ridolfo Ghirlandaio at Florence; from which ſchool he went to Rome, and ſtudied there with ſuch uncommon aſſiduity, that he was frequently ſo engroſſed by the objects of his contemplation, as to forget the neceſſary refreſhments of ſleep and food. He was excellent in painting every ſpecies of animals, fruit, or flowers; and in thoſe ſubjects not only imitated, but equalled, nature. His touch was free, light, and delicate, and his colouring inexpreſſibly true. The hiſtorical ſubjects which he deſigned from ſacred or profane authors, were much eſteemed and admired. He died in 1612.

BARBA'TO, a river of Spain, which runs into the Atlantic, between Cadiz and the Straits of Gibraltar, about nine leagues ſouth of Cadiz.

BARBATO, or PUERTO BARBATO, a ſeaport town of Spain, in Andaluſia, on the coaſt of the Atlantic, near the mouth of the river Barbato.

BA'RBE, *ſ.* in the military art. To fire in barbe, means to fire the cannon over the parapet, inſtead of firing through the embraſures; in which caſe, the parapet muſt not be above three feet and a half high.

BARBEAU', a river of Canada, which runs into the Eutwas. Lat. 45, 15. N. lon. 76. 20. W. Greenwich.

BAR'BEL, *ſ.* in ichthyology. See CYPRINUS.

BAR'BELA, or VERBELA, a river of Africa, which joins the Zaira, near its mouth.

BARBELICO'TÆ, an ancient ſect of Gnoſtics, ſpoken of by Theodoret. Their doctrines were abſurd, and their ceremonies abominable. The doctrine of the Barbelicotæ was, that one of the æons, poſſeſſed of immortality, had commerce with a virgin ſpirit named *Barbeloth*, who demanded of him, firſt preſcience, then incorruptibility, and laſtly eternal life; all of which were granted to her: that one day, being in a gayer humour than ordinary, ſhe conceived, and afterwards brought forth light, which, being perfected by the unction of the ſpirit, was called *Chriſt*. The child Chriſt deſired to have underſtanding, νȣν, and obtained it: after which, underſtanding, reaſon, incorruptibility, and Chriſt, united together; and from their union aroſe autogenes, αὐλογενης. To theſe fables they add divers others. They were alſo denominated *Barbariani*.

BAR'BER, *ſ.* [from *To barb.*] A man who ſhaves the beard:

> Thy boiſt'rous looks,
> No worthy match for valour to aſſail,
> But by the *barber's* razor beſt ſubdu'd. *Milton.*

The barbers were incorporated with the ſurgeons of London; but not to practiſe ſurgery, except drawing of teeth, &c. 32 Hen. VIII. c. 42. but ſeparated by 18 Geo. II. c. 15. See SURGEON.

To BARBER, *v. a.* To dreſs out; to powder.

BARBER-CHIRURGEON, *ſ.* A man who joins the practice of ſurgery to the barber's trade; ſuch as were all ſurgeons formerly, but now it is uſed only for a low practiſer of ſurgery.—He put himſelf into *barber-chirurgeons* hands, who, by unfit applications, rarefied the tumour. *Wiſeman.*

BARBER-MONGER, *ſ.* A word of reproach, which ſeems to ſignify a fop; a man decked out by his barber.—Draw, you rogue; for, though it be night, the moon ſhines; I'll make a ſop of the moonſhine of you; you whoreſon, cullionly, *barber-monger*, draw. *Shakeſpeare.*

BARBERA'NO, a town of Italy, in the eſtate of the Church, and the province of Patrimonio; ſix miles from Bieda.

BAR'BERIAN', an iſland on the Indian Ocean: fifteen leagueſt weſt from Ceylon. Lat. 6. 24. N. lon. 80. E. Greenwich.

BARBERI'NI (Francis), one of the moſt excellent poets of his age, was born at Barberino in Tuſcany, in 1264. As his mother was of Florence, he ſettled in that city; where his profeſſion of the law, but eſpecially the beauty of his poetry, raiſed him a very conſiderable character. The greateſt part of his works are loſt; but that which is entitled the Precepts of Love, which is a moral poem calculated to inſtruct thoſe in their duty who have a regard for glory, virtue, and eternity, has had a better fate. It was publiſhed at Rome, adorned with beautiful figures, in 1640, by Frederic Ubaldini: he prefixed the author's life; and, as there are in the poem many obſolete words, he added a gloſſary to explain them, which illuſtrates the ſenſe by the authority of contemporary poets.

BARBERI'NO, a town of Italy, in the duchy of Tuſcany, ſituated on a mountain, ſixteen miles ſouth of Florence.

Barberino, a town of Italy, in the duchy of Tuſcany, at the foot of the Apennines, on the ſide of the river Sieve, four miles weſt of Scarperia.

BAR'BERRY, *ſ.* in botany. See Berberis.

BARBESIEUX', a town of France, and principal place of a diſtrict in the department of the Charente. It had formerly a caſtle, which was deſtroyed by the Engliſh. Near it is a medicinal ſpring: five poſts ſouth-ſouth-weſt of Angouleſme, and ſixty-three and a half ſouth-ſouth-weſt of Paris. Lat. 45. 28. N. lon. 17. 31. E. Ferro.

BARBESUL', anciently a town and river of Bœtica, and a colony in the reſort of the Conventus Gaditanus in Spain, now *Marbella* in Grenada.

BAR'BET, *ſ.* in natural hiſtory, a name given by M. Reaumur, and other of the French writers, to a peculiar ſpecies of the worms which feed on the pucerons or aphides. See Aphis.

BAR'BETS, the name of the inhabitants of ſeveral valleys in Piedmont, particularly thoſe of Lucern, Angrona, Peruſa, and St. Martin.

BARBEYRAC' (John), was born at Beſiers, in Languedoc, in 1674. He was made profeſſor of law and hiſtory at Luſanne in 1710: which he enjoyed for ſeven years, and during that period was three times rector: in 1717, he was profeſſor of public and private law at Groningen. He tranſlated into French the two celebrated works of Puffendorf, his Law of Nature and Nations, and his Duties of a Man and a Citizen; to both which he added excellent notes, and to the former, an introductory preface. He alſo tranſlated Grotius's treatiſe *De Jure Belli ac Pacis*, with large and excellent notes; and ſeveral of Tillotſon's ſermons; and he wrote a work intitled *Traité de Jeu*, 2 vols. 8vo.

BAR'BICAN. See Barbacan.

BAR'BICANAGE, *ſ.* [*barbicanagium*, Lat.] Money given for the maintainance of a *barbican* or watch-tower; or a tribute towards the repairing or building a bulwark. 17 Edw. III. *Monaſticum, tom.* i. *p.* 976.

BARBIE'RI, (Giovanni Franceſco), otherwiſe called *Guercino de Cento*, an eminent hiſtorical painter, was born at Cento, near Bologna, in 1590. At firſt he was the diſciple of Benedetto Genari; but he afterwards ſtudied in the ſchool of the Caracci, though he did not adopt the manner of that famous academy. He preferred the ſtyle of Caravaggio to that of Guido or Albano, imagining it impoſſible to imitate nature without the aſſiſtance of ſtrong lights and ſtrong ſhadows; and, from that principle, his light was admitted into his painting-room from above. In effect, by the oppoſition of his ſtrong lights and ſhades, he gave ſuch force to his pictures, that few, except thoſe of Caravaggio, can ſtand near them, and not ſeem feeble in their effect: however, that manner is cenſured, becauſe by it objects appear as if they were ſeen by candle-light, or by the brightneſs of a ſun-beam, which alone can juſtify the deepneſs of his ſhadowing. The principal attention of Guercino ſeems to have been perfection in colouring; as if he were convinced, that few are qualified to diſcern the elevation of thought, which conſtitutes the excellence of a compoſition; few may be touched with the grandeur or beauty of the deſign, or perhaps have a capacity to examine even the correctneſs of any part of a painting; yet every eye, and every imperfect judge of a picture, may be ſenſibly affected by the force and beauty of the colouring. His taſte of deſign was natural, eaſy, and often grand, but without any extraordinary ſhare of elevation, correctneſs, or elegance. The air of his heads often want dignity, and his local colours want truth; yet in all his pictures there is a powerful and expreſſive imitation of life, which will for ever render them eſtimable. Towards the decline of life, he obſerved that the clearer and brighter ſtyle of Guido and Albano had attracted the admiration of all Europe; and therefore he altered his manner, even againſt his own judgment. But he apologized for that conduct, by declaring that formerly he painted for fame, and to pleaſe the judicious; but now he painted to pleaſe the ignorant, and enrich himſelf. He died in 1666. The moſt capital performance of Guercino is the hiſtory of S. Petronilla, which is conſidered as one of the principal ornaments of St. Peter's at Rome.

Barbieri (Paolo Antonio), da Centor, painter of ſtill life and animals, was the brother of Guercino, born at Cento, in 1596. His ſubjects were fruit, flowers, inſects, and animals; which he painted after nature with a lively tint, great tenderneſs of pencil, and a ſtrong character of truth and life. He died in 1640.

BARBI'GEROUS, *adj.* [*barbam gerens*, Lat.] Having a beard, bearded.

BARBIL'LONS, *ſ.* in the natural hiſtory of inſects, are certain bodies, uſually two in number, placed under the creature's head, and moveable at pleaſure, ſomewhat reſembling hands or fingers placed on a ſhort or broken arm. The word is a diminutive of the French *barbe*, beard.

BARB'ING, *ſ.* is ſometimes uſed in ancient ſtatutes for ſheering. Cloth is not to be exported till it be *barbed*, rowed, and ſhorn. 3 Hen. VII. c. 11.

BAR'BITOS, or Barbiton, *ſ.* An ancient inſtrument of muſic, mounted with three, others ſay ſeven, ſtrings; much uſed by Sappho and Alcæus, whence it is alſo denominated *leſboum*. The barbitos is ſaid to have differed from the lyre and cithara; but wherein the preciſe difference lay, does not appear. Strabo makes it the ſame with the ſambuca. It is repreſented as yielding a grave, deep, ſound, and, on that account, peculiarly fitted for Doric compoſitions. Anacreon is ſaid to be the inventor of the barbitos.

BAR'BLES, or Barbs, *ſ.* in farriery, the knots of ſuperfluous fleſh that grow up in the channels of a horſe's mouth; that is, in the intervals that ſeparate the bars, and lie under the tongue. Theſe, which are alſo called *barbes*, obtain in black cattle as well as horſes, and obſtruct their eating. For the cure, they caſt the beaſt, take hold of his tongue, and clip off the barbles with a pair of ſciſſars, or cut them with a ſharp knife; others chooſe to burn them off with a hot iron.

BARBO'NI, *ſ.* in ichthyology, a name given by many to the *mullus barbatus*, a fiſh greatly eſteemed at table, and caught in the Mediterranean, and ſome other ſeas.

BARBON'NE, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Sezanne, one league and a half ſouth of Sezanne.

BARBO'SA (Auguſtine), a celebrated canon and civil law author, of Spain, died in 1645.

BARBOTI'NE, *ſ.* a ſeed, otherwiſe called *ſemen ſantonicum*, and *ſemen contra vermes*, in Engliſh, *wormſeed*.

BARBOUR' (John), archdeacon of Aberdeen, was an elegant poet in the reign of David I. He wrote the hiſtory of Robert Bruce, in an heroic poem, ſtill extant, and which contains many facts and anecdotes omitted by other hiſtorians. The lateſt edition of this book is that of Glaſgow, printed in 1672. It is intitled, "The Acts and Life of the moſt victorious Conqueror Robert Bruce King of Scotland; wherein alſo are contained the martial deeds of the valiant princes Edward Bruce, Sir James Dowglas, Earl Thomas Randal, Walter Steward, &c." In one paſſage, he calls it a *romance*; but that word was then of good reputation: every body knows that the 'Romant of romants' has been innocently applied to true hiſtory, as well as the 'Ballad of ballads' to a ſacred ſong.

BARBU'DA, one of the Caribbee iſlands, about ſeven leagues long, and four leagues wide: was planted ſoon after the Engliſh ſettled upon St. Chriſtopher's, and called *Dulcena*, from its beautiful appearance; the land lies low, but it is fertile, and the inhabitants are chiefly employed in breeding cattle, ſheep, kids, fowls, and other ſtock, which they diſpoſe of to the neighbouring iſlands; they likewiſe cultivate citrons, pomegranates, oranges, raiſins, Indian figs, maize, cocoa-nuts, pine-apples, pepper, indigo, &c. There are ſeveral ſpecies of ſerpents, ſome of which are harmleſs, and ſome exceedingly venomous: the iſland has no harbour, but a well-ſheltered road on the weſt ſide. Lat. 27. 50. N. lon. 61. 50. W. Greenwich.

BAR'BULÆ, *ſ.* [dim. of *barba*, Lat. a beard.] In botany, a name given by Pliny to the *ſemifleſcula*.

BAR'BY, a lordſhip of Germany, in the circle of Upper Saxony, of ſmall extent. It had anciently its particular counts, but from the failure of heirs it came to the elector of Saxony: it is at this time a bailiwick, and makes part of the circle of Wittenberg, being given 1748 and 1765 to the count of Reuſus, and the Society of United Brethren, or Moravians.

Barby, a town of Germany, in the circle of Upper Saxony, ſituated on the Elbe, near the mouth of the Saale, where there is a Moravian academy, for the inſtruction of youth: fourteen miles north-weſt of Deſſau, and fourteen ſouth-ſouth-eaſt of Magdeburg. Lat. 51. 37. N. lon. 29. 37. E. Ferro.

BAR'BYLA, *ſ.* in botany, a name by which Theocritus, and other of the early writers, have called the common damaſk prune.

BAR'CA, a country of Africa, part of Barbary, lying to the weſt of Egypt, anciently called *Lybia*, at preſent belonging to the Turks, and governed by a ſangiac, dependant on the baſhaw, who reſides at Tripoli. The climate is very unequal; along the coaſts the land is fertile, and well peopled. The chief towns are Derna, the capital and reſidence of the ſangiac, Tolomata, and Grena, or Curen. The interior part is a dry ſandy deſert; on which account the Arabs call it *Sahart*, or *Ceyart Barka*, that is, the deſert or road of whirlwinds or hurricanes. It labours under a great ſcarcity of water; and except in the neighbourhood of towns and villages, where the ground produces ſmall quantities of millet and maize, the reſt is in a manner barren and uncultivated, or, to ſpeak more properly, uncultivable: and even of that ſmall quantity which thoſe ſpots produce, the poor inhabitants are obliged to exchange ſome part with their indigent neighbours, for dates, ſheep, and camels, which they ſtand in ſtill greater need of, by reaſon of their ſcarcity of graſs and other proper food; for want of which, thoſe cattle that are brought to them ſeldom thrive or live long. In this country was erected the famed temple of Jupiter Ammon; and, notwithſtanding the pleaſantneſs of the ſpot where it ſtood, this part is ſaid to have been the moſt dangerous of any, being ſurrounded with ſuch quick and burning ſands as are very dangerous to travellers; not only as they ſink under their feet, but being light, and heated by the ſun, are eaſily raiſed by every breath of wind; which, if it chances to be in their faces, almoſt blinds and ſtifles them; or, if vehement, often overwhelms whole caravans. Againſt this temple Cambyſes king of Perſia diſpatched an army of 50,000 men. They ſet out from Thebes in Upper Egypt, and under the conduct of proper guides reached the city of Oaſis, ſeven days journey from that place: but what was their fate afterwards is uncertain; for they never returned either to Egypt or to their own country. The Ammonians informed Herodotus, that, after the army had entered the ſandy deſert which lies beyond Oaſis, a violent wind began to blow from the ſouth at the time of their dinner, and raiſed the ſand in ſuch tremendous clouds, that the whole army was overwhelmed and buried alive. In this deſert dwell ſome of the moſt abject tribes of the wandering Arabs, called *Bedouins*. By them this deſolate tract was firſt inhabited. At their firſt coming in, they ſettled themſelves in one of the beſt places of the country; but as they multiplied, and had frequent wars with one another, the ſtrongeſt drove the weakeſt out of the beſt ſpots, and ſent them to wander in the deſert parts, where they live in the moſt miſerable manner. Hence it is that they are ſaid to be the uglieſt of all the Arabs: their bodies having ſcarcely any thing but ſkin and bone, their faces meagre, and their looks fierce and ravenous. They are expert and reſolute robbers, on which their livelihood chiefly depends. Thoſe that fall into their hands are made to drink plenty of warm milk: then they hang them up by the feet, and ſhake them, in order to make them vomit up any money they think they have ſwallowed; after which, they ſtrip them of all their clothes; yet with all this inhumanity, they generally ſpare their life. For the hiſtory of this ſingular people, ſee the article Bedouins.

Barca-longa, *ſ.* A large Spaniſh fiſhing-boat, navigated with lug-ſails, and having two or three maſts. Theſe are very common in the Mediterranean.

BARCALON', *ſ.* An appellation given to the prime miniſter of the king of Siam. The barcalon has in his department every thing relating to commerce, both at home and abroad. He is likewiſe ſuperintendant of the king's magazines.

BARCA'RIUM, *ſ.* [*barcaria*, Lat.] A ſheep-cote, and ſometimes uſed for a ſheep-walk. *MS. de Placit.* Edw. III.

BARCARO'TA, a town of Spain, in Eſtramadura, four miles from Almendral.

BARCELO'NA, a city and ſea-port of Spain, capital of Catalonia, and ſee of a biſhop, ſuffragan of the archbiſhop of Taragona; it is ſaid to have been built by the Carthagenian Hamilcar, the father of Hannibal, 250 years before Chriſt, and is now one of the largeſt and handſomeſt cities in Spain: its population is in proportion to its ſize, and the induſtry of the inhabitants far exceeds that of other parts of Spain. It is built in the form of a ſemicircle, on the bank of the ſea, in a large plain, and is divided into Old and New Town, ſeparated from each other by a wall, and the whole defended by thick walls, baſtions, hornworks, large and lofty ramparts, and deep ditches; with a citadel built on a mountain called *Montjoui*; it is however too-extenſive to be eaſily guarded and defended, on which account it has always been taken when attacked. In the year 1640, the Catalans, having ſhaken off the yoke of the Spaniards, called in the French, who continued maſters of Barcelona till 1652, when it was retaken during the civil wars of France, after a ſiege of fifteen months. In 1697, it was again taken by the French, under the command of the duke de Vendome, and reſtored the ſame year by the peace of Ryſwick. Notwithſtanding the inhabitants of Barcelona took the oath of fidelity to the king of Spain, Philip V. in perſon, and received from him a confirmation of their privileges, they invited the Engliſh and Dutch, and the governor was obliged to ſurrender up the town in 1705, when Charles, afterwards emperor, was received and proclaimed king. The year following, Philip, aſſiſted by the French, aſſailed the town, and took the fortreſs of Montjoui; but, the fleet of the allies coming to the ſuccour of the beſieged, he was compelled to abandon the enterprize, and retire, May 12th, 1706. By the treaty of Utrecht, in 1713, the troops of the emperor evacuated Catalonia, but the inhabitants of Barcelona perſiſted in their revolt, and would not acknowledge Philip for their king; they ſuffered a blockade for a year, which was followed by a terrible bombardment, and in fine, after a ſiege of ſixty-two days, from the opening of the trenches by the duke of Berwick, the town was taken by aſſault the 11th of September, 1714. By the moderation of the conqueror, the town was ſaved from pillage, but the privileges of the inhabitants were taken away; theſe however have ſince been re-eſtabliſhed; but a citadel was erected in 1715, to keep them in awe. Barcelona contains ſeveral fine edifices; that called the Terſana, or the arſenal, is of vaſt extent; a prodigious gallery, containing twenty-eight forges, has been erected in it within a few years. The cathedral, the church of Notre Dame, the exchange, biſhop's palace, the palace of the governor, of the inquiſition, &c. are all magnificent. About twenty years ago, a very large cannon foundery was eſtabliſhed in this city, under the care of Mr. Maritz, a Swiſs. Barcelona carries on an extenſive trade in its own fruits, and manufactures of glaſs, ſwords, knives, &c. and foreign merchandize. The harbour is ſpacious, commodious, and always full of veſſels, but it is ſometimes dangerous: it daily fills up, and requires continual care, and an immenſe expence, to keep the entrance open: the ſea viſibly retires, and, if the clearing of the harbour was neglected for a few years, Barcelona would ſoon be at a diſtance from the ſhore. It is defended on one ſide from the winds by Montjoui, which runs into the ſea in the form of a promontory, and on the other by a mole 300 paces in length. The port of Barcelona exports its ſilks, middling cloths, and cotonades, wines, brandies, and other productions; and, if we wiſh to judge of the part the Catalonians take in this commerce, it muſt be obſerved, that in 1782, out of 628 veſſels which entered Barcelona, 317 belonged to Spain. It is true that ſilks from Lyons, ſtockings from Nimes, ſeveral kinds of ſtuffs and cottons, notwithſtanding the prohibition, and particularly dried cod, an article for which Spain pays annually to the Engliſh three millions of piaſtres, paſs into Catalonia by the ſame port. Barcelona was erected into a county by Charlemagne, and became an independent ſovereignty in the year 884. The king of Spain is called the count of Barcelona. The dioceſe contains 213 pariſhes, beſides eight in the city: Barcelona is ſituated thirteen leagues eaſt-north-eaſt of Taragona, and ninety-two eaſt-north-eaſt of Madrid. Lat. 41. 23. N. lon. 18. 45. E. Peak of Teneriffe.

BARCELONET'TA, a town of France, and principal place of a diſtrict, in the department of the Lower Alps. It anciently belonged to Piedmont, and was ceded to France in the year 1713. It is ſituated on the right bank of the Ubaye, in a valley of excellent paſturage: four leagues ſouth-eaſt of Embrun, and eight and a half north-north-eaſt of Digne. Lat. 44. 23. N. lon. 24. 18. E. Ferro.

BARCELONETTA, or CUMANYOTTO, a town of South America, in the county of Terra Firma, and principal place of a diſtrict, in the province of Cumana.

BARCELON'NE, a town of France, in the department of the Girs, and chief place of a canton in the diſtrict of Nogaro, ſituated on the Adour: it contains about two thouſand inhabitants: three leagues ſouth-weſt of Nogaro, and nine and a half weſt-north-weſt of Mirande.

BARCELOR', a ſeaport town of the Eaſt Indies, with a good harbour, on the coaſt of Malabar, between Goa and Mangalore. It is the capital of Canara, and formerly belonged to the Portugueſe, from whom it was taken by the Dutch. Lat. 15. 30. N. lon. 74. 14. E. Greenwich.

BARCELOS', a town of Portugal, in the province of Entre Duero e Minho, not far from the ſea, on the river Cavado: eight miles weſt of Braga.

BAR'CES, or BERCHES, *ſ.* were formerly a kind of ſhip-guns, not unlike ſakers, but ſhorter, thicker in the metal, and wider in the bore.

BAR'CHIN, a town of Perſia, in the province of Kerman: 120 miles ſouth-eaſt of Sirgian.

BAR'CHUL, a town of Spain in the country of Granada: five leagues from Guadix.

BARCI'NO, anciently a town of the Terraconenſis in Spain, and capital of the Laletani. Now BARCELONA.

BAR'CLAY (Alexander), a learned monk in the reign of Henry VIII. He was educated in Oriel college, Oxford; and after leaving the univerſity he went abroad, and continued ſome time in France, Italy, and Germany, where he acquired a competent knowledge of the languages of thoſe countries. On his return to England, he became a Benedictine monk of Ely. On the diſſolution of that monaſtery, he obtained the vicarage of St. Matthew at Wokey in Somerſetſhire; and, in 1552, he was appointed rector of Allhallows, Lombard-ſtreet, London, which he lived to enjoy but a very ſhort time. He died at Croydon in June 1552. He is generally allowed to have been one of the politeſt writers of his time. He compoſed ſeveral original works: but was chiefly remarkable for his tranſlations from the Latin, Italian, French, and German, languages. His verſion from Salluſt of the war of Jugurtha is accurate, and not without elegance. His lives of ſeveral ſaints, in heroic verſe, are ſtill upubliſhed. His *Stultifera Navis*, or 'The Ship of Fools,' is the moſt ſingular of his performances. It was printed at London, 1509, in folio; and contains a variety of wooden plates, which are worthy the inſpection of the curious.

BARCLAY (William), a learned civilian, born in Aberdeenſhire, Scotland, in 1541. In 1573 he went to France, and at Bourges commenced ſtudent of civil law under the famous Cujacius. He was afterwards appointed profeſſor of civil law in the univerſity of Pont-à-Mouſſon, then firſt founded by the duke of Lorrain. That prince alſo made him counſellor of ſtate, and maſter of requeſts. He was next appointed profeſſor of civil law in the univerſity of Angers, where he died in 1605, and was buried in the Franciſcan church. He wrote elaborately in defence of the divine right of kings, in anſwer to Buchanan and others.

BARCLAY (John), ſon of the former, was alſo a great ſcholar, and much eſteemed for his writings. He publiſhed The Hiſtory of the Gunpowder Plot, the *Argenis*, and many tracts. He was invited to Rome by pope Paul V. and received a deal of civility from cardinal Bellarmin, though he had written againſt him. He died at Rome in 1621, while his *Argenis* was printing at Paris. This celebrated work has ſince gone through a great number of editions, and has been tranſlated into moſt languages.

BARCLAY (Robert), an eminent writer among the Quakers, the ſon of colonel David Barclay, was born at Edinburgh in 1648. He joined the Quakers in 1669, and diſtinguiſhed himſelf by his zeal and abilities in the defence of their doctrines. In 1676 he publiſhed his Apology for the Quakers; which is the moſt celebrated of his works, and eſteemed the ſtandard of the doctrine of the Quakers. The Theſes Theologicæ, which were the foundation of this work, and addreſſed to the clergy of what ſort ſoever, were publiſhed before the writing of the Apology, and printed in Latin, French, High Dutch, Low Dutch, and Engliſh. The dedication of his Apology to Charles II. is very remarkable for the uncommon frankneſs and ſimplicity with which it is written. From among many other extraordinary paſſages, we ſelect the following: "There is no king in the world who can ſo experimentally teſtify of God's providence and goodneſs; neither is there any who rules ſo many free people, ſo many true Chriſtians; which thing renders thy government more honourable, thyſelf more conſiderable, than the acceſſion of many nations filled with ſlaviſh and ſuperſtitious ſouls. Thou haſt taſted of proſperity and adverſity; thou knoweſt what it is to be baniſhed thy native country, to be over-ruled as well as to rule and ſit upon the throne; and, being oppreſſed, thou haſt reaſon to know how hateful the oppreſſor is both to God and man: if, after all thoſe warnings and advertiſements, thou doſt not turn unto the Lord with all thy heart, but forget him who remembered thee in thy diſtreſs, and give thyſelf up to follow luſt and vanity, ſurely great will be thy condemnation." He travelled with the famous Mr. William Penn through England, Holland, and Germany, and was every where received with the higheſt reſpect; for, though his converſation and behaviour were ſuitable to his principles, yet there was ſuch livelineſs and ſpirit in his diſcourſe, and ſuch ſerenity and cheerfulneſs in his deportment, as rendered him extremely agreeable. When he returned to his native country, he ſpent the remainder of his life in retirement. He died at Ury, in Scotland, on the 3d of October, 1690, in the forty-ſecond year of his age.

BARCLAY (Robert), member of parliament for the county of Kincardine, and great grandſon of Robert Barclay above-mentioned, was a man of extenſive information, and poſſeſſed of uncommon vigour, both of body and of intellect. Mr. Pennant, in his Tour in Scotland, vol. ii. p. 132, ſpeaking of Mr. Barclay, ſays, "This gentleman, by the example he ſets his neighbours in the fine management of his land, is a moſt uſeful and worthy character in his country: he has been long a peripatetic obſerver of the different modes of agriculture in all parts of Great Britain, his journies being on foot, followed by a ſervant, with his baggage, on horſeback. He has more than once walked to London; and, by way of experiment, has gone eighty miles in a day. He has reduced his remarks to practice, much to his honour and emolument: the barren heaths, which once ſurrounded him, are now converted into rich fields of wheat, beans, or oats. He was likewiſe a great planter. The land thus improved was originally heath; and even that which was arable produced moſt miſerable crops of poor and degenerate oats, and was, upon the whole, not worth two ſhillings an acre: but, in its preſent improved ſtate is worth twenty; and the tenants live on it twice as well as before the improvement. The firſt turnips for feeding cattle were raiſed by this gentleman; and the markets are now plentifully ſupplied with freſh beef. Before that period, freſh meat was hardly known in theſe parts during the winter and ſpring months, &c." Mr. Barclay may be conſidered as one of the greateſt benefactors of his country, having by his exertions, and his example, awakened in Scotland a ſpirit of improvement in agriculture, which giving a new, an honourable, and uſeful, direction, to the purſuits and character of his cotemporaries, has been productive of thoſe rapid improvements, which have enriched the inhabitants, and changed the face of that country. Such was the extent of his information, the energy of his character, and the ſuperiority of his powers, and ſo uſeful the direction in which they were employed, that he was looked up to with reſpect by men of the firſt rank and abilities; and his death was regretted as a public misfortune. He died on the 8th of April, 1797, at his ſeat at Ury, in Scotland.

BARCOCH'BAH, [Syr. of *bar*, a ſon, and *cochbah*, a ſtar.] The name of a Jewiſh impoſtor in the ſecond century, who applied to himſelf that prophecy of Balaam, Numb. xxiv. 17. *There ſhall come a ſtar out of Jacob*; and drew (as was foretold by the true Meſſiah) great numbers after him. The emperor Adrian, the better to repreſs the ſeditious ſpirit of the Jews, (which ſtill ſubſiſted, notwithſtanding the deſtruction of their city and temple by Titus, A. D. 70.) rebuilt Jeruſalem, A. D. 132, which he called Ælia Capitolina, and placed there a colony, and built alſo a temple to Jupiter Capitolinus, on the very place where the temple of God had ſtood. Upon which the Jews, under the conduct of Barcochbah, roſe up in arms againſt the Romans; and in that war had fifty cities demoliſhed; 985 of their beſt towns deſtroyed; and 580,000 men ſlain by the ſword, and, in the end of the war, A. D. 136, were baniſhed Judea on pain of death; and thenceforward the land remained deſolate of its old inhabitants. *Newton* and *Petavius*. A branch of hiſtory, the more worthy of our notice, as it contains a moſt exact fulfilment of our Saviour's prediction. Matt. xxiv. 15-28.

BAR'CONE, *ſ.* a ſhort broad veſſel, of a middle ſize, uſed in the Mediterranean ſea for the carriage of corn, wood, ſalt, and other proviſions, from one place to another.

BARD, *ſ.* [*bardd*, C. Brit. ſo called of *Bardus*, the ſon of Druis, who reigned over the Gauls.] A word denoting one who was a poet by profeſſion; and "who ſung of the battles of heroes, or the heaving breaſts of love." *Oſſian's Poems*, i. 37. The curioſity of man is great with reſpect to the tranſactions of his own ſpecies: and when ſuch tranſactions are deſcribed in verſe, accompanied with muſic, the performance is captivating. An ear, a voice, ſkill in inſtrumental muſic, and, above all, a poetical genius, are requiſite to excel in that complicated art. As ſuch talents are rare, thoſe who poſſeſſed them were highly eſteemed; and hence the profeſſion of a bard, which, beſides natural talents, required more culture and exerciſe than any other known art. Bards were capital perſons at every feſtival and at every ſolemnity. Their ſongs, which, by recording the atchievements of kings and heroes, animated every hearer, muſt have been the entertainment of every warlike nation. Demodocus is mentioned by Homer as a celebrated bard; and Phemius, another bard, is introduced by him deprecating the wrath of Ulyſſes as follows:

O king! to mercy be thy ſoul inclin'd,
And ſpare the poet's ever-gentle kind:
A deed like this thy future fame would wrong,
For dear to gods and men is ſacred ſong.
Self-taught I ſing; by heav'n, and heav'n alone,
The genuine ſeeds of poetry are ſown;
And (what the gods beſtow) the lofty lay,
To gods alone, and godlike worth, we pay.
Save then the poet, and thyſelf reward;
'Tis thine to merit, mine is to record. *Odyſſey*, viii.

Cicero reports, that at Roman feſtivals, anciently, the virtues and exploits of their great men were ſung. The ſame cuſtom prevailed in Peru and Mexico, as we learn from Garcilaſſo and other authors. Even the inhabitants of the Marian iſlands have bards, who are greatly admired, becauſe in their ſongs are celebrated the feats of their anceſtors. But in no part of the world did the profeſſion of bard appear with greater luſtre than in Gaul, in Britain, in Wales, and in Ireland. Wherever the Celtæ or Gauls are mentioned by ancient writers, we ſeldom fail to hear of their druids and their bards; the inſtitution of which two orders, was the capital diſtinction of their manners and policy. The druids were their philoſophers and prieſts; the bards, their poets and recorders of heroic actions: and both theſe orders of men ſeem to have ſubſiſted among them, as chief members of the ſtate from time immemorial. The Celtæ poſſeſſed, from very remote ages, a formed ſyſtem of diſcipline and manners, which appears to have had a deep and laſting influence. Ammianus Marcellinus gives them this expreſs teſtimony, that there flouriſhed among them the ſtudy of the moſt laudable arts; introduced by the bards, whoſe office it was to ſing in heroic verſe the gallant actions of illuſtrious men; and by the druids, who lived together in colleges or ſocieties, after the Pythagorean manner, and philoſophizing upon the higheſt ſubjects, aſſerted the immortality of the human ſoul.

So ſtrong was the attachment of the Celtic nations to their poetry and their bards, that amidſt all the changes of their government and manners, even long after the order of the druids was extinct, and the national religion altered, the bards continued to flouriſh. We find them, according to the teſtimonies of Strabo and Diodorus, before the age of Auguſtus Cæſar; and we find them remaining under the ſame name, and exerciſing the ſame functions as of old, in Wales, in Ireland, and in the north of Scotland, almoſt down to our own times. It is well known, that, in theſe countries, every *regulus* or chief had his own bard, who was conſidered as an officer of rank in his court.

Wales had certainly pre-eminence in the ſtyle and performances of its bards. The Welſh harp, being an inſtrument of great dignity and power, gave wonderful energy to their poems and ſongs. This union of muſic and poetry, clothed in ſimplicity, and addreſſed to the paſſions, ſeems to have influenced the ancient Welſh with an enthuſiaſm for native independence and liberty; which is the reaſon, it is ſaid, Edward I. made a general maſſacre of the Welſh bards. Their ſonnets and poetics not only celebrated to the heroic deeds of their princes and warriors, but ſerved to record the moſt ſimple occurrences in common life. The following is an example, of an untranſlated Englynion:

"Yn *Ffrainc* y mae gwîn yn ffraeth; yn *Llundain*,
  Mae llawnder cynnaliaeth;
Yn *Holand* 'menyn helaeth;
Y' *Nghymru*, Llymru a Llaeth." *Hugh Llwyn Cynvael.*

"The origin of this Englyn is as follows: Hugh Llwyd Cynvael was a poet, and lived at Cynvael, in Ardudwy, Merionethſhire, about the year 1620. When a young man, he made a ſtone-bench to put at his door; his ſiſter-in-law, or wife's ſiſter, was the firſt that ſat on it. Molly, ſaid he, you have had the maidenhead of this bench, and you muſt pay me three kiſſes for it. The demand was ſatisfied. Some time after, his wife died, whereon he went to London; leaving his ſiſter-in-law, now married, and her huſband, in poſſeſſion of the houſe. He entered into the army of Oliver Cromwell, wherein he had a commiſſion; and was in the army of general Monk at the reſtoration of Charles II. After having been from home a great many years, and grown old, he returned to his native country; and, going to his own houſe in a fine ſummer's evening, he ſaw his ſiſter-in-law, her huſband, and children (all grown up), ſitting on the ſtone-bench, eating flummery and milk *(llymru a llaeth)*; he aſked them in Engliſh if they would lodge him that night? but none of them knew a word of Engliſh; they, however, conjecturing what he wanted, ſhewed him a bed, the beſt in the houſe, and aſked him to partake of their fare; which he did; and, being ſatisfied, he, in Welſh, recited the above Englyn. What, then you are a Welſhman, my good friend? exclaimed his ſiſter-in-law. Yes, ſaid he, I am; it is many years ſince I had three kiſſes from the lady who firſt ſat on this bench! This made him known, and all was joy. He then took out of his pocket a large purſe filled with gold, and gave it to his ſiſter-in-law. Here, ſaid he, take this, as a reward for your hoſpitality to the old Engliſh ſtranger, who is now more than fourſcore years of age; he requires no more for it than a bed every night, and flummery and milk every day, whilſt he lives." See *Leges Wallicæ*, and Jones's *Relics of the Welſh Bards.*

The bards in Britain, as well as the druids, were exempted from taxes and military ſervice, even in times of the greateſt danger; and when they attended their patrons in the field, to record and celebrate their great actions, they had a guard aſſigned them for their protection. At all feſtivals and public aſſemblies they were ſeated near the perſon of the king or chieftain, and ſometimes even above the greateſt nobility and chief officers of the court. Nor was the profeſſion of the bards leſs lucrative than it was honourable. For, beſides the valuable preſents which they occaſionally received from their patrons when they gave them uncommon pleaſure by their performances, they had eſtates in land allotted for their ſupport. Nay, ſo great was the veneration which the princes of theſe times entertained for the perſons of their poets, and ſo highly were they charmed and delighted with their tuneful ſtrains, that they ſometimes pardoned even their crimes for a ſong; whence the old ſaying, "He had it, or he bought it, for a *ſong*."

Though the ancient inhabitants of the ſouthern parts of Britain had originally the ſame taſte and genius for poetry with thoſe of the north, yet none of their poetical compoſitions of this period have been preſerved. Nor have we any reaſon to be ſurpriſed at this; for, after they had ſubmitted to the Roman government, yielded up their arms, and had loſt their free and martial ſpirit, they could take little pleaſure in hearing or repeating the ſongs of their bards in honour of the glorious atchievements of their anceſtors. The Romans too, if they did not practiſe the ſame barbarous policy which was adopted by Edward I. of putting the bards to death, they would at leaſt diſcourage them, and diſcountenance the repetition of their poems for very obvious reaſons. Theſe ſons of the ſong being thus perſecuted by their conquerors, and neglected by their countrymen, either abandoned their country or their profeſſion; and their ſongs, being no longer heard, were ſoon forgotten.

It is probable that the ancient Britons, as well as many other nations of antiquity, had no idea of poems that were made only to be repeated, and not to be ſung to the ſound of muſical inſtruments. In the firſt ſtages of ſociety in all countries, the two ſiſter-arts of poetry and muſic ſeem to have been always united; every poet was a muſician, and ſung his own verſes to the ſound of ſome muſical inſtrument. This, we are told by two writers of credit, was the caſe in Gaul, and conſequently in Britain at this period. "The bards (ſays Diodorus Siculus) ſung their poems to the ſound of an inſtrument not unlike a lyre." "The bards (according to Marcellinus) celebrated the brave actions of illuſtrious men in heroic poems, which they ſung to the ſweet ſounds of the lyre." This account of theſe Greek and Latin writers is confirmed by many paſſages in the poems of Oſſian. "Beneath his own tree, at intervals, each bard ſat down with his harp. They raiſed the ſong, and touched the ſtring, each to the chief he loved."

The introduction of writing made a conſiderable change in the bard profeſſion. It is now an agreed point, that no poetry is fit to be accompanied with muſic but what is ſimple: a complicated thought or deſcription requires the utmoſt attention, and leaves none for the muſic; or, if it divide the attention, it makes but a faint impreſſion. The ſimple operas of Quinault bear away the palm from every thing of the kind compoſed by Boileau or Racine. But when a language, in its progreſs to maturity, is enriched with variety of phraſes fit to expreſs the moſt elevated thoughts, men of genius aſpired to the higher ſtrains of poetry, leaving muſic and ſong to the bards: which diſtinguiſhed the profeſſion of a poet from that of a bard. Homer, in a lax ſenſe, may be termed a bard; for in that character he ſtrolled from feaſt to feaſt. But he was not a bard in the original ſenſe: he, indeed, recited his poems to crowded audiences; but his poems are too complex for muſic, and he probably did not ſing them, nor accompany them with the lyre. The Trovadores of Provence were bards in the original ſenſe, and made a capital figure in the days of ignorance, when few could read, and fewer write. In later times, the ſongs of the bards were taken down in writing, which gave every one acceſs to them without a bard; and thus the profeſſion ſunk by degrees into oblivion. It is not however improbable, but that the preſent office of poet laureat is a remnant of the old cuſtom of celebrating royal birth-days, and great feſtivals, with the ſongs and praiſes of the bards.

BAR'DA, or PAR'THA, a town of Germany, in the circle of Upper Saxony, and circle of Leipſic: two miles ſouth-weſt of Grimma.

BARDACH', or BARDA'CA, *ſ.* [*bardoche*, Fr. *baradaſcio*, Ital.] A boy kept for pleaſure, to be abuſed contrary to nature.

BARDA'NA, or BUR'DOCK. See ARCTIUM.

BARDARIO'TÆ, *ſ.* in antiquity, were a kind of guard attending the Greek emperors, armed with rods, wherewith they kept off the people from crowding too near the prince when on horſeback. Their captain, or commander, was denominated *primivergius*. The word was probably formed from the *barde*, or houſings on their horſes.

BAR'DAS, the brother of the empreſs Theodora, and uncle of the famous Photius, is ſaid to have had no other good quality but that of loving the ſciences and polite literature, which he eſtabliſhed in the eaſtern empire; for he was treacherous, cruel, and ambitious. In the year 856, he aſſaſſinated Theoctiſtes, general of the emperor Michael's forces, and obtained his poſt. At length he cauſed the diſgrace of the empreſs Theodora; and St. Ignatius, patriarch of Conſtantinople, reproaching him for his vices, he had him depoſed in 858, to make room for Photius. Bardas was aſſaſſinated by Baſilius the Macedonian, in 866.

BARD'ED, *adj.* in heraldry, is uſed in ſpeaking of a horſe that is capariſoned. He bears ſable, a cavalier d'or, the horſe *barded*, argent.

BARDE'SANISTS, a ſect of ancient heretics, thus denominated from their leader Bardeſanes, a Syrian of Edeſſa in Meſopotamia. Bardeſanes, born in the middle of the ſecond century, became eminent, after his converſion to Chriſtianity, for his zeal againſt heretics; againſt whom, we are informed by St. Jerome and Euſebius, he wrote a multitude of books: yet he had the misfortune to fall, himſelf, into the errors of Valentinus, to which he added ſome others of his own. He adopted the oriental philoſophy concerning the two principles: maintaining, that the ſupreme God is free from all evil and imperfection, and that he created the world and its inhabitants pure and incorrupt: that in proceſs of time the prince of darkneſs, who is the fountain of all evil and miſery, enticed men to ſin; in conſequence of which, the ſupreme God permitted them to be diveſted of thoſe ethereal bodies with which he had endued them, and to fall into ſluggiſh and groſs bodies formed by the evil principle: and that Jeſus deſcended from heaven, clothed not with a real but aerial body, in order to recover mankind from that body of corruption which they now carry about them; and that he will raiſe the obedient to manſions of felicity, clothed with aerial vehicles, or celeſtial bodies. Strunzius has given the hiſtory of the Bardeſaniſts.

BAR'DEWICK, a town of Germany, in the circle of Lower Saxony, on the Illmenau: ſuppoſed to be one of the moſt ancient towns of Germany. It was in a very proſperous ſtate, and the ſee of a biſhop, in the year 1189, when Henry the Lion, duke of Saxony and Brunſwick, took and razed it to the ground, becauſe the inhabitants would not acknowledge him after he had been proſcribed by the emperor Frederic I. The biſhopric was then removed to Verden; and the city of Luneberg received the advantages of trade and population in conſequence. It is four miles north of Luneberg.

BAR'DEWISCH, a town of Germany, in the circle of Weſtphalia, and county of Delmenhorſt, ſix miles north of Delmenhorſt.

BAR'DI, a town of Italy, in the Parmeſan, ſituated on a rock near the ſmall river Ceno, and capital of a marquiſate, to which it gives name: twenty-ſix miles weſt of Parma.

BAR'DIN, a town of Perſia, in the province of Segeſtan, thirty miles weſt-ſouth-weſt of Zareng.

BAR'DIS, a town of Egypt, and reſidence of a ſcheik, whoſe authority extends a conſiderable way along the Nile. It is ſix miles ſouth of Girge.

BAR'DO, a town of Piedmont, in the duchy of Aoſta, ſituated on the Doria Baltea, ſeventeen miles S.E. of Aoſta.

BARDONA'CHE, a town of Piedmont, in a valley, to which it gives name: ten miles north of Sezanne, and ſix weſt-north-weſt of Exilles.

BAR'DOP, a river of England, which runs into the Read, ſix miles north-weſt of Ellſdon in Northumberland.

BARD'SEY, an iſland in the Iriſh Sea, near the coaſt of Cardigan in Wales, and north bounds of Cardigan-bay, twelve leagues ſouth-ſouth-eaſt of Holyhead. Lat. 52. 58. N. lon. 54. 0. W. Greenwich.

BARDS'TOWN, a town of Kentucky, in the United States of North America, and chief place of the county of Nelſon, on the Beech-Fork river; about twenty-five miles from the Ohio. Lat. 37. 48. N. lon. 11. 0. W. Philadelphia.

BARDT, or Barth, a town of Germany, in the duchy of Pomerania, ſituated in a ſmall bay in the Baltic: thirty-two miles north-eaſt of Roſtock, and twelve weſt-north-weſt of Stralſund.

BAR'DUBITZ, or Pardubitz, a town of Bohemia, in the circle of Chrudim, celebrated for its manufactures, ſituated on the Elbe: ſix miles north of Chrudim.

BARE, *adj.* [*bare*, Sax. *bar*, Dan.] Naked; without covering.—In the old Roman ſtatues, the parts were always *bare*, and expoſed to view as much as our hands and face. *Addiſon.*—Uncovered in reſpect.—Though the lords uſed to be covered whilſt the commons were *bare*, yet the commons would not be *bare* before the Scottiſh commiſſioners; and ſo none were covered. *Clarendon.*—Unadorned; plain; ſimple; without ornament:

Yet was their manners then but *bare* and plain;
For th' antique world exceſs and pride did hate. *Spenſer.*

Detected; no longer concealed:

Theſe falſe pretexts and varniſh'd colours failing,
Bare in thy guilt, how foul thou muſt appear. *Milton.*

Poor; indigent; wanting plenty.—Were it for the glory of God, that the clergy ſhould be left as *bare* as the apoſtles, when they had neither ſtaff nor ſcrip; God would, I hope, endue them with the ſelf-ſame affection. *Hooker.*—Mere; unaccompanied with uſual recommendation.—Nor are men prevailed upon by *bare* words, only through a defect of knowledge; but carried, with theſe puffs of wind, contrary to knowledge. *South.*—Threadbare; much worn.—You have an exchequer of words, and no other treaſure for your followers; for it appears, by their *bare* liveries, that they live by your *bare* words. *Shakeſpeare.*—Wanting clothes; ſlenderly ſupplied with clothes. Sometimes it has *of* before the thing wanted or taken away:

Tempt not the brave and needy to deſpair;
For, though your violence ſhould leave them *bare*
Of gold and ſilver, ſwords and darts remain. *Dryden.*

"*Bare* walls make giddy (or rather idle) houſewives." That is, when women have no work at home, they are apt to gad abroad in queſt of diverſion; and ſo in time contract a habit of idleneſs. The French ſay, *Vuides chambres font les dames folles*; much to the ſame purpoſe. The Latins ſay, *Haud facile emergunt quorum virtutibus obſtat res anguſta domi.*

Bare, an iſland in the South Pacific Ocean, near the eaſt coaſt of New Ireland. It is high land, not fertile, but inhabited. Lat. 39. 56. S.

To Bare, *v. a.* To ſtrip; to make bare or naked:

For virtue, when I point the pen,
Bare the mean heart that lurks beneath a ſtar;
Can there be wanting, to defend her cauſe,
Lights of the church, or guardians of the laws? *Pope.*

The Roman women, in times of public diſtreſs and mourning, went bare-headed, with their hair looſe. Among both Greeks, Romans, and barbarians, we find a feaſt called *Nudipedalia.* The Abyſſinians always enter their churches bare-foot; ſo they do the palaces of kings and great men. *Barefoot Carmelites and Auguſtines*, are religious of the order of St. Carmel and St. Auſtin, who live under a ſtrict obſervance, and go without ſhoes like the capuchins. There are alſo barefoot fathers of mercy. Formerly there were barefoot dominicans, and even barefoot nuns of the order of St. Auguſtin.

Bare, or Bore. The preterite of *To* Bear.

BA'REBONE, *ſ.* [from *bare* and *bone.*] Lean, ſo that the bones appear.—Here comes lean Jack, here comes *barebone. Shakeſpeare.*

BARE'E, a province of Hindoſtan, in the country of Lahore, between the rivers Rauvee, Beyah, and Setledge.

BA'REFACED, *adj.* [from *bare* and *face.*] With the face naked; not maſked.—Your French crowns have no hair at all, and then you will play *barefaced. Shakeſpeare.*—Shameleſs; unreſerved; without concealment; undiſguiſed.—It is moſt certain, that *barefaced* bawdry is the pooreſt pretence to wit imaginable. *Dryden.*

BAREFA'CEDLY, *adv.* Openly; ſhamefully; without diſguiſe.—Though only ſome profligate wretches own it too *barefacedly*, yet, perhaps we ſhould hear more, did not fear tie people's tongues. *Locke.*

BAREFA'CEDNESS, *ſ.* Effrontery; aſſurance; audaciouſneſs.

BA'REFOOT, *adj.* [from *bare* and *foot.*] Having no ſhoes.—Going to find a *barefoot* brother out. *Shakeſpeare.*

Barefoot, *adv.* Without ſhoes:

Ambitious love hath ſo in me offended,
That *barefoot* plod I the cold ground upon
With fainted vow. *Shakeſpeare.*

BAREFOOT'ED, *adj.* Being without ſhoes.—He himſelf, with a rope about his neck, *barefooted*, came to offer himſelf to the diſcretion of Leonatus. *Sidney.*

BAREGNAWN', *adj.* [from *bare* and *gnawn.*] Eaten bare:

Know my name is loſt,
By treaſon's tooth *baregnawn* and cankerbit. *Shakeſpeare.*

BAREHEAD'ED, *adj.* [from *bare* and *head.*] Uncovered in reſpect.—Next, before the chariot, went two men *bareheaded. Bacon.*

BARELLIER' (John), a French dominican friar, much eſteemed for his botanical writings; died in 1673.

BAREL'LY, a town of Hindoſtan, in the province of Oude, forty-one miles ſouth-ſouth-eaſt of Lucknow.

BA'RELY, *adv.* Nakedly. Poorly; indigently. Without decoration. Merely; only; without any thing more.—Where the balance of trade *barely* pays for commodities with commodities, there money muſt be ſent, or elſe the debts cannot be paid. *Locke.*

BA'REN, a river of Germany, which runs into the Roer, near Schwiert, in the county of Marck, and circle of Weſtphalia.

Baren, a town of Swiſſerland, in the Valais, twenty-five miles eaſt of Sion.

BARE'NESS, *ſ.* Nakedneſs; leanneſs; poverty; meanneſs of clothes.

BA'RENFELS, a town of Germany, in the circle of Upper Saxony, and county of Erzgeburg, two miles weſt of Altenberg.

BA'RENSTEIN, or Bernstein, a town of Germany, in the circle of Upper Saxony, and margraviate of Meiſſen, ſeventeen miles ſouth of Dreſden.

BARENT' (Diteric), an excellent Dutch painter, born at Amſterdam. He ſtudied in Italy, and became the favourite diſciple of Titian, with whom he lived a long time; but at length returned to Amſterdam, where he produced many extraordinary pieces. He died in 1582, aged forty-eight.

BARENTIN', a town of France, in the department of the Lower Seine, three leagues north-weſt of Rouen.

BARENTON', a town of France, in the department of the Channel, and chief place of a canton, in the diſtrict of Mortain, ſituated at the ſource of the Ardée. The number of inhabitants about 2000; and it is ſeven leagues eaſt-ſouth-eaſt of Avranches, and one and three-quarters ſouth-eaſt of Mortain.

BARES, a naval officer of Perſia, who wiſhed to deſtroy Cyrene, but was oppoſed by Amaſis. *Herodotus.*

BARESUND', a ſea-port town of Sweden, in the province of Eaſt Gothland, between Nordkioping and Soderkioping.

BARET'TI (Joſeph), born at Turin about the year 1716. His father was an architect, from whom he received a good education, and at his death inherited ſome property, which, however, he diſſipated; he was thus reduced to turn author "in ſpite of his teeth, and (borrowing his own language) to keep them going." He travelled much, experienced many difficulties, and at length, with little money in his pocket, a ſlight knowledge of the language, and without any recommendation, bent his courſe towards England, where he arrived in the year 1750, and reſided (with a ſhort interval) the remainder of his life. Baretti had the good fortune to be introduced to Dr. Samuel Johnſon, and between them a very long intimacy took place. From the time of his arrival in England, he ſubſiſted by teaching the Italian language, and by the ſale of his writings. In 1760 he made a tour to Italy, through Portugal and Spain, and returned to England after an abſence of ſix years. In 1769 he embarked for Spain; on his return from whence, an event took place which hazarded his life at the time, and probably diminiſhed, in future, ſome of the eſtimation in which, until them, he had been held among his friends. On the 6th of October, returning from the Orange coffee-houſe, between ſix and ſeven o'clock, and going haſtily up the Haymarket, he was accoſted by a woman, who behaving with great indecency, he was provoked to give her a blow on the hand (as he declared) accompanied with ſome angry words. This occaſioned a retort from her, in which ſeveral opprobrious terms were uſed towards him; and three men, who appeared to be connected with the woman, immediately interfering, and endeavouring to puſh him from the pavement, with a view to throw him into a puddle, in order to trample on him, he was alarmed for his ſafety, and raſhly ſtruck one of them with a knife. He was then purſued by them all; and, another of them collaring him, he again ſtruck the aſſailant, Evan Morgan, with his knife ſeveral times, and gave him ſome wounds of which he died in the Middleſex Hoſpital the next day. Mr. Baretti was immediately taken into cuſtody, and at the enſuing ſeſſions tried at the Old Bailey. He made a moſt admirable defence; which, added to the bad reputation of his proſecutors, impreſſed the court much in his favour. He was acquitted of the murder, and of the manſlaughter: the verdict was ſelf-defence. After this unfortunate tranſaction he again ſat down to his ſtudies; and in 1770 publiſhed his travels, for which it is ſaid he received 500l. On the eſtabliſhment of the Royal Academy, he was appointed foreign ſecretary, a poſt of more honour than profit. He was, however, more ſucceſsful in the application of one of his friends for a penſion during lord North's adminiſtration: he obtained the ſum of 80l. a-year from government; which, though inſufficient for independence, relieved him from the apprehenſions of want. With the indolence which ſometimes accompanies old age, he became negligent, inattentive to the ſtate of his finances, ſpent the principal of his 500l. and, at the concluſion of his life, felt himſelf ſcarcely out of the gripe of poverty. He died May 5, 1789, without a ſtruggle or ſigh, the moment after taking a glaſs of wine, preſerving his faculties to the laſt moment.

BAREUTH'. See Bayreuth.

BAREUX', a town of France, in the department of the Lower Pyrenées, and chief place of a canton in the diſtrict of Mauleon: five miles ſouth-eaſt of Mauleon.

BARFLEUR', a ſea-port town of France, in the department of the Channel. It had formerly a good harbour, and a conſiderable trade, but through neglect the harbour is choaked with ſand, and the trade in conſequence decayed. It is four leagues and a half eaſt of Cherburg.

BAR'GA, a town of Italy, in the duchy of Tuſcany, on the river Serchio, two leagues from Lucca.

BAR'GAIN, *ſ.* [*bargen*, Welſh; *bargaigne*, Fr.] A contract or agreement concerning the ſale of ſomething.—What is marriage but a very *bargain?* wherein is ſought alliance, or portion, or reputation, with ſome deſire of iſſue; not the faithful nuptial union of man and wife. *Bacon.*—The thing bought or ſold; a purchaſe; the thing purchaſed.—He who is at the charge of a tutor at home, may give his ſon a more genteel carriage, with greater learning into the *bargain*, than any at ſchool can do. *Locke.*—Stipulation; intereſted dealing.—There was a difference between courteſies received from their maſter and the duke; for that the duke's might have ends of utility and *bargain*, whereas their maſter's could not. *Bacon.*—An unexpected reply, tending to obſcenity:

No maid at court is leſs aſham'd,
Howe'er for ſelling *bargains* fam'd. *Swift.*

An event; an upſhot: *a low ſenſe.*—I am ſorry for thy miſfortune; however we muſt make the beſt of a bad *bargain*. *Arbuthnot.*

" A *bargain* is a *bargain*." What is done cannot be undone. The Germans ſay, *Was geſchehen iſt geſchehen.* The French, *Ce qui eſt fait eſt fait* ('what is done is done'), as the Italians, *Quel ch' è fatto è fatto.* Theſe proverbs are ſpoken to people, who, after having made any agreement or promiſe, are for retracting their word.

" A good *bargain* is a pick-purſe." French, *Bon marché tire l'argent hors de la bourſe:* that is (though it may ſeem a paradox), 'What is cheap is dear;' becauſe, according to the French, it draws our money out of our pockets, and often tempts us to buy what we do not want. The Germans ſay, as the French, *Ein wohlfeiler kauf locket einem das geld aus dem beutel.* And the Italians, *Il buon mercato vuota la borſa:* 'a cheap bargain empties the purſe.'

" Make the beſt of a bad *bargain*," or, What can't be cured muſt be endured. It is certainly prudent to turn every misfortune or diſappointment to the beſt advantage we can; and not, by indolently repining at what cannot be helped, to make bad worſe.

BARGAIN and SALE, in law, is an inſtrument whereby the property of lands and tenements is for valuable conſideration granted and transferred from one perſon to another: it is called a real contract upon a valuable conſideration, for paſſing of lands, tenements, and hereditaments, by deed indented and enrolled. 2 *Inſt.* 672. Since the introduction of uſes and truſts, and the ſtat. 27 Hen. VIII. c. 10, for transferring the poſſeſſion to the uſe, the neceſſity of livery of ſeiſin for paſſing a freehold in corporeal hereditaments, has been almoſt wholly ſuperſeded; and, in conſequence of it, the conveyance by feoffment is now very little in uſe. Before the ſtatute of *uſes*, equitable eſtates of freehold might be created through the medium of truſts, without livery; and, by the operation of the ſtatute, legal eſtates of freehold may now be created in the ſame way. They who framed the ſtatute of *uſes*, evidently foreſaw, that it would render livery unneceſſary to the paſſing of a freehold; and that a freehold of ſuch things as do not lie in grant would become transferable by *parol* only, without any ſolemnity whatever. To prevent the inconveniences which might ariſe from a mode of conveyance ſo uncertain in the proof, and ſo liable to miſconſtruction and abuſe, it was enacted in the ſame ſeſſion of parliament, that an eſtate of freehold ſhould not paſs by bargain and ſale only, unleſs it was by indenture enrolled in one of the courts at Weſtminſter, or in the county where the lands lie; ſuch enrolment to be made within ſix months after the date of the indenture. Stat. 27 Hen. VIII. c. 16. 2 *Inſt.* 675. *Dy.* 229. *Dalt.* 63. The objects of this proviſion evidently were, firſt, to enforce the contracting parties to aſcertain the terms of the conveyance by reducing it into writing; ſecondly, to make the proof of it eaſy, by requiring their ſeals to it, and conſequently the preſence of a witneſs; and, laſtly, to prevent the frauds of ſecret conveyances, by ſubſtituting the more effectual notoriety of enrolment for the more ancient one of livery. But the latter part of this proviſion, which, if it had not been evaded, would have introduced almoſt an univerſal regiſter of conveyances of the freehold, in caſe of corporeal hereditaments, was ſoon defeated by the invention of the conveyance by leaſe and releaſe, which ſprung from the omiſſion to extend the ſtatute to bargains and ſales for terms of years; and the other parts of the ſtatute were neceſſarily ineffectual in our courts of equity, becauſe theſe were ſtill left at liberty to compel the execution of truſts of the freehold, though created without deed or writing. The inconveniences from this inſufficiency of the ſtatute of enrolments are now in ſome meaſure prevented by ſtat. 29 Car. II. c. 3, which provides againſt conveying any lands or hereditaments for more than three years, or declaring truſts of them otherwiſe than by writing. 1 *Inſt.* 48.

This may ſerve at preſent to illuſtrate the doctrine of bargain and ſale; but to obtain a clear and diſtinct idea of this part of the law, it will be neceſſary to conſider the following particulars:

I. All things, for the moſt part, that are grantable by deed in any other way, are grantable by bargain and ſale; and lands, rents, advowſons, tithes, &c. may be granted by it, in fee-ſimple, fee-tail, for life, &c. 1 *Rep.* 176. 11 *Rep.* 25. Any freehold or inheritance in poſſeſſion, reverſion, or remainder, upon an eſtate for years, or life, or in tail, may be bargained and ſold, but the deed ſhall be enrolled. 2 *Co.* 54. *Dyer* 309. 2 *Inſt.* 671. But, if tenant for life bargains and ſells his land by deed enrolled, it will be a forfeiture of his eſtate. 4 *Leon.* 231. But a man ſeiſed of a freehold may bargain and ſell for years, and this ſhall be executed by the ſtatute of uſes. 27 Hen. VIII. c. 10. A man poſſeſſed of a term cannot bargain and ſell it ſo as to be executed by the ſtatute. 2 *Co.* 35. *Poph.* 76. A bargain and ſale of the profits of land is a bargain and ſale of the land itſelf; for the profits and the land are the ſame thing in ſubſtance. *Dyer*, 71. A rent in *eſſe* may be bargained and ſold, becauſe this is a freehold within the ſtatute; and before the ſtatute a rent newly created might be bargained and ſold, becauſe when money, as an equivalent, was given, and ceremonies or words of law were wanting, the Chancery ſupplied them; but it ſeems, that ſince the ſtatute a rent newly created cannot be bargained and ſold, becauſe there ought to be a freehold in ſome other perſon, to be executed in *ceſtui que uſe*; but here can be no ſeiſin of his rent in the bargainor, becauſe no man can be ſeiſed of a rent in his own land, and conſequently there can be no eſtate to be executed in the bargainee. *Kelw.* 85. 1 *Co.* 126. 1 *And.* 327. 1 *Jones*, 179. If A by indenture enrolled bargains and ſells lands to B and his heirs, with a way over other lands of A, this is void as to the way; for nothing but an uſe paſſes by the deed, and there can be no uſe of a thing not in *eſſe*, as a way, common, &c. before they are created. *Cro. Jac.* 189.

II. The king, and all other perſons that cannot be ſeiſed to a uſe, cannot bargain and ſell; for, at common law, when a man had ſold his land for money without giving livery, the uſe only paſſed in equity, and this is now executed and becomes a bargain and ſale by the ſtatute: but antecedent to any ſuch execution there muſt be a uſe well raiſed, which cannot be without a perſon capable of being ſeiſed to a uſe, which the king is not, there being no means to compel him to perform the uſe or truſt; for the Chancery has only a delegated power from the king over the conſciences of his ſubjects; and the king is the univerſal judge of property, and ought to be perfectly indifferent, and not to take upon him the particular defence of any man's eſtate as a truſtee. *Bro.* Feoffment to Uſes 33. *Hard.* 468. *Poph.* 72.

If tenant in tail bargains and ſells his land in fee, this paſſes an eſtate determinable upon the life of the tenant in tail; for at common law the uſe could not be granted of any greater eſtate than the party had in him; now tenant in tail had an inheritance in him, but he could diſpoſe of it only during his own life; and therefore, when he ſells the uſe in fee, *ceſtui que uſe* has a kind of an inheritance, yet determined within the compaſs of a life; and the ſtatute executes it in the ſame manner as he has the uſe, and conſequently he will have ſome properties of a tenant in fee, and ſome of a tenant for life only; but, if tenant for life bargains and ſells in fee, this paſſes only an eſtate for life, for he could not paſs the uſe of an eſtate for life to the bargainee, and the ſtatute executes the poſſeſſion as the party has the uſe. 10 *Co.* 96. 1 *Saund.* 260. 1 *Co.* 14. *Co. Lit.* 151.

A man may bargain and ſell to a corporation, for they may take a uſe, though the money be given by the governors in their natural capacity. 10 *Co.* 24. 2 *Rol. Abr.* 788. A man may bargain and ſell to his ſon; but then the conſideration of money ought to be expreſſed, and it ought to have all the other circumſtances of bargain and ſale; but this ſhall operate as a covenant to ſtand ſeiſed, if there be none but the conſideration of natural love and affection expreſſed. 7 *Co.* 40. *Cro. Eliz.* 394. 1 *Vent.* 137. 1 *Lev.* 56. But, if a ſon and heir bargains and ſells the inheritance of his father, this is void, becauſe he hath no right to transfer; the ſame law of a releaſe. *Keil.* 84. *Co. Lit.* 265. If an infant bargains and ſells his land by deed indented and enrolled, yet he may plead non-age; for notwithſtanding the ſtatute the bargainee claims by the deed as at common law, which was, and therefore is ſtill, defeazible by non-age. 2 *Inſt.* 673. If a huſband ſeiſed of lands, in right of his wife, or tenant in tail, bargains and ſells the trees growing on the lands, and dies before ſeverance, the bargainee cannot afterwards cut them down and take them away. *Mo.* 41. If there be two jointenants, and one of them makes a bargain and ſale of his own eſtate in fee, and then the other dies, the other moiety ſhall ſurvive to the bargainor: for, ſince the freehold is in the bargainor, the inheritance continues; but, if ſuch jointenant had bargained and ſold *totum ſtatum ſuum* in fee, though he died before enrolment; yet, if the deed were afterwards enrolled, the moiety would not ſurvive, but would paſs to the bargainee. *Cro. Jac.* 53. *Co. Lit.* 186. 1 *Bulſt.* 3.

The very words bargain and ſell are not of abſolute neceſſity in this deed, for other words equivalent will ſuffice; as, if a man ſeiſed of lands in fee ſell the ſame to another, by the words *alien* or *grant*, the deed being made in conſideration of money, and indented and enrolled, will be an effectual bargain and ſale. In ſhort, whatever words upon valuable conſideration would have raiſed an uſe of any lands, &c. at common law, the ſame would amount to a bargain and ſale within this act; as, if a man by deed, &c. for a valuable conſideration covenants to ſtand ſeiſed to the uſe of another, &c. 2 *Inſt.* 672. *Cro. Jac.* 210. *Mo.* 34. *Cro. Eliz.* 166.

III. There muſt be a good conſideration given, or at leaſt ſaid to be given, for lands, in theſe deeds; and, for a competent ſum of money, is a good conſideration; but not the general words for divers conſiderations, &c. *Mod. Ca.* 777. Where money is mentioned to be paid in a bargain and ſale, and in truth no money is paid, ſome of the books tell us this may be a good bargain and ſale; becauſe no averment will lie againſt that which is expreſsly affirmed by the deed, except it comes to be queſtioned whether fraudulent or not, upon the ſtatute againſt fraudulent deeds. *Dyer* 90. If no conſideration of money is expreſſed in a deed of bargain and ſale, it may be ſupplied by an averment, that it was made for money: and, after a verdict on a trial, it ſhall be intended that evidence was given, at the trial, of money paid. 1 *Ventr.* 108. If lands are bargained and ſold for money only, the deed is to be enrolled according to the ſtatute; but, if it be in conſideration of money, and natural affection, &c. the eſtate will paſs without it. 2 *Inſt.* 672. 2 *Lev.* 56. If a man, in conſideration of ſo much money to be paid at a day to come, bargains and ſells, the uſe paſſes preſently, and after the day the party has an action for the money, for it is a ſale, be the money paid preſently or hereafter. *Dyer* 337 *a*.

If the deed of bargain and ſale be not enrolled within ſix months, (which are to be reckoned after twenty-eight days to the month, the day of the date taken excluſively,) it is of no force; ſo that, if a man bargains and ſells his land to me, and the trees upon it, although the trees might be ſold by deed without enrolment, yet in this caſe if the deed be not enrolled, it will be good neither for the trees nor the land. *Dyer* 90. 7 *Rep.* 40. 2 *Bulſt.* 8. A bargain and ſale of a manor to which an advowſon is appendant by indenture not enrolled, will not paſs the advowſon or the manor, for it was to go as appendant. *Bro. Caſ.* 240. But, in ſome caſes, where a deed will not enure by way of bargain and ſale, by reaſon of ſome defect therein, it may be good to another purpoſe. *Dyer* 90.

If two bargains and ſales are made of the ſame land, to two ſeveral perſons, and the laſt deed is firſt enrolled; if afterwards the firſt deed is alſo enrolled within ſix months, the firſt buyer ſhall have the land; for, when the deed is enrolled, the bargainee is ſeiſed of the land from the delivery of the deed, and the enrolment ſhall relate to it. *Heb.* 165. *Wood's Inſt.* 259. Neither the death of the bargainor or bargainee, before the enrolment of the deed of bargain and ſale, will hinder the paſſing of the eſtate to the bargainee: but the eſtate of freehold is in the bargainor, until the deed is enrolled; ſo that the bargainee cannot bring any action of treſpaſs before entry had: tho' it is ſaid he may ſurrender, aſſign, &c. *Cro. Jac.* 52. *Co. Lit.* 147. A bargainee ſhall have rent which incurs after the bargain and ſale, and before the enrolment of the deed, the eſtate ſettles *ab initio*, by the ſtat. 27 Hen. VIII. c. 16; which ſays, that it ſhall not veſt, except the deed be enrolled; and, when it is enrolled, the eſtate veſts preſently by the ſtatute of uſes. 1 *Danv. Abr.* 696. If ſeveral ſeal a deed of bargain and ſale, and but one acknowledge it, and thereupon the deed is enrolled; this is a good enrolment within the ſtatute. *Style* 462. None can make a bargain and ſale of lands, that hath not the actual poſſeſſion thereof at the time of the ſale; if he hath not the poſſeſſion, the deed muſt be ſealed upon the land, to make it good. 2 *Inſt.* 672. 1 *Lill.* 290. Houſes and lands in London, and in any city, &c. are exempted out of the ſtatute of enrolments. 2 *Inſt.* 676. 1 *Nelſ. Abr.* 342. See Enrolment.

IV. In pleading a bargain and ſale, the deed itſelf muſt be ſhewn under ſeal. 1 *Inſt.* 225. For, though the enrolment being on record is of undoubted veracity, being the tranſaction of the court; yet the private deed has not the ſanction of a record, though publicly acknowledged and enrolled; for, it might have been falſely and fraudulently dated, or ill executed. *Co. Lit.* 225 *b.* 2 *Inſt.* 673. 4 *Co.* 71. 2 *Rol. Rep.* 119. It muſt likewiſe be ſet forth, that the enrolment was within ſix months, or *ſecundam formam ſtatuti*, &c. *Allen* 19. *Carter* 221. *Style* 34. In pleading a bargain and ſale, the party ought regularly to aver payment of the money. 1 *Leon.* 170. In replevin the caſe upon the pleadings was, that the defendant made a title under bargain and ſale, enrolled within ſix months, and the ſtatute of uſes, and did not ſhew that it was in conſideration of money; but adjudged, that, after a verdict, as this caſe was, it ſhall be intended, that evidence was given at the trial of money paid. 1 *Vent.* 108. The party that claims by any bargain and ſale, muſt ſhew in what court the deed is enrolled, becauſe he muſt ſhew all things in certain that make out his title; otherwiſe his adverſary would be put to an infinite ſearch before he could traverſe with ſecurity. *Yelv.* 213. *Cro. Jac.* 291.

To Bargain, *v. n.* To make a contract for the ſale or purchaſe of any thing: often with *for* before the thing.

Henry is able to enrich his queen,
And not to ſeek a queen to make him rich.
So worthleſs peaſants *bargain for* their wives,
As market-men for oxen, ſheep, or horſe. *Shakeſpeare.*

BARGAINEE', *ſ.* He or ſhe that accepts a bargain.

BAR'GAINER, *ſ.* The perſon who proffers, or makes a bargain.

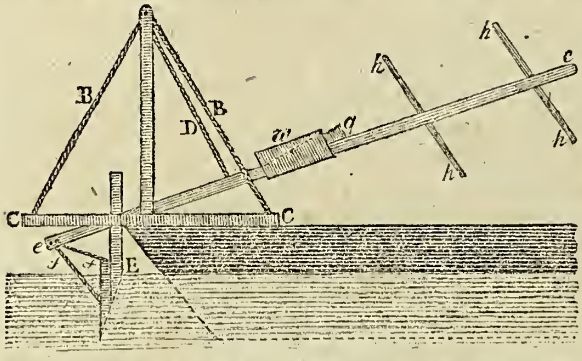
BARGAZAR' POINT, a cape on the coaſt of Iceland. Lat. 66. 18. N. lon. 16. 38. W. Greenwich.

BARGE, *ſ.* [*bargie*, Dutch.] A veſſel or boat of ſtate, furniſhed with elegant apartments, canopies, and cuſhions; equipped with a band of rowers, and decorated with flags and ſtreamers: they are generally uſed for proceſſions on the water, by noblemen, officers of ſtate, or magiſtrates of great cities, particularly by thoſe of London. Of this ſort, too, we may naturally ſuppoſe the famous barge of Cleopatra, which Shakeſpeare deſcribes as follows:

The *barge* ſhe ſat in, like a burniſh'd throne,
Burnt on the water: the poop was beaten gold:
Purple her ſails; and ſo perfumed, that
The winds were love-ſick with them: the oars were ſilver,
Which to the tune of flutes kept time, and made
The water which they beat to follow faſter,
As amorous of their ſtrokes.

There are likewiſe barges of a ſmaller kind, for the uſe of admirals and captains of ſhips of war. Theſe are of a lighter frame, and are eaſily hoiſted into and out of the ſhips to which they belong.

Barge is alſo the name of a flat-bottomed veſſel of burden, for lading and diſcharging ſhips, and removing their cargoes from place to place in a harbour. It is alſo the veſſel now in extenſive uſe for conveying goods from place to place by inland navigations; the advantages and utility of which begin to be univerſally felt. The uſual method of navigating theſe veſſels is by means of horſes and tackle affixed to the barge, by which they are drawn along; but an invention has been offered by Mr. Thomas Potts, of Penrice, Glamorganſhire, for which a patent was granted on the 20th of July, 1796, to navigate theſe barges by means of a large vertical oar, attached to the ſtern by nuts and ſcrews, and having a long pole let in by a mortice, with croſs-bars or handles at the other end, ſo that it may be worked by two, three, or four, men. As barges are of different ſizes, it is impoſſible to fix any given dimenſions for the oar; it is however to be obſerved, that the greater the burden to be moved, the wider the oar muſt be made. The annexed figure ſhews the ſide of the barge, with the apparatus affixed. B B are braces to ſecure the oar, faſtened by the two projecting pieces C C. The croſs-bars *hhhh*, which paſs through the pole *ee*, are the handles for puſhing or pulling the vertical oar E, faſtened to the pole by the ſtays *ff*. In the centre of the pole is a ſliding weight *w*, to balance the vertical oar E, with a wedge *q*, to fix the ſliding weight. Care muſt be taken to conſtruct the oar and its appendages of ſuch timber as is leaſt liable to be warped; and, to make the apparatus work eaſy, the ſliding weight muſt be ſo placed as to balance the oar at the end of the pole, when ſuſpended by the cord or chain D, which faſtens the pole to the braces. By this artifice the men may raiſe or ſink the oar at pleaſure, and make the ſtroke long or ſhort, deep or ſhallow, as they pleaſe, by raiſing or depreſſing the pole where the croſs-bars are applied; and may exert their whole force, together with that of the deſcending weight, againſt a column of water equal to the immerſed part of the oar; which, having performed its ſtroke, will return to its place by means of the deſcending weight and depreſſion of the end where the men work; and then, by elevating the end anew, the oar will dip perpendicularly, and be ready for repeating the ſtroke. When uſed at the head of a veſſel, the pole ſhould be of ſuch a length as not to cauſe the water, impelled by the oar, to act againſt the head of the veſſel; when at the ſides, the length may be diſcretionary.



Barge, *ſ.* in ornithology, a name uſed by ſome authors for the godwit, or as it is called in ſome places, the *ſtone-plover*, the *ægochephalus*.

Barge, or Bar'ges, a town of Piedmont, in the diſtrict of the Four Valleys, ſeven miles and a half ſouth of Pinerola.

Barge-couples, *ſ.* in architecture, is a beam mortiſed into another, to ſtrengthen the building. And *barge-courſe* with bricklayers, is a term uſed for that part of the tiling which projects over without the principal rafters, in all ſorts of buildings where there is either a gable or a kirken-head.

Barge le Chatel, a town of France, in the department of the Ain, and chief place of a canton, in the diſtrict of Pont-de-Vaux: four leagues and a half weſt-north-weſt of Bourg-en-Breſſe. Lat. 46. 19. N. lon. 22. 35. E. Ferro.

BARGE'MAN, *ſ.* He who works in, or aſſiſts the navigation of, a barge.

BAR'GER, *ſ.* The manager of a barge.—Many wayfarers make themſelves glee, by putting the inhabitants in mind of this privilege; who again, like the Campellians in the north, and the London *bargers*, forſlow not to baigne them. *Carew.*

BAR'GEMON, a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Draguignan: five leagues weſt-ſouth-weſt of Graſſe, and two north-north-eaſt of Draguignan.

BARGH'MASTER, Barmer, or Bar-master, *ſ.* in the royal mines, the ſteward or judge of the barmote. The bar-maſter is to keep two great courts of barmote yearly; and every week a ſmall one, as occaſion requires.

BARGH'MOTE, or Barmote, *ſ.* A court which takes cognizance of cauſes and diſputes between miners. By the cuſtom of the mines, no perſon is to ſue any miner for ore-debt, or for ore, or for any ground in variance, but only in the court of barmote, on penalty of forfeiting the debt, and paying the charges at law.

BARGO'TA, a town of Spain, in Navarre, ſix leagues from Eſtella.

BARGUZIN', a river of Siberia, which runs into lake Baikal, near Barguzinſk.

BARGUZINSK', a town of Siberia, on the eaſt coaſt of lake Baikal, on the river Barguzin: 104 miles north-eaſt of Irkutſk. Lat. 53. 30. N. lon. 128. E. Ferro.

BAR'HAM, a village ſix miles ſouth-eaſt from Canterbury, which gives name to that delightful range of open country, called Barham-Downs, on which Canterbury races are annually held.

BARH-NA'GASH, a province of Abyſſinia, in the kingdom of Tigre, in which the town of Arekea is ſituated.

BA'RI, a ſeaport town of Italy, in the kingdom of Naples, on the coaſt of the Adriatic, once the capital of the province of the ſame name, and ſee of an archbiſhop. It is well built, populous, and has a good trade. The harbour was almoſt deſtroyed by the Venetians: 120 miles eaſt-north-eaſt of Naples, and eighteen eaſt of Trani. Lat. 41. 15. N. lon. 34. 34. E. Ferro.

Bari, a province of Naples, bounded on the north and north-eaſt by the ſea, on the eaſt and ſouth-eaſt by the province of Otranto, on the ſouth by the Baſilicata, and on the weſt by the Capitanata. About ſixty-two miles long, and rather more than twenty in its mean breadth. It produces corn, wine, oil, cotton, ſaffron, and fruits: there are ſixteen towers built to defend the coaſts from corſairs. The principal towns are Bari, Trani, the preſent capital, Bitonto, Barletta, Altamura, Gravina, Molſetta, Viſeglia, and Andri. Ofanto is the only river.

BARIARED', a town of Perſia, in the province of Kerman: nineteen leagues ſouth-weſt of Sirgian.

BAR-JE'SUS, [ברישיע, Syr. the ſon of Jeſus.] A name of a man.

BARIL'LA, or Barilha, *ſ.* The name of a ſpecies of glaſs-wort, cnltivated in Spain for its aſhes, from which the pureſt kinds of mineral alkali are obtained. There are four ſpecies, *barilla*, *gazul*, (or as ſome call it, *algazul*,) *ſoza*, and *ſalicornia* or *ſalicor*. They are all burnt to aſhes; but applied to different uſes, as being poſſeſſed of different qualities. *Barilla* is ſown afreſh every year. Its greateſt height above ground is four inches: each root puſhes out a vaſt number of little ſtalks, which again are ſubdivided into ſmaller ſprigs reſembling ſamphire; and altogether form a large ſpreading tufted buſh. The colour is bright green; as the plant advances towards maturity, this colour vaniſhes away till it comes at laſt to be a dull green tinged with brown. *Gazul* bears the greateſt affinity to barilla, both in quality and appearance: the principal difference conſiſts in its growing on a drier ſalter earth, conſequently it is impregnated with a ſtronger ſalt. It does not riſe above two inches out of the ground, ſpreading out into little tufts. Its ſprigs are much flatter and more pulpy than thoſe of barilla, and are ſtill more like ſamphire. It is ſown but once in three, four, or five, years, according to the nature of the ſoil. *Soza*, when of the ſame ſize, has the ſame appearance as gazul; but in time grows much larger, as its natural ſoil is a ſtrong ſalt marſh, where it is to be found in large tufts of ſprigs, treble the ſize of barilla, and of a bright green colour. *Salicor* has a ſtalk of a deep green colour, inclining to red, which becomes at laſt the colour of the whole plant. It grows upright, and reſembles a buſh of young roſemary. Its natural ſoil is on the declivities of hills near the ſalt marſhes. Barilla contains leſs ſalt than the others: when burnt, it runs into a maſs reſembling a ſpongy ſtone, with a faint caſt of blue.

Gazul, after it has been burnt, comes as near barilla in its outward appearance as it does while growing in its vegetable form; but, if broken, the inſide is of a deeper and more gloſſy blue. Soaz and ſalicor are darker and almoſt black within, of a heavier conſiſtence, with very little or no ſign of ſponginеſs. All their aſhes contain a ſtrong alkali; but barilla the beſt and pureſt, though not in the greateſt quantity. Upon this principle, it is fitteſt for making glaſs and bleaching linen; the others are uſed in making ſoap. Each of them would whiten linen; but all, except barilla, would burn it. For the cultivation, ſee SALICORNIA. The method uſed in making barilla is the ſame as that followed in Britain in burning kelp. The plant as ſoon as ripe is plucked up and laid in heaps, then ſet on fire. The ſalt juices run out below into an hole made in the ground, where they run into a vitrified lump, which is left about a fortnight to cool. An acre may give about a ton.

BARILLA'RIUS, *ſ.* An ancient officer in monaſteries and great houſeholds, who had the care of the caſks and veſſels of wine, &c. in the cellars.

BARILLOVITZ', a town of Croatia, on the river Korana, ten miles ſouth Carlſtadt.

BA'RIN, a town of Aſiatic Turkey, in the province of Natolia, twelve miles ſouth of Amaſiah.

BA'RING of TREES, *ſ.* in agriculture, the taking away ſome of the earth about the roots, that the winter-rain and ſnow-water may penetrate farther into the roots. This is frequently practiſed in the autumn.

BARJOLS', a town of France, and principal place of a diſtrict, in the department of the Var; the town is populous, and is ſituated in a charming country: nine leagues north of Toulon; and eight eaſt of Aix. Lat. 43. 35. N. lon. 23. 41. E. Ferro.

BAR-JO'NAS, [בריונה of בר of a ſon, and יונה, Heb. a dove.] A name given by our Saviour to Peter the apoſtle.

BARIQUISEME'TO, a river of North America, in the country of Terra Firma, which runs into the Oronooko.

BARITO'NO, *ſ.* in muſic, denotes a voice of low pitch, between a tenor and baſs.

BA'RIUM, anciently a town of Apulia on the Adriatic; ſo called from the founders, who being expelled from the iſland Bara built this town. It is now called BARI.

BARK, *ſ.* [*bark*, Dan.] In the anatomy of plants, the exterior part of trees, correſponding to the ſkin of an animal. As animals are furniſhed with a panniculus adipoſus, uſually replete with fat, which inveſts and covers all the fleſhy parts, and protects them from external injury; ſo plants are encompaſſed with a bark replete with fatty juices, by means whereof the cold is kept out, and in winter-time the ſpiculæ of ice prevented from fixing and freezing the juices in the veſſels: whence it is, that ſome ſorts of trees remain ever-green the year round, by reaſon their barks contain more oil than can be ſpent and exhaled by the ſun, &c.

The bark of trees in general is of a ſpongy texture; and, by many little fibres which paſs through the capillary tubes, whereof the wood conſiſts, it communicates with the pith; ſo that the proper nutriment of the tree, being imbibed by the roots, and carried up through the veſſels of the tree by the warmth of the ſoil, &c. to the top of the plant, is uſually ſuppoſed to be there condenſed, and in that form returns by its own gravity down the veſſels, which do the office of veins, lying between the wood and inner bark; leaving, as it paſſes by, ſuch parts of its juice as the texture of the bark requires for its ſupport. That ſoft whitiſh rind or ſubſtance between the inner bark and the wood, which Mr. Bradley thinks does the office of veins, ſome account a third bark, only differing from the other two in that its fibres are cloſer. It is this that contains the liquid ſap, gums, &c. found in plants in the ſpring and ſummer months. It hardens by little and little, by means of the ſap it tranſmits, and is converted imperceptibly into the woody part of the tree. There are few trees without it; yet it is ſtill found in leſs quantity as the tree is more expoſed to the ſun: that of the oak is ordinarily about an inch thick. It is here that the decay of trees generally begins; whence thoſe who fell and cut out trees, ought always to leave as little of it on as poſſible.

The bark of roots is ſometimes yellow, as in dock; ſometimes red, as in biſtort; but ofteneſt white. It is derived from the ſeed itſelf, being only the extenſion of the *parenchyma* of the radicle. It is of various degrees of ſubſtance, being ſometimes very thin, as in the Jeruſalem artichoke, and in moſt trees: yet ſometimes it is very thick, and makes the greateſt part of the ſubſtance of the root, as in aſparagus and dandelion. In beet-root, the bark ſcarce exceeds a good thick ſkin; whereas in a carrot, it is half the ſemidiameter of the root, being in ſome places above an inch over. This too is found common to the generality of roots, that their barks are proportionably thicker at bottom than at top.

The inner part of the bark, we have obſerved, annually lignifies or turns to wood. The bark of a tree is found each year to divide and diſtribute itſelf into two contrary ways: the outer part gives towards the ſkin, 'till it becomes ſkin itſelf, and at length falls off, like the human cuticle, or the *exuviæ* of ſerpents; while the inmoſt portion is yearly diſtributed and added to the wood. The bark is found truly continuous to the body of the tree, as the ſkin of our body is to the fleſh; contrary to the common opinion, that the bark only ſurrounds the tree, as a ſcabbard does a ſword, or a glove the hand; which ſeems confirmed by the eaſy ſlipping of the bark of the willow, and moſt other trees when full of ſap, from the wood. Their continuity is effected by means of the *parenchyma*, which is one entire body, running from the bark into the wood, and thus uniting both together. The reaſon why the bark ſlips ſo eaſily from the wood is, that moſt of the parenchymous parts are young veſſels, formed every year ſucceſſively between the wood and the bark, and are much in the condition of the tender veſſels or fibres of the embryo in a womb, or egg; a thouſand of which are broke with the ſmalleſt force. That trees only live by the aſcent of the ſap in or between the bark and the wood, and that if a circle be drawn round any tree (except, perhaps, aſh) by inciſion to the timber, how thin ſoever the knife be, provided no part of the thickneſs of the bark remain uncut, the tree will die from that part upwards, has been the ſtanding doctrine of naturaliſts of all ages, and is delivered for fact by Pliny and others. But Dr. Plott aſſerts this to be a popular error, for the inſtance of a large old elm in Magdalen college grove, quite diſbarked around, at moſt places two feet, at ſome four feet, from the ground, which yet grew and flouriſhed many years, as well as any tree in the grove. Beſides, it was entirely without pith, being hollow within as a drum: and the ſame is confirmed from the hiſtory of the elm in the Thuilleries, related by M. Parent, which lived and put out leaves, though entirely ſtripped of bark from top to bottom. It may alſo be obſerved, that the plane and cork trees diveſt themſelves yearly of all their old bark, and acquire new, as ſnakes do their ſkins; and in the change from one to the other, it is evidently not by the bark that they are nouriſhed. Some infer from hence, that the bark never feeds the wood; but Dr. Plott is more reſerved in his concluſion, arguing only, that hence it ſeems to follow, that there muſt be other veſſels, beſides the ſap-veſſels of the bark, capable of the office of conveying ſap. It is probable when the ordinary conveyance fails, ſome of the woody part, which had all once been ſap-veſſels, reſumes its ancient office; or, as the ſame author conjectures, they ſtill ſo far retain their office of conveying ſap, as to keep a tree alive, though not to augment it; which may, perhaps, be one different uſe of thoſe ſap-veſſels in the wood from thoſe in the bark, the former being ſufficient for the continuation of a tree, and the latter ſerving only for its augmentation.

Mr. Brotherton, however, has related ſome experiments, which ſeem to decide the controverſy by ſhewing that the bark is not the vehicle of vegetation. He hacked a crab-tree all round with a hatchet, ſo as, beſides cutting off the bark, to cut pretty deep into the wood, for the breadth of about four inches; yet the ſame year it was obſerved to increaſe very conſiderably in thickneſs above the divided part, and to ſhoot in length of wood about one foot. The next year it alſo grew conſiderably, and ſhot in length five inches; but on the third year it died to the very root. The ſame happened to another tree, part of whoſe bark was eaten off by canker: the lower part ſtood without increaſe, and by degrees the wood rotted: the upper part increaſed to the third year, and then died alſo. The ſame writer found, that, in the branches of Scotch fir, the joints above the rings barked would grow much larger in three years than in five if the rings were not cut off. A ring of bark three inches broad being cut off a Scotch fir, near the bottom of the ſtem, below the uppermoſt knot or joint, was found to grow and ſhoot out of its top half a yard, and all the parts above the ring to increaſe in thickneſs the ſame year, much more than they would have done, had not the ſection been made; but all the part of the ſtem between the ring and the next knot below it did not grow at all: the part below the ring next under that, increaſed in ſome degree, though leſs than it would have done if the bark had not been cut off. The ſecond year the increaſe was alſo conſiderable; but on the third year it died. Phil. Tranſ. No. 187.

M. Magnol mentions an olive-tree, from which a circular ring of bark being cut away, the tree that year bore above the place of inciſion double the quantity of flowers and fruit which it uſed to bear. Mr. Reneaume relates a fact nearly ſimilar to this. In the country about Aix and Marſeilles, when an olive-tree grows old, and almoſt ready for ſelling, they have a method of making it firſt yield all the fruit which it is capable of producing, by cutting a circular ring of bark, an inch broad, from one of its young branches, and in its place putting an equal ring of bark taken from the branch of a young bearing olive-tree. The effect of this engraftment is, that the branches of the old tree bear plentifully the enſuing year, and thoſe of the young one die away. Hiſt. Acad. Sc. 1711. On the whole, Mr. Brotherton concludes, that moſt of the ſap, if not all, aſcends in the veſſels of the woody part, and not by the bark, nor between the bark and the wood. Mr. Lewenhoeck, on the other hand, has given ſeveral experiments and obſervations with the microſcope, to ſhew that the bark of trees is produced from the wood, and not the wood from the bark. See Phil. Tranſ. No. clxxxvii. and No. ccii. Be this as it may, it is very remarkable, that trees ſtripped in the time of the ſap, and ſuffered to die, afford timber heavier, more uniformly denſe, ſtronger, and fitter for ſervice, than if the tree had been cut down in its healthy ſtate. Something of a like nature has been obſerved by Vitruvius and Evelyn. Mem. Acad. Scienc. 1738.

In the tranſactions of the London Society for the encouragement of Arts, &c. for 1796, there is a recent diſcovery made by Mr. Fairman, of Lynſted, Kent, for reſtoring the bark of trees that have been peeled by ſheep, or other animals, in the winter ſeaſon. The method he deſcribes as follows: "In the ſeverity of the ſpring of 1794, ſome fatted ſheep were turned into a fine orchard of about twenty years growth, where, in a ſhort time, they ſtripped the bark from ſeveral of the trees entirely round the bodies, leaving the wood bare for at leaſt ſixteen inches. The firſt ſtep which I took to remedy this accident, was to cut off the arms from ſeveral of the trees which were moſt injured; and, from the largeſt of thoſe arms, I took off ſlips of rind of about two or three inches in width, and placed them perpendicularly round the naked body of the tree, ſo as completely to fill up the deficient bark. But I firſt cut away the uneven or damaged rind that was bitten, and then raiſed the edges of the bark up at top and bottom, and put the ends of the ſlips under, that the ſap might circulate, and afterwards bound them round very tight with rope-yarn; I then applied a compoſition of loam and cow-dung, with a little drift ſand, over which I tied ſome old ſacking; which was the whole of the proceſs." The event of this experiment was, that the ſlips adhered to the tree, united with each other, and became as full of ſap as any other part; and the trees are now as ſtrong and vigorous as if they had received no injury, and are as healthy and luxuriant as any in the orchard. If, therefore, the barking of trees ſubjects them to decay, this muſt be conſidered as a very valuable diſcovery.

Boerhaave mentions eight different ſpecies of juices lodged in the bark, viz. the watery ſap or chyle, an oil, balm, pitch, reſin, colophony, gum, and gummous reſin. The bark hath alſo its peculiar diſeaſes; and is infected with inſects peculiar to it. Moſs is a diſeaſe of the bark. Wounds of the bark often prove mortal. See CANKER.

Of the bark of willows and linden trees is ordinarily made a kind of ropes. The Siameſe make their cordage of the bark of the cocoa tree, which is alſo the caſe in moſt of the Aſiatic and African nations. In reality, flax and hemp, with all their toughneſs, are only the ſap-veſſels, or ligneous fibres of the bark of thoſe plants.

There are a great many kinds of barks in uſe in the ſeveral arts: ſome in medicine, as the CINCHONA, or *Jeſuits bark*, *macer*, *caſcarilla*, &c. others in dying, as the bark of the alder, and the *quercitron* or yellow oak-bark of America: others in ſpicery, as CINNAMON, *caſſia lignea*, &c. Oak bark is uſed in tanning: others on other occaſions, as cork; that of a kind of birch is uſed by the Indians for canoes capable of holding twenty-four perſons. The ancients wrote their books on barks, eſpecially thoſe of the aſh, and *tilia* or lime-tree; not on the exterior or outer bark, but on the inner and finer, called *philyra*; which are of ſo durable a texture, that there are manuſcripts on it, ſtill extant, a thouſand years old.

In the Eaſt Indies they manufacture the bark of a certain tree into a kind of ſtuff or cloth. It is ſpun and dreſſed much after the manner of hemp. The long filaments ſeparated from it, upon beating and ſteeping in water, compoſe a thread, of a middle kind between ſilk and common thread; neither ſo ſoft nor bright as ſilk, nor ſo hard or flat as hemp. See Neumann's Works, p. 428. Some of theſe ſtuffs are pure bark, and are called *pinaſſes*, *biombonnes*, &c. In others they mix ſilk with the bark, and call them *ginghams* and *nillas*: the fountalunges too are part ſilk, part bark, and are only diſtinguiſhed by being ſtriped.

In the iſland of Otaheite, the natives make their cloth, which is of three kinds, of the bark of three different trees; the paper mulberry, the bread-fruit tree, and the cocoa-tree. That made of the mulberry is the fineſt and whiteſt, and worn chiefly by the principal people. It is manufactured in the following manner. When the trees are of a proper ſize, they are drawn up, and ſtripped of their branches; after which, the roots and tops are cut off; the bark of theſe rods being then ſlit up longitudinally, is eaſily drawn off; and, when a proper quantity has been procured, it is carried down to ſome running water, in which it is depoſited to ſoak; and, when it is ſuppoſed to be ſufficiently ſoftened, the women go down to the brook, and, ſtripping themſelves, ſit down in the water, to ſeparate the inner bark from the green part on the outſide: to do this, they place the under ſide upon a flat ſmooth board, and with a ſhell ſcrape it very carefully, dipping it continually in the water till nothing remains but the fine fibres of the inner coat. Being thus prepared in the afternoon, they are ſpread out upon plantain leaves in the evening: they are placed in lengths of about eleven or twelve yards, one by the ſide of another, till they are about a foot broad, and two or three layers are alſo laid one upon the other: care is taken that the cloth ſhall be in all parts of an equal thickneſs, ſo that, if the bark happens to be thinner in any one particular part of one layer than the reſt, a piece that is ſomewhat thicker is picked out to be laid over in the next. In this ſtate it remains till the morning, when, a great part of the water which it contained being either drained off or evaporated, the ſeveral fibres adhere together, ſo as that the whole may be raiſed from the ground in one piece. It is then laid upon the ſmooth ſide of a long piece of wood prepared for the purpoſe, and beaten with a ſquare wooden club, having each of its four ſides or faces marked, length-ways, with ſmall grooves, or furrows, of different degrees of fineneſs; thoſe on one ſide being of a width and depth ſufficient to receive a ſmall packthread, and the others finer in a regular gradation, ſo that the laſt are not more than equal to ſewing ſilk. They beat it firſt with the coarſeſt ſide of this mallet; it ſpreads very faſt under the ſtrokes, chiefly however in the breadth, and the grooves in the mallet mark it with the appearance of threads; it is ſucceſſively beaten with the other ſides, and laſt with the fineſt, when it is fit for uſe. Of this cloth there are ſeveral ſorts, of different degrees of fineneſs, in proportion as it is more or leſs beaten. The other cloth alſo differs in proportion as it is beaten: but they are unlike each other in conſequence of the different materials of which they are made. The bark of the bread-fruit is not taken till the trees are conſiderably longer and thicker than thoſe of the mulberry; the proceſs afterwards is the ſame. Of the bark of a tree they call *poerou*, the *Hibiſcus tiliaceus* of Linnæus, they manufacture excellent matting; a coarſe ſort which ſerves them to ſleep upon, and a finer to wear in wet weather. Of the ſame bark they alſo makes ropes and lines, from the ſize of a ſmall pack-thread to the thickneſs of an inch.

Bark, *Anguſtura*, [*Anguſturæ Cortex.*] This bark was firſt imported in the year 1788, and was ſuppoſed to be the production of a tree on the coaſt of Africa; but is now found to come from the Spaniſh main. Dr. Bruce pronounced it to be the bark of a tree called *wooginos*, by which he was cured of the dyſentery, in Abyſſinia; and having brought over ſome ſeeds, and planted them in Kew gardens, their product he calls *Brucea antidyſenterica, vel februginea.* See Brucea. But, in the Medical Commenmentaries of Edinburgh, 1790, they are, on compariſon, proved to be very different. This bark is much of the ſame colour and thickneſs as the *canella aromatica*, and powders very freely. It is a powerful bitter, joined with an aroma, not much more pungent than caſcarilla, having a portion of pure oil, which approaches in its nature to camphor. It ſeems alſo to poſſeſs a narcotic principle; hence it differs from the Peruvian bark; and has been conſidered more powerful than it, both as a tonic and antiſeptic; the virtues reſide more in its gummy than reſinous extract; but is ſtill more powerful having both diſſolved, which warm water effects, extracting alſo the oily portion; hence it is beſt prepared by infuſion. The diſeaſes in which this medicine has been employed are thoſe in which the Peruvian bark has been uſeful. In intermittents, it is not always ſuperior; ſometimes inferior; in low fevers, and thoſe of the putrid kind, it has ſeemed ſuperior. In headachs, attended with fever, but ariſing from the ſtomach; in dyſentery and dyſpepſia, it has been of great ſervice. From various experiments that have been made, the Anguſtura bark ſeems to claim the higheſt rank as an antiſeptic. An extract is made in the following manner: Take four ounces of the Anguſtura bark, put it into a flannel bag of a conical ſhape, pour upon this boiling water; and repeat it till the filtering liquor has but little taſte or colour. Let this be evaporated by a gentle heat, there will remain 13 drachms and 20 grains of extract, of the full flavour of the bark, containing two drachms of reſinous matter. See Brande's Experiments and Obſervations on Anguſtura Bark.

Bark, *ſ.* in navigation, denotes a little veſſel for the ſea, uſually with pointed or triangular ſails, in number two, or three, at the moſt. The term is uſually appropriated by ſeamen to thoſe ſmall ſhips which carry three maſts without a mizen top-ſail. Our northern mariners in the coal-trade apply the term to a broad-ſterned ſhip, which carries no ornamental figure on the ſtern or prow. The word is derived by ſome from the Latin *barca*; by Fournier, from *Barce*, a city in Africa; and by Toletanus, from *Barcelona.* Some authors uſe the word *bark* for any veſſel that has no maſts. Of barks, there are various kinds, diſtinguiſhed by different names, as, a *bilander*; a *ſaik*; a *ſette*; a *ſkuit*; a *ſnaul*; a *ſnouke.*

Bark, *armed*, a kind of fire-ſhip filled with ſoldiers, uſed both for making ſallies, and to attack galleries, and bar the paſſage over them.

Bark-binding, *ſ.* A diſtemper incident to trees; cured by ſlitting the bark, or cutting along the grain.

Bark-galling, *ſ.* is when the trees are galled with thorns, &c. It is cured by binding clay on the galled places.

Bark, *Indian*, [*Thuris cortex.*] A medicinal bark, brought from the eaſt, rolled up like cinnamon, of a ruſty colour, a warm aromatic bitter taſte, and pleaſant ſmell; ſometimes uſed in fumigation in convulſive diſeaſes.

Bark-mills. See Mill.

Bark, *Peruvian.* or *Jeſuit's bark*, is the rind of the *cinchona officinalis*, a large and ſtately tree, that grows along the ſides of the mountains in Peru. As a medicine, it has been long and juſtly celebrated; and ſeems not only ſuited to the cure of intermittents, but to that ſtate of fibre on which all rigidly periodical diſeaſes ſeem to depend. Nor is its uſe of leſs importance in continued fevers; attention being paid to keep the bowels in a proper ſtate, and to promote when neceſſary the evacuation of redundant bile. In the confluent ſmall-pox, it promotes a proper ſuppuration in the puſtules, diminiſhes the fever through its whole courſe, and corrects putreſcence and the diſpoſition to gangrene. In ulcerated ſore throats it is uſed with extraordinary ſucceſs, as it is alſo externally and internally in every ſpecies of gangrene. In all thoſe hemorrhages called *paſſive*, and which it is allowed all hemorrhages are very apt to become, and likewiſe in other increaſed diſcharges which tend to debilitate the patient, it is much employed; and in certain undefined caſes of hæmoptyſis, ſome allege that it is remarkbly effectual when joined with ſome of the mineral acids. It is alſo uſed for obviating the diſpoſition to nervous and convulſive diſeaſes, as it greatly leſſens the irritability of the ſyſtem; and ſome have great confidence in it joined with the acid of vitriol, in caſes of phthiſics, ſcrophula, ill-conditioned ulcers, rickets, ſcurvy, and in promoting the recovery of convaleſcents. For particulars of the diſcovery, growth, preparation, and further medicinal properties, of this bark, ſee Cinchona.

Water-Barks, *ſ.* Are little veſſels uſed in Holland for the carriage of freſh-water to places where it is wanting, as well as for the fetching ſea-water to make ſalt. They have a deck, and are filled with water up to the deck.

To Bark, *v. n.* [*beorcan*, Sax.] To make the noiſe which a dog makes when he threatens or purſues:

> Sent before my time
> Into this breathing world, ſcarce half made up,
> And that ſo lamely and unfaſhionably,
> That dogs *bark* at me. *Shakeſpeare.*

To clamour at; to purſue with reproaches:

> Who dares patronage
> The envious *barking* of your ſaucy tongue? *Shakeſpeare.*

"To *bark* at the moon," or "to *bark* where one cannot bite." French, *Aboyer à la lune.* The deſign of this proverb is to expoſe the folly of thoſe, who are given to threaten or rail at their ſuperiors, or thoſe who are out of their reach, to as little purpoſe as it is for a dog to pretend to inſult or terrify the moon by barking.

"*Barking* dogs ſeldom bite." Fr. *Tout chien qui aboye ne mord pas.* Lat. *Canes timidi vehementiùs latrant quàm mordent.* Ital. *Can chi abbaia non morde.* H. Ger. *Ein bellender hand beiſſet nicht leicht.* All which imply, that huffing, hectoring, bouncing, fellows, who are ever quarrelling and inſulting, where they think they ſhall meet with no oppoſition, are rarely or ever endowed with a true generous courage; but are generally cowards and puſillanimous beings, who dare hardly look a man of honour in the face.

To Bark, *v. a.* To ſtrip trees of their bark.—The ſevereſt penalties ought to be put upon *barking* any tree that is not felled. *Temple.*

Bark-bared, *adj.* [from *bark* and *bare.*] Stripped of the bark.—Excorticated and *bark-bared* trees may be preſerved by nouriſhing up a ſhoot from the foot, or below the ſtripped place, cutting the body of the tree ſloping off a little above the ſhoot, and it will heal, and be covered with bark. *Mortimer.*

BARK'ARY, *ſ.* [*barkaria, corticulus.*] A tan-houſe or place to keep bark in for the uſe of tanners.

BARK'ER, *ſ.* One that barks or clamours.—What hath he done more than a baſe cur? barked and made a noiſe? But they are rather enemies of my fame than me, theſe *barkers. Ben Jonſon.*—[From *bark* of trees.] One that is employed in ſtripping trees.

BAR'KING, a pleaſant town in the county of Eſſex, ſituated on a creek in the river Rothin, to which it gives name, near the Thames, from whence goods are brought up to the quay. It has a weekly market held on Saturday; five miles ſouth-weſt of Rumford, eleven ſouth of Epping, and ſeven eaſt of London.

Barking of Trees, *ſ.* The peeling off the rind or bark. This muſt be done, in our climate, in the month of May, becauſe at that time the ſap of the tree ſeparates the bark from the wood. It would be very difficult to perform it at any other time of the year, unleſs the ſeaſon was extremely wet and rainy; for heat and dryneſs are a very great hindrance to it. By the old French laws, all dealers were forbid to bark their wood while growing, on the penalty of 500 livres. This law was the reſult of ignorance; it being now found, that barking of trees, and letting them die, increaſes the ſtrength of the timber.

BARK'LEY, [*Beorcean*, probably of *beorce*, a beech-tree, and *lan* for *leag*, a field, Sax. by reaſon of plenty of beech-trees growing there.] A town in Glouceſterſhire.

BAR'KOW, a town of Poland, in the palatinate of Braclaw, forty-eight miles weſt-north-weſt of Braclaw.

BAR'KU, or Barraku, a town of Africa, in the country of Agouna, where the Dutch had a fort.

Barku (Little), a town of Africa, a league and a half from Barku.

BARK'WAY, a ſmall town, in the county of Herts: thirty-four miles and a half north of London, and ſixteen and a half ſouth of Cambridge.

BARK'Y, *adj.* Conſiſting of bark; containing bark.—Ivy ſo enrings the *barky* fingers of the elm. *Shakeſpeare.*

BARLA'AMITES, in Church Hiſtory, the followers of a Calabrian monk, afterwards biſhop of Emont, the great opponent of Gregory Palama and the Heſychaſtæ. The Barlaamites are the ſame with thoſe otherwiſe denominated Acindynites.

BARLÆ'US (Gaſpar), profeſſor of philoſophy at Amſterdam, and one of the beſt Latin poets of the 17th century. There was ſcarcely any thing great that happened in the world, while he lived, but he made a pompous elegy upon it, when reaſons of ſtate were no obſtacle to the publication. He was a great defender of Arminius; and proved his abilities in hiſtory by his relation of what paſſed in Braſil during the government of count Maurice of Naſſau, publiſhed 1647. He died the year following.

BARLAIMONT', or Barlemont, a town of the Netherlands, in the county of Hainault: four leagues ſouth-eaſt of Le Queſnoy.

BAR'LAND (Adrian), a famous Latin commentator, hiſtorian, and chronologer, of Zealand; died in 1542.

BARLEN'GA, a ſmall iſland, the principal of a cluſter in the Atlantic Ocean, about three leagues from the weſt coaſt of Portugal; with a fortreſs: theſe iſlands are called *Borlings* by the Engliſh ſeamen, and the greater part merely rocks. Lat. 39. 20. N. lon. 9. 5. E. Ferro.

BARLE'RIA, *ſ.* [This name was given by Plumier in honour of the revrend James Barrelier, a dominician and M. D. of Paris, who travelled from France into Spain and Italy, and died, aged ſixty-eight on the 17th of September 1673.] In botany, a genus of the claſs didynamia, order angioſpermia, natural order perſonatæ. The generic characters are—Calyx: perianthium four-parted, permanent; two oppoſite leaflets larger. Corolla: monopetalous, funnel-form, quinquefid, ſub-equal; the fifth diviſion deeper. Stamina: filaments four, filiform; two very ſhort, capillary; antheræ, the upper oblong, the lower withered. Piſtillum: germ ovate; ſtyle filiform, the length of the ſtamens; ſtigma bifid. Pericarpium: capſule acute, flat-quadrangular, two-celled, two-valved, gaping elaſtically at the claws; partition contrary. Seeds two, compreſſed, roundiſh. *Obſervation:* An intermediate genus between *ruellia* and *juſticia.*—*Eſſential Character.* Calyx four-parted; ſtamina two, far leſs than the others; capſule quadrangular, bilocular, bivalvular, elaſtic, without the claws; ſeeds two.

Species. 1. Barleria longifolia: ſpines of the whorls ſixfold; leaves enſiform, very long, ſcabrous. Stem bluntly quadrangular, erect. Native of the Eaſt Indies. Introduced in 1781, by Sir Joſeph Banks, Bart.

2. Barleria ſolanifolia: ſpines axillary, leaves lanceolate, toothletted. This riſes with upright ſquare ſtalks three feet high; and has two oblong entire leaves at every joint. Theſe joints are about three inches from each other. The flowers are blue, and have more of the form of the labiate flowers than any of the other ſpecies. Miller received it from Panama.

3. Barleria Hyſtrix: ſpines axillary, twin ſimple, leaves quite entire, lanceolate-ovate. This is carefully to be ſeparated from the next ſpecies. The ſtem is wand-like, not firm; the branches are rather quadrangular than round: the leaves ſmooth on both ſides. Native of the Eaſt Indies.

4. Barleria Prionitis: ſpines axillary, pedate, fourfold; leaves quite entire, lanceolate-ovate. Native of the Eaſt Indies.

5. Barleria buxifolia: ſpines axillary, oppoſite, ſolitary; leaves roundiſh, quite entire. This has ſhrubby ſtalks, five or ſix feet high, with ſtrong ſpines under the leaves. Native of Jamaica, and the Eaſt Indies.

6. Barleria noctiflora: ſpines axillary, branching; leaves lanceolate, quite entire, cuſpidated; bractes ovate, ſcarioſe; tube elongated. Obſerved near Tanjour, in the Eaſt Indies, by Koenig.

7. Barleria criſtata: leaves oblong, quite entire; two leaflets of the calyx broader, ciliated, and two linear, acute. Stem round.

8. Barleria coccinea: unarmed, leaves ovate, toothletted, petioled. Stems ſmooth, four feet high. Flowers ſcarlet, appearing from July to September, and ſucceeded by ſhort pods incloſing flat ſeeds. Native of South America.

9. Barleria pungens: unarmed, leaves ovate, acute, pungent; bractes ciliated. Found at the Cape of Good Hope by Thunberg.

10. Barleria longiflora: unarmed, leaves ovate, ſilky, bractes cordate, ſcarioſe; corollas very long. This is an underſhrub, with the branches generally oppoſite, ſilky, and round. Obſerved on the mountain of St. Thomas, in Malabar, by Koenig.

11. Barleria procumbens: unarmed; leaves lanceolate, crenate, hiſpid; heads terminating. This alſo is an underſhrub, with yellow flowers. Native of China, near Canton.

Propagation and Culture. The barlerias, being all natives either of the Eaſt Indies or South America, require the protection of the bark ſtove. The ſecond, fourth, fifth, and eighth, were cultivated by Mr. Miller, but the others have not made their appearance in our ſtoves. The roots of the ſecond ſort will continue three or four years, but after the ſecond year, the plants grow too rambling, and, the lower parts of the branches being naked, are not ſo ſightly as the young plants; therefore a ſucceſſion of theſe ſhould be raiſed, and the old ones turned out. They are propagated by ſeeds, which will ſow themſelves in the pots which are near them in the ſtove, when the plants are once obtained; but, where the ſeeds are received from abroad, they muſt be ſown upon a hot-bed in the ſpring; and, when the plants are fit to remove, they muſt be each planted in a ſeparate pot, and plunged into a hot-bed of tanners' bark, where they muſt conſtantly remain, and be managed in the ſame manner as other tender exotics from the ſame countries; giving them water frequently in ſummer, and letting the freſh air to them every day in warm weather, but in winter they ſhould have leſs water and be kept warm. They flower from June to November, and their ſeeds ripen ſoon after. The fourth ſort has flexible perennial ſtalks, which if cut off during the ſummer months, and made into lengths of ſix or eight inches, and planted in pots, plunging them into a hot-bed, and duly watered and ſhaded from the ſun, will ſoon put out roots, ſo may be planted each in a ſmall pot, and plunged into the tan-bed in the ſtove; for, although this ſort may be kept in a dry ſtove through the winter, yet the plants will not grow near ſo faſt, nor will their leaves be ſo large as thoſe which are plunged into bark. By this method the plants may be propagated in plenty, but, as they rarely produce flowers in England, ſo two or three plants will be ſufficient to maintain the ſpecies. The fifth and eighth ſorts will produce ſeeds in England, provided the plants are kept in the tan-bed in the ſtove, theſe therefore may be propagated by ſeeds, which ſhould be ſown in the hot-bed, and the plants afterwards treated in the ſame manner as the former.

BARLET'TA, a ſea-port town of Italy, in the kingdom of Naples, and country of Bari, on the Adriatic: four miles weſt of Trani. Lat. 41. 19. N. lon. 34. 3. E. Ferro.

BAR'LEY, *ſ.* in botany. See Hordeum. Barley is emollient, moiſtening, and expectorating; and it was choſen by Hippocrates as a proper food in inflammatory diſtempers. The principal uſe of barley among us is for making beer; in order to which it is firſt malted. The Spaniards, among whom malt-liquors are little known, feed their horſes with barley as we do with oats. In Scotland, barley is a common ingredient in broths; and the conſumption of it for that purpoſe is very conſiderable, *barley-broth* being a diſh as frequent there as that of *ſoup* in France.

Pearl Barley, and *French* Barley; barley freed of the huſk by a mill; the diſtinction between the two being, that the pearl barley is reduced to the ſize of ſmall ſhot, all but the very heart of the grain being ground away.

Barley-corn, *ſ.* [from *barley* and *corn.*] A grain of barley; the beginning of our meaſure of length; the third part of an inch:

A long, long journey, choak'd with brakes and thorns,
Ill meaſur'd by ten thouſand *barley-corns*. *Tickell.*

Barley-corn, *(grain d'orge,)* is uſed in building for a little cavity between the mouldings of joiners' work, ſerving to ſeparate or keep them aſunder; thus called, becauſe made with a kind of plane of the ſame name.

Barley Cove, a creek on the ſouth-weſt coaſt of Ireland, between Mizenhead and Browhead, in the county of Cork. Lat. 51. 24. N. lon. 9. 40. W. Greenwich.

Barley-mow, *ſ.* [from *barley* and *mow.*] The place where reaped barley is ſtowed up:

Whenever by yon *barley-mow* I paſs,
Before my eyes will trip the tidy laſs. *Gay.*

Barley-water, is a decoction of either French or pearl barley, reputed ſoft and lubricating, of frequent uſe in phyſic. This well-known decoction is a very uſeful drink in many diſorders; and is recommended, with nitre, in acute fevers.

BAR'LEYBRAKE, *ſ.* A kind of rural play:

By neighbours prais'd ſhe went abroad thereby,
At *barleybrake* her ſweet ſwift feet to try. *Sidney.*

BAR'LOWE (William), biſhop of Chicheſter, was deſcended of an ancient family in Wales. In his youth he favoured the reformation; and travelled to Germany to be inſtructed by Luther. How long he continued a Proteſtant is uncertain: but it appears, that he wrote ſeveral books againſt the church of Rome. He was a regular canon in the Auguſtine monaſtery of St. Oſith in the county of Eſſex, and ſtudied ſome time at Oxford with the brothers of that order, where he took the degree of doctor in divinity. On the diſſolution of abbeys, he reſigned not only with a good grace, but perſuaded ſeveral other abbots to follow his example. King Henry was ſo pleaſed with his ready obedience, that he made him biſhop of St. Aſaph, afterwards of St. David's, and in 1547 of Bath and Wells. During this time, as appears from the following letter to the king, he pretended to be a ſtaunch Papiſt: it was written in 1533. "Prayſe be to God, who of his infynyte goodneſs and mercy ineſtymable hath brought me out of darkneſs into light, and from deadly ignorance into the quick knowledge of the truth. From the whiche, through the fiend's inſtigation and falſe perſuaſion, I have greatly ſwerved. In ſo much that I have made certayn bokes and have ſoffred them to be emprinted, as the tretiſe of the Buryall of the Maſſe, &c. In theſe tretiſes I perceive and acknowledge myſelf grievouſly to have erred; namely, againſt the bleſſed ſacrament of the altare; diſallowing the maſſe and denying purgatory, with ſlanderous infamy of the pope and my lord cardinal, and outrageous raylying againſt the clergy; which I have forſaken and utterly renounced—Aſks pardon, *William Barlowe*." However, when Edward VI. came to the crown, he was again a Proteſtant; and, for that reaſon, on queen Mary's acceſſion, he was deprived of his biſhopric, and ſent priſoner to the Fleet; from whence he found means to eſcape, and immediately joined the Engliſh Proteſtants in Germany. When Elizabeth aſcended the throne, he was raiſed to the ſee of Chicheſter, and ſoon after made firſt prebendary of Weſtminſter. He died in 1568, and was buried in the cathedral at Chicheſter. He had five daughters, each of which married a biſhop. He wrote, 1. The Buryall of the Maſſe. 2. The Climbing up of Fryers and religious Perſons, portred with Figures. 3. Chriſtian Homilies. 4. A Book upon Coſmography. 5. The godly Inſtitution of a Chriſtian Man, commonly called the Biſhop's Book; and ſeveral other works. He is ſaid to be the tranſlator of the Apocrypha as far as the book of Wiſdom. His letters to M. Parker are in manuſcript in Corpus Chriſti college, Cambridge, Miſc. i. 445.

Barlowe (William), an eminent mathematician and divine, in the 16th century. He was born in Pembrokeſhire, his father being then biſhop of St. David's. In 1560 he was entered commoner of Baliol college, Oxford; and, in 1564, having taken a degree in arts, he left the univerſity, and went to ſea; but in what capacity is uncertain: however, he thence acquired conſiderable knowledge in the art of navigation, as his writings afterwards ſhewed. About the year 1573, he entered into orders, and became prebendary of Wincheſter, and rector of Eaſton, near that city. In 1588 he was made prebendary of Litchfield, which he exchanged for the office of treaſurer of that church. He was afterwards appointed chaplain to prince Henry, eldeſt ſon of James I. and, in 1614, archdeacon of Saliſbury. Barlowe was remarkable for having been the firſt writer on the nature and properties of the loadſtone. He was the firſt who made the inclinatory inſtrument tranſparent, and to be uſed with a glaſs on both ſides. It was he alſo who ſuſpended it in a compaſs-box, where, with two ounces weight, it was made fit for uſe at ſea. He alſo found out the difference between iron and ſteel, and their tempers for magnetical uſes. He likewiſe diſcovered the proper way of touching magnetical needles; and of piercing and cementing loadſtones; and alſo why a loadſtone, being double capped, muſt take up ſo great a weight. He died in 1625. His works are as follow: 1. The Navigator's Supply: 1597, 4to. 2. Magnetical Advertiſement, or Diverſe Experiments concerning the Nature and Properties of the Loadſtone: 1616, 4to. 3. A Diſcovery of the idle Animadverſions of Mark Ridley, M. D. upon a treatiſe entitled Magnetical Advertiſements: 1618, 4to. Barlowe's works contain deſcriptions of ſeveral inſtruments for the uſe of navigation, the principal of which is an azimuth compaſs, with two upright ſights; and, as the author was very curious in making experiments on the loadſtone, he treats well and fully upon the ſea-compaſs.

BARLOWE (Thomas), born in 1607, was appointed fellow of Queen's college, Oxford, in 1633; and two years after was choſen reader of metaphyſics to the univerſity. He was keeper of the Bodleian library, and in 1657 was choſen provoſt of Queen's college. After the reſtoration of Charles II. he was nominated one of the commiſſioners for reſtoring the members unjuſtly expelled in 1648. He wrote at that time, The Caſe of Toleration in Matters of Religion. In 1675, he was made biſhop of Lincoln. After the powder-plot he publiſhed ſeveral tracts againſt the Roman Catholic religion; in which he ſhews an uncommon extent of learning and ſkill in polemical divinity. Nevertheleſs, when the Duke of York was proclaimed king, he took all opportunities of expreſſing his affection toward him; but after the revolution he as readily voted that the king had abdicated his kingdom: and was very vigorons in excluding thoſe of the clergy who refuſed the oaths, from their benefices. He died at Buckden, in Huntingdonſhire, on the 8th of October, 1691, in the eighty-fifth year of his age.

BARLOWE (Francis), an Engliſh painter, born in Lincolnſhire. On his coming to London, he was placed with a limner; but his genius led him chiefly to drawing of birds, fiſh, and other animals. There are ſix books of animals from his drawings, and he painted ſome ceilings with birds, for noblemen and gentlemen in the country. His etchings are numerous; his illuſtration of Eſop is his greateſt work. He died in 1702.

BARM, *ſ.* [*burm*, Welſh; *beorm*, Sax.] Alſo called YEAST or YEST; the foam or froth of beer or other liquors in a ſtate of fermentation. Barm is uſed for a leaven or ferment in the making of bread; ſerving to ſwell or puff it up very conſiderably in a little time, and to make it much lighter, ſofter, and more delicate: though, when there is too much of it, the bread is rendered bitter and nauſeous. Barm is ſaid to have been firſt uſed by the Celtæ in the compoſition of bread. About the time of Agricola's entrance into Lancaſhire, a new ſort of loaf had been introduced at Rome; which was formed only of water and flour, and much eſteemed for its lightneſs: and it was called the *water-cake*, from its ſimple compoſition, and the *Parthian roll*, from its original inventors. But, even this was not comparable to the French or Spaniſh bread for its lightneſs. The uſe of curmi, and the knowledge of brewing, had acquainted the Celtes with an ingredient for their bread, which was much better calculated to render it light and pleaſant, than the leaven, the eggs, the milk, or the wine and honey, of other nations. This was the ſpume which aroſe on the ſurface of their *curw* in fermentation, and which the Welſh denominate *burm*, and we *barm*. The Celtes of Gaul, of Spain, and moſt probably of South Britain, had long uſed it; and their bread was, in conſequence, ſuperior in lightneſs to that of any other nation in the world. The uſe of yeaſt in bread is but a modern practice among the Engliſh. It is but little more than a century ago that the bakers firſt introduced it; and then it was only done from fraudulent motives. The faculty of medicine in Paris, by a decree of the 24th of March, 1688, ſolemnly declared it noxious to the health of the people; yet even that cenſure did not prevent its becoming general.

Common ale yeaſt may be kept freſh and fit for uſe ſeveral months, by putting a quantity of it into a cloſe canvaſs bag, and gently ſqueezing out the moiſture in a ſcrew-preſs, till the remaining matter be as firm and ſtiff as clay. In this ſtate it ſhould be cloſe packed up in a tight caſk, ſo as to ſecure it from the air; and it will keep freſh, ſound, and fit for uſe, for a long time. For this diſcovery a patent was granted to Mr. Felton Matthew, of the Three Cranes Wharf, London, on the 22d of February, 1796.

A method has lately been diſcovered of preparing artificial yeaſt, by which good bread may be made without the aſſiſtance of any other ferment. The method is this: Boil flour and water together to the conſiſtence of treacle, and when the mixture is cold ſaturate it with fixed air. Pour the mixture thus ſaturated into one or more large bottles or narrow-mouthed jars; cover it over looſely with paper, and upon that lay a ſlate or board with a weight to keep it ſteady. Place the veſſel in a ſituation where the thermometer will ſtand from 70° to 80°, and ſtir up the mixture two or three times in twenty-four hours. In about two days ſuch a degree of fermentation will have taken place, as to give the mixture the appearance of yeaſt. With the yeaſt in this ſtate, and before it has acquired a thoroughly vinous ſmell, mix the quantity of flour intended for bread, in the proportion of ſix pounds of flour to a quart of the yeaſt, and a ſufficient portion of warm water. Knead them well together in a proper veſſel, and, covering it with a cloth, let the dough ſtand for twelve hours, or till it appears to be ſufficiently fermented in the fore-mentioned degree of warmth. It is then to be formed into loaves and baked. The yeaſt would be more perfect, if a decoction of malt were uſed inſtead of ſimple water.

It has lately been diſcovered, that a decoction of malt alone, without any addition, will produce a yeaſt proper enough for the purpoſe of brewing. This diſcovery was made by Joſeph Senyor, ſervant of the Rev. Mr. Maſon, of Aſton, near Rotheram; and he received for it a reward of 20l. from the Society for promoting Arts, Manufactures, and Commerce. The proceſs is as follows: Procure three earthen or wooden veſſels of different ſizes and apertures, one capable of holding two quarts, the other three or four, and the third five or ſix: boil a quarter of a peck of malt for about eight or ten minutes in three pints of water; and, when a quart is poured off from the grains, let it ſtand in the firſt or ſmaller veſſel in a cool place till not quite cold, but retaining that degree of heat which the brewers uſually find to be proper when they begin to work their liquor. Then remove the veſſel into ſome warm ſituation near a fire, where the thermometer ſtands between 70° and 80° Fahrenheit, and there let it remain till the fermentation begins, which will be plainly perceived within thirty hours: add then two quarts more of a like decoction of malt, when cool, as the firſt was; and mix the whole in the ſecond or larger veſſel, and ſtir it well in, which muſt be repeated in the uſual way, as it riſes in a common vat: then add a ſtill greater quantity of the ſame decocction, to be worked in the largeſt veſſel, which will produce yeaſt enough for a brewing of forty gallons.

A compoſition for ſupplying the place of yeaſt has been invented by Mr. R. Tillyer Blunt, for which the king's letters patent were granted on the 30th of October, 1787. The method is as follows: Boil in common water eight pounds of potatoes, as for eating; bruiſe them perfectly ſmooth, and mix with them whilſt warm two ounces of honey, or any other ſweet, and one quart of common barm. Then, for making bread, mix three pints of the above compoſition with a buſhel of flour, uſing warm water in making the bread; the water to be warmer in winter than in ſummer. This compoſition is to be uſed in a few hours after it is made; and, as ſoon as the ſponge begins to fall the firſt time, the bread ſhould be made and put in the oven. See the articles BAKING and BREAD.

BARMACH', a lofty mountain of Perſia, in the province of Schirvan, near the Caſpian Sea.

BARMANCOT'TY, a town of Aſia, in the country of Thibet, five miles ſouth of Sirinagur, and thirteen north of Duprag.

BAR'MAS, an Eaſt-Indian people, who in 1515 poſſeſſed all the coaſt from Bengal to Pegu. It appears alſo, that they were formerly maſters of Ava, the dominions of which extended as far as China; of courſe the Barmas were maſters of moſt of the northern part of the peninſula beyond the Ganges. Their dominions, however, were afterwards reduced to very narrow bounds, and they became tributary to the king of Pegu; but by degrees they not only recovered their former empire, but conquered the kingdoms of Pegu, Siam, and ſeveral others. By the lateſt accounts, their kingdom extends from the province of Yun-nan in China, about 800 miles in length from north to ſouth, and 250 in breadth from eaſt to weſt.

BAR'MEN, a town of Germany, in the circle of Weſtphalia, and duchy of Berg, ſituated in a fertile valley to which it gives name. It is five miles north of Launep.

BAR'MOTE. See Barghmote.

BAR'MOUTH, a ſea-port of North Wales, in the county of Merioneth, ſituated in a bay to which it gives name: eight miles ſouth-weſt of Dolgelly.

BAR'MY, *adj.* Containing barm; yeaſty:

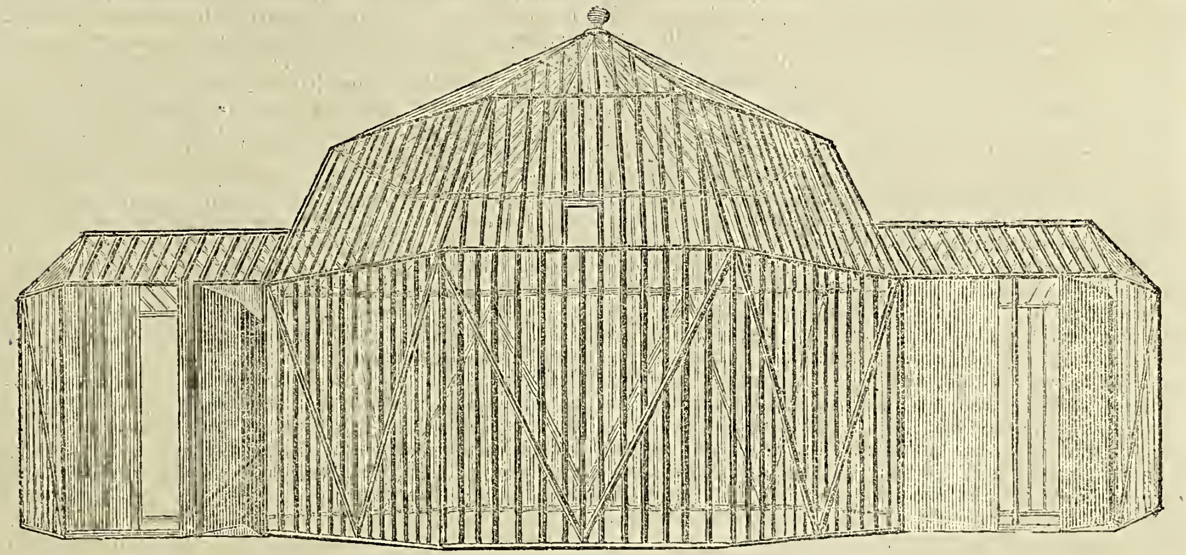
Their jovial nights in frolics and in play
They paſs, to drive the tedious hours away;
And their cold ſtomachs with crown'd goblets cheer
Of windy cider, and of *barmy* beer. *Dryden.*

BARN, *ſ.* [*bern*, Sax.] A place or houſe for laying up any ſort of grain, hay, or ſtraw:

In vain the *barns* expect their promis'd load;
Nor *barns* at home, nor reeks are heap'd abroad. *Dryden.*

Improvement in the building of barns appearing to be a matter of great public utility, the committee of the Bath Society for the Encouragement of Agriculture propoſed a premium for the conſtruction of a barn on a new and improved plan; in conſequence of which the following model was communicated by Mr. Henry Dobſon, of Norwich. "The ties and braces of the barns now in uſe, have always been a juſt cauſe of complaint with the farmer; but the form of the preſent plan renders theſe unneceſſary, which not only makes the ſpace occupied more commodious, but produces a conſiderable ſaving in the quantity of timber.

"I am well aware (ſays Mr. Dobſon) that the dimenſions of the threſhing-floors, in this model, will be objected to, as almoſt every innovation on the common practice is; but, to candid men, and to ſuch only improvements ought to be intruſted, they will be found quite ſufficient. I have obſerved, that the threſher ſeldom uſes a larger ſpace to threſh upon than that aſſigned for this purpoſe in the preſent model; and the porches in common uſe, added to the enormous width of the barn, can ſerve for very little more than a receptacle for the threſhed corn; the bow at the end of each threſhing-floor is intended for this purpoſe, and will contain near two laſts, undreſſed, or in ſacks. The only objection that remains is, the length not being ſufficient to dreſs the corn upon; the uſual method being, to fling it with a ſhovel, as much as poſſible, to the diſtance of from twenty to twenty-ſix feet; by which means the heavier particles fly fartheſt, and the unſound corn and huſks are of courſe left in the intermediate ſpace: as this part of the proceſs occupies as little, if not leſs, time than any other, it will not the difficult to find a ſufficient time of fine weather, in any ſeaſon, to place a ſail-cloth, or boards prepared for that purpoſe, to the diſtance of twelve or fourteen feet from the doors, which will effectually anſwer every purpoſe of thoſe now in uſe."



But as threſhing is, for the moſt part, done in the winter-months, when the barn-doors are generally frequented by cattle, poultry, and birds, great inconvenience would be found in lengthening the floor by a ſail-cloth, or boards, as Mr. Dobſon propoſes. But, if the corn be dreſſed with a winnowing-engine, (as is frequently practiſed in many counties,) the length of the floor will be quite ſufficient. In every other reſpect, the Bath Society pronounced this the completeſt model of a barn they ever ſaw, and paid Mr. Dobſon the premium accordingly.

The following are the dimenſions of a common barn, 50 feet by 20½, and thoſe of one according to the model;

Common Barn.	Barn according to Model.
1,475 Square feet, the area	1,472 Square feet, the area
24,426 Cubic ft. for corn only	30,900 Cubic ft. for corn only
702 Cubic feet of timber	445 Cubic feet of timber

By which calculation it appears, that a barn built on the model propoſed by Mr. Dobſon, as repreſented in the annexed figure, gains, on one in common uſe of the ſame area, 6,474 cubic feet of ſpace, and is built with 257 cubic feet of timber leſs; and, as there is nothing in its conſtruction which would increaſe the expence of workmanſhip, the difference between the expence of building a barn on this plan, and that of one in common uſe, of the ſame area, would be as 445 to 702. It is needleſs to ſay any thing of its mathematical ſtrength, as it muſt be obvious to any one who is at all acquainted with mechanics, that the method here propoſed is of all others the beſt calculated to anſwer the purpoſe.

Barn, or Bearn, *ſ.* A child, in the Scotch or North Country dialect.

Barn-floor, that part of a barn which is boarded, for the purpoſe of beating or threſhing out corn and grain. In the year 1706, Mr. John Upton, of Petworth, Suſſex, received a premium of thirty guineas, from the London Society of Arts and Manufactures, for his invention of a *moveable* barn-floor, which promiſes to be of great utility. The floor conſiſts of two large leaves, that turn upon hinges on each ſide the floor-way; and, when let down, join in the middle, reſting on moveable timbers placed to receive them. The vibration afforded by this contrivance gives a much greater ſpring to the flail, and aſſiſts the threſher exceedingly; by which means the corn is more thoroughly threſhed out than on the common floors. But the greateſt advantage is, that, in harveſt-time, during the houſing of the corn, the leaves are turned up on each ſide, and, the bearing timbers or rafters being removed, the loaded waggons are drawn into the barn on a gravel or ſtone foundation formed beneath. Thus, the threſhing-floor receives no injury from the treading of the horſes, and the weight of the load; conſequently, the ſtrength of timber required, as well as the wear, is much leſs than when the floor is fixed, and the team is drawn over it. At certain ſeaſons, when the leaves are turned up, it may alſo be uſed as a ſtable, ox-ſtall, hovel, or cart-houſe; and, when the leaves are down, as it is hollow under, and affords eaſy acceſs to dogs and cats, it can harbour no vermin. Wherever it is the cuſtom to draw loaded carriages into barns, (a practice which is declining in the north of England,) and eſpecially in countries where ſmall barns and ſmall floors are in uſe, this will be found a very valuable improvement.

BAR'NABAS, or BARN'ABY, [כרנבא Syr. of בר a ſon, and, according to Jerome, נביא a prophet, the office of a prophet being put for conſolation; i. e. the ſon of conſolation.] A proper name of men.

St. BARNABAS'S DAY, a feſtival, celebrated on the 11th of June. St. Barnabas was born at Cyprus, and deſcended of the tribe of Levi, whoſe Jewiſh anceſtors are thought to have retired thither to ſecure themſelves from violence during the troubleſome times in Judea. His proper name was *Joſes*; to which, after his converſion to Chriſtianity, the apoſtles added that of *Barnabas*, ſignifying either the 'ſon of prophecy,' or the 'ſon of conſolation;' the firſt reſpecting his eminent prophetic gifts, the other his great charity in ſelling his eſtate for the comfort and relief of the poor Chriſtians. The time of his converſion is uncertain; but he is generally eſteemed one of the ſeventy diſciples choſen by our Saviour himſelf. At Antioch, St. Paul and St. Barnabas had a conteſt, which ended in their ſeparation: but what followed it with reſpect to St. Barnabas is not related in the Acts of the Apoſtles. Some ſay, he went into Italy, and founded a church at Milan. At Salamis, we are told, he ſuffered martyrdom; whither ſome Jews, being come out of Syria, ſet upon him, as he was diſputing in the ſynagogue, and ſtoned him to death. He was buried, by his kinſman Mark, in a cave near the city. The remains of his body are ſaid to have been diſcovered in the reign of the emperor Zeno, together with a copy of St. Matthew's goſpel, written with his own hand, and lying on his breaſt.

St. BARNABAS'S EPISTLE, an apocryphal work aſcribed to St. Barnabas, and frequently cited by St. Clement of Alexandria, and Origen. It was firſt publiſhed in Greek, from a copy of father Hugh Menard, a Benedictine monk. An ancient verſion of it was found in a manuſcript of the abbey of Coebey, near a thouſand years old. Voſſius publiſhed it, in the year 1656, together with the epiſtles of St. Ignatius.

St. BARNABAS'S GOSPEL, another apocryphal work, aſcribed to St. Barnabas, wherein the hiſtory of Jeſus Chriſt is related in a manner very different from the account given by the four Evangeliſts. The Mahometans have this goſpel in Arabic, and it correſponds very well with thoſe traditions which Mahomet followed in his Koran. It was, probably, a forgery of ſome nominal Chriſtians; and afterwards altered and interpolated by the Mahometans, the better to ſerve their purpoſe.

BAR'NABITES, a religious order, founded in the 16th century by three Italian gentlemen, who had been adviſed by a famous preacher of thoſe days to read carefully the epiſtles of St. Paul. Hence they were called *Clerks of St. Paul*; and *Barnabites*, becauſe they performed their firſt exerciſe in a church of St. Barnabas at Milan. Their habit is black; and their office is to inſtruct, catechiſe, and ſerve in miſſion to diſtant countries.

BAR'NACH, a ſmall iſland near the weſt coaſt of Ireland, ſituated in Black Sod Bay.

BAR'NACLE, *ſ.* [probably of *bearn*, a child, and *aac*, Sax. an oak.] A kind of ſhell-fiſh that grow upon timber that lies in the ſea. A bird like a gooſe, fabulouſly ſuppoſed to grow on trees.—It is beyond even an atheiſt's credulity and impudence, to affirm, that the firſt men might grow upon trees, as the ſtory goes about *barnacles*; or might be the lice of ſome vaſt prodigious animals, whoſe ſpecies is now extinct. *Bentley.*—An inſtrument made commonly of iron for the uſe of farriers, to hold a horſe by the noſe, to hinder him from ſtruggling when an inciſion is made.

BARNADE'SIA, *ſ.* [ſo named by Mutis, from Michael Barnades, a Spaniſh botaniſt.] In botany, a genus of the claſs ſyngeneſia, order polygamia æqualis, natural order compoſitæ diſcoideæ. The generic characters are—Calyx: common, ſomewhat ventricoſe, ſpreading at the tip, imbricate; ſcales numerous, gradually longer from baſe to tip; the inferior or exterior ovate, cloſely imbricate, ſharp, pungent; the ſuperior or interior ſubulate, flat, ſpreading, pungent. Corolla: compound, rayed; corollets hermaphrodite, tubular, very few (three or four), remote, in the diſk; ligulate, in a ſimple ſeries, in the ray; proper to the former funnel-form, the tube very ſhort, having a hairy five-parted border with parts erect and converging; proper to the latter ligulate, lanceolate, ſpreading at the baſe, incurved at the tip, and ſplit, being outwardly very hairy, and having the tube longer than the calyx. Stamina: filaments five; antheræ cylindric, tubular. Piſtillum: germ ovate; ſtyle filiform, longer than the ſtamens; ſtigma bifid; clefts ſpreading, ovate-rounded. Pericarpium: none; calyx converging. Seeds: very many, ovate, hairy; hairs reverſed; down of the flowers of the diſk briſtly; rays ſubulate, ſtiff, broken backwards, naked, or covered with extremely minute hairs; of the radial flowers long, erect, ſpreading, many-rayed, feathery, ſoft. Receptaculum: flat, villoſe, without chaff.—*Eſſential Character.* Calyx naked, imbricate, pungent. Corolla radiate; down of the ray feathered; of the diſk briſtly, broken backwards.

Only one ſpecies, barnadeſia ſpinoſa. This is a ſhrub, with very ſmooth branches, ſet with a pair of thorns, at their origin, which at firſt were ſtipules; they are patulous, brown, and ſmooth. Leaves alternate, ſimple, ovate, quite entire, ſharp, flat, veined, ſomewhat hairy on both ſides, whitiſh underneath. Petioles very ſhort. Stipules in pairs, ſmall, ſubulate. Flowers panicled, terminating. Calyx pubeſcent. The flower is ſingular in having two ſorts of down. Native of South America, where it was found by Mutis.

BAR'NARD (Sir John), was in the year 1722 choſen one of the repreſentatives in parliament for the city of London, a truſt which he continued to enjoy during the ſix ſucceeding parliaments, and which he always diſcharged with equal integrity and ability. In 1727, he was choſen alderman of Dowgate Ward, and the next year prepared and preſented to the commons a bill for the better regulation and government of ſeamen in the merchant ſervice. In the debate upon the famous exciſe-ſcheme projected by Sir Robert Walpole in 1733, Sir John ſhewed himſelf not more zealous for the trade of his country than for the honour of thoſe by whom it was principally conducted, and made ſo ſtrenuous an oppoſition to this unpopular

popular and unconſtitutional ſcheme, that, in conjunction with other members, he obliged the miniſtry entirely to lay it aſide. In 1735, he moved for leave to bring in a bill to limit the number of playhouſes, and reſtrain the licentiouſneſs of players, which was now encreaſed to an amazing degree; and, though the bill miſcarried at that time, it was yet, about two years after, enacted into a law, which ſtill continues in force. In 1736, he ſerved, with his brother-in-law, Sir Robert Godſchall, Knt. alderman of Biſhopſgate-ward, the office of ſheriff of the city of London and county of Middleſex. In 1737 he formed a ſcheme for reducing the intereſt on the national debt; a project which, though it did not at that time ſucceed, was, nevertheleſs, afterwards carried into execution, to the great emolument of the trading part of the nation. In 1738 he ſerved the high office of lord-mayor of London; in which ſituation he did his duty with the minuteſt ſcrupuloſity. A young woman, decently dreſſed, was late at night brought to him at the Manſion-houſe by a watchman, as a proſtitute, ſhe having been found alone in the ſtreets at midnight. She requeſted to be heard in her defence. Circumſtances were, however, ſo much againſt her, that Sir John aſked, if ſhe could produce any perſon to her character? She ſaid, that her relations lived a great way off, as far as Whitechapel; and that it would be inconvenient to him to wait till they could be produced. He ſaid, as a magiſtrate his time was that of the public, and their convenience his; and that he would willingly ſit up till her friends could come, and prevent her being ſent to priſon. The girl ſent to Whitechapel for ſome of her friends, who gave her an exceeding good character, and corroborated the reaſons ſhe gave for being out ſo late. This excellent magiſtrate ſaid, that he had never felt more ſincere pleaſure in his life; and, after adviſing her to be more cautious in future, diſmiſſed her. A worthy example this for our modern magiſtrates, who are not perhaps ſufficiently cautious with reſpect to ſending perſons to priſon on very trivial ſuſpicions, nor in keeping them there by way of puniſhment for petty crimes; confining them in thoſe places of wickedneſs and deſpair, where, as Dr. Johnſon obſerves, "the lewd inflame the lewd, the wicked encourage the wicked; and where a criminal is taught to do that with more cunning which he had been uſed to do with leſs."

Sir John Barnard, when he quitted the perſuaſion of the Quakers, did not lay aſide the ſimplicity of his manners and the integrity of his conduct. When Sir Robert Walpole, then prime miniſter, was one day whiſpering to the ſpeaker of the houſe of commons, who leaned towards him over the arm of his chair at the time that Sir John was ſpeaking, he exclaimed, "Mr. Speaker, I addreſs myſelf to you, and not to your chair; I will be heard; I call that gentleman to order." The ſpeaker immediately turned about, begged Sir John's pardon, and requeſted him to proceed. The late Mr. Rob. Dingley uſed to ſay, that Sir John refuſed to accept of the poſt of chancellor of the Exchequer, when it was offered to him, in 1746. Lord Chatham (then Mr. Pitt), a man not particularly liberal in his praiſes, gave Sir John the dignified appellation of the *Great Commoner*; an appellation which with equal propriety was afterwards beſtowed upon himſelf. When, by the death of Sir James Thompſon, he became the firſt on the liſt of the court of aldermen, the title of *Father of the City* devolved upon him; a diſtinction to which, by his virtues, he had ever a claim; and which appears to have been confirmed in the moſt forcible manner by the erection of a ſtatue to him during his life-time in the Royal Exchange; after which Sir John never made his appearance within that fabric, but tranſacted his buſineſs in the front of it. In July, 1758, to the inexpreſſible regret of his brother aldermen, and of all his fellow citizens, he reſigned his gown, retired in a great meaſure from public buſineſs, and continued to live chiefly in a private manner at Clapham; where, after having attained to near the age of eighty, he died the 29th of Auguſt, 1766.

BARNARD or BERNARD (John), was born at Caſtor in Lincolnſhire, and educated at Cambridge. After ſeveral preferments, he was made a prebendary of the church of Lincoln. He wrote Cenſura Clerior, againſt ſcandalous miniſters not fit to be reſtored to church-livings; the Life of Dr. Heylyn; and a few other works. He died at Newark, Auguſt 17, 1683.

BARNARD CASTLE, a market-town in the county of Durham, is 254 miles from London; it ſtands on the river Tees, fifteen miles from Richmond in Yorkſhire, and twenty-ſix from Durham. The caſtle was built originally by Bernard Baliol, great grandfather of John Baliol, whom Edward I. made king of Scotland. It was a large ſtructure, ſituated on a rock, great part of which is ſtill ſtanding, guarded upon one ſide by the river Tees, and in the biſhopric of Durham. The preſent caſtle, which is on the weſt ſide of the town, is of great antiquity, and the buildings elegant, being of white ſtone; the principal ſtreet is ſpacious, and near a mile long. It is not incorporated, but is governed by a ſteward and jury, of the manor of Darlington, which conſiſts of the principal inhabitants. It is very populous. At the foot of the market-place ſtands an open ſtructure of fine freeſtone work, cupolaed, and covered with blue ſlate, ſurrounded with an octagon colonnade, as a ſtand for the market-people. Notwithſtanding this is an inland town, it has one of the largeſt corn-markets in the north of England, but is ſurrounded by ſix or eight thouſand acres of land, capable of the higheſt improvement by cultivation, lying waſte. Its fairs are on Eaſter-Monday, Wedneſday in Whitſun-week, St. James's day, and July 25. Market on Wedneſday. It contains about three thouſand inhabitants; once famous for white leather bridles, and the firſt place where tammys or Scotch camblets were made, a woollen ſtuff, thirty yards in length and about eighteen inches in breadth: about four hundred weavers are yet employed in this branch of trade. This town lies in the pariſh of Gainford, a village eight miles diſtant, eaſt, on the turnpike-road leading to Stockton-upon-Tees, and holds a perpetual curacy under the vicar of that place, who enjoys his living under Trinity College, Cambridge.

From the Yorkſhire banks, adjoining the little village of Startforth, you look upon the ſouth-weſt front of the caſtle, as it crowns the cliffs which overhang the river: an awful and ſolemn aſpect marks the whole edifice, in many parts covered with ivy. To the left, the river is extended in a beautiful canal, bordered with woods and meads, terminated by ſome bold rocks fringed with oaks, and ſurmounted by hills of paſture-ground, on which a little farmhold ſtands, and gives an agreeable termination to the proſpect. To the right, the river falls in caſcades, and, winding from the eye, is concealed for near a mile upon the landſcape, when again it breaks out upon the view, through an avenue of hanging woods; the rich lands on both ſides of the river are grouped with fine cattle and ſheep. At the greateſt diſtance, Hamilton hills are ſeen, of a duſky hue, which diſtinguiſh them from the ſky. The banks of the Tees, a little below the town, afford the moſt pleaſing and romantic walks: a ſpacious plain of meadow-ground lies on the river's brink, from whence, in gradual aſcents, the lands ariſe, varied with paſture, tillage, and meads, interſperſed with coppices and oaken groves. From an eminence called Barberry Rigs, (a natural terrace of half-a-mile in length,) as you look down from the river, the ſolemn ruins of Athelſtan Abbey, placed on a fine eminence, ſkirted with ſycamores, ſtand to the right. Beneath the ſtream falls in caſcades, over rocks of black marble pouring its foaming waters through the elevated arch of Rookby new bridge. On the river's banks, (which beneath the bridge are rocky and ſteep,) a grove of oaks forms an avenue terminated by Rookby Hall; looking up the ſtream, which is ſeen meandering for near a mile, margined with rich incloſures, on one hand you have a proſpect of the church and part of the town of Barnard Caſtle, other parts being intercepted by the nearer hills. In the depth of the vale, by the brink of the river, other parts of the town preſent themſelves. On the other hand, the village of Startforth, with the pleaſant ſeat of George Fielding, Eſq. and the little vicarage, are ſeen, whilſt the back ground is thickened with wood, mingled in a beautiful manner with cottages, ſuperior to which, the ancient hoſpitable manſion of the Maires of Larthington ſhews its white front, ſurmounted with the hills of Hunderthwaite and Lunedale. The ruins of Athelſtan Abbey are near the river; the walls are much diſunited, and juſt ſerve to diſtinguiſh that their original form was a croſs. The eaſt window remains perfect. Here are no monuments or inſcriptions. Authors have diſagreed greatly about the foundation of this place; ſome by miſtake attributing it to Gilbert de le Leya, others to Ranulphus de Moulton, and again others to Conon earl of Richmond. It is probable, from its name, that it was founded by Athelſtan, in propitiation for his crimes againſt his brother, at or near the time he founded Middleton and Michelneſs in Dorſet on that occaſion; he was touched with ſuch remorſe, that in one of theſe religious houſes he underwent a ſeven years penance. A little beyond this abbey is the fine bridge of one arch lately built over the river Tees, by Mr. Morritt: this ſtructure, ariſing from rocks on each ſide of the river, has a ſtriking appearance; the arch is ſeventy-eight feet ſix inches in ſpan, and its elevation above the ſurface of the river is 58 feet 1 inch.

BARNA'SNE, mountains of Ireland, in the county of Kerry, eight miles ſouth-weſt of Killarney.

BARNA'VE (M.) was one of the moſt conſpicuous and able members of the firſt national or conſtituent aſſembly at Paris, in 1789, at the beginning of the late revolution. He was a native of the city of Grenoble, and an advocate in the parliament. He was, while running his career, no more than twenty-ſeven years of age. It would be impoſſible for us, in the compaſs of this article, to do complete juſtice to the character of this extraordinary young man: his hiſtory wholly includes that of the firſt years of the revolution. It will ſuffice for our purpoſe, to make a ſelection of the moſt important facts in which he was the chief actor. On the famous 20th of June, 1789, when the national aſſembly met in the tennis-court at Verſailles, Barnave exhibited, for the firſt time, his powers of mind and eloquence, in a ſpeech, the object of which was to prove, that there exiſted in the king's council an intention to diſſolve the ſtates-general, and that the aſſembly ought to take an oath never to ſeparate, until the objects of their miſſion were completely attained. On the 24th of the ſame month, he moved, contrary to the king's expreſs order, that the ſittings of the aſſembly ſhould be made public; it being ſingular that the nation ſhould be refuſed admittance into the national aſſembly. He was the chief author of the law which was enacted, in October 1789, that no bankrupt, or inſolvent debtor, ſhould become a member of any municipality, or of the provincial and national aſſemblies. Barnave was perpetually upon the ſtage during the whole of 1790. In the ſitting of the 12th of March, he was the member who moved for the ſuppreſſion of the religious orders: "What I propoſe is not for our own benefit (ſaid he, with his uſual eloquence), it is for the benefit of the religious perſons themſelves; it is not we, but they, who ſtand in need of that freedom which they have ſo imprudently alienated. We ought to aboliſh thoſe reſtraints, even though we ſhould be loſers by our conduct: I am not propoſing a financial operation, but a moral and political arrangement." The ſitting of the 22d of June was wholly occupied by Barnave, in oppoſition to Mirabeau, on the queſtion of the power to be delegated to the king of making war and peace: his ſpeeches on this occaſion are eſteemed the beſt which he ever made. He was a ſteady promoter of the emancipation of the negroes in the French colonies; and, having carried his point, he wrote ſome inſtructions on the beſt mode of convoking the colonial aſſemblies. His conduct, however, in this affair, was highly diſapproved by the French politicians, who imagined, that an unbounded liberty to the negroes would be fatal to the Weſt Indies. Barnave, like the greater part of the conſtituents, was attached to a limited monarchy. He was appointed by the national aſſembly, jointly with Latour-Maubourg, and Petion, to meet the king and royal family, when returning to Paris after their flight to Varennes. The three deputies were ſeated in the ſame carriage with the king and queen; and it was obvious, that both the king and queen beſtowed upon Barnave ſo marked a degree of preference, as greatly to exaſperate the others. This flattering conduct of the royal family, aided by the winning addreſs of the queen, and the affecting point of view in which they appeared, had the effect of converting Barnave to their intereſt. In the ſubſequent ſtruggles, therefore, he lent his ſupport to the king's party with ſo much energy and ſucceſs, that he obtained a decree of oblivion for the diſhonourable conduct of the court in that affair.

Upon the concluſion of the ſeſſion of the national aſſembly, Barnave was appointed, by his countrymen, mayor of Grenoble. He likewiſe married the only daughter of a *conſeiller des aides*, of the ſame city, with a dowry of 700,000 livres. He did not, however, long enjoy his dignity or fortune. In the year 1794, when a perſecution was begun by the terroriſts, againſt all thoſe who were conſtituents, or conſidered as well-affected to monarchy, Barnave was ſeized by the revolutionary committee of Grenoble, and transferred to the bloody and unſparing tribunal of Dumas, in Paris. His behaviour, during his mock trial, was reſolute and highly intrepid. On the queſtion of the preſident, Why he became a royaliſt? he anſwered, "I was the moſt zealous advocate of freedom ſo long as it was founded upon the principles of philoſophy; but I deteſt it, as a tool of miſchief, in the hands of ſuch miſcreants as you." This great man was deſtined to the guillotine on April 12, 1794, in the thirty-third year of his age.

BARNAUL', a town of Siberia, on the weſt ſide of the Oby, 100 miles ſouth-ſouth-eaſt of Kolivan.

BARNE'RA, a ſmall iſland of Scotland, near the weſt coaſt of Lewis, ſeparated from the main land by a ſtrait, called *Loch Barnera*, about a mile wide. Lat. 58. 25. N. lon. 7. 3. W. Greenwich.

BARNES (Joſhua), profeſſor of the Greek language at Cambridge, to which office he was choſen in 1695. His firſt publication was a whimſical tract, intitled, Gerania; or a new Diſcovery of the little People called Pygmies. After that appeared his Life of Edward III. In the year 1700, Mrs. Maſon, of Hemingford, in Huntingdonſhire, a widow lady of fortune, came to Cambridge, and deſired to ſettle 100l. a-year upon him; which he politely refuſed, unleſs ſhe would condeſcend to make him happy with her perſon, which was not very engaging. The lady was too obliging to refuſe any thing to Joſhua, for whom ſhe ſaid, "the ſun ſtood ſtill;" and they were accordingly married. Mr. Barnes wrote ſeveral other books, viz. Sacred Poems; The Life of Oliver Cromwell; ſeveral dramatic pieces; A Poetical Paraphraſe on the Hiſtory of Eſther, in Greek verſe; and he publiſhed editions of Euripides, Anacreon, and Homer, with notes and a Latin tranſlation. He was of ſo humane a diſpoſition, that he gave his only coat to a vagrant begging at his door. This excellent man died the 3d of Auguſt, 1712, in his fifty-eighth year.

BAR'NET, a pleaſant town, partly in Herts and partly in Middleſex, eleven miles north-weſt of London, on the great northern road. It is called High Barnet, from its ſituation on a hill; and Chipping or Cheaping Barnet, from its market, which was granted by Henry II. to the monks of St. Alban's, and is famous for cattle. At the twelve-mile-ſtone beyond the town, ſtands a high ſtone, erected in memory of the battle fought on that ſpot, on the 14th of April, 1471, between Edward IV. and Guy earl of Warwick, in which the noble earl was ſlain, with ten thouſand of his men. This town is governed by a magiſtrate, high-conſtable, and petty officers. The market is on Monday; and the fairs on July 24 and 25, for toys;

September 4, 5, and 6, for horſes, cows, ſheep, and cheeſe; and October 18 and 19, for Engliſh, Welch, and Scotch, cattle. The church is ſituated in the centre of the town, and is a very ancient edifice; it is a chapel of eaſe to the village of Eaſt Barnet. Here is a free-ſchool for boys, founded by queen Elizabeth, and endowed partly by that queen, and partly by alderman Owen, of London, whoſe additional endowment is paid by the fiſhmonger's company, who appoint twenty-four governors, by whom the maſter and uſher are choſen. Here are alſo twelve alms-houſes, with good donations to the poor. This pariſh has a very large common-right, in the midſt of which is a mineral ſpring, formerly of great note. The town and country around is very healthy and fruitful, and is famous for good hay, which is ſent to the London market.

BAR'NEVELDT (John d'Olden), the celebrated Dutch ſtateſman, and one of the founders of the civil liberty of Holland. His patriotic zeal inducing him to limit the authority of Maurice prince of Orange, the ſecond ſtadtholder, the partizans of that prince falſely accuſed him of a deſign to deliver his country into the hands of the king of Spain. On this abſurd charge he was tried, condemned, and beheaded, in 1619. His ſons William and René, to revenge their father's death, formed a conſpiracy againſt the ſtadtholder, which was diſcovered. William fled: but René was taken and condemned to die; which fatal circumſtance has immortalized the memory of his mother, of whom the following anecdote is recorded. She ſolicited a pardon for René; upon which Maurice expreſſed his ſurpriſe that ſhe ſhould do that for her ſon, which ſhe had refuſed to do for her huſband. To this remark, ſhe replied with indignation, "I would not aſk a pardon for my huſband, becauſe he was innocent: I ſolicit it for my ſon, becauſe he was guilty." William, who fled, was obliged to take refuge in Spain, where he ſpent ſome time in a ſtate of exile, wandering from place to place, till affairs in Holland had taken a favourable turn; when he was recalled, and, from the virtues and patriotiſm of his father, he became in great favour with the States General. It is remarkable, that, during his abode in Spain, he became enamoured of a lady of noble birth, and of a ſimilar fortune with himſelf. Her parents had been driven from France by a ſimilar political commotion, and had found an aſylum in the cottage of a poor old hermit, in the foreſt of Ardennes. In this hermitage the lady was born; and her mother, being obliged to fly, left her to the care of the hermit, who undertook her education; but in ſuch a way, that at the age of twelve ſhe remained ignorant of ſexual diſtinctions. From this period the hermit employed himſelf in ſtoring the mind of his pupil with the knowledge of manners, politics, and in ſhort all the tranſactions of civil ſociety. When ſhe reached the age of eighteen years her preceptor died; and from the wilds of the foreſt ſhe emerged into civilized life. Alone, and unprotected as ſhe was, ſhe aſſumed for ſecurity the dreſs of a man, went to reſide in Flanders, and became engaged in a variety of innocent intrigues with the women; till, tired of that mode of ſpending her time, ſhe went to Paris, ſtill retaining her maſculine garb. At Paris ſhe became acquainted with ſignora Florino, an Italian lady; a mutual attachment took place between them; but, on an eclairciſſement, the ſignora proving to be the count Roſino, they quitted Paris together; and on their arrival at Florence, the reſidence of the count's parents, they were married. Their happineſs, however, was of ſhort duration; for, on a voyage to Smyrna, the ſhip in which they embarked was attacked by a corſair, and a ſevere action enſued, which terminated in the death of the count, and the captivity of his wife. Imminent was the danger to her chaſtity while immured in a ſeraglio at Tunis; but, being at length ranſomed and ſet on ſhore in Spain, ſhe there met with William Barneveldt, juſt as he was recalled to Holland. A mutual affection taking place, they ſet off on their journey together; but, being attacked by a party of robbers, they ſeparated them, plundered them of their valuables, and ſet them out by different routes. She proceeded to Amſterdam, and from thence to Bruſſels; where ſhe heard that Barneveldt was alive, and at the Hague; for, though he had been cruelly treated by the robbers, he had recovered of his wounds, and had been joyfully received by his countrymen. On her arrival at this place, ſhe had not only the happineſs of celebrating her nuptials with William Barneveldt, but had the ſingular felicity of meeting with her long-loſt mother.

BAR'NEVELTS ISLANDS, two ſmall flat iſlands near the coaſt of Terra del Fuego. Lat. 55. 40. S. lon. 66. 58. W. Greenwich.

BAR'NEVILLE, a town of France, in the department of the Channel, and chief place of a canton, in the diſtrict of Valognes; four leagues and a quarter weſt-ſouth-weſt of Valognes, and five and a quarter ſouth-ſouth-weſt of Cherburg.

BAR'NFIARD, *ſ.* in ornithology, the name of a bird uſually ſeen at ſea, and looked on as a foreteller of bad weather. It is about the ſize of a ſparrow; its neck and back are black, and its breaſt and belly grey; its feet are red, and its bill black and ſomewhat broad. It ſkims very nimbly along the ſurface of the water.

BAR'NSLEY, a market town in Yorkſhire, ſituated fifteen miles weſt from Doncaſter, upon the turnpike-road leading from thence to Mancheſter, from which it is diſtant thirty-eight miles; north from Sheffield fourteen miles; ſouth from Wakefield ten miles; upon the great weſtern turnpike-road from London into the north. It is about five furlongs in length, on the ſide of a hill. It carries on a conſiderable trade in wire, and hardwares made of iron and ſteel. The town, though it is well built of ſtone, is called Black Barnſley; but whether from its forges, which are continually ſmoaking, or from the neighbouring moors, which have a ſooty aſpect, is not certain. The land about this place is remarkably good, and famous for its growth of wheat and other crops of grain; nor is the place and neighbourhood leſs diſtinguiſhable for the goodneſs and plenty of fuel, coals being as cheap here as in any part of the kingdom. A ſcheme is in agitation for bringing up a navigation to this town from the river Dunn, by which the Eaſt Riding of this county, and the counties of Lincoln, Leiceſter, Nottingham, &c. would be materially benefited by increaſing and cheap ſupplies of coals, and no place is better calculated, from the population of its neighbourhood, the plenty and cheapneſs of proviſions, the abundance of ſtone and timber, and iron-ſtone, &c. for eſtabliſhing and conducting manufactures of every kind. The wire-manufactory is of conſiderable antiquity here, and ſuppoſed to be the beſt in the kingdom, from the goodneſs of the materials and the long experience of its artiſts. Alſo, a linen-manufactory is carried on in this town and neighbourhood, and there is ſuppoſed to be five hundred looms, or more, employed in weaving of linen cloth and checque. A glaſs-manufactory of black bottles is carried on near the town. Here is a well-built church, with a good peal of eight bells; alſo a free grammar-ſchool, founded and endowed by Thomas Keresforth, in 1665. It has three fairs, viz. Wedneſday before February 28, May 12, and October 10, for horned cattle, horſes, hogs, &c. Market-day, Wedneſday. Two miles from Barnſley is Monk Bretton priory, in the deanery of Doncaſter and archdeaconry of York. Here Adam Fitz-Swain, early in the reign of Henry II. founded a monaſtery of the Choniac order to the honour of St. Mary Magdalene; it was firſt made ſubordinate to the priory of St. John Pontefract, who had, till the diſſolution, from this houſe, a ſmall yearly acknowledgment in money. The ſituation was on the north ſide of the river Devon; but it is nearly all demoliſhed, except one entire window belonging to the church, the porter's lodge, and a round building which was uſed as an oven in the time of the religious, now converted to a dove-cot; and a gateway, over which is an eſcutcheon of ſtone, whereon were cut three covered cups. Lady Mary Armyn, daughter to Henry Talbot, fourth ſon of the illuſtrious

George Talbot earl of Shrewſbury, erected on this ſpot, in 1635, an hoſpital for ſix poor widows, who have forty ſhillings and a new gown every year. This monaſtery made Monk Bretton tithe-free. Alſo, in this village is a meeting-houſe for the people called quakers. When George Fox the firſt quaker came to this place, a gentleman gave the piece of ground to erect the meeting-houſe and burial-ground, A.D. 1657; and tradition ſays, the firſt quaker that died in England is interred in this ground. In the village of Stainbrough, three miles from Barnſley, is Wentworth-caſtle, the ſeat of the right honourable William earl of Strafford, a moſt beautiful fabric, which ſtands on a riſing eminence, and commands a fine proſpect into the north, eaſt, and weſt, and is ſurrounded with a large extenſive park well ſtocked with fine deer; and within the houſe is a moſt elegant gallery, the length from ſouth to north meaſures a hundred and eighty feet by twenty-four within, ornamented in a moſt ſuperb ſtile; and on the eaſt ſide of the houſe, in the park, runs a ſerpentine canal of ſome length, with a good ſtone-bridge over it of one arch. At Weſt Bretton, ſix miles from Barnſley, in the pariſh of High Hoyland, is Bretton-hall, the ſeat of Sir Thomas Blackett, a moſt beautiful fabric, and ſtands in the midſt of an extenſive park ſtocked with deer, with two large ſheets of water well-ſtocked with fiſh; meaſures above ſixty acres. There is a handſome chapel endowed by Sir Thomas Blackett. And, ſix miles from Barnſley is Wortley-hall, the ſeat of the counteſs of Bute.

BARN'STAPLE, a ſea-port town in the north of Devonſhire, with a market on Fridays, and three fairs in the year, viz. September 19, Friday before April 21, and the ſecond Friday in December. The name is compounded of *bar*, which, in the Britiſh language, is the mouth of a river, and *ſtable*, which, in the Saxon, is a mart of trade. It had walls formerly, with a caſtle, the liberties of a city, and a haven, which became at laſt ſo ſhallow, though at ſpring tides the neighbouring fields are overflowed, that moſt of the ſhipping removed to Biddeford; yet it has ſtill ſome merchants, and a good trade. The town is pleaſantly ſituated among hills, in the form of a ſemicircle, to which the river is a diameter. The ſtreets are clean and well paved, and the houſes are of ſtone. It is incorporated by charter of queen Mary with a mayor, twenty-four common council, of whom two are aldermen, beſides a high ſteward, a recorder, his deputy, &c. It is noted for good ale. It has ſent burgeſſes to parliament ever ſince the 23d of Edward I. It is ſeated on the river Taw, over which there is a ſtately bridge of ſixteen arches, which was built by the generous benefaction of one Stamford, a citizen and merchant of London, who was not a native of the place; but, by trading here to his gain, had kindneſs enough for the town to confer that valuable benefit upon it. Barnſtaple is alſo called Barum on the mile-ſtones near it, as Saliſbury is called Sarum. It is more populous than Biddeford, but not better built, and ſtands lower. It has two ſquares, and an extenſive walk adjoining the Yeo and Taw, commanding a beautiful land and ſea proſpect, as the tide waſhes the banks twice every day. The markets are large, for cattle, corn, and all kinds of proviſions. The woollen manufactories carried on at Barnſtaple, are chiefly tammies, ſhalloons, baize, &c. Here are two alms-houſes, and two good charity-ſchools, all of them well endowed. The church is alſo large and handſome. Barnſtaple is forty miles north-north-weſt of Exeter, and two hundred weſt of London.

BARN'STORF, or BERN'DORF, a town of Germany, in the circle of Weſtphalia, and county of Diepholz; eight miles north of Diepholz.

BARN'TRUP, a town of Germany, in the circle of Weſtphalia, and county of Lippe; four miles north-eaſt of Blomberg.

BA'RO, or BARON (Peter), profeſſor of divinity in the univerſity of Cambridge, in the ſixteenth century, was born at Eſtampes in France, and educated at the univerſity of Bourges, where he was admitted a licentiate in the law; but, being of the proteſtant religion, he was obliged to leave his native country: and, coming to England, was kindly entertained by lord Burleigh. He afterwards ſettled at Cambridge, and in 1574 was choſen lady Margaret's profeſſor. For ſome years he quietly enjoyed his profeſſorſhip; but there was raiſed a faction againſt him, by his oppoſing the doctrine of abſolute predeſtination; which rendered his place ſo uneaſy, that he choſe to leave the univerſity, and to ſettle in London. He wrote, 1. *In Jonam Prophetam Prælectionis* xxxix. 2. *De Præſtantia & Dignitate Divinæ Legis*; and other pieces. He died about the year 1600.

BAROACH', a town of India, in the country of Guzerat, in the dominions of the Great Mogul, once famous for its cotton manufactories. It is thirty-four miles north of Surat, and eighty ſouth of Amedabad. The Engliſh and Dutch had formerly factories here, which are now abandoned. Lat. 21.45. N. lon. 72.58. E. Greenwich.

BAROC'CI (Frederic), a celebrated painter, born at Urbino, who appears to have been inſpired with the genius of Raphael. In his early youth he travelled to Rome, where he painted in freſco. He then returned to Urbino, and, giving himſelf up to intenſe ſtudy, acquired a great name in painting. His genius particularly led him to religious ſubjects. At his leiſure hours, he etched a few prints from his own deſigns, which are highly finiſhed, and executed with great ſoftneſs and delicacy. The Salutation is his capital performance in that way; of which we ſeldom meet with any impreſſions, but thoſe taken from the retouched plate, which are very harſh. He died at Urbino in 1612, aged eighty-four.

BARO'CHE (La), a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Domfront; four miles ſouth-ſouth-eaſt of Domfront.

BARO'CO, *ſ.* in logic, a term given to the fourth mode of the ſecond figure of ſyllogiſms. A ſyllogiſm in baroco has the firſt propoſition univerſal and affirmative, but the ſecond and third particular and negative, and the middle term is the predicate in the two firſt propoſitions. For example,

BA Every virtue is attended with diſcretion.
RO Some kinds of zeal are not attended with diſcretion.
CO Therefore ſome kinds of zeal are not virtues.

BAR Nullus homo non eſt bipes.
OC Non omne animal eſt bipes.
O Non omne animal eſt homo.

BARO'METER, *ſ.* [*barometrum*, Lat. βαρομετρον, Gr. from βαρος, weight, and μετρον, a meaſure.] An inſtrument for meaſuring the weight or preſſure of the atmoſphere; and by that means the variations in the ſtate of the air, foretelling the changes in the weather, and meaſuring heights or depths, &c. This inſtrument commonly conſiſts of a glaſs tube, open at one end; which being firſt filled with quickſilver, and then inverted with the open end downwards into a baſon of the ſame, the mercury deſcends in the tube till it remains at about the height of twenty-nine or thirty inches, according to the weight or preſſure of the atmoſphere at the time, which is juſt equal to the weight of that column of the quickſilver. Hence it follows that, if by any means the preſſure of the air be altered, it will be indicated by the riſing or falling of the mercury in the tube; or, if the barometer be carried to a higher ſtation, the quickſilver will deſcend lower in the tube, but, when carried to a lower place, it will riſe higher in the tube, according to the difference in elevation between the two places.

About the beginning of the laſt century, when the doctrine of a plenum was in vogue, it was a common opinion among philoſophers, that the aſcent of water in pumps was owing to what they called nature's abhorrence of a vacuum; and that thus fluids might be raiſed by ſuction to any height whatever. But an accident having juſt diſcovered, that water could not be raiſed in a pump unleſs the ſucker reached to within thirty-three feet of the water in the well, it was conjectured by Galileo, who flouriſhed about that time, that there might be ſome other cauſe of the aſcent of water in pumps, or at leaſt that this abhorrence was limited to the finite height of thirty-three feet. Being unable to ſatisfy himſelf on this head, he recommended the conſideration of the difficulty to Torricelli, who had been his diſciple. After ſome time Torricelli fell upon the ſuſpicion that the preſſure of the atmoſphere was the cauſe of the aſcent of water in pumps; that a column of water thirty-three feet high was a juſt counterpoiſe to a column of air, of the ſame baſe, and which extended up to the top of the atmoſphere; and that this was the true reaſon why the water did not follow the ſucker any farther. And this ſuſpicion was ſoon after confirmed by various experiments. Torricelli conſidered, that, if a column of water thirty-three feet high were a counterpoiſe to a whole column of the atmoſphere, then a column of mercury of about two feet and a half high would alſo be a counterpoiſe to it, ſince quickſilver is nearly fourteen times heavier than water, and ſo the fourteenth part of that height, or near two feet and a half, would be as heavy as the column of water. This reaſoning was ſoon verified; for, having filled a glaſs tube with quickſilver, and inverted it into a baſon of the ſame, the mercury preſently deſcended till its height, above that in the baſon, was about two feet and a half, juſt as he expected. And this is what has, from him, been called the Torricellian experiment.

The new opinion, with this confirmation of it, was readily acquieſced in by moſt of the philoſophers, who repeated the experiment in various ways. Others however ſtill adhered to the old doctrine, and raiſed ſeveral objections againſt the new one; ſuch as that there was a film or imperceptible *rope of mercury*, extended through the upper part of the tube, which ſuſpended the column of mercury, and kept it from falling into that in the baſon. This and other objections were however ſoon overcome by additional confirmations of the true doctrine, particularly by varying the elevation of the place. It was hinted by Deſcartes and Paſcal, that if the mercury be ſuſtained in the tube by the preſſure of the atmoſphere, by carrying it to a higher ſituation, it would deſcend lower in the tube, having a ſhorter column of the atmoſphere to ſuſtain it, and *vice verſa*. And Paſcal engaged his brother-in-law, M. Perier, to try that experiment for him, being more conveniently ſituated for that purpoſe than he was at Paris. This he accordingly executed, by obſerving the height of the quickſilver in the tube, firſt at the bottom of a mountain in Auvergne, and then at ſeveral ſtations, or different altitudes, in aſcending, by which it was found that the mercury fell lower and lower all the way to the top of the mountain; and ſo confirming the truth of the doctrine relating to the univerſal preſſure of the atmoſphere, and the conſequent ſuſpenſion of the mercury in the tube of the barometer. Thus, by the united endeavours of Torricelli, Deſcartes, Paſcal, Merſenne, Huygens, and others, the cauſe of the ſuſpenſion of the quickſilver in the tube of the barometer became pretty generally eſtabliſhed.

It was ſome time however after this general conſent, before it was known that the preſſure of the air was various at different times in the ſame place. This could not however remain long unknown, as the frequent meaſuring of the column of mercury muſt ſoon ſhew its variations in altitude; and experience and obſervation would preſently ſhew that thoſe variations in the mercurial column, were always ſucceeded by certain changes in the weather, as to rain, wind, froſts, &c. Hence this inſtrument ſoon came into uſe as the means of foretelling the changes of the weather; and on this account it obtained the name of the *weather-glaſs*, as it did that of *barometer* from its being the meaſure of the weight or preſſure of the air. We ſhall now ſtate its various forms and uſes.

The COMMON BAROMETER. This is repreſented at *fig.* 1, in the annexed Plate, and was the invention of Torricelli. A B is a glaſs tube, of a quarter, or one-third, or half an inch wide, the more the better, and about thirty-four inches long, being cloſe at the top A, and the open end B immerſed in a baſon of quickſilver C D, which is the better the wider it is. To fill this, or any other barometer, take a clean new glaſs tube, of the dimenſions as above, and pour ſome purified quickſilver into it, with a ſmall funnel either of glaſs or paper, in a fine continued ſtream, till it wants about an inch of being full; then, ſtopping it cloſe with the finger, invert it ſlowly, and the air in the empty part will aſcend gradually to the other end, collecting into itſelf ſuch other ſmall air bubbles as unavoidably get into the tube among the mercury, in filling it with the funnel: and thus continue to invert it ſeveral times, turning each end alternately upwards, till all the air bubbles are collected, and brought up to the open end of the tube, and till the part filled ſhall appear without ſpeck, like a fine poliſhed ſteel rod. This done, pour in a little more quickſilver, to fill the empty part quite full, and ſo exclude all air from the tube: then, ſtopping the orifice again with the finger, invert the tube, and immerſe the finger and end thus ſtopped into a baſon of the ſame purified quickſilver; in this poſition withdraw the finger, then will the mercury deſcend in the tube to ſome place as E, between twenty-eight and thirty-one inches above that in the baſon at F, as theſe are the limits between which it always ſtands in this country on the common ſurface of the earth. Then meaſure, from the ſurface of the quickſilver in the baſon at F, twenty-eight inches to G, and thirty-one inches to H, dividing the ſpace between them into inches and tenths, which may be marked from a ſcale placed againſt the ſide of the tube; and the tenths are ſubdivided into hundredth parts of an inch by a ſliding index carrying a vernier or nonius. Theſe three inches, between twenty-eight and thirty-one, ſo divided, will anſwer for all the ordinary purpoſes of a ſtationary or chamber barometer; but for experiments on altitudes and depths, it is proper to have the diviſions carried on a little higher up, and a great deal lower down. In the proper filling and fitting up of the barometer, ſeveral circumſtances are to be carefully noted; as, that the bore of the tube be pretty wide, to allow the freer motion of the quickſilver, without being impeded by an adheſion to the ſides; that the baſon below it be alſo pretty large, in order that the ſurface of the mercury at F may not ſenſibly riſe or fall with that in the tube; that the bottom of the tube be cut off rather obliquely, that when it reſts on the bottom of the baſon there may be a free paſſage for the quickſilver; and that, to have the quickſilver very pure, it is beſt to boil it in the tube, which will expel all the air from it. This barometer is commonly fitted up in a neat mahogany caſe, together with a thermometer and hygrometer, as repreſented at *fig.* 13.

As the ſcale of variation is but ſmall, being included within three inches in the common barometer, ſeveral contrivances have been deviſed to enlarge the ſcale, or to render the motion of the quickſilver more ſenſible. Deſcartes firſt ſuggeſted a method of increaſing the ſenſibility, which was executed by Huygens. This was effected by making the barometrical tube end in a large cylindrical veſſel at top, into which was inſerted alſo the lower or open end of a much finer tube than the former, which was partly filled with water, to give little obſtruction by its weight to the motion of the mercury, while it moved through a pretty long ſpace of the very fine tube by a ſmall variation of the mercury below it, and ſo rendered the ſmall changes in the ſtate of the air very ſenſible. But the inconvenience was this, that the air contained in the water gradually diſengaged itſelf, and eſcaped through into the vacuum in the top of the ſmall tube, till it was collected in a body there, and by its elaſticity preventing the free riſe of the fluids in the tubes, ſpoiled the inſtrument as a barometer. And this, it may be obſerved, is the reaſon why a water barometer cannot ſucceed. This barometer is repreſented in *fig.* 2, where C D is the veſſel, in which are united the upper & ſmall water tube A C, with the lower or mercurial tube C B. To remedy this inconvenience, Huygens thought of placing the mercury at top, and the water at bottom, which he thus contrived. A D G (*fig.* 3) is a bent tube hermetically ſealed at A, but open at G, of about one line in diameter, and paſſing through the two equal cylindrical veſſels B C, E F, which are about twenty inches apart, and of fifteen lines diameter, their length being ten. The mercury, being put into the tube, will ſtand between the middle of the veſſels E F and B C, the remaining ſpace to A being void both of air and mercury. Laſtly, common water, tinged with a ſixth part of aqua regis, to prevent its freezing, is poured into the tube F G, till it riſes a foot above the mercury in D F. To prevent the water from evaporating, a drop of oil of ſweet almonds floats on the top of it. But the column of water will be ſenſibly affected by heat and cold, which ſpoils the accuracy of the inſtrument.

The HORIZONTAL or RECTANGULAR BAROMETER, repreſented in *fig.* 4, was invented by J. Bernoulli and Caſſini; where A B is a wide cylindrical part at the top of the tube, which tube is bent at right angles at C, the lower part of it C D being turned into the horizontal direction, and cloſed above at A, but open at the lower end D, where the mercury cannot run out, becauſe it is oppoſed by the preſſure of the atmoſphere. This and the foregoing contrivance of Huygens are founded on the theorem in hydroſtatics, that fluids of the ſame baſe preſs according to their perpendicular altitude, not according to the quantity of their matter; ſo that the ſame preſſure of the atmoſphere ſuſtains the quickſilver that fills the tube A C D and the ciſtern B, as would ſupport the mercury in the tube alone. Hence, having fixed upon the ſize of the ſcale, ſuppoſe twelve inches, inſtead of three, in the common barometer from twenty-eight to thirty-one, that is four times as long; then the area of a ſection of the cylinder A B muſt be four times that of the tube, and conſequently its diameter double, ſince the areas of circles are as the ſquares of their diameters: then for every natural variation of an inch in the cylinder A B, there will be a variation of four inches in the tube C D. But, on account of the attrition of the mercury againſt the ſides of the glaſs, and the great momentum from the quick motion in C D, the quickſilver is apt to break, and the riſe and fall is no longer equable; and beſides, the mercury is apt to be thrown out of the orifice at D by any ſudden blow or motion of the machine.

The DIAGONAL BAROMETER of Sir Samuel Moreland, is ſhewn at *fig.* 5, and is another method of enlarging the natural ſcale of three inches perpendicular, or C D, by extending it to any length, as B C, in an oblique direction. This is liable in ſome degree to the ſame inconvenience, from friction and breaking, as the horizontal one; and hence it is found that the diagonal part B C cannot properly be bent from the perpendicular more than in an angle of 45°, which only increaſes the ſcale nearly in the proportion of ſeven to five.

DOCTOR HOOK'S WHEEL BAROMETER, *fig.* 6, was invented about 1668, and is meant to render the alterations in the air more ſenſible. Here the barometer tube has a large ball A B at top, and is bent up at the lower or open end, where an iron ball G floats on the top of the mercury in the tube, to which is connected another ball H by a cord, hanging freely over a pulley, turning an index K L about its centre. When the mercury riſes in the part F G, it raiſes the ball, and the other ball deſcends and turns the pulley with the index round a graduated circle from N towards M and P; and the contrary way when the quickſilver and the ball ſink in the bent part of the tube. Hence the ſcale is eaſily enlarged ten or twelve fold, being increaſed in proportion of the axis of the pulley to the length of the index K L. But then the friction of the pulley and axis is ſome obſtruction to the free motion of the quickſilver.

The STEELYARD BAROMETER, for ſo that may be called which is repreſented by *fig.* 7, which enlarges the ſcale in the proportion of the ſhorter to the longer arm of a ſteelyard. A B is the barometer tube, cloſe at A and open at B, immerſed in a cylindrical glaſs ciſtern C D, which is but very little wider than the tube A B. The barometer tube is ſuſpended to the ſhorter arm of the index like a ſteelyard, moving on the fulcrum E, and the extremity of its longer arm pointing to the diviſions of a graduated arch, with which index the tube is nearly in equilibrio. When the preſſure of the atmoſphere is leſſened, the mercury deſcends out of the tube into the ciſtern which raiſes the tube and the ſhorter arm of the index, and conſequently the extremity of the longer moves downwards, and paſſes over a part of the graduated arch. And on the contrary this moves upwards when the preſſure of the atmoſphere increaſes.

The PENDANT BAROMETER, *fig.* 8, was invented by M. Amontons, in 1695. It conſiſts of a ſingle conical tube A B, hung up by a thread, the larger or open end downwards, and having no veſſel or ciſtern, becauſe the conical figure ſupplies that, and the column of mercury ſuſtained is always equal to that in the common barometer tube; which is effected thus: when the preſſure of the air is leſs, the mercury ſinks down to a lower and wider part of the tube, and conſequently the altitude of its column will be leſs; and on the contrary, by a greater preſſure of the atmoſphere the mercury is forced up to a higher and narrower part, till the length of the column C D be equal to that in the tube of the common barometer. The inconvenience of this barometer is, that as the bore muſt be made very ſmall, to prevent the mercury from falling out by an accidental ſhake, the friction and adheſion to the ſides of the tube prevent the free motion of the mercury.

MR. ROWNING'S COMPOUND BAROMETERS, have ſeveral contrivances for enlarging the ſcale in any proportion whatever. One of theſe is deſcribed in the Philoſ. Tranſ. No. 427, and alſo in his Nat. Philoſ. part 2, which is here repreſented at *fig.* 9. A B C is a compound tube, hermetically ſealed at A, and open at C; empty from A to D, filled with mercury from thence to B, and from hence to E with water. Then, by varying the proportions of the two tubes A F and F C, the ſcale of variation may be changed in any degree.

The MARINE BAROMETER. This was firſt invented by Dr. Hook, to be uſed at ſea, being contrived ſo as not to be affected or injured by the motion of the ſhip. His contrivance conſiſted of a double thermometer, or a couple of tubes half filled with ſpirit of wine; the one ſealed at both ends, with a quantity of air included; the other ſealed at one end only. The former of theſe is affected only by the warmth of the air; but the other is affected both by the external warmth and by the variable preſſure of the atmoſphere. Hence, conſidering the ſpirit thermometer as a ſtandard, the exceſs of the riſe or fall of the other above it will ſhew the increaſe or decreaſe of the preſſure of the atmoſphere. This inſtrument is deſcribed by Dr. Halley, in the Philoſ. Tranſ. No. 269, where he ſays of it, "I had one of theſe barometers with me in my late ſouthern voyage, and it never failed to prognoſticate and give early notice of all the bad weather we had, ſo that I depended thereon, and made proviſion accordingly; and from my own experience I conclude, that a more uſeful contrivance hath not for this long time been offered for the benefit of navigation."

Mr. Nairne, an ingenious artiſt in London, has lately invented a new kind of Marine Barometer; which differs from the common barometer by having the lower part of the tube, for about two feet long, made very ſmall, to check the vibrations of the mercury, which is apt to ariſe from the motions of the ſhip. This is alſo aſſiſted by being hung in gimbals, by a part which ſubjects it to be the leaſt affected by ſuch motions. Another ſort of Marine Barometer has alſo been invented by M. Paſſemente, an ingenious artiſt at Paris. This contrivance conſiſts in twiſting the middle of the tube into a ſpiral of two revolutions; by which the impulſes the mercury receives from the ſhip's motions are deſtroyed, by being directed contrariwiſe.

The STATICAL BAROSCOPE, or BAROMETER of Mr. Boyle, conſiſts of a large glaſs bubble, blown very thin, and then balanced by a ſmall braſs weight. Hence, theſe two bodies being of unequal bulk, the larger will be very much affected by a change of the denſity of the medium, but the leſs not at all as to ſenſe: ſo that, when the atmoſphere becomes denſer, the ball loſes more of its weight, and the braſs weight preponderates; contrariwiſe when the air grows lighter.

Mr. CASWELL's BAROSCOPE, or BAROMETER, ſeems to be the moſt ſenſible and exact of any. It is thus deſcribed: Suppoſe A B C D, *fig.* 10, is a bucket of water, in which is the baroſcope *x r e z y o ſ m*, which conſiſts of a body *x r ſ m*, and a tube *e z y o*, which are both concave cylinders made of glaſs, and communicating with each other. The bottom of the tube *z y* has a leaden weight to ſink it, ſo that the top of the body may juſt ſwim even with the ſurface of the water by the addition of ſome grain weights on the top. When the inſtrument is forced with its mouth downwards, the water aſcends into the tube to the height *y u*. To the top is added a ſmall concave cylinder, or pipe, to keep the inſtrument from ſinking down to the bottom: *m d* is a wire: and *m* S, *d e*, are two threads oblique to the ſurface of the water, which perform the office of diagonals: for while the inſtrument ſinks more or leſs by an alteration in the gravity of the air, where the ſurface of the water cuts the thread is formed a ſmall bubble, which aſcends up the thread while the mercury of the common baroſcope aſcends, and *vice verſa.* It appears from a calculation which the author makes, that this inſtrument ſhews the alterations in the air 1200 times more accurately than the common barometer. He obſerves, that the bubble is ſeldom known to ſtand ſtill even for a minute; that a ſmall blaſt of wind, which cannot be heard in a chamber, will ſenſibly make it ſink; and that a cloud paſſing over it always makes it deſcend, &c.

While ſome have been increaſing the ſenſibility of the barometer by enlarging the variations, others have endeavoured to make it more convenient by reducing the length of the tube. M. Amontons, in 1688, firſt propoſed this alteration in the ſtructure of barometers, by joining ſeveral to one another, alternately filled with mercury and with air, or ſome other fluid; and the number of theſe tubes may be increaſed at pleaſure: but this contrivance perhaps is more ingenious than uſeful. Marian's *reduced* barometer, which is only three inches long, ſerves the purpoſe of a manometer, in ſhewing the dilatations of the air in the receiver of an air-pump; and inſtruments of this kind are now commonly applied to this uſe.

The PORTABLE BAROMETER is ſo contrived that it may be carried from one place to another without being diſordered. The end of the tube is tied up in a leathern bag not quite full of mercury; which being preſſed by the air, forces the mercury into the tube, and keeps it ſuſpended at its proper height. This bag is uſually incloſed in a box, through the bottom of which paſſes a ſcrew, by means of which the mercury may be forced up to the top of the tube, and prevented from breaking it by daſhing againſt the top when the inſtrument is removed from one ſtation to another. It ſeems Mr. Patrick firſt made a contrivance of this kind: but the portable barometer has received various improvements ſince; and the moſt complete of this kind has been deſcribed by M. de Luc, in his *Recherches*, vol. ii. with the apparatus belonging to it, the method of conſtruction and uſe, and the advantages attending it. Improvements have alſo been ſuggeſted by Sir George Shuckburgh, and Col. Roy, which have been carried into execution, with farther improvements, by Mr. Ramſden, and other ingenious artiſts in London. This inſtrument is repreſented at *fig.* 11, incloſed in its mahogany caſe by means of three metallic rings *a a a*. This caſe is a hollow cone, ſo ſhaped within as to contain ſteadily the body of the barometer, and is divided into three branches from *b* to *c*, forming three legs or ſupports for the inſtrument when obſervations are making, and ſuſtaining it at the part *d* of the caſe, as ſhewn in *fig.* 12, by an improved kind of gimbals, in which its own weight renders it ſufficiently ſteady at any time. In the part of the frame *f g* where the barometer tube appears, is made a long ſlit or opening, that the column of mercury may be ſeen againſt the light, and the vernier piece *f* brought down to coincide very nicely with the edge of the mercury. When the inſtrument is fixed in its ſtand, the ſcrew *l* is to be turned to let the mercury down to its proper ſtation, and a peg at *i* muſt be looſened, to admit the external air to act upon the mercury contained in the box *k*. The proper adjuſtment, or mode of obſerving what is called the *zero* or 0 diviſion of the column of mercury, is by obſerving it in the tranſparent part of the box *k*, which has a glaſs tube or reſervoir for the quickſilver, and an edged piece of metal attached to the external part of it; with the edge of which the mercury is to be brought into contact by turning the ſcrew *l* to the right or left as occaſion requires. The vernier piece at *f*, which determines the altitude of the mercurial column, is firſt brought down by the hand to a near contact, and then accurately adjuſted by turning the ſcrew *e* at the top. The diviſions annexed to the tube of this inſtrument may be of any ſort, or of any degree of ſmallneſs, according to the purpoſes it is intended to ſerve. To accommodate it to the uſe of foreigners as well as natives, there are commonly added ſcales of both French and Engliſh inches, with their ſubdiviſions to any extent required. It is uſual to place the French ſcale of inches on the right ſide at *f g*, from nineteen to thirty-one inches, meaſured from the zero or ſurface of the mercury in the box *k* below; each inch being divided into lines or 12th parts, and each line ſubdivided by the vernier into 10th parts, or 120th parts of inches; by means of which the length of the mercurial column may be determined to the 120th part of a French inch. The other ſcale, which is placed on the left ſide of the inſtrument, is divided into Engliſh inches, and each inch into 20th parts, which by a vernier are ſubdivided into 25th parts, or 500th parts of inches; by this means ſhewing the height of the mercury to the 500th part of an Engliſh inch. But this vernier is figured double, or each diviſion is accounted two, which reduces the meaſures to 1000ths of an inch for the conveniency of calculation, in meaſuring altitudes of hills, &c.

A thermometer is always attached to the inſtrument, as a neceſſary appendage to it, being faſtened to the body at *h*, and ſunk into the ſurface of the frame, to preſerve it from injury: the degrees of this thermometer are marked on two ſcales, one on each ſide of it, viz. the ſcale of Fahrenheit, and that of Reaumur; the freezing point of the former being at 32, and of the latter at 0. Alſo on the right hand ſide of theſe two ſcales there is a third, called a ſcale of *correction*, placed oppoſite to that of Fahrenheit, with the words *add* and *ſubtract* marked; which ſhews the neceſſary correction of the obſerved altitude of the mercury at any given temperature of the air, indicated by the thermometer. A new kind of *portable barometer for meaſuring heights*, has been lately introduced by the Rev. Dr. J. A. Hamilton, of Ireland. Inſtead of the leathern bag which confines the mercury in the common portable barometer, Dr. Hamilton ſubſtitutes a cylindrical ciſtern of ivory, with a ſcrewed bottom and an open top, ſomewhat contracted into a ſhoulder that receives internally a ſound, clean, and porous, cork, through which the glaſs tube is nicely inſerted and puſhed down midway. The conſtruction depends on this principle, that ſpungy cork affords a ready paſſage through its pores to the particles of air, but prevents the eſcape of quickſilver, unleſs a very powerful preſſure be applied. The fact, however, is not preciſely ſtated. It is not through the pores of that ſubſtance, but through the minute interſtices between the cork and the inſide of the ivory cylinder, that the air inſinuates itſelf. Accordingly, ſome caution and experience are requiſite to prevent the ſtopper from being fitted too tight. Nor can the obſerver be always aſſured that the confinement of the cork will occaſion no inaccuracy in the reſults; for it will evidently require a conſiderable time, through the extremely ſlender communications, to reſtore the balance between the external and internal air, if ever that balance can rigorouſly obtain. Dr. Hamilton gives very copious and circumſtantial directions for the conſtruction, adjuſtment, and application, of this inſtrument. He remarks that mercury is beſt cleaned by ſhaking it repeatedly in a phial with freſh portions of water. To correct the errors of altitude cauſed by the fluctuation of the ſurface of mercury in the baſon, he adviſes to compute tables from the proportion which the aperture of the tube bears to that of the cylinder. Dr. H. Hamilton, dean of Armagh, propoſes, that, as the pores of cork may in time become choaked with duſt or humidity, the box ſhould have a top of ivory with a hole to drop in a floating gage, and which might be occaſionally ſtopped with a peg or ſcrew, to render the inſtrument ſafely portable. Inſtead of making tables for correcting the error occaſioned by the variation of the level of the mercury in the baſon, he thinks it would be more convenient to contract proportionably the diviſions of the ſcale. It is ſuggeſted that theſe cloſe barometers would anſwer equally at ſea. In reality, the very defects of the conſtruction of ſuch inſtruments prove advantageous on ſhip-board; ſince, being very gradually affected by any change, they are leſs apt to be diſturbed by the working of the veſſel. The proſecution of this idea may lead to the perfection of that great *deſideratum*, the marine barometer.

The Common Chamber Weatherglass, is alſo uſually fitted up in a neat mahogany frame, with embelliſhments, to make it an ornamental piece of furniture. It conſiſts of the common tube barometer, with a thermometer by the ſide of it, and an hygrometer at the top, as exhibited in *fig.* 13. There is alſo a new ſort of barometer, or *weather inſtrument by the ſound of a wire*. This is mentioned by M. Lazowſki in his Tour through Switzerland, where it was diſcovered by accident. It ſeems that a clergyman, though near-ſighted, often amuſed himſelf with firing at a mark, and contrived to ſtretch a wire ſo as to draw the mark to him to ſee how he had aimed. He obſerved that the wire ſometimes ſounded as if it vibrated like a muſical cord; and that, after ſuch ſoundings, a change always enſued in the ſtate of the atmoſphere; from whence he came to predict rain or fine weather. On making farther experiments, it was found that the ſounds were moſt diſtinct when extended in the plane of the meridian. And, according to the weather which was to follow, it was found that the ſounds were more or leſs ſoft, or more or leſs continued; alſo fine weather, it is ſaid, was announced by the tones of counter tenor, and rain by thoſe of baſs. It has been ſaid that M. Volta mounted fifteen cords in this way at Pavia, to bring this method to ſome preciſion; but no accounts have yet appeared of the ſucceſs of his obſervations. This diſcovery, however, ſerves to ſhew, how very ſenſibly the ambient acts upon even the ſmalleſt conductors; and in ſome meaſure countenances the obſervation of an eccentric authority, who ſays, "that by means of barometers we may regain the knowledge that ſtill reſides in brutes, but which we forfeited, by not continuing in the open air, as they moſtly do; and, by our intemperance and exceſs, corrupting the *craſis* of our organs of ſenſe. It is from this cauſe that the huſbandman and labourer have the advantage over the rich and voluptuous, in ſtore of health and exuberance of offspring."

PHENOMENA and OBSERVATIONS of the BAROMETER.

The phenomena of the barometer are various; but authors are not yet agreed upon the cauſes of them; nor is the uſe of it, as a weather-glaſs, yet perfectly aſcertained, though daily obſervations and experience lead us ſtill nearer to preciſion. Mr. Boyle obſerves, that the phenomena of the barometer are ſo precarious, that it is exceedingly difficult to form any certain general rules concerning the riſe and fall of the mercury. Even that rule fails which ſeems to hold the moſt generally, viz. that the mercury is low in high winds. The beſt rules however that have been deduced by ſeveral authors are as follow.

Dr. Halley's Rules for judging of the Weather.—1. In calm weather, when the air is inclined to rain, the mercury is commonly low. 2. In ſerene, good, and ſettled, weather, the mercury is generally high. 3. Upon very great winds, though they be not accompanied with rain, the mercury ſinks loweſt of all, according to the point of the compaſs the wind blows from. 4. The greateſt heights of the mercury are found upon eaſterly or north-eaſterly winds, other circumſtances corroborating. 5. In calm froſty weather, the mercury commonly ſtands high. 6. After very great ſtorms of wind, when the mercury has been very low, it generally riſes again very faſt. 7. The more northerly places have greater alterations of the barometer than the more ſoutherly, near the equator. 8. Within the tropics, and near them, there is little or no variation of the barometer, in all weathers. For inſtance, at St. Helena it is little or nothing, at Jamaica 3-10ths of an inch, and at Naples the varation hardly ever exceeds an inch; whereas in England it amounts to two inches and a half, and at Peterſburg to three and one-third nearly. Dr. Beal, who followed the opinion of M. Paſcal, obſerves that, *cæteris paribus*, the mercury is higher in cold weather than in warm: and in the morning and evening uſually higher than at mid-day. That in ſettled and fair weather, the mercury is higher than either a little before or after, or in the rain; and that it commonly deſcends lower after rain than it was before it. And he aſcribes theſe effects to the vapours with which the air is charged in the former caſe, and which are diſperſed by the falling rain in the latter. If it chance to riſe higher after rain, it is uſually followed by a ſettled ſerenity. And that there are often great changes in the air, without any perceptible alteration in the barometer.

Mr. Patrick's Rules for judging of the Weather.—Theſe are eſteemed the beſt of any general rules hitherto given. 1. The riſing of the mercury preſages, in general, fair weather; and its falling, foul weather, as rain, ſnow, high winds, and ſtorms. 2. In very hot weather, the falling of the mercury indicates thunder. 3. In winter, the riſing preſages froſt: and in froſty weather, if the mercury falls three or four diviſions, there will certainly follow a thaw. But in a continued froſt, if the mercury riſes, it will certainly ſnow. 4. When foul weather happens ſoon after the falling of the mercury, expect but little of it; and on the contrary, expect but little fair weather when it proves fair ſhortly after the mercury has riſen. 5. In foul weather, when the mercury riſes much and high, and ſo continues for two or three days before the foul weather is quite over, then expect a continuance of fair weather to follow. 6. In fair weather, when the mercury falls much and low, and thus continues for two or three days before the rain comes; then expect a great deal of wet, and probably high winds. 7. The unſettled motion of the mercury always denotes uncertain and changeable weather. 8. You are not ſo ſtrictly to obſerve the words engraved on the plates, as the mercury's riſing and falling; though in general it will agree with them. For if it ſtands at *much rain*, and then riſes up to *changeable*, it preſages fair weather; though not to continue ſo long as if the mercury had riſen higher. And ſo, on the contrary, if the mercury ſtood at *fair*, and falls to *changeable*, it preſages foul weather; though not ſo much of it as if it had ſunk lower.

Upon theſe rules of Mr. Patrick, the following remarks are made by Mr. Rowning. That it is not ſo much the abſolute height of the mercury in the tube that indicates the weather, as its motion up and down: wherefore, to paſs a right judgment of what weather is to be expected, we ought to know whether the mercury is actually riſing or falling; to which end the following rules are of uſe. 1.

If the ſurface of the mercury is convex, ſtanding higher in the middle of the tube than at the ſides, it is a ſign that the mercury is then riſing. 2. But if the ſurface be concave, or hollow in the middle, it is then ſinking. And, 3. If it be plain, or rather a very little convex, the mercury is ſtationary: for mercury being put into a glaſs tube, eſpecially a ſmall one, naturally has its ſurface a little convex, becauſe the particles of mercury attract one another more forcibly than they are attracted by glaſs. Farther, 4. If the glaſs be ſmall, ſhake the tube; then, if the air be grown heavier, the mercury will riſe about half a 10th of an inch higher than it ſtood before; but, if it be grown lighter, it will ſink as much. And, in the wheel or circular barometer, tap the inſtrument gently with the finger, and the index will viſibly ſtart forwards or backwards according to the tendency to riſe or fall at that time. This proceeds from the mercury's ſticking to the ſides of the tube, which prevents the free motion of it till it be diſengaged by the ſhock: and therefore when an obſervation is to be made with ſuch a tube, it ought to be firſt ſhaken; for ſometimes the mercury will not vary of its own accord, till the weather is preſent which it ought to have indicated.

To the foregoing may be added the following additional rules, more accurately drawn from later and more cloſe obſervation of the motions of the barometer, and the conſequent changes in the air in this country. 1. In winter, ſpring, and autumn, the ſudden falling of the mercury, and that for a large ſpace, denotes high winds and ſtorms; but in ſummer it denotes heavy ſhowers, and often thunder: and it always ſinks loweſt of all for great winds, though not accompanied with rain; though it falls more for wind and rain together than for either of them alone. Alſo, if after rain the wind change into any part of the north, with a clear and dry ſky, and the mercury riſe, it is a certain ſign of fair weather. 2. After very great ſtorms of wind, when the mercury has been low, it commonly riſes again very faſt. In ſettled fair and dry weather, except the barometer ſink much, expect but little rain; for its ſmall ſinking then, is only for a little wind, or a few drops of rain; and the mercury ſoon riſes again to its former ſtation. In a wet ſeaſon, ſuppoſe in hay-time and harveſt, the ſmalleſt ſinking of the mercury muſt be minded; for, when the conſtitution of the air is much inclined to ſhowers, a little ſinking in the barometer then denotes more rain, as it never then ſtands very high. And if, at ſuch a ſeaſon, it riſe ſuddenly, very faſt, and high, expect not fair weather more than a day or two, but rather think the mercury will fall again very ſoon, and rain immediately to follow: the ſlow gradual riſing, and keeping on for two or three days, being moſt to be depended on for a week's fair weather. And the unſettled ſtate of the quickſilver always denoting uncertain and changeable weather, eſpecially when the mercury ſtands any where about the word *changeable* on the ſcale. The greateſt heights of the mercury in this country, ariſing from eaſterly and north-eaſterly winds, it may often rain or ſnow, the wind being in theſe points, though the barometer ſink little or none, or perhaps may be in a riſing ſtate. But the mercury ſinks for wind, as as well as rain, in all the other points of the compaſs; but riſes as the wind ſhifts about to the north or eaſt, or between thoſe points: but, if the barometer ſhould ſink with the wind in that quarter, expect it ſoon to change from thence; or elſe, ſhould the fall of the mercury be much, a heavy rain is then likely to enſue, as ſometimes happens.

To account for the foregoing phenomena of the barometer, many hypotheſes have been framed, which may be reduced to two general heads, viz. *mechanical*, and *chemical*. The chief writers upon theſe cauſes, are Paſcal, Beal, Wallis, Garcian, Garden, Liſter, Halley, Garſten, De la Hire, Mariotte, Le Cat, Woodward, Leibnitz, De Mairan, Hamberger, D. Bernoulli, Muſchenbroek, Chambers, De Luc, Black, &c. and an account of moſt of their hypotheſes may be ſeen at large in M. de Luc's *Recherches ſur les Modifications de l'Atmoſphere*, vol. 1. c. 3. alſo the Philoſophical Tranſactions. We ſhall here notice the principal of them.

Dr. Liſter accounts for the changes of the barometer from the alterations by heat and cold in the mercury itſelf; contracting by cold, and expanding by heat. But this, it is now well known, is quite inſufficient to account for the whole of the effect. The changes in the weight or preſſure of the atmoſphere muſt therefore be regarded as the principal cauſe of thoſe in the barometer. But then, the difficulty will be to aſſign the cauſe of that cauſe, or whence ariſe thoſe alterations that take place in the atmoſphere, which are ſometimes ſo great as to alter its preſſure by the tenth part of the whole quantity. It is probable that the winds, as driven about in different directions, have a great ſhare in them; vapours and exhalations, riſing from the earth, may alſo have ſome ſhare; and ſome perhaps ariſe from the flux and reflux occaſioned in the air by the moon; as well as ſome chemical cauſes operating between the different particles of matter.

Dr. Halley thinks the winds and exhalations ſufficient; and on this principle gives a theory, the ſubſtance of which may be compriſed in what follows:* 1ſt, That the winds muſt alter the weight of the air in any particular country; and this, either by bringing together a greater quantity of air, and ſo loading the atmoſphere of any place; which will be the caſe as often as two winds blow from oppoſite parts, at the ſame time, towards the ſame point: or by ſweeping away ſome part of the air, and giving room for the atmoſphere to expand itſelf; which will happen when two winds blow oppoſite ways from the ſame point at the ſame time: or laſtly by cutting off the perpendicular preſſure of the air; which is the caſe when a ſingle wind blows briſkly any way; it being found by experience, that a ſtrong blaſt of wind, even made by art, will render the atmoſphere lighter; and hence the mercury in a tube below it, as well as in others more diſtant, will conſiderably ſubſide. 2dly, That the cold nitrous particles, and even the air itſelf condenſed in the northern regions, and driven elſewhere, muſt load the atmoſphere, and increaſe its preſſure. 3dly, That heavy dry exhalations from the earth muſt increaſe the weight of the atmoſphere, as well as its elaſtic force; as we find the ſpecific gravity of menſtruums increaſed by diſſolved ſalts and metals. 4thly, That the air, being rendered heavier by theſe and the like cauſes, is thence better able to ſupport the vapours; which being likewiſe intimately mixed with it, make the weather ſerene and fair. Again, the air being made lighter from the contrary cauſes, it becomes unable to ſupport the vapours with which it is replete; theſe therefore precipitating, are collected into clouds, the particles of which in their progreſs unite into drops of rain. Hence he infers, it is evident that the ſame cauſes which increaſe the weight of the air, and render it more able to ſupport the mercury in the barometer, do likewiſe produce a ſerene ſky, and a dry ſeaſon; and that the ſame cauſes which render the air lighter, and leſs able to ſupport the mercury, do likewiſe generate clouds and rain. But theſe principles, though well adapted to many of the particular caſes of the barometer, ſeem however to fall ſhort of ſome of the principal and moſt obvious ones, beſides being liable to ſeveral objections.

Leibnitz accounted for the fall of the mercury before rain by another principle, viz. That as a body ſpecifically lighter than a fluid, while it is ſuſtained by it, adds more weight to that fluid than when, by being reduced in bulk, it becomes ſpecifically heavier, and deſcends; ſo the vapour, after it is reduced into the form of clouds, and deſcends, adds leſs weight to the air than it did before; and hence the mercury ſinks in the tube. But here, granting that the drops of rain formed from the vapours always increaſing in ſize as they fall lower, were continually accelerated alſo in their motion, and ſo the air ſuffer a continued loſs of their weight as they deſcend; it may however be objected, that by the deſcent of the mercury the rain is foretold a much longer time before it comes, than the vapour can be ſuppoſed to take up in falling: that many times, and in different places, there falls a great deal of rain, without any ſinking of the mercury at all; as alſo that there often happens a fall of the mercury without any rain enſuing: and that ſometimes the mercury will ſuddenly ſink, in a ſhort ſpace of time, half an inch or more, which anſwers to ſeven inches of rain, or about one third of the whole quantity falling in the whole year.

M. de Luc ſuppoſes that the changes obſerved in the preſſure of the atmoſphere, are chiefly produced by the greater or leſs quantity of vapours floating in it: as others have attributed them to the ſame cauſe, but have given a different explanation of it. His opinion is, that vapours diminiſh the ſpecific gravity, and conſequently the abſolute weight, of thoſe columns of the atmoſphere into which they are received, and which, notwithſtanding this admixture, ſtill remain of the ſame height with adjoining columns that conſiſt of pure or dry air. He afterwards vindicates and more fully explains this theory, and applies it to the ſolution of the principal phenomena of the barometer, as depending on the varying denſity and weight of the atmoſphere.

Dr. James Hutton, in his Theory of Rain, printed in the Tranſactions of the Royal Society of Edinburgh, vol. i. gives ingenious and plauſible reaſons for thinking that the leſſening the weight of the atmoſphere by the fall of rain, is not the cauſe of the fall of the barometer; but that the principal, if not the only cauſe, ariſes from the commotions in the atmoſphere, which are chiefly produced by ſudden changes of heat and cold in the air. "The barometer, ſays he, is an inſtrument neceſſarily connected with motions in the atmoſphere; but it is not equally affected with every motion in that fluid body. The barometer is chiefly affected by thoſe motions by which there are produced accumulations and abſtractions of this fluid, in places or regions of ſufficient extent to affect the preſſure of the atmoſphere upon the ſurface of the earth. But as every commotion in the atmoſphere may, under proper conditions, be a cauſe for rain, and as the want of commotion in the atmoſphere is naturally a cauſe of fair weather, this inſtrument may be made of great importance for the purpoſe of meteorological obſervations, although not in the certain and more ſimple manner in which it has been, with the increaſe of ſcience, ſo ſucceſsfully applied to the meaſuring of heights." See RAIN.

In the Encyclopædia Britannica there is another theory of the changes in the barometer, as depending on the heat in the atmoſphere, not as producing commotions there, but as altering the ſpecific gravity of the air by the changes of heat and cold. The principles of this theory are, 1ſt, That vapour is formed by intimate union between the elements of fire and water, by which the fire or heat is ſo totally enveloped, and its action ſo perfectly ſuſpended by the aqueous particles, that it not only loſes its properties of burning and of giving light, but becomes incapable of affecting the moſt ſenſible thermometer, in which caſe it is ſaid to be in a latent ſtate: and 2d, That, if the atmoſphere be affected by any unuſual degree of heat, it thence becomes incapable of ſupporting ſo long a column of mercury as before; for which reaſon it is that the barometer ſinks. From theſe axioms it would follow, that as vapour is formed by an union of fire with water, whether by attraction or a ſolution of the water in the fire, the vapour cannot be condenſed till this union, attraction, or ſolution, is at an end. Hence the beginning of the condenſation of the vapour, or the firſt ſigns of approaching rain, muſt be the ſeparation of the fire which is latent in the vapour. In the beginning, this may be either ſlow and partial, or it may be ſudden and violent: in the firſt caſe, the rain will come on ſlowly, and after a conſiderable time; but in the other, it will come very quickly, and in a great quantity. But Dr. Black has proved, that when fire quits its latent ſtate, however long it may have lain dormant and inſenſible, it always reaſſumes its proper qualities, and affects the thermometer juſt the ſame as if it had never been abſorbed. The conſequence of this is, that in proportion as the latent heat is diſcharged from the vapour, thoſe parts of the atmoſphere into which it is diſcharged muſt be ſenſibly affected by it; and in proportion to the heat communicated to thoſe parts, they will become ſpecifically lighter, and the mercury will ſink of courſe.

In the Memoirs of the Literary Society of Mancheſter, vol. 4. is alſo a curious paper on this ſubject, viz. Meteorological Obſervations made on different Parts of the Weſtern Coaſt of Great Britain: by T. Garnett, M. D. This paper is compoſed of materials furniſhed by ſeveral obſervers; thoſe of Mr. Copland, ſurgeon at Dumfries, are of ſpecial importance. This gentleman is of opinion that the changes of the barometer indicate approaching hot and cold weather, with more certainty than dry and wet. "Every remarkable elevation of the barometer, (ſays he,) where it is of any duration, is followed by very warm or dry weather, and moderate as to wind, or by all of them; but heat ſeems to have moſt influence and connexion; and, when it is deficient, the continuance of the other two will be longer and more remarkable; therefore the calculation muſt be in a compound ratio of the exceſs and deficiency of the heat, and of the dryneſs of the weather in compariſon of the medium of the ſeaſon; and with regard to the want of ſtrong wind, it appears to be intimately connected with the laſt, as they ſhew that no precipitation is going on in any of the neighbouring regions."

In his remarks, he obſerves, 'That the barometer being lower, and continuing ſo longer than what can be accounted for by immediate falls, or ſtormy weather, indicates the approach of very cold weather for the ſeaſon; and alſo, cold weather, though dry, is always accompanied by a low barometer, till near its termination. And, that warm weather is always preceded and moſtly accompanied by a high barometer; and the riſing of the barometer in the time of broken or cold weather, is a ſign of the approach of warmer weather: and alſo, if the wind is in any of the cold points, a ſudden riſe of the barometer indicates the approach of a ſoutherly wind, which in winter generally brings rain with it.'

In the two following remarks, Mr. Copland had explained certain phenomena from a principle ſimilar to that on which Dr. Darwin has ſo much inſiſted: viz. 'That the falling of the barometer may proceed from a decompoſition of the atmoſphere occurring around or near that part of the globe where we are placed, which will occaſion the electricity of the atmoſphere to be repelled upwards in fine lambent portions; or driven downwards or upwards in more compacted balls of fire; or laſtly, to be carried along with the rain, &c. in an imperceptible manner to the ſurface of the earth: the precipitation of the watery parts generally very ſoon takes place, which diminiſhes the real gravity of the atmoſphere, and alſo, by the decompoſition of ſome of the more active parts, the air loſes part of that elaſtic and repulſive power which it ſo eminently poſſeſſed, and will therefore preſs with leſs force on the mercury of the barometer than before, by which means a fall enſues.

'That the cauſe of the currents of air, or winds, may alſo be this way accounted for: and in very ſevere ſtorms, where great decompoſitions of the atmoſphere take place, this is particularly evident, ſuch as generally occur in one or more of the Weſt-India iſlands at one time, a great loſs of real gravity, together with a conſiderable diminution of the ſpring of the air, immediately enſues; hence a current commences, firſt in that direction whence the air has moſt gravity, or is moſt diſpoſed to undergo ſuch a change; but it being ſoon relieved of its ſuperior weight or ſpring on that ſide, by the decompoſition going on as faſt as the wind arrives on the iſland, it immediately veers to another point, which then ruſhes in moſtly with an increaſe of force; thus it goes on till it has blown more than half way round the points of the compaſs during the continuation of the hurricane. For in this manner the Weſt-India phenomena, as well as the alteration of the wind during heavy rains in this country, can only be properly accounted for.

Mr. Copland's fourth aphoriſm is, 'That the heavieſt rains, when of long continuance, generally begin with the wind blowing eaſterly, when it gradually veers round to the ſouth; and that the rain does not then begin to ceaſe till the wind has got to the weſt, or rather a little to the northward of it, when, it may be added, it commonly blows with ſome violence.' For farther obſervations on the weather, and other ſubjects connected with the barometer, ſee the article WEATHER.

Of the BAROMETER in MEASURING ALTITUDES.

The ſecondary character of the barometer, namely, as an inſtrument for meaſuring acceſſible heights or depths, was firſt propoſed by Paſcal, and Deſcartes, and ſucceeding philoſophers have been at great pains to aſcertain the proportion between the fall of the barometer and the height to which it is carried; as Halley, Mariotte, Maraldi, Scheuchzer, J. Caſſini, D. Bernoulli, Horrebow, Bougeur, Shuckburgh, Roy, and more eſpecially De Luc, who has given a critical and hiſtorical detail of moſt of the attempts that have at different times been made for applying the motion of the mercury in the barometer to the meaſurement of acceſſible heights. And for this purpoſe ſerves the portable barometer above deſcribed, which ſhould be made with all the accuracy poſſible. Various rules have been given by the writers on this ſubject, for computing the height aſcended from the given fall of the mercury in the tube of the barometer, the moſt accurate of which was that of Dr. Halley, till it was rendered much more accurate by the indefatigable reſearches of De Luc, by introducing into it the corrections of the columns of mercury and air, on account of heat. And other corrections and modifications of the ſame may be ſeen under the article ATMOSPHERE, where the moſt correct rule is deduced from one ſingle experiment only. This rule is as follows:

The *rule for computing altitudes*, is this, viz. 10,000 × log. of $\frac{M}{m}$ is the altitude in fathoms, in the mean temperature of 31°; and for every degree of the thermometer above that, the reſult muſt be increaſed by ſo many times its 435th part, and diminiſhed when below it: in which theorem M denotes the length of the column of mercury in the barometer tube at the botton, and *m* that at the top of the hill, or other eminence; which lengths may be expreſſed in any one of the ſame ſort of meaſures, whether feet, or inches, or tenths, &c. and either Engliſh, or French, or of any other nation; but the reſult is always in fathoms, of ſix Engliſh feet each. And the *precepts*, in words, for the practice of meaſurements by the barometer, are theſe following: 1ſt. Obſerve the height of the barometer at the bottom of any height or depth, propoſed to be meaſured; together with the temperature of the mercury by means of the thermometer attached to the barometer, and alſo the temperature of the air in the ſhade by another thermometer which is detached from the barometer. 2dly, Let the ſame thing be done at the top of the ſaid height or depth, and as near to the ſame time with the former as may be. And let thoſe altitudes of mercury be reduced to the ſame temperature, if it be thought neceſſary, by correcting either the one or the other, viz. augmenting the height of the mercury in the colder temperature, or diminiſhing that in the warmer, by its 9600th part for every degree of difference between the two; and the altitudes of mercury ſo corrected, are what are denoted by M and *m* in the algebraic formula above. 3dly, Take out the common logarithms of the two heights of mercury, ſo corrected, and ſubtract the leſs from the greater, cutting off from the right-hand ſide of the remainder three places for decimals; ſo ſhall thoſe on the left be fathoms in whole numbers, the tables of logarithms being underſtood to be ſuch as have ſeven places of decimals. 4thly, Correct the number laſt found, for the difference of the temperature of the air, as follows: viz. Take half the ſum of the two temperatures of the air, ſhewn by the detached thermometers, for the mean one; and for every degree which this differs from the ſtandard temperature of 31°, take ſo many times the 435th part of the fathoms above found, and add them if the mean temperature be more than 31°, but ſubtract them if it be below 31°; ſo ſhall the ſum or difference be the true altitude in fathoms, or, being multiplied by 6, it will give the true altitude in Engliſh feet.

Ex. 1. Let the ſtate of the barometers and thermometers be as follows, to find the altitude, viz.

Thermometers.		Barometers.
detached.	attached.	
57	57	29·68 lower.
42	43	25·28 upper.
mean 49½	dif. 14	

As 9600 : 14 :: 29·68 : ·04
cor ·04 logs.

mean 49½ M=29·64 - 4718782
ſtand. 31 *m*=25·28 - 4027771
dif. 18½ As 435 : 18½ :: 691·011 : 29·388.
29·388

the altitude ſought is { 720·399 fath.
or 4322·394 feet.

Ex. 2. To find the altitude of a hill, when the ſtate of the barometer and thermometer, as obſerved at the bottom and top of it, is as follows, viz.

Thermometers.		Barometers.
detached.	attached.	
35	41	29·45
31	38	26·82
mean 33	dif. 3	

As 9600 : 3 :: 29·45 : ·01
·01 logs.

mean 33 M=29·44 - 4689378
ſtand. 31 *m*=26·82 - 4284588
dif. 2 As 435 : 2 :: 404·790 : 1·86
1·86

the altitude ſought is { 406·65 fathoms.
or 2439·90 feet.

See this rule inveſtigated at the end of the article PNEUMATICS. And let it be obſerved, that the mean height of the barometer in London, upon an average of two obſervations in every day of the year, kept at the houſe of the Royal Society, for many years paſt, is 29·88; the medium temperature, or height of the thermometer, according to the ſame, being 58°. But the medium height at the ſurface of the ſea, according to Sir Geo. Shuckburgh (Philoſ. Tranſ. 1777, p. 586), is 30·04 inches, the heat of the barometer being 55°, and of the air 62°.

BAROME'TRICAL, *adj.* Relating to the barometer.—He is very accurate in making *barometrical* and thermometrical inſtruments. *Derham.*

BAROMET'Z, *ſ.* in botany. See POLYPODIUM.

BA'RON, *ſ.* [*baron*, Fr. perhaps of *beorn*, Sax. noble. The origin and primary import of this term is much conteſted. Menage derives it from the Latin *baro*, which we find uſed in the pure age of that language for *vir*, a 'ſtout or valiant man;' whence, according to this author, it was, that thoſe placed next the king in battles were called *barones*, as being the braveſt men in the army; and, as princes frequently rewarded the bravery and fidelity of thoſe about them with fees, the word came to be uſed for any noble perſon who holds a fee immediately of the king. Iſidore, and after him Camden, take the word, in its original ſenſe, to ſignify a 'mercenary ſoldier.' Meſſieurs of the Port Royal derive it from βαρος, Gr. weight or authority. Cicero uſes the word *baro* for a ſtupid brutal man;

and the old Germans make mention of *buffeting a baron*, i. e. a 'villain;' as the Italians ſtill uſe the word *barone* to ſignify a 'beggar.' M. de Marca derives baron from the German *bar*, 'man or freeman;' others deduce it from *ber*, an old Gauliſh word, ſignifying 'commander;' others from the Hebrew ברנ of the ſame import; but the moſt probable opinion is, that it comes from the Spaniſh *varo*, a 'ſtout noble perſon;' whence wives uſed to call their huſbands, and princes their tenants, *barons*. In the Salic law, as well as the laws of the Lombards, the word *baron* ſignifies a *man* in the general; and the old gloſſary of Philomenes tranſlates by *ανηρ*, man.] A perſon who holds a barony. Baron is more particularly uſed, among us, for a peer of the loweſt claſs; or a degree of nobility next below that of a viſcount, and above that of a knight or a baronet. In ancient records the word baron included all the nobility of England, becauſe regularly all noblemen were barons, though they had alſo a higher dignity. But it hath ſometimes happened, that, when an ancient baron has been raiſed to a new degree of peerage, in the courſe of a few generations the two titles have deſcended differently; one perhaps to the male deſcendants, the other to the heirs general; whereby the earldom or other ſuperior title hath ſubſiſted without a barony: and there are alſo modern inſtances, where earls and viſcounts have been created without annexing a barony to their other honours: ſo that now the rule doth not hold univerſally that all peers are barons.

The origin of barons has occaſioned great inquiries among our Engliſh antiquarians. The moſt probable opinion is ſuppoſed to be, that they were the ſame with our preſent lords of manors; to which the name of *court baron* (which is the lord's court, and incident to every manor) gives ſome countenance. It is ſaid the original name of this dignity in England was *vavaſſour*, which by the Saxons was changed into *thane*, and by the Normans into *baron*. It may be collected from king John's Magna Charta, that originally all lords of manors, or barons, had ſeats in the great council or parliament: but ſuch is the deficiency of public records, that the firſt precept to be found is of no higher date than the 49th year of Henry III. which, although it was iſſued out in the king's name, was neither by his authority nor by his direction: for, not only the king himſelf, but his ſon prince Edward, and moſt of the nobility who ſtood loyal to him, were then priſoners in the hands of the rebellious barons; having been ſo made in the month of May preceding, at the battle of Lewes, and ſo continued until the memorable battle of Eveſham, which happened in Auguſt the year following; when, by the happy eſcape of prince Edward, he reſcued the king and his adherents out of the hands of Simon Mountfort earl of Leiceſter. It cannot be doubted but that ſeveral parliaments were held by Henry III. and Edward I. yet no record is to be found (except the 5th of Edward I.) until the 22d year of the laſt-mentioned king.

Before the 49th of Henry III. the ancient parliaments conſiſted of the archbiſhops, biſhops, abbots, earls, and barons. Of theſe barons there were two ſorts: the *greater* barons, or the king's chief tenants, who held of him *in capite* by barony; and the *leſſer* barons, who held of the firſt by military ſervice *in capite*. The former had ſummons to parliament by ſeveral writs; and the latter (i. e. all thoſe who were poſſeſſed of thirteen knights fees and a quarter) had a general ſummons from the ſheriff in each county. Thus things continued till the 49th of Hen. III. But then, inſtead of keeping to the old form, the prevailing powers thought fit to ſummon, not all, but only thoſe of the greater barons who were of their party; and, inſtead of the leſſer barons who came with large retinues, to ſend their precepts to the ſheriff of each county, to cauſe two knights in every ſhire to be choſen, and one or two burgeſſes for each borough, to repreſent the body of the people reſiding in thoſe counties and boroughs; which gave riſe to the ſeparation into two houſes of parliament. By degrees the title came to be confined to the greater barons, or lords of parliament only; and there were no other barons among the peerage but ſuch as were ſummoned by writ, in reſpect of the tenure of their lands or baronies, till Richard II. firſt made it a mere title of honour by conferring it on divers perſons by letters patent.

When a baron is called up to the houſe of peers by writ of ſummons, the writ is in the king's name, and he is directed to come to the parliament appointed to be held at a certain time and place, and there to treat and adviſe with his majeſty, the prelates, and nobility, about the weighty affairs of the nation. The ceremony of the admiſſion of a baron into the houſe of peers is thus: He is brought into the houſe between two barons, who conduct him to the lord chancellor, his patent or writ of ſummons being carried by a king at arms, who preſents it kneeling to the lord chancellor, who reads it, and then congratulates him on his becoming a member of the houſe of peers, and inveſts him with his parliamentary robe. The patent is then delivered to the clerk of the parliament, and the oaths are adminiſtered to the new peer, who is then conducted to his ſeat on the barons bench. Some barons hold their ſeats by tenure. The firſt who was raiſed to this dignity by patent was John de Beauchamp of Holt Caſtle, created baron of Kidderminſter in Worceſterſhire, to him and his heirs male, by Richard II. in the 11th year of his reign. He inveſted him with a mantle and cap. The coronation-robes of a baron are the ſame as an earl's, except that he has only two rows of ſpots on each ſhoulder. In like manner, his parliamentary robes have but two guards of white fur, with rows of gold lace. In other reſpects they are the ſame as other peers. Charles II. granted a coronet to the barons. It has ſix pearls, ſet at equal diſtances, on the chaplet. His cap is the ſame as a viſcount's. His ſtyle is *Right Honourable*; and he is ſtyled by the king or queen, *Right Truſty and Well-beloved*.

Barons of the Exchequer, the four judges to whom the adminiſtration of juſtice is committed, in cauſes between the king and his ſubjects relating to matters concerning the revenue. They were formerly barons of the realm, but of late are generally perſons learned in the laws. Their office is alſo to look into the accounts of the king, for which reaſon they have auditors under them. See EXCHEQUER.

Barons of the Cinque Ports are members of the houſe of commons, elected by thoſe ports, two for each port. See the article CINQUE PORTS.

BARON (Robert), a dramatic author, who lived in the reign of Charles I. and protectorſhip of Cromwell. He received the earlier parts of his education at Cambridge, after which he became a member of the ſociety of Gray's Inn. While at the univerſity, he wrote a novel called the Cyprian Academy, in which he introduced the two firſt of the dramatic pieces mentioned below. The third of them is a much more regular and perfect play, and was probably written when the author had attained a riper age. The names of them are, 1. Deorum Dona, a maſque. 2. Gripus and Hegio, a paſtoral. 3. Mirza, a tragedy. Mr. Baron had a particular intimacy with the celebrated Mr. James Howell, the great traveller, in whoſe collection of Letters there is one to this gentleman. To Mr. Howell, and to all the ladies of England, he has dedicated his romance.

BARON (Michael), an excellent comedian of Paris, was the ſon of Michael Baron, who was of the ſame profeſſion, and a native of Iſſoudun. He wrote ſome poems, and ſeveral theatrical pieces, in 2 vols. 12mo. He died at Paris in 1729, aged ſeventy-ſeven.

BARON and FEME, is the law-term for *huſband* and *wife*, and includes the eſtabliſhed law between or concerning them. Our law conſiders marriage in no other light than as a civil contact. The holineſs of the matrimonial ſtate is left entirely to the eccleſiaſtical law; the temporal courts not having juriſdiction to conſider unlawful marriage as a ſin, but merely as a civil inconvenience. The puniſhment therefore, or annulling of inceſtuous and unſcriptural marriages, is the province of the ſpiritual court.

By marriage, the huſband and wife are one perſon in law (1 *Inſt.* 112); that is, the very being or legal exiſtence of the woman is ſuſpended during the marriage; or at leaſt is incorporated and conſolidated into that of her huſband: under whoſe wing, protection, and cover, ſhe performs every thing; and is therefore called in our law-French a *feme-covert (fœmina viro cooperta)*; is ſaid to be *covert-baron*, or under the protection and influence of her huſband, her baron, or lord; and her condition during her marriage is called her *coverture*. Therefore, if an eſtate be granted or conveyed to an huſband and wife, and their heirs, they do not take by moieties, as other jointenants, but the intire eſtate is in both. 2 *Lev.* 39. And, if an eſtate be granted to an huſband and wife, and another perſon, the huſband and wife have but one moiety, and the other perſon the other moiety. *Litt.* 291. A woman may be attorney for her huſband; for that implies no ſeparation from, but is rather a repreſentation of, her lord. Upon this principle of an union of perſon in huſband and wife, depend almoſt all the legal rights, duties, and diſabilities, that either of them acquire by the marriage. We ſhall conſider the effect of theſe rights, duties, and diſabilities, in the following order:

I. Grants and Contracts.—At common law a man could neither in poſſeſſion, reverſion, or remainder, limit an eſtate to his wife; but, by ſtat. 27 Hen. VIII. c. 10, a man may covenant with other perſons to ſtand ſeiſed to the uſe of his wife; or make any other conveyance to her uſe, but may not covenant with his wife to ſtand ſeiſed to her uſe. A man may deviſe lands by will to his wife, becauſe the deviſe doth not take effect till after his death. *Co. Litt.* 112. According to ſome books, by cuſtom of a particular place, as of York, the wife may take by immediate conveyance from the huſband. *Fitz. Preſcription* 61. And it ſeems, that a *donatio cauſâ mortis* by huſband to wife may be good; becauſe that is in the nature of a legacy. 1 *P. Wms.* 441. Where the huſband or wife act *en autre droit*, the one may make an eſtate to the other; as, if the wife has an authority by will to ſell, ſhe may ſell to her huſband. 1 *Inſt.* 112, 187. If the feme obligee take the obligor to huſband, this is a releaſe in law. The like law is if there be two femes obligees, and the one take the debtor to huſband. 1 *Inſt.* 264. *Cro. Car.* 551.

In the caſe of Smith *v.* Stafford (*Hob.* 216), the huſband promiſed the wife, before marriage, that he would leave her worth 100l. The marriage took effect, and the queſtion was, Whether the marriage was a releaſe of the promiſe? All the judges but Hobart were of opinion, that, as the action could not ariſe during the marriage, the marriage could not be a releaſe of it. This doctrine alſo ſeems to be admitted in the caſe of Gage *v.* Acton (1 *Salk.* 325. 12 *Mod.* 290); the caſe there aroſe upon a bond executed by the huſband to the wife before marriage, with a condition, making it void if ſhe ſurvived him, and he left her 1000l. Two of the judges were of opinion that the debt was only ſuſpended, as it was on a contingency which could not by any poſſibility happen during the marriage. But L. C. J. Holt differed from them; he admitted, that a covenant or promiſe by the huſband to the wife, to leave her ſo much in caſe ſhe ſurvives him, is good, becauſe it is only a future debt on a contingency, which cannot happen during the marriage, and that is precedent to the debt; but, that a bond-debt was a preſent debt, and the condition was not precedent but ſubſequent, that made it a preſent duty; and the marriage was conſequently a releaſe of it. The caſe afterwards went into Chancery; the bond was there taken to be the agreement of the parties, and relief accordingly decreed. 2 *Vern.* 481. A like decree was made in caſe of Carnel *v.* Buckle. 2 *P. Wms.* 243.

A, before marriage with M, agrees with M by deed, in writing, that ſhe, or ſuch as ſhe ſhould appoint, ſhould, during the coverture, receive and diſpoſe of the rents of her jointure, by a former huſband, as ſhe pleaſed. It was decreed, That this agreement, being with the feme herſelf before marriage, was by the marriage extinguiſhed. *Chan. Ca.* 21. But, where a man before marriage articled with the feme to make a ſettlement of certain lands, before the marriage ſhould be ſolemnized; they intermarried before the ſettlement, and then the baron died: on a bill by the widow for an execution of the articles, it was decreed, againſt the heir at law of the baron, that the articles ſhould be executed. 2 *Vent.* 343.

In trials of any ſort, huſband and wife are not allowed to be evidence for or againſt each other; partly becauſe it is impoſſible their teſtimony ſhould be indifferent, but principally becauſe of the union of perſon; and, therefore, if they were admitted to be witneſſes for each other, they would contradict one maxim of law, "*nemo in propriâ cauſâ teſtis eſſe debet*;" and, if againſt each other, they would contradict another maxim, "*nemo tenetur ſeipſum accuſare.*" But, where the offence is directly againſt the perſon of the wife, this rule has been uſually diſpenſed with; and therefore, by ſtat. 3 Hen. VII. c. 2, in caſe a woman be forcibly taken away and married, ſhe may be a witneſs againſt ſuch her huſband, in order to convict him of felony. For, in this caſe, ſhe can with no propriety be reckoned his wife; becauſe a main ingredient, her conſent, was wanting to the contract: and alſo, there is another maxim of law, that no man ſhall take advantage of his own wrong; which the raviſher here would do, if by forcibly marrying a woman he could prevent her from being a witneſs, who is perhaps the only witneſs to that very fact. 1 *Comm.* 443, 4. See the recent caſe of Lady Strathmore *v.* Bowes.

The huſband cannot be a witneſs againſt the wife, nor the wife againſt the huſband, to prove the firſt marriage on an indictment, on ſtat. 1 Jac. I. c. 11, for a ſecond marriage. But the ſecond wife or huſband may be a witneſs; the ſecond marriage being void. In *Raym.* 1, there is an opinion, that a huſband and wife may be witneſſes againſt one another in treaſon; but the contrary is adjudged. 1 *Brownl.* 47. 1 *H. P. C.* 301. The rule in lord Audley's caſe is denied to be law (*Raym.* 1); and perhaps was admitted on the particular circumſtances of the facts, which were deteſtable in the extreme, the huſband having aſſiſted in the rape of his wife. In an information againſt two, one for perjury, and the other for ſubornation, in ſwearing, on the trial of an ejectment, that a child was ſuppoſititious, the huſband of one of the defendants was admitted to give evidence of the birth, but refuſed as to the ſubornation. *Sid.* 377. 2 *Keb.* 403. *Mar.* 120. And the evidence of a wife has been diſallowed even againſt others, where her huſband might be indirectly in danger. *Leach's Hawk. P. C.* ii. 607. A huſband and wife may demand ſurety of the peace againſt each other, and their evidence muſt then of neceſſity be admitted againſt each other. The wife of a bankrupt may be examined by the commiſſioners. It ſeems, that a wife may be evidence to prove a fraud on the huſband, particularly if ſhe were party thereto, as in caſe of a marriage-brocage agreement, *Sid.* 431; and in caſes of ſeduction. *L. E.* 55. And, in civil actions, where the huſband is not concerned in the action, but the evidence is collateral to diſcharge the defendant, by charging the huſband. 1 *Stra.* 504.

II. Agreements before Marriage.—As by marriage the huſband and wife become one perſon in law, therefore ſuch an union works an extinguiſhment or revocation of ſeveral acts done by her before the marriage; and this not only for the benefit of the huſband, but likewiſe of the wife, who, if ſhe were allowed at her pleaſure to reſcind and break through, or confirm, ſeveral acts, might be ſo far influenced by her huſband, as to do things greatly to her diſadvantage. *Keilw.* 162. *Co. Lit.* 55. *Cro. Car.* 304. But, in things which would be manifeſtly to the prejudice of both huſband and wife, the law does not make her acts void; and therefore, if a feme ſole makes a leaſe a will, or is leſſee at will, and afterwards marries, the marriage is no determination of her will, ſo as to make the leaſe void; but ſhe herſelf cannot, without the conſent of her huſband, determine the leaſe in either caſe. 5 *Co.* 10. So, where a warrant of attorney was given to confeſs a judgment to a feme ſole, the court gave leave, notwithſtanding the marriage, to enter up judgment; for that the authority ſhall not be deemed to be revoked or countermanded, becauſe it is for the huſband's advantage; like a grant of a reverſion to a feme ſole, who marries before attornment, yet the tenant may attorn afterwards: otherwiſe, if a feme ſole gives a warrant of attorney, and marries, for that is to charge the huſband. 1 *Salk.* 117, 399. But, if a feme ſole makes her will, and deviſes her land to J. S. and afterwards marries him, and then dies, yet J. S. takes nothing by the will, becauſe the marriage was a revocation of it. 4 *Co.* 60.

Equity will ſet aſide the intended wife's contracts, tho' legally executed, when they appear to have been entered into with an intent to deceive the huſband, and are in derogation of the rights of marriage; as, where a widow made a deed of ſettlement of her eſtate, and married a ſecond huſband, who was not privy to ſuch ſettlement; and, it appearing to the court, that it was in confidence of her having ſuch eſtate that the huſband married her, the court ſet aſide the deed as fraudulent; ſo, where the intended wife, the day before her marriage, entered privately into a recognizance to her brother, it was decreed to be delivered up. 2 *Chan. Rep.* 41, 79, 81. 2 *Vern.* 17. But, where a widow, before her marriage with a ſecond huſband, aſſigned over the greateſt part of her eſtate to truſtees for children by her former huſband; though it was inſiſted, that this was without the privity of the huſband, and done with a deſign to cheat him, yet the court thought, that a widow might thus provide for her children before ſhe put herſelf under the power of a huſband; and, it being proved, that 8000l. was thus ſettled, and that the huſband had ſuppreſſed the deed, he was decreed to pay the whole money, without directing any account. 1 *Vern.* 408.

III. Power of the Husband over the Wife.—By marriage the huſband hath power over his wife's perſon; and, by the old law, he might give her moderate correction (1 *Hawk. P. C.* 258); but this power was confined within reaſonable bounds. *Moor.* 874. In the time of Charles II. this power of correction began to be doubted. The courts of law, however, ſtill permit a huſband to reſtrain a wife of her liberty, in caſe of any groſs miſbehaviour. *Stra.* 478. But, if he threaten to kill her, &c. ſhe may make him find ſurety of the peace, by ſuing a writ of *ſupplicavit* out of Chancery, or by preferring articles of the peace againſt him in the court of King's Bench, or ſhe may apply to the ſpiritual court for a divorce, *propter ſævitiam*. *Crom.* 28, 136. *F. N. B.* 80. *Dalt.* c. 68. *Lamb* 7. *Crom.* 133. So may the huſband have ſecurity of the peace againſt his wife. *Stra.* 1207. But a wife cannot, either by herſelf or her *prochein amy*, bring a *homine replegiando* againſt her huſband; for he has by law a right to the cuſtody of her, and may, if he think fit, confine her, but he muſt not impriſon her; if he does, it will be a good cauſe for her to apply to the ſpiritual court for a divorce, *propter ſævitiam*; and the nature and proceedings in the writ *de homine replegiando* ſhew that it cannot be maintained by the wife againſt her huſband. *Prec. in Chan.* 492. The courts of law will grant a habeas corpus to relieve a wife from unjuſt impriſonment.

The ground of an action for adultery, is the injury done to the huſband, by alienating the affections of his wife, deſtroying the comforts ariſing from her company, and that of her children, and impoſing on him a ſpurious iſſue. In this action the plaintiff muſt bring proof of the actual ſolemnization of a marriage; nothing ſhall ſupply its place: cohabitation or reputation are not ſufficient, nor any collateral proof whatever. 4 *Burr.* 2057. *Bull. N. P.* 27. But it is not neceſſary to prove a marriage according to the ceremony of the church of England; if the parties are Jews, Quakers, &c. proof of a marriage according to their rites is ſufficient. The confeſſion of the wife will be no proof againſt the defendant; but a diſcourſe between her and the defendant may be proved, and the defendant's letters to her; but the wife's letters to the defendant will be no evidence for him. The injury in the caſe of adultery being great, the damages are generally conſiderable, but depend on circumſtances; ſuch, on the one hand, as go in aggravation of damages, and to ſhew the circumſtances and property of defendant; or, on the other hand, ſuch as go in extenuation of the offence, and mitigation of damages. *Bull. N. P.* 27. *Eſp.* 343, 4. The defendant may prove particular acts of criminality in the wife, previous to her guilt with him, but not her general character, in extenuation. If a woman is ſuffered by her huſband to live as a common proſtitute, and a man is thereby drawn into *crim. con.* no action at the ſuit of the huſband will lie; but, if the huſband does not know this, it goes only in mitigation of damages. It is now determined, that, if the huſband conſent to his wife's adultery, this will go in bar of his action. 4 *Term Rep.* 657, in the caſe of Duberly *v.* Gunning. See 12 *Mod.* 232. It ſeems to be in the diſcretion of the court to grant a new trial in this action, on account of exceſſive damages; but which they will be very cautious in doing. If adultery be committed with another man's wife without any force, but by her own conſent, though the huſband may have aſſault and battery, and lay it *vi & armis*, yet they ſhall in that caſe puniſh him below for that very offence; for an indictment will not lie for ſuch an aſſault and battery; neither ſhall the huſband and wife join in an action at common law; and therefore they proceed below, either civilly, (that is, to divorce them,) or criminally, becauſe they were not criminally proſecuted above. 7 *Mod.* 81.

IV. Interest of Husband and Wife in their reſpective Estates.—With reſpect to the lands of the wife, the freehold or right of poſſeſſion of all her lands of inheritance veſts in the huſband immediately upon the marriage; the right of property ſtill being preſerved to her. 1 *Inſt.* 351 *a*, 273 *b*. This eſtate he may convey to another. An incorrect ſtatement in the book called Caſes in Equity, *temp. Ld. Talbot*, p. 167, of what was delivered by his lordſhip in the caſe of Robinſon *v.* Cummins, ſeems to have given riſe to a notion that the huſband could not make a tenant to the præcipe of his wife's eſtate for the purpoſe of ſuffering a common recovery of it, without the wife's previouſly joining in a fine; but it now ſeems to be a ſettled point that he can. See *Cruiſe* on Recoveries. By ſtat. 32 Hen. VIII. c. 28, leaſes of the wife's inheritance muſt be made by indenture, to which the huſband and wife are both parties, to be ſealed by the wife, and the rent to be reſerved to the huſband and wife, and to the heirs of the wife; and the huſband ſhall not alien the rent longer than during the coverture, except by fine levied by huſband and wife. By the ſame act it is provided, that no fine or other act done by the huſband only of the inheritance or freehold of his wife ſhall be any diſcontinuance thereof, or prejudicial to the wife or her heirs, but they may enter according to their rights; fines whereunto the wife is party and privy (and the above-mentioned leaſes) only excepted. As to alienations of a huſband's eſtate, by a woman tenant in dower, &c. ſee ſtat. 11 Hen. VII. c. 20, which makes them void.

As to chattels real, and things in action, of the wife; where the huſband ſurvives the wife. At the common law, no perſon had a right to adminiſter. The ordinary might grant adminiſtration to whom he pleaſed, till the ſtatutes which gave it to the next of kin, and, if there were perſons of equal kindred, whichever took adminiſtration firſt was entitled to the ſurplus. The ſtatute of diſtribution was made to prevent this. Where the wife was entitled only to the truſt of a chattel real, or to any choſe in action, or contingent intereſt in any kind of perſonalty, it ſeems to have been doubted, whether, if the huſband ſurvived her, he was intitled to the benefit of it or not. 1 *Inſt.* 351. *Rol. Ab.* 346. *Cro. Eliz.* 466. *Gilb. Ca. Eq.* 234. Upon the conſtruction of the ſtatute of Diſtributions, it has been held, that the huſband may adminiſter to his deceaſed wife; and that he is entitled for his own benefit to all her chattels real, things in action, truſts, and every other ſpecies of perſonal property, whether actually veſted in her, and reduced into poſſeſſion, or contingent, or recoverable only by action or ſuit. It was, however, made a queſtion after the ſtat. 29 Car. II. c. 3, whether, if the huſband, having ſurvived his wife, afterwards die, during the ſuſpenſe of the contingency upon which any part of his wife's property depended, or without having reduced into poſſeſſion ſuch of her property as lay in action or ſuit, his repreſentative, or his wife's next of kin, were entitled thereto. But, by a ſeries of caſes, it is now ſettled, that the repreſentative of the huſband is entitled as much to this ſpecies of his wife's property as to any other; that the right of adminiſtration follows the right of the eſtate, and ought, in caſe of the huſband's death after the wife, to be granted to the next of kin of the huſband. And that, if adminiſtration *de bonis non* of the wife is obtained by any third perſon, he is a truſtee for the repreſentative of the huſband. 1 *P. Wms.* 378, 382.

If the wife ſurvive the huſband. As to this point, there is a material difference with reſpect to chattels real, and goods, cattle, money, and other chattels perſonal. All chattels perſonal become the property of the huſband immediately on the marriage; he may diſpoſe of them, without the conſent or concurrence of his wife; and, at his death, whether he dies in her life-time, or ſurvives her, they belong to his perſonal repreſentative. 10 *Co.* 42. 2 *Inſt.* 510. With reſpect to her chattels real, as leaſes for years, there is a diſtinction between thoſe which are in the nature of a preſent veſted intereſt in the wife, and thoſe in which ſhe has only a poſſible or contingent intereſt. To explain this fully, it ſeems proper to mention, that it was formerly held that a diſpoſition of a term of years to a man for his life, was ſuch a total diſpoſition of the term, that no diſpoſition could be made of the poſſible reſidue of the term; or, at leaſt, that, if it was made, the firſt deviſee might diſpoſe of the whole term, notwithſtanding the deviſe of the reſidue. This is reported (*Dy.* 74) to have been determined by all the judges in a caſe in 6 Edw. VI. The court of Chancery firſt broke through this rule, and ſupported ſuch future diſpoſitions when made by way of truſt; their example was followed by the courts of law in Mat. Manning's caſe, 8 *Rep.* 94 *b*, and Lampet's caſe, 10 *Rep.* 46 *b*. This diſpoſition of the reſidue of a term, after a previous diſpoſition of it to one for life, operates by way of executory deviſe, and the intereſt of the deviſee of the reſidue is called a poſſibility. This poſſible intereſt in a term of years differs from a contingent intereſt created by way of remainder. If a perſon limits a real eſtate to A for life, and after the deceaſe of A, and, if B dies in A's life-time, to C for a term of years; this operates not as an executory deviſe, but as a remainder, and therefore is not to be conſidered as a poſſibility, but as a contingent intereſt.

Now, if a perſon marries a woman poſſeſſed of, or entitled to, the truſt of a preſent, actual, and veſted, intereſt, in a term of years, or any other chattel real, it ſo far becomes his property, that he may diſpoſe of it during her life; and, if he ſurvives her, it veſts in him abſolutely; but, if he makes no diſpoſition of it, and ſhe ſurvives him, it belongs to her, and not to his repreſentatives: nor is he in this caſe intitled to diſpoſe of it from her by will. *Prec. Ch.* 418. 2 *Vern.* 270. If a perſon marries a woman entitled to a poſſible or contingent intereſt in a term of years, if it is a legal intereſt, that is, ſuch an intereſt as, upon the determination of the previous eſtate, or the happening of the contingency, will immediately veſt in poſſeſſion in the wife, there the huſband may aſſign it; unleſs perhaps in thoſe caſes where the poſſibility, or contingency, is of ſuch a nature, that it cannot happen during the huſband's life-time. 1 *Inſt.* 46 *b*. 1 *Salk.* 326. But it is an exception to this rule, at leaſt in equity, that, if a future or executory intereſt in a term, or other chattel, is provided for the wife, by or with the conſent of the huſband, there he cannot diſpoſe of it from the wife, as it would be abſurd to allow him to defeat his own agreement. But this ſuppoſes the proviſion to be made before marriage; for, if made ſubſequent, it is a mere voluntary act, and void againſt an aſſignee for a valuable conſideration. 1 *Cha. Ca.* 225. 1 *Vern.* 7, 18. If a wife have a chattel real, *en autre droit*, as executor or adminiſtrator, the huſband cannot diſpoſe of it. 1 *Inſt.* 351 *a*. But, if the wife had it as executrix to a former huſband, the huſband may diſpoſe of it. 3 *Wilſ.* 277. And, if a woman be jointenant of a chattel real, and marries and dies, the huſband ſhall not have it, but it ſurvives to the other jointenant. 1 *Inſt.* 185 *b*. And the huſband hath not power over a chattel real, which the wife hath as guardian. *Plowd.* 294.

Things in action do not veſt in the huſband till he reduces them into poſſeſſion. It has been held that the huſband may ſue alone for a debt due to the wife upon bond; but that, if he join her in the action, and recover judgment and die, the judgment will ſurvive to her. 1 *Vern.* 396. *All.* 36. 2 *Lev.* 107. 2 *Vez.* 677. The principle of this diſtinction appears to be, that his bringing the action, in his own name alone, is a diſagreement to his wife's intereſt, and implies it to be his intention that it ſhould not ſurvive to her; but, if he brings the action in the joint names of himſelf and his wife, the judgment is, that they both ſhould recover; ſo that the ſurviving wife, and not the repreſentative of the huſband, is to bring the *ſcire facias* on the judgment. In 3 *Atk.* 21, lord Hardwicke is reported to ſay, that, at law, if the huſband has recovered a judgment for a debt of the wife, and dies before execution, the ſurviving wife, not the huſband's executors, is entitled.

Theſe appear to be the general principles of the courts of law, reſpecting the intereſt which the huſband takes in, and the power given him over, the things in action of his wife; but the courts of equity have admitted many very nice diſtinctions reſpecting them.

1. A ſettlement made before marriage, if made in conſideration of the wife's fortune, entitles the repreſentative of the huſband dying in his wife's life-time, to the whole of her things in action; but it has been ſaid, that, if it is not made in conſideration of her fortune, the ſurviving wife will be entitled to the things in action, the property of which has not been reduced (into his power) by the huſband in his life-time; ſo, if the ſettlement is in conſideration of a particular part of her fortune, ſuch of the things in action as are not compriſed in that part, it has been ſaid, ſurvive to the wife. *Pre. Ch.* 63. 2 *Vern.* 502. *Talb.* 168. In the caſe of Blois *v.* Counteſs of Hereford, (2 *Vern.* 501,) a ſettlement was made for the benefit of the wife, but no mention was made of her perſonal eſtate; it was decreed to belong to the repreſentative of the huſband; and it was then ſaid, that in all caſes where there was a ſettlement equivalent to the wife's portion, it ſhould be intended that he is to have the portion, though there is no agreement for that purpoſe. *Eq. Ab.* 69.

2. If the huſband cannot recover the things in action of his wife but by the aſſiſtance of a court of equity, the court upon the principle, that he who ſeeks equity muſt do equity, will not give him their aſſiſtance to recover the property, unleſs he either has made a previous proviſion for her, or agrees to do it out of the property prayed for; or, unleſs the wife appears in court, and conſents to the property being made over to him. 2 *P. Wms.* 641. 2 *Vez.* 669. Neither will the court, where no ſettlement is made for the wife, direct the fortune to be paid to the huſband, in all caſes where ſhe does appear perſonally and conſent to it. 2 *Vez.* 579. It appears to be agreed, that the intereſt is always payable to the huſband, if he maintains his wife; yet, where the huſband receives a great part of the wife's fortune, and will not ſettle the reſt, the court will not only ſtop the payment of the reſidue of her fortune, but will even prevent his receiving the intereſt of the reſidue, that it may accumulate for her benefit. 3 *Atk.* 21.

3. Voluntiers and aſſignees, under a commiſſion of bankrupt, are in caſes of this nature ſubject to the ſame equity as the huſband; and are therefore required by the court,

if they apply for its aſſiſtance in recovering the wife's fortune, to make a proper proviſion for her out of it. 2 *Atk.* 420. 1 *P. Wms.* 382. But, if the huſband actually aſſigns either a truſt term of his wife, or a thing in action, for a valuable conſideration, the court does not compel the aſſignee to make a proviſion for the wife. See 1 *Vern.* 18. *Cox's P. Wms.* i. 459, where lord Thurlow is reported to have ſaid in a caſe before him "that he did not find it any where decided, that, if the huſband makes an actual aſſignment by contract, for a valuable conſideration, the aſſignee ſhould be bound to make any proviſion for the wife; but, that a court of equity has much greater conſideration, for an aſſignment actually made by contract, than for an aſſignment made by mere operation of law; for, in this latter caſe, the creditor ſhould be exactly in the caſe of the huſband, and ſubject preciſely to the ſame equity in favour of the wife."

4. But, notwithſtanding the uniform and earneſt ſolicitude of the courts of equity, to make ſome proviſion for the wife out of her fortune, in thoſe caſes where the huſband, or thoſe claiming under him by act of law, cannot come at it, without the aſſiſtance of thoſe courts, ſtill it does not appear that they have ever interfered to prevent its being paid the huſband, or to inhibit him from recovering it at law. 2 *Atk.* 420. In *Pre. Ch.* 414, it is obſerved, that, if the truſtees pay the wife's fortune, it is without remedy.

5. Money due on mortgage is conſidered as a thing in action. It ſeems to have been formerly underſtood that, as the huſband could not diſpoſe of lands mortgaged in fee, without the wife, the eſtate, remaining in the wife, carried the money along with it to her and her repreſentatives; but that, as to the truſt and abſolute power of a term of years, there was nothing to keep a mortgage debt, ſecured by a term, from going to the huſband's repreſentatives: but this diſtinction no longer prevails; and it is now held that, though in the caſe of a mortgage in fee, the legal fee of the lands in mortgage continues in the wife, ſhe is but a truſtee, and the truſt of the mortgage follows the property of the debt. 1 *P. Wms.* 458. 2 *Atk.* 207.

6. If baron and feme have a decree for money in right of the feme, and then the baron dies, the benefit of the decree belongs to the feme, and not to the executor of the huſband. This was certified by Hyde, Ch. J. and his certificate confirmed by lord chancellor. 1 *Cha. Ca.* 27. If the wife has a judgment, and it is extended upon an *elegit*, the huſband may aſſign it without a conſideration. So, if a judgment be given in truſt for a feme ſole, who marries, and by conſent of her truſtees is in poſſeſſion of the land extended, the huſband may aſſign over the extended intereſt; and, by the ſame reaſon, if the feme has a decree, to hold and enjoy lands until a debt due to her is paid, and ſhe is in poſſeſſion of the land under this decree, and marries, the huſband may aſſign it without any conſideration, for it is in nature of an extent. 3 *P. Wms.* 200.

7. If a leaſe be conveyed by a feme ſole, in truſt for the uſe of herſelf, if ſhe afterwards marries, it cannot be diſpoſed of by the huſband: if ſhe dies, he ſhall not have it, but the executors of the wife. *March* 44. 2 *Vern.* 270. If a feme having a rent for life takes huſband, the baron ſhall have action of debt for the rent incurred during the coverture, after the death of the feme. 1 *Danv.* 719. And arrears due in the life-time of the huſband, after his death, ſhall ſurvive to the wife, if ſhe outlives him, and her adminiſtrators after her death. 2 *Lut.* 1151. A feme leſſee for life, rendering rent, takes huſband and dies, the baron ſhall be charged in action of debt for the rent which was grown due during the coverture, becauſe he took the profits out of which the rent ought to iſſue. *Keilw.* 125. *Raym.* 6. If a feme covert ſues a woman in the ſpiritual court for adultery with her huſband, and obtains a ſentence againſt her, and coſts; the huſband may releaſe theſe coſts, for the marriage continues, and whatever accrues to the wife during the coverture belongs to the huſband; per Holt Ch. J. on motion for prohibition. 1 *Salk.* 115. But, if the huſband and wife be divorced *a menſâ & thoro*, and the wife has her alimony, and ſues for defamation or other injury, and there has coſts, and the huſband releaſes them, this ſhall not bar the wife, for theſe coſts come in lieu of what ſhe hath ſpent out of her alimony, which is a ſeparate maintenance, and not in the power of her huſband. 3 *Bulſt.* 264. 2 *Rol. Abr.* 293. 1 *Salk.* 115. If huſband is attainted of felony, and pardoned on condition of tranſportation for life, and afterwards the wife becomes intitled to an orphanage ſhare of perſonal eſtate, it ſhall not belong to the huſband, but to the wife. 3 *P. Wms.* 37. Trinkets and jewels given to a wife before marriage, become the huſband's again by marriage, and are liable to his debts, if his perſonal eſtate is not ſufficient. 2 *Atk.* 104.

8. And, as the huſband may generally acquire a property in all the perſonal ſubſtance of the wife, ſo in one particular inſtance the wife may acquire a property in ſome of her huſband's goods, which ſhall remain to her after his death, and not go to his executors. Theſe are called her *paraphernalia*; which is a term borrowed from the civil law, and is derived from the Greek, ſignifying ſomething over and above her dower. Our law uſes it to ſignify the apparel and ornaments of the wife ſuitable to her rank and degree; and, therefore, even the jewels of a peereſs, uſually worn by her, have been held to be *paraphernalia*. *Moor* 213. Theſe ſhe becomes entitled to at the death of her huſband, over and above her jointure or dower, and preferably to all other repreſentatives. 1 *Ro. Ab.* 911. 2 *Leon.* 166. Neither can the huſband deviſe by his will ſuch ornaments or jewels of his wife; though, during his life, perhaps he hath power to ſell or give them away. *Noy's Max.* c. 49. 2 *Comm.* 436. But, if ſhe continue in the uſe of them till his death, ſhe ſhall afterwards retain them againſt his executors and adminiſtrators, and all other perſons except creditors, where there is a deficiency of aſſets. 1 *P. Wms.* 730. And her neceſſary apparel is protected even againſt the claim of creditors. *Noy's Max.* c. 49.

V. HUSBAND how far liable to a WIFE'S DEBTS.—If a feme ſole indebted takes huſband, her debt becomes that of the huſband and wife, and both are to be ſued for it; but the huſband is not liable after the death of the wife, unleſs there be a judgment againſt both during the coverture. 1 *Rol. Abr.* 351. *F. N. B.* 120. Where there is judgment againſt a feme ſole, who marries and dies, the baron ſhall not be charged therewith: though, if the judgment he had upon *ſcire facias* againſt baron and feme, and then the feme dies, he ſhall be charged. 3 *Mod.* 186. In action brought againſt a feme ſole, if, pending the action, ſhe marries, this ſhall not abate the action; but the plaintiff may proceed to judgment and execution againſt her, according as the action was commenced. 1 *Lill.* 217. And, if *habeas corpus* be brought to remove the cauſe, the plaintiff is to move for a *procedendo* on the return of the *habeas corpus*: alſo the court of B. R. may refuſe it, where brought to abate a juſt action. 1 *Salk.* 8. In general, the huſband is liable to the wife's debts, contracted before marriage, whether he had any portion with her or not; and this the law preſumes reaſonable, becauſe by the marriage the huſband acquires an abſolute intereſt in the perſonal eſtate of the wife, and has the receipt of the rents and profits of her real eſtate during coverture; alſo whatever accrues to her by her labour, or otherwiſe, during the coverture, belongs to the huſband; ſo that, in favour of creditors, and that no perſon's act ſhould prejudice another, the law makes the huſband liable to thoſe debts with which he took her attached. *F. N. B.* 265. 20 Hen. VI. 22. 1 *Rol. Abr.* 352. 3 *Mod.* 186. If baron and feme are ſued on the wife's bond, entered into by the feme before marriage, and judgment is had thereupon, and the wife dies before execution, yet the huſband is liable; for the judgment has altered the debt. 1 *Sid.* 337. If judgment be againſt huſband and wife, he dies, and ſhe ſurvives, execution may be againſt her. 1 *Rol. Abr.* 890. Where a man marries a widow executrix, &c. her evidence ſhall not be allowed to charge her ſecond huſband with more than ſhe can prove to have actually come to her hands. Agreed *per cur. Abr. Eq. Ca.* 227. *Hil.* 1719.

D confeſſed a judgment to F, who made his wife, the plaintiff, executrix, and died; ſhe adminiſtered, and married a ſecond huſband, and then ſhe alone, without her huſband, acknowledged ſatisfaction, though no real ſatisfaction was made. The court held that this was not good. *Sid.* 31. A wife adminiſtratrix under ſeventeen ſhall join with her huſband in an action. *Mod.* 297. If a feme executrix takes baron, and he releaſes all actions, this ſhall be a bar during the coverture without queſtion. *Br. Releaſes, pl.* 29. If a feme executrix take baron, and the baron puts himſelf in arbitrament for death of the teſtator, and award is made, and the baron dies, the feme ſhall be barred; *per tot' cur'.* Brooke ſays, that from hence it ſeems to him, that the releaſe of the baron without the feme is a good bar againſt the feme; *quod conceditur*, anno 39 Hen. 15; and therefore there he excepted thoſe debts in his releaſe, otherwiſe they had been extinct. *Br. Releaſes*, 79. If a man marries an adminiſtratrix to a former huſband, who in her widowhood waſted the aſſets of her inteſtate, the huſband is liable to the debts of the inteſtate, during the life of the wife; and this ſhall be deemed a *devaſtavit* in him. *Cro. Car.* 603.

VI. The Wife's Contracts during Marriage.—Every gift, grant, or diſpoſition, of goods, lands, or other thing whatſoever, and all obligations and feoffments made by a feme covert, without her huſband's conſent, are void. 1 Hen. V. 125. *Fitz. Covert.* 18. The huſband is obliged to maintain his wife in neceſſaries: yet they muſt be according to his degree and eſtate, to charge him; and neceſſaries may be ſuitable to a huſband's degree of quality, but not to his eſtate; alſo they may be neceſſaries, but not *ex neceſſitate* to charge the huſband. 1 *Mod.* 129. 1 *Nelſ. Abr.* 354. If a woman buys things for her neceſſary apparel, tho' without the conſent of her huſband, yet the huſband ſhall be bound to pay it. *Brownl.* 47. And, if the wife buys any thing for herſelf, children, or family, and the baron does any act precedent or ſubſequent whereby he ſhews his conſent, he may be charged thereupon. 1 *Sid.* 120. The expences of a feme covert's funeral, paid by her father, while her huſband had left her, and was gone abroad, deemed neceſſaries. *H. Black. Rep.* 90. Though a wife is very lewd, if ſhe cohabits with her huſband, he is chargeable for all neceſſaries for her, becauſe he took her for better, for worſe: and ſo he is if he runs away from her, or turns her away: but, if ſhe goes away from her huſband, then, as ſoon as ſuch ſeparation is notorious, whoever gives her credit doth it at his peril, and the huſband is not liable, unleſs he take her again. 1 *Salk.* 119. 1 *Stra.* 647, 706. If a man cohabits with a woman, allows her to aſſume his name, and paſſes her for his wife, though in fact he is not married to her, yet he is liable to her contracts for neceſſaries; and therefore *ne unques accouple* is a bad plea in an action on the caſe for the debt of a wife; it is good only in dower or an appeal. *Bull. N. P.* 136. *Eſp. N. P.* 124.

Although a huſband be bound to pay his wife's debts for her reaſonable proviſion, yet, if ſhe parts from him, eſpecially by reaſon of any miſbehaviour, and he allows her a maintenance, he ſhall never after be charged with her debts, till a new cohabitation; but, if the huſband receive her, or come after her, and lie with her but for a night, that may make him liable to the debts. *Paſch.* 3 *Ann. Mod. Caſ.* 147. If there be an agreement in writing between the huſband and wife to live ſeparate, and that ſhe ſhall have a ſeparate maintenance, it ſhall bind them both till they both agree to cohabit again; and, if the wife is willing to return to her huſband, ſhe may; but it has been adjudged, that the huſband hath no coercive power over the wife to force her, though he may viſit her, and uſe all lawful means in order to a reconciliation. *Mich. Geo.* 1. *Mod. Ca. in L. & E.* 22. Where there is a ſeparation by conſent, and the wife hath a ſeparate allowance, thoſe who truſt her do it upon her own credit. 1 *Salk.* 116. If a huſband makes his wife an allowance for clothes, &c. which is conſtantly paid her, it is ſaid he ſhall not be charged. 1 *Sid.* 109. And, if he forbids particular perſons to truſt her, he will not be chargeable: but a prohibition in general, by putting her in the newſpapers, is no legal notice not to truſt her. 1 *Vent.* 42.

It may now ſafely be aſſumed as a principle, that "where the huſband and wife part by conſent, and ſhe has a ſeparate maintenance from her huſband, ſhe ſhall in all caſes be ſubject to her own debts." This was firſt finally decided and ſettled in the caſe of Ringſtead *v.* Lady Laneſborough, *M.* 23 Geo. III. and *H.* 23 Geo. III. where in actions againſt the defendant for goods ſold ſhe pleaded coverture; and the plaintiff's replication "that ſhe lived ſeparate and apart from her huſband, from whom ſhe had a ſeparate maintenance, and ſo was liable to her own debts," was on demurrer holden to be good; and the plaintiff had judgment. In the above caſe the plea alſo ſtated, that the huſband lived in Ireland, which being out of the proceſs of the court, ſome ſtreſs was laid on it in the deciſion; but, in the caſe of Barwell *v.* Brooks, *H.* 24 Geo. III. it was decided, as a general principle, that the huſband was not liable in any caſe where the wife lived apart, and had a ſeparate maintenance; and this principle was recognized in Corbett *v.* Poelnitz, which followed it. 1 *Term Rep.* 5. It has been ſaid, that, when the huſband and wife live apart, the wife muſt have a ſeparate maintenance from the huſband, in order to diſcharge him. 4 *Burr.* 2078. But this opinion ſeems much ſhaken by that of lord Mansfield, in 1 *Term Rep.* 5-11, where he ſays, the caſes (already mentioned) do not reſt on one or two circumſtances, but on the great principle which the court has laid down "that where a woman has a ſeparate eſtate, and acts and receives credit as a feme ſole, ſhe ſhall be liable as ſuch." A principle which extends further than the facts in any caſes yet determined. And it ſeems, that now a determination in 12 *Mod.* 603, where coverture and life of the huſband in Ireland was given in evidence in an action againſt a woman who had traded twelve years as a widow, is not law.

The baron in an account ſhall not be charged by the receipt of his wife, except it came to his uſe. 1 *Danv.* 707. Yet, if ſhe uſually receives and pays money, it will bind him in equity. *Abr. Caſ. Eq.* 61. And why not in law, in an action for money had and received? For goods ſold to a wife, to the uſe of the huſband, the huſband ſhall be charged, and be obliged to pay for the ſame. *Sid.* 425. If the wife pawn her clothes for money, and afterwards borrows money to redeem them, the huſband is not chargeable unleſs he were conſenting, or that the firſt ſum came to his uſe. 2 *Show.* 283. If a wife takes up clothes, as ſilk, &c. and pawns them before made into clothes, the huſband ſhall not pay for them, becauſe they never came to his uſe; otherwiſe if made up and worn, and then pawned. 1 *Salk.* 118. A wife may uſe the goods of her huſband, but ſhe may not diſpoſe of them: and, if ſhe takes them away, it is not felony, for ſhe cannot by our law ſteal the goods of her huſband; but, if ſhe delivers them to an adulterer, and he receives them, it will be felony in him. 3 *Inſt.* 308.

If the baron is beyond ſea in any voyage, and during his abſence the wife buys neceſſaries, this is a good evidence for a jury to find that the baron *aſſumpſit*. *Sid.* 127. A huſband who has abjured the realm, or who is baniſhed, is thereby *civiliter mortuus*; and being diſabled to ſue or be ſued in right of his wife, ſhe muſt be conſidered as a feme ſole; for it would be unreaſonable that ſhe ſhould be remedileſs on her part, and equally hard on thoſe who had any demands on her, that, not being able to have any redreſs from the huſband, they ſhould not have any againſt her. *Bro. Baron and Feme*, 66. *Co. Lit.* 133. *Moor* 851. 3 *Bulſt.* 188. 2 *Vern.* 104. In aſſumpſit the defendant proved that ſhe was married, and her huſband alive in France, the plaintiff had judgment, upon which, as a verdict againſt evidence, ſhe moved for a new trial, but it was denied;

nied; for it ſhall be intended that ſhe was divorced: beſides the huſband is an alien enemy, and in that caſe, why is not his wife chargeable as a feme ſole? 1 *Salk.* 116. *Deerly v. Ducheſs of Mazarine.*

By the cuſtom of London, if a feme covert trades by herſelf, in a trade with which her huſband does not intermeddle, ſhe may ſue and be ſued as a feme ſole. 10 *Mod.* 6. But in ſuch caſe ſhe cannot give a bond and warrant of attorney to confeſs a judgment: and, when ſued as a feme ſole, ſhe muſt be ſued in the courts of the city of London; for, if ſued in the courts above, the huſband muſt be joined. So the wife alone cannot bring an action in the courts above, but only in the city courts; and this even though her huſband be dead; if the cauſe of action accrued in his life-time. 4 *Term Rep.* 361, 2. Where a married man is tranſported for any felony, &c. the wife may be ſued alone, for any debt contracted by her, after the tranſportation. 1 *Term Rep.* 9.

VII. Husband how far anſwerable for his Wife in Criminal Cases.—In ſome caſes the command or authority of the huſband, either expreſs or implied, will privilege the wife from puniſhment, even for capital offences. And therefore if a woman commit bare theft or burglary by the coercion of her huſband, (or even in his company, which the law conſtrues a coercion,) ſhe is not guilty of any crime, being conſidered as acting by compulſion, and not of her own will. But for crimes *mala in ſe*, not being merely offences againſt the laws of ſociety, ſhe is anſwerable; as for murder and the like; not only becauſe theſe are of a deeper die; but alſo, ſince in a ſtate of nature no one is in ſubjection to another, it would be unreaſonable to ſcreen an offender from the puniſhment due to natural crimes, by the refinements and ſubordinations of civil ſociety. In treaſon alſo, no plea of coverture ſhall excuſe the wife: no preſumption of the huſband's coercion ſhall extenuate her guilt. 1 *Hale's P. C.* 47. And this as well becauſe of the odiouſneſs and dangerous conſequences of the crime itſelf, as becauſe the huſband having broken through the moſt ſacred tie of ſocial community, by rebellion againſt the ſtate, has no right to that obedience from a wife which he himſelf as a ſubject has forgotten to pay. 4 *Comm.* 28. 29. If alſo a feme commit a theft of her own voluntary act, or by the bare command of her huſband, or be guilty of treaſon, murder, or robbery, though in company with, or by coercion of, her huſband, ſhe is puniſhable. 1 *Hawk. P. C.* 1. The diſtinction between her guilt in burglary or theft and robbery, ſeems to be, that in the former, if committed through the means of her huſband "ſhe cannot know what property her huſband may claim in the goods taken." 10 *Mod.* 63. But in robbery the wife has an opportunity of judging in what ſort of right the goods are taken. *Leach's Hawk. P. C.* i. c. 1. If the wife receive ſtolen goods of her own ſeparate act, without the privity of her huſband, or if he, knowing thereof, leave the houſe and forſake her company, ſhe alone ſhall be guilty as acceſſary. 22. *Aſſ.* 40. *Dalt.* 157. 1 *Hale P. C.* 516. In inferior miſdemeanors alſo, another exception may be remarked; that a wife may be indicted and ſet in the pillory with her huſband, for keeping a brothel; for this is an offence touching the domeſtic economy or government of the houſe, in which the wife has a principal ſhare; and is alſo ſuch an offence as the law preſumes to be generally conducted by the intrigues of the female ſex. 1 *Hawk. P. C.* c. 1. 10 *Mod.* 63.

A feme covert generally ſhall anſwer, as much as if ſhe were ſole, for any offence not capital againſt the common law or ſtatute; and if it be of ſuch nature, that it may be committed by her alone, without the concurrence of her huſband, ſhe may be puniſhed for it without the huſband by way of indictment, which being a proceeding grounded merely on the breach of the law, the huſband ſhall not be included in it for any offence to which he is no way privy. 1 *Hawk P. C.* c. 1. *Moor* 813. *Hob.* 93. *Noy* 103. *Savil* 25. *Cro. Jac.* 482. A feme may be indicted alone for a riot. For ſelling gin againſt the ſtat. 9 Geo. II. c. 23. For recuſancy. For being a common ſcold. For aſſault and battery. For foreſtalling. For uſury. For barratry. For a forcible entry. For keeping a gaming-houſe. Keeping a bawdy-houſe, if the huſband does not live with her. For treſpaſs or ſlander. *Keilw.* 61. *Ro. Ab.* 251. *Leon.* 122. *Cro. Car.* 376. 1 *Hawk. P. C.* c. 1.

A man muſt anſwer for the treſpaſſes of his wife: if a feme covert ſlander any perſon, &c. the huſband and wife muſt be ſued for it, and execution is to be awarded againſt him. 11 *Rep.* 62. Huſband and wife may be found guilty of nuſance, battery, &c. 10 *Mod* 63. If the wife incur the forfeiture of a penal ſtatute, the huſband may be made a party to an action or information for the ſame; as he may be generally to any ſuit for a cauſe of action given by his wife, and ſhall be liable to anſwer what ſhall be recovered thereon. 1 *Hawk. P. C.* c. 1.

VIII. Acts which bind the Wife, after the Husband's Death. A wife is *ſub poteſtate viri*, and therefore her acts ſhall not bind her, unleſs ſhe levy a fine, &c. when ſhe is examined in private, whether ſhe doth it freely, or by compulſion of the huſband; if baron and feme levy a fine, this will bar the feme: and where the feme is examined by writ, ſhe ſhall be bound; elſe not. 1 *Danv. Abr.* 708. If a common recovery be ſuffered by huſband and wife of the wife's lands, this is a bar to the wife; for ſhe ought to be examined upon the recovery. *Pl. Com.* 514*a.* 1 *Rol.* 347. So, if huſband and wife are vouchees in a common recovery, the recovery ſhall be a bar, though the wife be not examined; for, though it be proper that ſhe be examined, yet that is not neceſſary, and is frequently omitted. 1 *Sid.* 11. *Sti.* 319. A recovery, as well as a fine by a feme covert, is good to bar her, becauſe the *præcipe* in the recovery anſwers the writ of covenant in the fine, to bring her into court, where the examination of the judges deſtroys the preſumption of the law, that this is done by the coercion of the huſband, for then it is to be preſumed they would have refuſed her. 10 *Co.* 43. 2 *Rol. Abr.* 395.

By the cuſtom in ſome cities and boroughs, a bargain and ſale by the huſband and wife, where the wife is examined by the mayor or other officer, binds the wife after the huſband's death. 2 *Inſt.* 673. And it ſeems that by ſtat. 34 Hen. VIII. c. 22. all ſuch cuſtomary conveyances ſhall be of force notwithſtanding the ſtat. 32 Hen. VIII. c. 28. So, by cuſtom in Denbigh in Wales, a ſurrender by huſband and wife, where the wife is examined in court there, binds the wife and her heirs as a fine does; and this cuſtom is not taken away by ſtat. 27 Hen. VIII. c. 26; for it is reaſonable and agreeable to ſome cuſtoms in England. *Dy.* 363. So a ſurrender of a copyhold by huſband and wife, the wife being examined by the ſteward, binds the wife.

A wife is diſabled to make contracts, &c. 3 *Inſt.* 110. And if a married woman enters into bond as feme ſole, if ſhe is ſued as feme ſole, ſhe may plead *non eſt factum*, and the coverture will avoid her bond. 1 *Lil. Abr.* 217. A feme covert may plead *non aſſumpſit*, and give coverture in evidence, which makes it no promiſe, &c. *Raym.* 395. In caſe money be due to the huſband by bill or bond, or for rent on a leaſe, and it is paid to the wife; this ſhall not prejudice him, if after payment he publickly diſagrees to it. 19 *Jac.* 1 *B. R.* 2 *Shep. Abr.* 426. *Contra*, if ſhe is uſed to receive money for him, or if it can be proved the money paid came to his uſe.

If a feme covert levies a fine of her own inheritance without her huſband, this ſhall bind her and her heirs, becauſe they are eſtopped to claim any thing in the land, and cannot be admitted to ſay ſhe was covert againſt the record; but the huſband may enter and defeat it, either during the coverture, to reſtore him to the freehold he held *jure uxoris*, or after her death to reſtore himſelf to his tenancy by the curteſy, becauſe no act of a feme covert can transfer that intereſt which the intermarriage has veſted in the huſband; and, if the huſband avoids it during the coverture, the wife or her heirs ſhall never after be bound by it. 10

Co. 43. *Hob.* 225. *Co. Lit.* 46. Leaſe made by baron and feme, ſhall be ſaid to be the leaſe of them both, till the feme diſagrees, which ſhe cannot do in the life of the baron. *Br. Agreement, pl.* 6.

The examination of a feme covert is not always neceſſary in levying of fines, becauſe, that being provided that ſhe may not at the inſtance of her huſband make any unwary diſpoſition of her property, it follows, that when the huſband and wife do take an eſtate by the fine, and part with nothing, the feme need not be examined; but where ſhe is to convey or paſs any eſtate or intereſt, either by herſelf or jointly with her huſband, there ſhe ought to be examined; therefore if A. levies a fine *come ceo* to baron and feme, and they render to the conuzor, the feme ſhall be examined; ſo it is where ſhe takes an eſtate by the fine rendering rent. 2 *Inſt.* 515. 2 *Rol. Abr.* 17. If baron and feme by fine *ſur conceſſit* grant land to J. S. for ninety-nine years, and warrant the ſaid land to J. S. during the ſaid term, and the baron dies, and J. S. is evicted by one that hath a prior title, he may thereupon bring covenant againſt the feme, notwithſtanding ſhe was covert at the time when the fine was levied. 2 *Saund.* 177. 1 *Sid.* 466. 1 *Mod.* 290.

If a huſband diſſeiſe another to the uſe of his wife, this does not make her a diſſeiſoreſs, ſhe having no will of her own, nor will any agreement of hers to the diſſeiſin during the coverture, make her guilty of the diſſeiſin, for the ſame reaſon: but her agreement after her huſband's death will make her a diſſeiſoreſs, becauſe then ſhe is capable of giving her conſent, and that makes her tenant of the freehold, and ſo ſubject to the remedy of the diſſeiſee. 1 *Rol. Abr.* 660. *Bro. Diſſeiſin* 67. But if a feme covert actually enters and commits a diſſeiſin, either ſole or together with her huſband, then ſhe is a diſſeiſoreſs, becauſe ſhe thereby gains a wrongful poſſeſſion; but ſuch actual entry cannot be to the uſe of her huſband or a ſtranger, ſo as to make them diſſeiſors, becauſe, though by ſuch entry ſhe gains an eſtate, yet ſhe has no power of transferring it to another. *Co. Lit.* 357. 1 *Rol. Abr.* 660. 8 Hen. VI. 14.

If the huſband, ſeiſed of lands in right of his wife, makes a leaſe thereof for years by indenture or deed poll, reſerving rent; all the books agree this to be a good leaſe for the whole term, unleſs the wife, by ſome act after the huſband's death, ſhews her diſſent thereto; for, if ſhe accepts rent which becomes due after his death, the leaſe is thereby become abſolute and unavoidable; the reaſon whereof is, that the wife, after her intermarriage, being by law diſabled to contract for, or make any diſpoſition of, her own poſſeſſions, as having ſubjected herſelf and her whole will to the will and power of her huſband; the law therefore transfers the power of dealing and contracting for her poſſeſſions to the huſband, becauſe no other can then intermeddle therewith, and without ſuch power in the huſband they would be obliged to keep them in their own manurance or occupation, which might be greatly to the prejudice of both; but to prevent the huſband's abuſing ſuch power, and leſt he ſhould make leaſes to the prejudice of his wife's inheritance, the law has left her at liberty after his death, either to affirm and make good ſuch leaſe, or defeat and avoid it, as ſhe finds it ſubſervient to her own intereſt; and this ſhe may do, though ſhe joined in ſuch leaſe, unleſs made purſuant to ſtatute 32 Hen. VIII. c. 28. *Bro. Leaſes* 24. *Cro. Jac.* 332. *Co. Lit.* 45. *Plow.* 137. *Yelv.* 1. *Cro. Eliz.* 769. Huſband and wife make a leaſe for years, by indenture, of the wife's lands, reſerving rent; the leſſee enters, the huſband before any day of payment dies; the wife takes a ſecond huſband, and he at the day accepts the rents and dies; and it was held, that the wife could not now avoid the leaſe, for by her ſecond marriage ſhe transferred her power of avoiding it to her huſband, and his acceptance of the rent binds her, as her own act before ſuch marriage would have done; for he by the marriage ſucceeded into the power and place of the wife, and what ſhe might have done, either as to affirming or avoiding ſuch leaſe before marriage, the ſame may the huſband do after the marriage. *Dyer* 159. 1 *Rol. Abr.* 475.

A re-delivery by the wife after the death of her huſband, of a deed delivered by her during the coverture, is a ſufficient confirmation of ſuch deed ſo as to bind her, without its being re-executed or re-atteſted, and circumſtances alone may be equivalent to ſuch re-delivery, though the deed be a joint deed by baron and feme affecting the wife's land; and no fine levied. *Comp.* 201.

The huſband being ſeiſed of copyhold lands in right of his wife in fee, makes thereof a leaſe for years not warranted by the cuſtom, which is a forfeiture of her eſtate, yet this ſhall not bind the wife or her heirs after the huſband's death, but that they may enter and avoid the leaſe, and thereby purge the forfeiture; and the diverſity ſeems between this act, which is at an end when the leaſe is expired or defeated by the entry of the lord, or the wife af the huſband's death, and ſuch acts as are a continuing detriment to the inheritance, as wilful waſte by the huſband, which tends to the deſtruction of the manor; ſo of nonpayment of rent, denial of ſuit or ſervice; for ſuch forfeitures as theſe bind the inheritance of the wife after the huſband's death; but in the other caſe the huſband cannot forfeit by this leaſe more than he can grant, which is but for his own life. 2 *Rol. Rep.* 344. *Cro. Eliz.* 149. 4 *Co.* 27.

A feme covert is capable of purchaſing, for ſuch an act does not make the property of the huſband liable to any diſadvantage, and the huſband is ſuppoſed to aſſent to this, as being to his advantage, but the huſband may diſagree; and that ſhall avoid the purchaſe; but, if he neither agrees nor diſagrees, the purchaſe is good, for his conduct ſhall be eſteemed a tacit conſent, ſince it is to turn to his advantage; but in this caſe, though the huſband ſhould agree to the purchaſe, yet after his death ſhe may waive it, for, having no will of her own at the time of the purchaſe, ſhe is not indiſpenſibly bound by the contract; therefore if ſhe does not, when under her own management and will, by ſome act expreſs her agreement to ſuch purchaſe, her heirs ſhall have the privilege of departing from it. *Co. Lit.* 3.

Jointreſs paying off a mortgage was decreed to hold over till ſhe or her executor be ſatisfied, and intereſt to be allowed her. *Chan. Caſes* 271. The huſband gave a voluntary bond after marriage to make a jointure of a certain value on his wife; the huſband accordingly makes a jointure; the wife gives up the bond; the jointure is evicted; the jointure ſhall be made good out of the huſband's perſonal eſtate, there being no creditors in the caſe; and the delivery up of the bond by a feme covert could no ways bind her intereſt. *Vern.* 427. A feme covert agrees to ſell her inheritance, ſo as ſhe might have 200l. of the money ſecured to her; the land is ſold, and the money put out in a truſtee's name accordingly; this money ſhall not be liable to the huſband's debts, nor ſhall any promiſe by the wife, to that purpoſe, ſubſequent to the firſt original agreement, be binding in that behalf. 2 *Vern.* 64. *Trin.* 1688. It is a general rule that a feme covert acting with reſpect to her ſeparate property, is competent to act in all reſpects as if ſhe were a feme ſole. 2 *Vez.* 120. 1 *Bro. C. R.* 20. and ſee 1 *Vez.* 163. Where the wife, being authoriſed by ſettlement to diſpoſe of her ſeparate eſtate, contracted to ſell it, the court of Chancery will bind her to a ſpecific performance. 1 *Vez.* 517. 1 *Bro. C. R.* 20. So the bond of a feme covert jointly with her huſband ſhall bind her ſeparate eſtate. 1 *Bro. C. R.* 16. 2 *Vez.* 190.

IX. Where HUSBAND and WIFE muſt JOIN in bringing ACTIONS.—In thoſe caſes where the debt or cauſe of action will ſurvive to the wife, the huſband and wife are regularly to join in action; as in recovering debts due to the wife before marriage; in actions relating to her freehold or inheritance, or injuries done to the perſon of the wife. 1 *Rol. Abr.* 347. 2 *Mod.* 269. But if a feme ſole hath a rent-charge, and rent is in arrear, and ſhe marries, and the baron diſtrains for this rent, and thereupon a reſcous is made, this is a tort to the baron himſelf, and he may have an action alone. *Cro. Eliz.* 439. So if a feme ſole hath right to have common for life, and ſhe takes huſband, and ſhe is hindered in taking the common, he may have an action alone without his wife, it being only to recover damages. 2 *Bulſt.* 14. But, if baron and feme are diſſeiſed of the lands of the feme, they muſt join in action for the recovery of this land. 1 *Bulſt.* 21. The baron may have an action alone upon the ſtat. 5 Rich. II. ſtat. 1. c. 8, for entering into the land of the feme; treſpaſs and taking charters of the inheritance of the feme; *quare impedit, &c.* But for perſonal torts, they muſt join, though the baron is to have the damages. 1 *Danv.* 709. 1 *Rol. Rep.* 360. The huſband is to join in actions for battery to the wife; and a wife may not bring any action for wrong to her without her huſband. *Co. Lit.* 132. An action for a battery on the wife, brought by huſband and wife, muſt be laid to the damage of both. 2 *Lord Raym.* 1209. For an injury done to the wife alone, action cannot be maintained by the huſband alone, without her; but for aſſault and debauching or lying with the wife, or for a loſs and injury done to the huſband, in depriving him of the converſation and ſervice of his wife, he alone may bring an action; and theſe laſt actions are laid for aſſault, and detaining, &c. the wife, *per quod conſortium amiſit, &c. Cro. Jac.* 538. *Yelv.* 89.

For taking any thing from the wife, the huſband only is to bring the action, who has the property; for the wife hath not the property. In all caſes where the feme ſhall not have the thing recovered, but the huſband only, he alone is to bring the action. 1 *Rol. Rep.* 360, except as above, &c. For a perſonal duty to the wife, the baron only may bring the action: and the huſband is intitled to the fruits of his wife's labour, for which he may bring *quantum meruit.* 1 *Lill. Abr.* 227. 1 *Salk.* 114. In caſe, before marriage, a feme enters into articles concerning her eſtate, ſhe is a ſeparate perſon; and the huſband may be plaintiff in equity againſt the wife. *Prec. in Chancery* 24. Where the feme is adminiſtratrix, the ſuit muſt be in both their names, for by the intermarriage the huſband had authority to intermeddle with the goods as well as the wife; but in the declaration the granting adminiſtration to the feme muſt be ſet forth. *Godb.* 40. *pl.* 44. In action for goods which the feme hath as executrix, they muſt join, to the end that the damages thereby recovered may accrue to her as executrix in lieu of the goods. *Went. Off. Ex.* 207. In an action upon a trover before marriage, and a converſion after, the baron and feme ought to join; for this action, as a treſpaſs, diſaffirms the property; but the baron alone ought to bring a replevin, detinue, &c. for the allegations admit and affirm a property in the feme at the time of the marriage, which by conſequence muſt have veſted in the baron. 1 *Sid.* 172. 1 *Keb.* 641. *S.C.* 2 *Lev.* 107. *S.P.* and that he may join the wife at his election. If A. declares, that the defendant being indebted to him and his wife, as executrix to J. S. in conſideration that A. would forbear to ſue him for three months, aſſumed, &c. and avers that he forbore, and that his wife is ſtill alive, the action is well maintainable by the huſband alone, for this is on a new contract, to which the wife is a ſtranger. *Carth.* 462. 1 *Salk.* 117. *Yelv.* 84. Where a right of action doth accrue to a woman before marriage, as where a bond is made to her and forfeited, there, if ſhe marry, ſhe muſt be joined with the huſband in an action of debt againſt the obligor. *Owen* 82. In all actions real for the land of the wife, the huſband and wife ought to join. *R.* 1 *Bulſt.* 21. So in actions perſonal for a choſe in action, due to the wife before coverture. 1 *Rol.* 347. *Cro. Eliz.* 537. In the civil law the huſband and the wife are conſidered as two diſtinct perſons; and may have ſeparate eſtates, contracts, debts, and injuries; and therefore in our eccleſiaſtical courts a woman may ſue and be ſued without her huſband. 2 *Ro. Ab.* 298.

X. Where Husband and Wiee muſt be jointly Sued.—The huſband is by law anſwerable for all actions for which his wife ſtood attached at the time of the coverture, and alſo for all torts and treſpaſſes during coverture, in which caſes the action muſt be joint againſt them both; for if ſhe alone were ſued, it might be a means of making the huſband's property liable; without giving him an opportunity of defending himſelf. *Co. Lit.* 133. 2 Henry VI. 4. If goods come to a feme covert by trover, the action may be brought againſt huſband and wife, but the converſion may be laid only in the huſband, becauſe the wife cannot convert goods to her own uſe; and the action is brought againſt both, becauſe both were concerned in the treſpaſs of taking them. *Co. Lit.* 351. 1 *Rol. Abr.* 6. *pl.* 7. *Yelv.* 166. *Noy.* 79. 1 *Leon.* 312. But, in debt upon a *devaſtavit* againſt baron and feme executrix, it ſhall not be laid *quod devaſtaverunt*, for a feme covert cannot waſte. 2 *Lev.* 145. An action on the caſe was brought againſt baron and feme, for retaining and keeping the ſervant of the plaintiff, and judgment accordingly. 2 *Lev.* 63. If a leaſe for life or years be made to baron and feme, reſerving rent, an action of debt for rent arrear may be brought againſt both; for this is for the advantage of the wife. 1 *Rol. Abr.* 348.

If an action be brought againſt an huſband and wife for the debt of the wife, when ſole, and the plaintiff recovers judgment, the *ca. ſa.* ſhall iſſue to take both the huſband and wife in execution. *Moor* 704. But if the action was originally brought againſt herſelf when ſole, and pending the ſuit ſhe marries, the *ca. ſa.* ſhall be awarded againſt her only, and not againſt the huſband. *Cro. Jac.* 323. Yet if judgment be recovered againſt an huſband and wife, for the contract, nay even for the perſonal miſbehaviour of the wife, during her coverture, the *ca. ſa.* ſhall iſſue againſt the huſband only: which is (ſays Mr. J. Blackſtone) one of the many great privileges of Engliſh wives. 3 *Comm.* 414. 3 *Wilſ.* 124. But in an action againſt huſband and wife, for an aſſault by the wife, it was held that both may be taken in execution. 1 *Wilſ.* 149. See *Eſpinaſſe's N. P.* 327. Where a woman before marriage becomes bound for the payment of a ſum of money, and on her marriage ſeparate property is ſettled on her, if the obligee can have no remedy againſt the huſband, the wife's ſeparate property is bound. But the obligee muſt firſt endeavour to recover againſt the huſband by ſuing him. 1 *Bro. C. R.* 17.

XI. Of Divorces.—If baron and feme are divorced *caſuâ adulterii*, which is a divorce *à menſâ et thoro*, they continue baron and feme: it is otherwiſe in a divorce *à vinculo matrimonii*, which diſſolves the marriage. The feme after divorce, ſhall re-have the goods which ſhe had before marriage. *Br. Coverture, pl.* 82. *D.* 13. *pl.* 63. *per Fitzherbert. Keilw.* 122 *b. pl.* 75. But, if the huſband had given or ſold them without colluſion before the divorce, there is no remedy; but, if by colluſion, ſhe may aver the colluſion, and have detinue for the whole, whereof the property may be known; and as for the reſt, which conſiſts of money, &c. ſhe ſhall ſue in the ſpiritual court. *Br. Deraignment & Divorce, pl.* 1. cites 26 Hen. VIII. 7.

If a man is bound to a feme ſole, and after marries her, and after they are divorced, the obligation is revived. *Br. Cov. pl.* 82. Becauſe the divorce being *à vinculo matrimonii*, by reaſon of ſome prior impediment, as pre-contract, &c. makes them never huſband and wife *ab initio*; but if the huſband had made a feoffment in fee of the lands of his wife, and then the divorce had been, that would have been a diſcontinuance as well as if the huſband had died, becauſe there the intereſt of a third perſon had been concerned, but between the parties themſelves it will have relation to deſtroy the huſband's title to the goods, and it proves no more than the common rule, viz. that relations will make a nullity between the parties themſelves, but not amongſt ſtrangers. *Lord Raym.* 521. *Hil.* 11 *W.* 3. If a man gives lands in tail to baron and feme, and they have iſſue, and after, divorce is ſued, now they have only franktenement, and the iſſue ſhall not inherit. *Br. Tail et Dones, &c. pl.* 9. If the baron and feme purchaſe jointly and are diſſeiſed, and the baron releaſes, and after they are divorced, the feme ſhall have the moiety, though before the divorce there were no moieties; for the divorce converts it into moieties. *Br. Deraignment, pl.* 18. cites 32 Hen. VIII. If baron alien the wife's land, and then there is a divorce *caſua præcontractûs*, or any other divorce which diſſolves the marriage *à vinculo matrimonii*, the wife during the life of the baron may enter by ſtat. 32 Hen. VIII. c. 28. But, if after ſuch alienation and divorce the baron dies, ſhe is put to her *cui in vita ante divortium*; and yet the words of the ſtatute are, that ſuch alienation ſhall be void, but this ſhall be intended to toll the *cui in vita*. *Mo.* 58 *pl.* 164. *Paſch.* 8 Eliz. *Broughton v. Conway.*

Divorce *cauſa adulterii* of the huſband; afterwards the wife ſues in the ſpiritual court for a legacy; the executor pleads the releaſe of the baron; the releaſe binds the wife, for the *vinculum matrimonii* continues. *Cro. Eliz.* 908. 1 *Salk.* 115. Holt held, that if a feme covert after divorce *à menſâ et thoro*, ſues for a legacy, which, if recovered, comes to her huſband, there the huſband may releaſe it, becauſe there is no alimony: and, if he may releaſe the duty, he may releaſe the coſts. 1 *Vern.* 261. A divorce was *à menſâ et thoro*, and then the huſband dies inteſtate. The wife by bill prayed aſſiſtance as to dower and adminiſtration (it being granted to another) and diſtribution. The maſter of the rolls bid her go to law to try if ſhe was entitled to her dower, there being no impediment, and as to that diſmiſſed the bill; and, as to the adminiſtration, the granting that is in the eccleſiaſtical court; but the diſtribution more properly belongs to this court; but, ſince in that court ſhe is ſuch a wife as is not intitled to adminiſtration, he diſmiſſed the bill as to diſtribution too, and ſaid, if they could repel that ſentence, ſhe then would be intitled to diſtribution. *Ch. Prec.* 111. In caſe of a divorce *à menſâ et thoro* the law allows alimony to the wife: which is that allowance which is made to a woman for her ſupport out of the huſband's eſtate, being ſettled at the diſcretion of the eccleſiaſtical judge, on conſideration of all the circumſtances of the caſe. And the eccleſiaſtical court is the proper court in which to ſue for alimony. *Het.* 69. This is ſometimes called her *eſtovers*, for which, if the huſband refuſes payment there is (beſides the ordinary proceſs of excommunication in the eccleſiaſtical court) a writ at common law *de eſtoverits habendis*, in order to recover it. 1 *Lev.* 6. It is generally proportioned to the rank and quality of the parties; but, in caſe of an elopement and living with an adulterer, the law allows her no alimony. *Cowl.* 1 *Inſt.* 235 *a.* 12 *Rep.* 30. A bill may be brought in Chancery for a ſpecific performance of an agreement by the huſband with a third perſon, for a ſeparate maintenance of the wife; notwithſtanding that alimony belongs to the ſpiritual court. *Treat. Eq.* 39.

The court of chancery has decreed the wife a ſeparate maintenance out of a truſt fund on account of the cruelty and ill-behaviour of the huſband, though there was no evidence of a divorce or agreement that the fund in diſpute ſhould be ſo applied. 2 *Vern.* 752. And in another caſe, the huſband having quitted the kingdom, lord Hardwicke decreed the wife the intereſt of a truſt fund till he ſhould return and maintain her as he ought. 2 *Atk.* 96. Yet in a ſubſequent caſe lord Hardwicke obſerves, that he could find no decree to compel a huſband to pay a ſeparate maintenance to his wife, except upon an agreement between them, and even then unwillingly. 3 *Atk.* 547. And this latter opinion ſeems moſt reconcilable with principle; for the caſe of a divorce *propter ſævitiam* may be conſidered as an implied agreement; and, if there be an expreſs or implied agreement, there ſeems no doubt, but that courts of equity may, concurrently with the ſpiritual court, in proceeding upon it, decree a ſeparate maintenance. *Wood's Inſt.* 62. 2 *Vern.* 386. *Guth v. Guth*, MSS. The ſpiritual court however would be the more proper juriſdiction, if it acted *in rem. Lit. Rep.* 78. 2 *Atk.* 511. But if, after an agreement between huſband and wife to live ſeparate, they appear to have cohabited, equity will conſider the agreement as waived thereby. *Fletcher v. Fletcher, Mitch.* 1788. See *Fonblanque's Treat. Eq.* 96, 7. Where, on a ſeparation, lands are conveyed by the baron in truſt for the feme, chancery will not bar the feme from ſuing the baron in the truſtee's name, and a ſurrender or releaſe by the baron ſhall not be made uſe of againſt the feme. 2 *Chan. Ca.* 102. A woman living ſeparate from her huſband, and having a ſeparate maintenance, contracts debts. The creditors, by a bill in this court, may follow the ſeparate maintenance whilſt it continues; but when that is determined, and the huſband dead, they cannot by a bill charge the jointure with the debts: by lord keeper North; and the rather, becauſe the executor of the huſband, who may have paid the debt, is no party. *Vern.* 326. Where the huſband, during his cohabitation with the wife, makes her an allowance of ſo much a-year for her expences, if ſhe out of her own good houſewifery ſaves any thing out of it, this will be the huſband's eſtate, and he ſhall reap the benefit of his wife's frugality; becauſe, when he agrees to allow her a certain ſum yearly, the end of the agreement is, that ſhe may be provided with clothes and other neceſſaries, and whatſoever is ſaved out of this redounds to the huſband, *per* lord keeper Finch. *Freem. Rep.* 304.

A term was created on the marriage of A. with B. for raiſing 200l. a year for pin-money, and in the ſettlement A. convenanted for payment of it. There was an arrear of one year at A.'s death, which was decreed, becauſe of the covenant to be charged on a truſt-eſtate ſettled for payment of debts, it being in arrear for one year only; *ſecus* had it been in arrear for ſeveral years. *Chan. Prec.* 26. The plaintiff's relation (to whom he was heir) allowed the wife pin-money; which being in arrear, he gave her a note to this purpoſe; I am indebted to my wife 100l. which became due to her ſuch a day; after by his will he makes proviſion out of his lands for payment of all his debts, and all monies which he owed to any perſon in truſt for his wife; and the queſtion was, whether the 100l. was to be paid within this truſt; and my lord keeper decreed not; for in point of law it was no debt, becauſe a man cannot be indebted to his wife; and it was not money due to any in truſt for her. *Hil.* 1701. between Cornwall and the earl of Montague. But *quære*; for the teſtator looked on this as a debt, and ſeems to intend to provide for it by his will. *Abr. Ex. Ca.* 66.

Where the wife hath a ſeparate allowance made before marriage, and buys jewels with the money ariſing thereout, they will not be aſſets liable to the huſband's debts. *Chan. Prec.* 295. Where there is a proviſion for the wife's ſeparate uſe for clothes, if the huſband finds her clothes, this will bar the wife's claim; nor is it material whether the allowance be provided out of the eſtate which was originally the huſband's, or out of what was her own eſtate; for in both caſes her not having demanded it for ſeveral years together, ſhall be conſtrued a conſent from her that he ſhould receive it; *per* lord C. Macclesfield. 2 *P. Wms.* 82, 83. So where 50l. a year was reſerved for clothes and private expences, ſecured by a term for years, and ten years after the huſband died, and ſoon after the wife died; the executors in equity demanded 500l. for ten years arrear of this pin-money; but it appearing that the huſband maintained her, and no proof that ſhe ever demanded it, the claim was diſallowed. 2 *P. Wms.* 341. For other particulars relative to man and wife, ſee MARRIAGE.

BARON and FEME, in heraldry, is when the coats of arms of a man and his wife are borne par pale in the ſame eſcutcheon, the man's being always on the dexter ſide, and the woman's on the ſiniſter; but here the woman is ſuppoſed not an heireſs, for then her coat muſt be borne by the huſband on an eſcutcheon of pretence.

BARON of BEEF is when the two ſirloins are not cut aſunder, but joined together by the end of the backbone.

BA'RONAGE, *ſ.* The body of barons and peers.—His charters of the liberties of England, and of the foreſt, were hardly, and with difficulty, gained by his *baronage* at Staines, A. D. 1215. *Hale.*—The dignity of a baron. The land which gives title to a baron.

BA'RONESS, *ſ.* [*baroneſſa*, Ital. *baroniſſa*, Lat.] A baron's lady.

BA'RONET, *ſ.* [of *baron*, and *et*, diminutive termination.] A dignity or degree of honour next beneath a baron, and above a knight; having precedency of all knights excepting thoſe of the garter; and they would even take precedency of them, were it not that knights of the garter are always privy counſellors. The dignity of baronet is given by patent, and is the loweſt degree of honour that is hereditary. The order was founded by Jas. I. at the ſuggeſtion of Sir Robert Cotton, in 1611, and was then a purchaſed honour, for the purpoſe of raiſing money to pay troops ſent out to quell ſome inſurgents in the province of Ulſter in Ireland; the arms of which province, being a red or bloody hand, every baronet has it added, on his creation, to his coat of arms. Their number was at firſt but 200; but now they are without limitation. Baronets take place according to the dates of their patents; by the terms of which no honour is to be erected between barons and baronets. The title *Sir* is granted them by a particular clauſe in their patents, whence both a baronet, and his eldeſt ſon, being of full age, may claim knighthood. The firſt baronet who was created was Sir Nicholas Bacon, of Redgrave in Suffolk, whoſe ſucceſſor is therefore ſtyled *Primus Baronetorum Angliæ.*

BARONETS of SCOTLAND, called alſo *Baronets of Nova Scotia.* The order of knights-baronets was intended to be eſtabliſhed in Scotland in 1621, by James I. for the plantation and cultivation of Nova Scotia; but it was not actually inſtituted till the year 1625, by his ſon Charles I. when the firſt perſon dignified with this title was Sir Robert Gordon of Gordonſtone, a younger ſon of the earl of Sutherland. The king granted a certain portion of land in Arcadia, or New Scotland, to each of them, which they were to hold of Sir William Alexander (afterwards earl of Stirling), for their encouragement who ſhould hazard their lives for the good and increaſe of that plantation, with precedency to them and their heirs-male for ever before all knights called *equites aurati*, and all leſſer barons called *lairds*, and all other gentlemen, except Sir William Alexander his majeſty's lieutenant in Nova Scotia, his heirs, their wives and children; that the title of *Sir* ſhould be prefixed to their Chriſtian name, and *Baronet* added to their ſurname; and, that their own and their eldeſt ſons wives ſhould enjoy the title of *Lady*, *Madam*, or *Dame*. His majeſty was ſo deſirous of adding every mark of dignity to this order, that he granted them the privilege of wearing an orange ribbon, and a medal. This mark of diſtinction fell to the ground, with all the other honours of Scotland, during the uſurpation of Cromwell. It alſo continued in diſuſe after the reſtoration; but, in the year 1775, the order was recogniſed and eſtabliſhed by his preſent majeſty George III.

BARONETS of IRELAND. This order was likewiſe inſtituted by James I. for the ſame purpoſe and with the ſame privileges within the kingdom of Ireland, as he had conferred on the like order in England; for which the Iriſh baronets paid the ſame fees into the treaſury of Ireland. The firſt of that kingdom who was advanced to this hereditary dignity was Sir Francis Blundell, then ſecretary for the affairs of Ireland. Since his time, ſeveral have been created, no number being limited.

BARO'NI (Leonora), a celebrated ſinger and compoſer, was born at Naples, but ſpent the greateſt part of her life at Rome. She was daughter of Adriana Baroni of Mantua, baroneſs of Pian-caretta; a lady alſo diſtinguiſhed for her muſical talents, and for her beauty ſurnamed *the fair*. Leonora had leſs beauty than her mother; but excelled her in muſic, in the ſweetneſs of her voice, and in the attracting charms of her manner. She is ſaid by Mr. Bayle to have been one of the fineſt ſingers in the world. She was celebrated by the wits, who, in 1639, publiſhed, at Bracciano, a collection of Latin, Greek, Italian, Spaniſh, and French, poems, in her praiſe, under this title, 'Applauſi Poetici alle Glorie della Signora Leonora Baroni.' Among the Latin poems of Milton there are three, wherein this lady is celebrated for her ſinging, with an alluſion to her mother's exquiſite performance on the lute. A fine eulogium on this accompliſhed woman is alſo contained in a diſcourſe on the Muſic of the Italians, printed at Paris in 1672, by M. Maugars prior of St. Peter de Mac, the king's interpreter of the Engliſh language, and ſo famous a performer on the viol, that the king of Spain and ſeveral other ſovereign princes of Europe deſired to hear him. The character he gives of Leonora Baroni is as follows: "She is endowed with the ſuperior judgment of diſtinguiſhing good from bad muſic; ſhe underſtands it perfectly well; and even compoſes. She ſings with a bold and generous modeſty; her voice reaches a large compaſs of notes, and is exact, loud, and harmonious; ſhe ſoftens and raiſes it without ſtraining or making grimaces. Her raptures and ſighs are not laſcivious; her looks having nothing impudent, nor does ſhe tranſgreſs a virgin modeſty in her geſtures. In paſſing from one key to another, ſhe ſhews ſometimes the diviſions of the enharmonic and chromatic kind with ſo much art and ſweetneſs, that every body is raviſhed with that fine and difficult method of ſinging. She has no need of any perſon to aſſiſt her with a theorbo or viol, one of which is neceſſary to make her ſinging complete; for ſhe plays perfectly well herſelf on both theſe inſtruments. In ſhort, I have had the good fortune to hear her ſing above thirty different airs, compoſed by herſelf. I one day heard her ſing with her mother and her ſiſter. Her mother played upon the lute, her ſiſter upon the harp, and herſelf upon the theorbo. This concert, compoſed of three fine voices, and of three different inſtruments, ſo powerfully tranſported my ſenſes, that I forgot my mortality, and thought myſelf among the angels enjoying the felicity of the bleſſed."

BARO'NIUS (Cæſar), a pious and learned Neapolitan cardinal, was born at Sore in 1538. He ſtudied at Rome, and put himſelf under the diſcipline of St. Philip de Neri. In 1593 he was made general of the congregation of the Oratory by the reſignation of the founder Philip de Neri. Pope Clement VIII. made him his confeſſor, and created him a cardinal in 1596. He was afterwards made librarian to the Vatican; and died in 1605, at ſixty-eight years of age. He wrote ſeveral works; the principal of which is his Annales Eccleſiaſtici, from A.D. 1 to 1198, in twelve vols. folio; which has been abridged by ſeveral perſons, particularly by Henry Spondæus, Bzovius, and Ludovico Aurelio.

BA'RONY, BARONIA, or BARONAGIUM, *ſ.* [*baronnie*, Fr. *beorny*, Sax.] The lordſhip or fee of a baron, either temporal or ſpiritual: in which ſenſe *barony* amounts to the ſame with what is otherwiſe called *honour*. A barony may be conſidered as a lordſhip held by ſome ſervice in chief of the king, coinciding with what is otherwiſe called *grand ſergeanty*. Baronies, in their firſt creation, moved from the king himſelf, the chief lord of the whole realm, and could be holden immediately of no other lord. For example, the king enfeoffed a man of great ſeigneurie in land, to hold to the perſon enfeoffed and his heirs, of the king and his heirs, by baronial ſervice; to wit, by the ſervice of twenty, forty, ſixty, knights, or of ſuch other number of knights, either more or fewer, as the king by his enfeoffment limited or appointed. In the ages next after the conqueſt, when a great lord was enfeoffed by the king of a large ſeigneurie, ſuch ſeigneurie was called a *barony*, but more commonly an *honour*; as, the honour of Glouceſterſhire, the honour of Wallingford, the honour of Lancaſter, the honour of Richmond, &c. There were in England certain honours, which were often called by Norman or other foreign names; that is to ſay, ſometimes by the Engliſh and ſometimes by the foreign name. This happened when the ſame perſon was lord of an honour in Normandy, or ſome other foreign country, and alſo of an honour in England. For example, William de Forz, de Force, or de Fortibus, was lord of the honour of Albemarle in Normandy: he was alſo lord of two honours in England; to wit, the honour of Holderneſs, and the honour of Skipton in Cravenc. Theſe honours in England were ſometimes called by the Norman name, the honour of Albemarle, or the honour of the earl of Albemarle. In like manner, the earl of Britannie was lord of the honour of Britannie in France, and alſo of the honour of Richmond in England: the honour of Richmond was ſometimes called by the foreign name, the honour of Britannie, or the honour of the earl of Britannie. This ſerves to explain the terms 'honour of Albemarle in England,' *honor Albemarliæ*, or *comitis Albemarliæ in Anglia*; *honor Britanniæ*, or *comitis Britanniæ in Anglia*, 'the honour of Britannie,' or 'the earl of Britannie in England.' Not that Albemarle or Britannie were in England, but that the ſame perſon reſpectively was lord of each of the ſaid honours abroad and each of the ſaid honours in England. The baronies belonging to biſhops are by ſome called *regalia*, as being held ſolely on the king's liberality. A barony, according to Bracton, is a right indiviſible: Wherefore, if an inheritance be to be divided among coparceners, though ſome capital meſſuages may be divided, yet, if the capital meſſuage be the head of a county or barony, it may not be parcelled: and the reaſon is, leſt by this diviſion many of the rights of counties and baronies by degrees come to nothing, to the prejudice of the realm, which is ſaid to be compoſed of counties and baronies.

BARONY'CHIA, *ſ.* in botany. See ASPLENIUM RUTA MURARIA.

BA'ROSCOPE, *ſ.* [of *βαρος*, heavy, and *σκοπεω*, to ſpy out.] An inſtrument to ſhew the weight of the atmoſphere; the ſame with BAROMETER.—If there was always a calm, the equilibrium could only be changed by the contents; where the winds are not variable, the alterations of the *baroſcope* are very ſmall. *Arbuthnot.*

BAROWECZ', a town of Poland, in the palatinate of Lublin, thirty-ſix miles north of Lublin.

BAR'QUES POINT, a cape on the north-eaſt of Sagana-bay, in lake Huron.

BARR, or BAAR, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diſtrict of Benfelden, ſeven miles weſt-north-weſt of Benfelden.

BAR'RA, an iſland of Africa, in the mouth of the river Gambia.

BARRA, or BAR, a kingdom of Africa, near the river Gambia, on the borders of it, which extends about twenty leagues.

BARRA, or BARRAY, one of the Hebrides, or Weſtern Iſlands of Scotland: about ſix miles long, and two and a half broad. The principal produce is barley and potatoes; great quantities of cod and ling are caught on the eaſt coaſt, 30,000 of the latter having been ſent in one year from this iſland to Glaſgow, which is thought to be about the average, where they are ſold for 5l. or 6l. the hundred; the fiſhermen alſo catch ſome dog-fiſh, the oil of which they burn in their lamps, and ſell what they do not conſume at 7d. or 8d. the Scotch pint. Shell-fiſh abound here, ſuch as limpets, muſcles, wilks, clams, ſpout-fiſh or razor-fiſh, lobſters, crabs, &c. &c. but what is ſingularly beneficial to the inhabitants, is the ſhell-fiſh called *cockle*. It is found upon the great ſand on the north end of Barray, in ſuch quantities, that, in times of great ſcarcity, all the families upon the iſland (about 200) reſort to it for their daily ſubſiſtence. It has been computed, that in two ſummers, which were peculiarly diſtreſſing on account of the great ſcarcity, no leſs than from 100 to 200 horſe-loads of cockles were taken off the ſands at low-water every day of the ſpring-tides, during the months of May, June, July, and Auguſt. If the people made uſe of cockles in plentiful years, they might ſave as much bread as would prevent a ſcarcity in the worſt of times. Barra is five miles ſouth of the iſland of South Uiſt. Lat. 57. 2. N. lon. 7. 30. W. Greenwich.

BARRA LOUGH, a lake of Ireland, in the county of Donegal, twenty miles north of Donegal.

BARRA, *ſ.* in commerce, a long-meaſure uſed in Portugal, and ſome parts of Spain, to meaſure woollen cloths, linen cloths, and ſerges. There are three ſorts: the barra of Valencia, thirteen of which make $12\frac{6}{7}$ yards Engliſh meaſure; the barra of Caſtile, ſeven of which make $6\frac{4}{7}$ yards; and the barra of Arragon, three of which make $2\frac{4}{7}$ yards Engliſh.

BARRABA' (Deſert of), a tract of land in Siberia, lying between the rivers Irtis and Oby, in the province of Tobolſk. It is uninhabited, but not through any deficiency of the ſoil; for that is excellent for tillage, and part of it might alſo be laid out in meadows and paſtures. It is interſperſed with a great number of lakes, which abound with a ſpecies of carp called by the neighbouring people *karawſchen*; and the country produces great numbers of elks, deer, foxes, ermine, and ſquirrels. Between the Irtis and Oby are ſome rich copper-mines; particularly on a mountain called *Pictowa*, from the *picta* or white firs that grow upon it.

BARRABO'A, a town of Africa, in the country of Magadoxa.

BAR'RACAN, or BARRAGAN, *ſ.* [*bouracan*, or *barracan*, Fr.] A kind of ſtuff belonging to the claſs of camblets, only of a grain much coarſer than the reſt, manufactured in various parts of France and Flanders, chiefly at Abbeville, Amiens, Rouen, and Liſle, and now in England. The chief uſe of barracans is for ſurtouts, or upper garments againſt the rain, being, when good, of ſo cloſe a grain, that the water will not ſoak through, but only run over them. For the woof, its thread is ſingle, twiſted, and fine ſpun; that of the warp is double or triple, i.e. compoſed of two or three threads well twiſted together. The uſual material is wool; though there are ſome made at Rouen, where the warp is hemp, and the woof wool. Some barracans are made of wool, dyed before it comes to the loom; others are woven white, and dyed afterwards, red, black, blue, brown, &c. They are not fulled, but only boiled two or three times in fair water, when they come from the loom; then calendered to make them ſmooth and even; and laſtly, made into rolls called *pieces* of barracan.

BARRACI'DA, *ſ.* in ichthyology, a ſpecies of pike. See ESOX.

BAR'RACK, *ſ.* [*barracca*, Span.] Little cabins made by the Spaniſh fiſhermen on the ſea-ſhore; or little lodges for ſoldiers in a camp. It is generally taken among us for buildings to lodge ſoldiers.

Barracks, when damp, are greatly prejudicial to the health of the ſoldiers lodged in them; occaſioning dyſenteries, intermittent fevers, coughs, rheumatic pains, &c. For which reaſon, quarter-maſters ought to be careful in examining every barrack offered by the magiſtrates of a place; rejecting all ground-floors in houſes that have any ſigns of moiſture.

BARRA-CON'DA, a town of Africa, in the country of Nigritia, ſituated on the river Gambia.

BARRAD', a town of Arabia, forty miles ſouth-eaſt of Saade.

BARRAN', a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Auch; containing about 700 inhabitants. It is two leagues weſt-ſouth-weſt of Auch, and two north of Mirande.

BARRAN'CE, a town of South America, in Peru, with a harbour, on the Pacific Ocean. Lat. 10. 30. S. lon. 59. 45. W. Ferro.

BAR'RATI, barred, an appellation given to the Carmelites after they were obliged to lay aſide the white cap, and wear cowls ſtriped black and white.

BAR'RATOR, or BARRETOR, *ſ.* [*barractator*, Lat. *barrateur*, Fr.] A common mover of ſuits and quarrels, either in law, or otherwiſe, between any of his majeſty's ſubjects. Lambard derives the word *barretor*, from the Lat. *balatro*, 'a vile knave:' but the proper derivation is from the French *barrateur*, 'a deceiver,' and this agrees with the deſcription of a common barretor in lord Coke's Reports, viz. that he is a common mover and maintainer of ſuits in diſturbance of the peace, and in taking and detaining the poſſeſſion of houſes and lands, or goods by falſe inventions, &c. 8 *Rep.* 37. However it ſeems clear, that no general indictment, charging the defendant with being a common oppreſſor, and diſturber of the peace, and ſtirrer up of ſtrife among neighbours, is good, without adding the words *common barretor*, which is a term of art appropriated by law to this purpoſe. 1 *Mod.* 288. 1 *Sid.* 282. *Cro. Jac.* 526. 1 *Hawk. P. C.* c. 81.

A common barrator is ſaid to be the moſt dangerous oppreſſor in the law; for he oppreſſeth the innocent by colour of law, which was made to protect them from oppreſſion. 8 *Rep.* 37. No one can be a barrator in reſpect of one act only; for every indictment for ſuch crime muſt charge the defendant with being *communis barractator*, and conclude *contra pacem, &c.* And it hath been holden, that a man ſhall not be adjudged a barrator for bringing any number of ſuits in his own right, though they are vexatious, eſpecially if there be any colour for them; for, if they prove falſe, he ſhall pay the defendant coſts. 1 *Rol. Abr.* 355. 3 *Mod.* 98. A barriſter at law entertaining a perſon in his houſe, and bringing ſeveral actions in his name, where nothing was due, was found guilty of barratry. 3 *Mod.* 97. An attorney is in no danger of being convicted of barratry, in reſpect of his maintaining another in a groundleſs action, to the commencing whereof he was no way privy. A common ſolicitor, who ſolicits ſuits, is a common barrator, and may be indicted thereof, becauſe it is no profeſſion in law. 1 *Danv. Abr.* 725.

The puniſhment for this offence in a common perſon is by fine and impriſonment; but, if the offender (as is too frequently the caſe) belongs to the profeſſion of the law, a barrator who is thus able as well as willing to do miſchief, ought alſo to be diſabled from practiſing for the future. ſtat. 12 Geo. I. c. 29. 34 Edw. III. c. 1. 1 *Hawk. P. C.* c. 81. It ſeems to be the ſettled practice not to ſuffer the proſecutor to go on in the trial of an indictment of this kind, without giving the defendant a note of the particular matters which he intends to prove againſt him; for otherwiſe it would be impoſſible to prepare a defence againſt ſo general and uncertain a charge, which may be proved by ſuch a multiplicity of different inſtances. 5 *Mod.* 18. 1 *Ld. Raym.* 490. 1 *Hawk. P. C.* c. 81. To this head may alſo be referred another offence of equal malignity and audaciouſneſs, that of ſuing another in the name of a fictitious plaintiff; either one not in being at all, or one who is ignorant of the ſuit. This offence, if committed in any of the king's ſuperior courts, is left, as a high contempt, to be puniſhed at their diſcretion. But, in courts of a lower degree, where the crime is equally pernicious, but the authority of the judges not equally extenſive, it is directed by ſtat. 8 Eliz. c. 2, to be puniſhed by ſix months impriſonment, and treble damages to the party injured. 4 *Comm.* 134.

BAR'RATRY, *ſ.* The practice or crime of a barrator; foul practice in law:

'Tis arrant *barratry*, that bears
Point blank an action 'gainſt our laws. *Hudibras.*

BARRATRY, in a ſhipmaſter, is his cheating the owners. If goods delivered on ſhip-board are embezzled, all the mariners ought to contribute to the ſatisfaction of the party that loſt his goods, by the maritime law; and the cauſe is to be tried in the admiralty. In caſe where a ſhip was inſured againſt the barratry of the maſter, &c. and the jury found that the ſhip was loſt by the fraud and negligence of the maſter, the court agreed, that the fraud was barratry, though not named in the covenant; but that negligence was not.

BARRAU'X, a fortreſs of Dauphiné, belonging to France. It ſtands in the valley of Greſivaudan, and was built by the duke of Savoy in 1597. The French took it in 1598, and have kept it ever ſince.

BARRE', a town of France, in the department of the Lozerre, and chief place of a canton, in the diſtrict of Florac: two leagues ſouth of Florac, and ſix and a half weſt-north-weſt of Alais.

BAR'RE (La), a town of France, in the department of the Eure, and chief place of a canton, in the diſtrict of Bernay: three leagues ſouth-ſouth-eaſt of Bernay, and ſix and a half weſt-ſouth-weſt of Evreux.

BARRE' (Louis François Joſeph de la), of Tournay, author of ſeveral works printed at Paris. Amongſt others, *Imper. Orientale, Recueil des Medailles des Empereurs,* 'Memoirs for the Hiſtory of France, &c.' He died in 1738.

BARRE'A, a circar or diſtrict of Hindoſtan; in the country of Guzerat.

BARRE'GE LE BAINS, a town of France, ſituated in a valley, at the foot of the Pyrenees, in which are a number of medicinal ſprings of different degrees of heat, from luke-warm to nearly ſcalding hot; from 95° to 113° of Fahrenheit's thermometer. The waters are limpid, unctuous, or oily to the touch, and in taſte and ſmell ſaid to reſemble eggs on which a hen has ſat ſome time. They are uſed both for bathing and drinking. Barrege le Bains is ſix poſts ſouth of Tarbes. Lat. 42. 53. N. lon. 17. 43. E. Ferro.

BAR'REL, *ſ.* [*baril*, Welſh.] In the cooperage, a round wooden veſſel, to be ſtopped cloſe.—It hath been obſerved by one of the ancients, that an empty *barrel*, knocked upon with the finger, giveth a diapaſon to the ſound of the like *barrel* full. *Bacon.*—Any thing hollow; as, the *barrel* of a gun, that part which holds the ſhot.—Take the *barrel* of a long gun perfectly bored, ſet it upright with the breech upon the ground, and take a bullet exactly fit for it: then, if you ſuck at the mouth of the *barrel* ever ſo gently, the bullet will come up ſo forcibly, that it will hazard the ſtriking out your teeth. *Digby.*—A cylinder; frequently that cylinder about which any thing is wound, as the ſpring of a watch, &c.—Your ſtring and bow muſt be accommodated to your drill; if too weak, it will not carry about the *barrel. Moxon.*—*Barrel of the Ear*, is a cavity behind the tympanum, covered with a fine membrane.

BARREL, in commerce, a legal meaſure of divers commodities. A barrel of wine contains the eighth part of a tun, the fourth part of a pipe, and the moiety of a hogſhead; that is, thirty-one gallons and a half. Stat. 1 Richard III. c. 13. Of beer, it contains thirty-ſix gallons; and of ale, thirty-two gallons. 23 Henry VIII. c. 4. 12 Car. II. c. 23. The aſſiſe of herring-barrels is thirty-two gallons wine meaſure, containing in every barrel uſually a thouſand full herrings. 13 Eliz. c. 11. The eel-barrel contains thirty gallons. 2 Hen. VI. c. 11. It alſo denotes a certain quantity or weight of ſundry merchandizes, by cuſtom; thus, a barrel of Eſſex butter weighs 106lbs. and of Suffolk butter, 256lbs. The barrel of ſalmon contains forty-two gallons; the barrel of ſoap 256lbs.

To BARREL, *v. a.* To put any thing in a barrel for preſervation.

BARREL-BELLIED, *adj.* [from *barrel* and *belly.*] Having a large belly.

BAR'RELS, rocks near the ſouth coaſt of the county of Wexford, in the Iriſh Sea, five miles ſouth-weſt of Carnſore Point.

BARRELS, rocks near the ſouth coaſt of Ireland, in Courtmaſchery-bay.

Fire-BARRELS. See FIRE-SHIP.

Thundering-BARRELS, in the military art, are filled with bombs, grenades, and other fire-works, to be rolled down a breach.

BARRE'ME, a town of France, in the department of the Lower Alps, and chief place of a canton, in the diſtrict of Digne: ten miles ſouth-ſouth-eaſt of Digne.

BAR'REN, *adj.* [*bare*, Sax. naked; properly applied to trees or ground unfruitful.] Without the quality of producing its kind; not prolific: applied to animals.—There ſhall not be male or female *barren* among you, or among your cattle. *Deuteronomy.*—Unfruitful; not fertile; ſterile.—The ſituation of this city is pleaſant, but the water is naught, and the ground *barren.* 2 *Kings.*—Not copious; ſcanty.—Some ſchemes will appear *barren* of hints and matter, yet prove to be fruitful. *Swift.*—Unmeaning; un-inventive; dull.—There be of them that will make themſelves laugh, to ſet on ſome quantity of *barren* ſpectators to laugh too. *Shakeſpeare.*

Barren Corn, the name given to a diſtemper in corn by M. Aimen, who firſt obſerved it. It is moſt common in wheat and rye; the ears of which are long, lean, and white; in ſome the ſtamina are dry, tranſparent, and horned: the female organs are ſmall, whiter, and leſs velvety, than in healthy ears; in others the filaments are ſmaller, the apices are void of farina, and the ſtigmata badly unfolded. It is owing either to the too ſudden growth of the corn; to froſt, or to hot gleams of ſun-ſhine after hard ſhowers; and ſometimes, though very rarely, to inſects. Count Ginnani imputes this diſeaſe of corn to the faultineſs of the ſoil; and he recommends particular attention to the amendment of it by ſuch means as are beſt ſuitable to its nature; and he alſo directs to change the ſeed every year.

Barren Island, in the Eaſt-Indian Sea, about ſix leagues in circumference, and eighteen leagues eaſt from the Great Andaman. Lat. 12. 20. N. lon. 94. 10. E. Ferro.

Barren Islands, at the entrance of Cook's river, on the weſt coaſt of North America.

Barren Money is uſed in the civil law, for that which is not put out to intereſt.

Barren Signs, with aſtrologers, the ſigns Gemini, Leo, and Virgo, ſo called, becauſe when the queſtion is aſked, whether ſuch a perſon ſhall have children or not? if one of thoſe ſigns be upon the cuſp, or firſt point, of the firſt houſe, they take it for granted, that the perſon enquiring ſhall have none.

Barren Springs, a name given by huſbandmen to thoſe whoſe waters are injurious to land. Such are moſt of thoſe that flow from coal-mines, or through beds of ſulphureous minerals.

BAR'RENLY, *adv.* Unfruitfully.

BAR'RENNESS, *ſ.* Want of offspring; want of the power of procreation:

I pray'd for children, and thought *barrenneſs*
In wedlock a reproach. *Milton.*

Unfruitfulneſs; ſterility; infertility.—Within the ſelfſame hamlet, lands have divers degrees of value, through the diverſity of their fertility or *barrenneſs. Bacon.*—Want of invention; want of the power of producing any thing new.—The adventures of Ulyſſes are imitated in the Æneis; though the accidents are not the ſame, which would have argued him of a total *barrenneſs* of invention. *Dryden.*—Want of matter; ſcantineſs.—The importunity of our adverſaries hath conſtrained us longer to dwell than the *barrenneſs* of ſo poor a cauſe could have ſeemed either to require or to admit. *Hooker.*—In theology, it ſignifies aridity; want of emotion or ſenſibility.—The greateſt ſaints ſometimes are fervent, and ſometimes feel a *barrenneſs* of devotion. *Taylor.*

Barrenneſs was held a grievous affliction by the wives of the ancient patriarchs. Women who are prolific frequently become ſterile after a miſcarriage, or a difficult labour, by reaſon of injuries done to the uterus, or ſome other of the genital parts. It is alſo certain, that ſterility in either ſex may ariſe from a ſchirroſity or induration in the organs deſtined to generation, whence their functions are either depraved or aboliſhed; as, for inſtance, the teſticles may become ſchirrous in men, as we are ſhewn by innumerable inſtances. But, ſince there are ſeveral neceſſary circumſtances required in women, that they may be capable not only of receiving the firſt rudiments of the incipient animal, but alſo that they may be able to retain and nouriſh the ſame to its proper time of perfect maturity; it is from thence evident, that the cauſes of ſterility are much more frequent in the female ſex. In fat women, Hippocrates aſſerts, that the large omentum compreſſes the uterus in ſuch a manner, that they are not capable of receiving the ſemen maſculinum; but this is unlikely. If the os uteri ſhould be ſchirrous, as alſo its neck, which may be known by paſſing up the finger, the woman will be barren unleſs cured of that diſorder. But alſo the opening of dead bodies demonſtrates that ſchirroſities concealed in theſe parts have occaſioned barrenneſs. A woman of ſixty years old, who had been married twice but never conceived, was opened by Hildanus, that he might diſcover the cauſe of her ſterility: and he found a ſchirrous round the os uteri, which inveſted the neck of the womb like a ring, and by that means ſo ſtrictly cloſed its opening, that it was difficult even to introduce a probe. In another woman, that was taken with an inflammation of the uterus, in her firſt lying-in, and remained ever afterwards barren, he found after her death, that a ſchirrous, equal to the ſize of a gooſe-egg, was placed in ſuch a manner before the os uteri, as totally to exclude the paſſage of any thing to that organ, and ſo firmly adhered to the circumjacent parts, that it could not by any means be pulled off. Van Swieten aſſerts, that he has ſeen the vagina uteri ſchirrous throughout, and ſo much ſwelled in every point as to be ſcarcely able to admit a probe. It is alſo frequently obſerved in women who have lived ſterile, that the uterus begins to turn cancerous about the time when their menſes leave them; in which terrible diſorder they are afflicted with ſevere pains, and a profuſe diſcharge of a putrid matter, the veſſels being rendered varicoſe, and afterwards eroded. From all which it is ſufficiently evident, that a ſchirrus is deſervedly reckoned among other organical defects which cauſe ſterility.

BAR'RENWORT, *ſ.* in botany. See Epimedium.

BARREO'NE, a river of Piedmont, which runs into the Veſubia, near St. Martin, in the county of Tenda.

BARRE'RIA, *ſ.* [from Peter *Barrere*, profeſſor of medicine at Perpignan.] In botany, a genus of the claſs ſyngeneſia, order monogamia. The generic characters are—Calyx: perianthium one-leafed, five-toothed, ſmall. Corolla: one-petalled, five-parted; parts oblong, acute, convex beneath, concave above, with a double pit; the ſuperior ovate, bifid; the wedge-ſhaped one trifid; excavated for the reception of the ſtamens. Stamina: filaments five, aſcending, linear, wider above, thick, triangular, bordered, curved; antheræ erect, four-cornered, marginated, coaleſcing into the form of a mill-wheel; each, in a cloſed flower, anſwering, together with the filaments, to the pits of two of the petals. Piſtillum: germ roundiſh; ſtyle ſhort; ſtigma trifid.—*Eſſential Character.* Calyx five-toothed, very ſmall. Corolla five-parted; ſtyle ſhort; ſtigma trifid.

Of this there is but one ſpecies, called barreria Guianenſis. It is a tree forty or fifty feet in height, and two feet and a half in diameter: the bark is aſh-coloured, and the wood is reddiſh brown, hard, and compact. It ſends forth from the top a great number of branches, which riſe and ſpread in all directions. Theſe branches are loaded with twigs, on which are alternate, entire, ſmooth, firm, ovate, leaves, ending in a long point; their petiole is ſhort, convex beneath, channelled above; the largeſt are ſeven inches long, and three broad. The flowers are in ſmall axillary ſpikes, alternate, and almoſt ſeſſile. Native of Guiana, in the extenſive foreſts, near the banks of the river Sinemari, fifty leagues from its mouth. It flowers there in November.

BARR'FUL, *adj.* [from *bar* and *full.*] Full of obſtructions:

A *barrful* ſtrife!
Whoe'er I woo, myſelf would be his wife. *Shakeſpeare.*

BARRICA'DE, *ſ.* [*barricade*, Fr.] A fortification made in haſte, of trees, earth, waggons, or any thing elſe, to keep off an attack. Any ſtop; bar; or obſtruction.

The moſt uſual materials for military barricades conſiſt of pales or ſtakes, croſſed with batoons, and ſhod with iron at the feet, uſually ſet up in paſſages or breaches.

Barricade, in naval architecture, a ſtrong wooden rail, ſupported by ſtanchions, extending acroſs the foremoſt part of the quarter-deck. In a ſhip of war, the vacant

cant ſpaces between the ſtanchions are commonly filled with rope-mats, cork, or pieces of old cable; and the upper part, which contains a double rope-netting above the rail, is ſtuffed with full hammocks to intercept the motion, and prevent the execution of ſmall-ſhot in time of battle.

To Barricade, *v. a.* [*barricader*, Fr.] To ſtop up a paſſage. To hinder by ſtoppage.—A new volcano continually diſcharging that matter, which being till then *barricaded* up and impriſoned in the bowels of the earth, was the occaſion of very great and frequent calamities. *Woodward.*

BARRICA'DO, *ſ.* [*barricada*, Span.] A fortification; a bar; any thing fixed to hinder entrance.—The acceſs was by a neck of land, between the ſea on one part, and the harbour water, or inner ſea, on the other; fortified clean over with a ſtrong rampier and *barricado. Bacon.*

To Barricado, *v. a.* To fortify; to bar; to ſtop up.—He had not time to *barricado* the doors; ſo that the enemy entered. *Clarendon.*

Faſt we found, faſt ſhut
The diſmal gates, and *barricado'd* ſtrong! *Milton.*

BAR'RICOURT, a town of France, in the department of the Ardennes, and chief place of a canton, in the diſtrict of Grandpré: ſix leagues ſouth of Sedan, and three north-eaſt of Grandpré.

BAR'RIER, *ſ.* [*barriere*, Fr. It is ſometimes pronounced with the accent on the laſt ſyllable, but it is placed more properly on the firſt.] A barricade; an entrenchment:

Safe in the love of heav'n, an ocean flows
Around our realm, a *barrier* from our foes. *Pope.*

A fortification, or ſtrong place, as on the frontiers of a country.—The queen is guarantee of the Dutch, having poſſeſſion of the *barrier*, and the revenues thereof, before a peace. *Swift.*—A ſtop; an obſtruction.—If you value yourſelf as a man of learning, you are building a moſt impaſſable *barrier* againſt improvement. *Watts.*—A bar to mark the limits of any place.—For juſts, and tourneys, and *barriers*, the glories of them are chiefly in the chariots, wherein the challengers make their entries. *Bacon.*—A boundary; a limit:

How inſtinct varies in the grovelling ſwine,
Compar'd, half reas'ning elephant! with thine:
'Twixt that and reaſon what a nice *barrier!*
For ever ſep'rate, yet for ever near. *Pope.*

Barrier, called by the French *jeu de barres*, i. e. *paleſtra*; a martial exerciſe of men armed and fighting together with ſhort ſwords, within certain bars or rails which ſeparated them from the ſpectators: it has been long diſuſed in this country.

Barrier Islands, at the mouth of the river Thames, near the eaſt coaſt of New Zealand.

BARRI'LE, a town of Italy, in the kingdom of Naples, and province of Baſilicata, ſeven miles weſt-ſouth-weſt of Venoſa.

BAR'RING A VEIN, in farriery. See *To* Bar.

BARRINGDIN', a town of Africa, in the country of Bara.

BAR'RINGTON (John Shute), lord viſcount, a nobleman of conſiderable learning, and author of ſeveral books on religious ſubjects, was born in 1678, and died in 1734.

Barrington, a town of Nova Scotia, on the ſouth coaſt, fifteen miles ſouth-weſt of Shelburn.

Barrington, a town of Rhode Iſland, in North America, on the river Swanſey: ſix miles from Briſtol.

BARRINGTO'NIA, *ſ.* [ſo named by Forſter from the Hon. Daines *Barrington.*] In botany, a genus of the claſs monadelphia, order polyandria, natural order heſperideæ. The generic characters are—Calyx: perianthium two-leaved, ſuperior; leaflets roundiſh, concave, coriaceous, permanent. Corolla: petals four, equal, ovate, ſpreading, coriaceous, larger than the calyx; nectary conic, tubular, coating the baſe at the ſtyle, toothed at the tip; teeth ſeveral, unequal. Stamina: filaments very many, monadelphous, (or conjoined from the very baſe into a cylinder ſeated on the receptacle,) capillary, longer than the corolla; antheræ ſmall, roundiſh. Piſtillum: germ inferior, turbinate; ſtyle filiform, length of the ſtamens; ſtigma ſimple. Pericarpium: drupe large, ovate, conic-quadrangular, crowned by the calyx. Seed: nut long, ovate, outwardly wrinkled-fibroſe, four-celled; kernels ovate, wrinkled.—*Eſſential Character.* Calyx ſimple, two-leaved, ſuperior, permanent; fruit a dry four-cornered drupe, incloſing a nut, one to four celled.

There is only one ſpecies, commonly called barringtonia ſpecioſa, or laurel-leaved barringtonia. It is a lofty tree, and the handſomeſt in the whole equinoctial Flora, with its thick ſhady bunches of leaves, and its large handſome purple and white flowers every where mixed with them. The trunk is lofty, thick, ſtraight: covered with a dark grey ſmooth bark, ſcored with little chinks. The branches are round, expand very widely, are ſubflexuoſe, variouſly divided, covered with a chinky bark, and leafy at the ends. The leaves are crowded, the upper ones in a kind of whorl, ſeſſile, wedge-form, obtuſe, quite entire, expanding, from a foot to fifteen inches in length, thick, coriaceous, very ſmooth, ſhining, dark green, with yellow veins, the rachis yellow, thick, marked with a red baſe. The flowers are borne on a ſolitary erect thyrſe, a foot in length, at the ends of the branches. Peduncle round, ſubangular, very ſmooth, ſubflexuoſe, a foot long: Pedicels five to twenty, one-flowered, ſcattered, round very ſmooth, expanding, three or four inches long, and the thickneſs of a gooſe-quill. Bractes roundiſh, very ſmooth, quite entire, ſeſſile, deciduous, ſolitary at the baſe of the pedicels. Flowers very large, very white, and tranſparent. Filaments white, with a purple top, and diaphanous at the baſe. Antheræ gold-colour. Style white, with a purple top. Drupe reddiſh brown. The flowers open during the night, and fall at ſun-riſe; the birds alſo pluck them off, and the ground about theſe trees is perfectly covered with them. The ſeed, mixed with the bait, inebriates fiſh in the ſame manner with cocculus indicus, &c. It grows within the tropics, eſpecially on the ſhores of the ocean, and at the mouths of rivers, in the Eaſt Indies, from the ſouthern coaſts of China through the Molucca iſles to Otaheite and the other Society iſles, the Friendly iſles, &c. It is cultivated in the governor's garden at the iſland of St. Helena.

BAR'RISTER, *ſ.* [*barraſterius*, Lat.] A counſellor learned in the law, admitted to plead at the bar, and there to take upon him the protection and defence of clients. They are termed *juriſconſulti*; and in other countries called *licentiati in jure:* and anciently barriſters at law were called apprentices of the law, (from the French *apprendre*, to learn,) in Latin, *apprenticii juris nobiliores.* Forteſcue. The time before they ought to be called to the bar, by the ancient orders, was eight years, now reduced to five; and the exerciſes done by them, (if they were not called *ex gratiâ*,) were twelve grand moots performed in the inns of Chancery, in the time of the grand readings, and twenty-four petty moots in the term times, before the readers of the reſpective inns: and a barriſter newly called was to attend the ſix (or four) next long vacations the exerciſe of the houſe, viz. in Lent and ſummer, and was thereupon for thoſe three (or two) years ſtiled a *vacation barriſter.* Alſo they are called *utter barriſters*, i. e. pleaders *ouſter* the bar, to diſtinguiſh them from benchers, or thoſe that have been readers, who are ſometimes admitted to plead within the bar, as the king, queen, or prince's, counſel are.

From the degrees of barriſters and ſerjeants at law, ſome are uſually ſelected to be his majeſty's counſel; the two principal of whom are called his attorney and ſolicitor general. The firſt king's counſel under the degree of ſerjeant, was Sir Francis Bacon, who was made ſo *honoris cauſâ*, without either patent or fee; ſo that the firſt of the modern order, who are now the ſworn ſervants of the crown with a ſtanding ſalary, ſeems to have been Sir Francis North, afterwards lord keeper to Charles II. Theſe king's counſel muſt not be employed in any cauſe againſt the crown without ſpecial licence. A cuſtom now prevails of granting letters patent of precedence to ſuch barriſters as the crown thinks proper to honour with that mark of diſtinction, whereby they are entitled to ſuch rank and pre-audience as are aſſigned in their reſpective patents, ſometimes next after the king's attorney general, but uſually next after his majeſty's counſel then being. Theſe, as well as the queen's attorney and ſolicitor general, rank promiſcuouſly with the king's counſel, and together with them ſit within the bar of the reſpective courts; but receive no ſalaries and are not ſworn, and therefore are at liberty to be retained in cauſes againſt the crown. And all other ſerjeants and barriſters indiſcriminately (except in the court of Common Pleas, where ſerjeants only are admitted in term time) may take upon them the protection and defence of any ſuitors whether plaintiff or defendant. 3 *Comm.* 27, 28.

A counſel can maintain no action for his fees, which are given not as a ſalary or hire, but as a mere gratuity, which a barriſter cannot demand without doing wrong to his reputation. *Davis*, 23. And in order to encourage due freedom of ſpeech in the lawful defence of their clients, and at the ſame time to give a check to unſeemly licentiouſneſs, it hath been holden, that a counſel is not anſwerable for any matter by him ſpoken, relative to the cauſe in hand, and ſuggeſted in his client's inſtructions; although it ſhould reflect upon the reputation of another, and even prove abſolutely groundleſs: but if he mentions an untruth of his own invention, or even upon inſtructions, if it be irrelevant to the cauſe in hand, he is then liable to an action from the party injured. *Cro. Jac.* 90. And counſel guilty of deceit or colluſion, are puniſhable by ſtat. Weſtm. 1. 3 Edw. I. c. 28, with impriſonment for a year and a day, and perpetual ſilence in the courts; and the latter puniſhment is ſtill ſometimes inflicted for groſs miſdemeanours in practice. *Raym.* 376. 3 *Comm.* 29. Barriſters who conſtantly attend the King's Bench, &c. are to have the privilege of being ſued in tranſitory actions in the county of Middleſex. But the court will not change the venue becauſe ſome of the defendants are barriſters. *Str.* 610. All pleas, before they are filed, muſt be ſigned by a barriſter or ſerjeant.

With reſpect to the profeſſional character of a barriſter, it has been much the vogue to load it with reproach, on account of their pleading indiſcriminately on either ſide the queſtion, and of introducing too much of brow-beating and quibble, whereby the cauſe is often wreſted from the ſide of Truth. Even the celebrated Junius, in his 68th letter, addreſſed to the late lord chief juſtice Mansfield, paſſes the following ſevere cenſure.—"As a *practical* profeſſion, the ſtudy of the law requires but a moderate portion of abilities. The learning of a pleader is generally upon a level with his integrity. The indiſcriminate defence of right and wrong contracts the underſtanding, while it corrupts the heart. Subtlety is ſoon miſtaken for wiſdom, and impunity for virtue. If there be any inſtances upon record, as ſome there undoubtedly are, of genius and morality united in a lawyer, they are diſtinguiſhed by their ſingularity, and operate as exceptions."—But however this be, it is with confidence we remark, that the Engliſh barriſters are gentlemen, who maintain a high ſpirit of independence; and who, in arduous and important cauſes, are neither ſwayed by the hand of power, nor miſled by pecuniary or perſonal conſiderations. That a barriſter will ſometimes appear in an awkward light, from the circumſtance of being obliged to become the advocate both of right and wrong, is not to be denied; but that he may in all caſes acquit himſelf as a gentleman, and a man of honour, has been ſatiſfactorily proved by Mr. Giſborne, in his excellent Treatiſe on the Duties of Men in Society. He ſays, that, by attending to the nature of the ſituation in which a barriſter ſtands, it will be eaſy to diſcern what kinds of arguments he may conſcientiouſly bring forward in ſupport of the cauſe which he has undertaken. He is avowedly the advocate of a particular ſide of the queſtion. The judges, the jury, the parties involved in the diſpute, the whole audience before whom he pleads, the public whoſe intereſt is always concerned in the final deciſion, conſider him as acting in that capacity. They expect to hear from him every adjudged caſe, every fact, every direct or analogical argument founded on precedent, which he is perſuaded ought to have an influence propitious to his cauſe on the ſcale of legal juſtice. They expect more from him. They know that it pertains to his character to reflect that the court may determine, and rightly determine, in his favour, on grounds which previouſly to the trial he might regard as not entitling him to ſucceſs. They expect him therefore to produce every train of legal reaſoning, though to his own mind it may appear inconcluſive, which he hopes may yet be declared ſatisfactory by an able and impartial tribunal. They expect him to take advantage of informalities and errors in the proceedings of his adverſaries, as far as he is authorized by law and cuſtom. They expect him to preſs, to ſtrengthen, and to decorate, his own cauſe, and to invalidate the efforts of his opponents, by manly and honeſt eloquence. In adopting a line of conduct correſponding to theſe expectations, he is guiltleſs of injuſtice and deceit. The weapons which he uſes are recognized by the rules of fair and honourable war; and he has a right to handle them as effectually as he is able. But he has no right to have recourſe to arms which integrity would bluſh to employ, and which are proſcribed by the eſtabliſhed mode of forenſic hoſtilities. He is not at liberty to aſſert any falſe propoſition; nor to urge as a fact, what he knows never to have taken place; nor to advance as a principle of law, what he is conſcious the ſtatutes, and legal uſages, contradict. Practices of this kind are of ſo ſcandalous a nature, that he who ſhould indulge himſelf in them would not only prove himſelf devoid of uprightneſs of heart; but would be held to have departed from the profeſſional point of honour, and would fall into merited and univerſal diſgrace.

There are however other deviations from the line of duty which occur not unfrequently at the bar; and are of too indeterminate a kind to be accurately ſpecified, and expreſsly prohibited by general rules. They of courſe eſcape, except in very flagrant caſes, the open reprehenſion of the court, and the public cenſure of the profeſſion. Each individual barriſter is left to ſecure himſelf from the danger, by purity of intention and ſenſibility of conſcience. The following obſervations relate to ſome of the practices in queſtion.

As the barriſter when pleading in court ought to ſhun with the utmoſt ſolicitude the appearance of being urged on by malice or perſonal inveteracy; of being induced to engage in the buſineſs, not from a deſire to ſubſtantiate right and promote the public good, but from eagerneſs to hunt down a private enemy; ſo he ought to ſecure his breaſt with unremitting vigilance from the intruſion of bitterneſs and malevolence towards the oppoſite party. Whether therefore the cauſe in which he is concerned leads him to attack or to defend; whether he contends for the maintenance of rights enjoyed, or for the recovery of ſuch as are withheld; for the vindication of innocence; for the reparation of injuries; or for the puniſhment of crimes; let him reſolve from the outſet to preſerve a temper unruffled by provocations, and to regulate his thoughts, his words, and his whole conduct, by the Chriſtian precept of doing to others as under ſimilar circumſtances he might juſtly expect them to do by him. If actuated by this principle, he will beware of being ſo carried away by the rapidity of his own motion, ſo heated in action, ſo thrown off his guard, as to loſe his compoſure and ſelf-poſſeſſion; and to ſtate facts, to advance arguments, to practiſe arts, and give way to emotions, which in his cooler and more collected moments he would condemn. He will uniformly act with candour towards the client of his antagoniſts;

he will not endeavour to excite unjuſt prejudices againſt him; nor avail himſelf of thoſe which may already have been excited. He will be anxious to ſeparate the queſtion of law from that of character, in all caſes in which they are not neceſſarily connected: and even where they are blended together, far from loading the man againſt whom he demands a verdict with calumnious obloquy and ungenerous reproaches, he will not ſeek to depreciate, nor heſitate to avow, the merits which the object of his attack may poſſeſs. He will not repreſent the cauſe which he ſupports, or the ſentence which he requires, as more important than he believes them to be to the public welfare. He will ſpontaneouſly undeceive the court, if he ſhould diſcover them to entertain conceptions of the matter before them in any reſpect erroneous, though he ſhould foreſee that his ingenuouſneſs would be diſadvantageous to his cauſe. If his proofs reſt on preſumptions and probabilities alone, he will not contrive indirectly to convey an impreſſion that he is arguing from acknowledged facts; nor will he boldly pronounce a maſs of circumſtantial evidence entitled to a degree of weight which he is convinced it ought not to obtain. He will reflect that exaggeration, however it may have been defined by the maſters of rhetoric, generally proves, according to modern uſage, but another name for falſehood. He will not pay court to the foibles, nor avail himſelf of the prepoſſeſſions, of the judge. He will not ſtrive to impoſe on the jury, nor entrap them into the ſervice of his client, by practiſing on their partiality for himſelf. In relating tranſactions to them, he will ſtudy to lay every particular before them with fairneſs and perſpicuity; and in ſuch manner as he deems moſt likely to put them into poſſeſſion of the true nature of the caſe. In addreſſing them, while he avails himſelf of his powers of oratory to raiſe in their breaſts a ſympathetic concern for the perſon whom he defends, and to place his claim before them in the moſt attractive garb with which ſincerity will permit him to inveſt it; he will not attempt to pervert their judgment by leading them to view the ſubject merely through the dazzling medium of their paſſions. Towards the evidences produced, whether on behalf of the plaintiff or of the defendant, he will conduct himſelf according to the principles of fair dealing. He will admoniſh all of them with equal impartiality and ſolicitude of the ſacredneſs of an oath. He will not repreſent thoſe who come forward in ſupport of his client as entitled to be believed, when he diſcovers that they are unworthy of confidence; he will not defame the witneſſes of the adverſe party; nor, by ſuggeſting illiberal ſuſpicions and reſorting to unreaſonable cavils, ſtrive to rob their teſtimony of the credit which it deſerves. He will not overawe their timidity by brow-beating and menaces, nor impoſe on their ſimplicity by ſophiſtry and cunning. He will not ſeek by oblique artifice to lead the evidences on either ſide to affirm facts of the certainty of which they are doubtful; nor inſidiouſly labour to extract from their words a ſenſe foreign to their intentions. He will abhor the idea of drawing thoſe who appear againſt him into ſeeming contradictions and perjury, when he perceives their meaning to be honeſt, and their ſtory in reality conſiſtent. It is happily ordered by Providence, that in the common courſe of human events the paths of duty and policy are found ultimately to coincide. The number of examples by which this general propoſition is illuſtrated, may be increaſed by referring to what takes place at the bar. The indulgence of unwarrantable practices is proved by experience to be generally inauſpicious to the very cauſe which they are intended to aſſiſt; and finally ruinous to the character of the man who is accuſtomed to recur to them.

BAR'RITUS, *ſ.* a word of German original, adopted by the Romans to ſignify the general ſhout uſually given by the ſoldiers of their armies on their firſt encounter after the *claſſicum* or alarm. This cuſtom was not peculiar to the Romans, but prevailed amongſt the Trojans according to Homer, amongſt the Germans, the Gauls, Macedonians, and Perſians.

BAR'ROE-LOUGH, a lake of Ireland, in the county of Monaghan; eleven miles ſouth-ſouth-eaſt of Monaghan.

BAR'ROS (John), a celebrated Portugueſe hiſtorian, born at Viſco, in 1496. He was educated at the court of king Emanuel, among the princes of the blood, and made a great progreſs in Greek and Latin. The infant John, to whom he attached himſelf, and became preceptor, having ſucceeded the king his father in 1521, Barros obtained a place in this prince's houſehold; and, in 1522, was made governor of St. George del Mina, on the coaſt of Guinea. Three years after the king, having recalled him to court, made him treaſurer of the Indies, and this poſt inſpired him with the thought of writing its hiſtory, for which purpoſe he retired to Pompas, where he died in 1570. His hiſtory of Aſia and the Indies is divided into decades; the firſt he publiſhed in 1552, the ſecond in 1553, the third in 1563, and the fourth in 1615. Several authors have continued it, ſo that we have at preſent twelve decades.

BAR'ROW, *ſ.* [*berewe*, Sax. ſuppoſed by Skinner to come from *bear*.] Any kind of carriage moved by the hand; as, a *hand-barrow*, a frame of boards, with handles at each end, carried between two men; a *wheel-barrow*, that which one man puſhes forward by raiſing it upon one wheel.—Have I lived to be carried in a baſket, like a *barrow* of butcher's offal, and thrown into the Thames? *Shakeſpeare.*

BARROW, *ſ.* [*berg*, Sax.] A caſtrated hog: whence *barrow* greaſe, or hog's lard.

BARROW, whether in the beginning or end of names of places, ſignifies a grove; from *bearwe*, which the Saxons uſed in the ſame ſenſe. *Gibſon.*

BARROW, in ancient topography, an artificial hillock or mount, met with in many parts of the world, intended as repoſitories or monuments for the dead, and formed either of ſtones heaped up, or of earth. For the former, more generally known by the name of *cairns*, ſee CAIRNS. Of the latter, Dr. Plot takes notice of two ſorts in Oxfordſhire: one placed on the military ways; the other in the fields, meadows, or woods; the firſt ſort doubtleſs of Roman erection, the other more probably erected by the Britons or Danes. We have an examination of the barrows in Cornwall by Dr. Williams, in the Philoſ. Tranſ. No. 458; from whoſe obſervations it ſeems they are compoſed of foreign or adventitious earth brought from ſome diſtance. On digging into the barrows, urns have been found in ſome of them, made of calcined earth, and containing burnt bones and aſhes; in others, ſtone cheſts containing bones entire; in others, bones neither lodged in cheſts nor depoſited in urns. Theſe tumuli are round, not greatly elevated, and generally at their baſes ſurrounded with a foſs. They are of different ſizes; in proportion, as is ſuppoſed, to the greatneſs, rank, and power, of the deceaſed perſon. The links or ſands of Skail, in Sandwich, one of the Orkneys, abound in round barrows. Some are formed of earth alone, others of ſtone covered with earth. In the former was found a coffin, made of ſix flat ſtones. They are too ſhort to receive a body at full length: the ſkeletons found in them lie with the knees preſſed to the breaſt, and the legs doubled along the thighs. A bag, made of ruſhes has been found at the feet of ſome of theſe ſkeletons, containing the bones, moſt probably, of another of the family. In one were to be ſeen multitudes of ſmall beetles; and as ſimilar inſects have been diſcovered in the bag which incloſed the ſacred Ibis, we may ſuppoſe that the Egyptians, and the nation by whom theſe tumuli were erected, might have had the ſame ſuperſtition reſpecting them. On ſome of the corpſes interred in this iſland, the mode of burning was obſerved. The aſhes, depoſited in an urn which was covered on the top with a flat ſtone, have been found in the cell of one of the barrows. This coffin or cell was placed on the ground, then covered with a heap of ſtones, and that again caſed with earth and ſods. Both barrow and contents evince them to be of a different age from the former.

Theſe tumuli were in the nature of family vaults: in them have been found two tiers of coffins. It is probable, that, on the death of any one of the family, the tumulus was opened, and the body interred near its kindred bones.

Ancient Greece and Latium concurred in the ſame practice with the natives of this iſland. Patroclus among the Greeks, and Hector among the Trojans, received but the ſame funeral honours; and the aſhes of Dercennus the Laurentine monarch had the ſame ſimple projection. The urn and pall of the Trojan warrior might perhaps be more ſuperb than thoſe of a Britiſh leader: the riſing monument of each had the common materials from our mother earth:

The ſnowy bones his friends and brothers place,
With tears collected, in a golden vaſe.
The golden vaſe in purple palls they roll'd
Of ſofteſt texture and inwrought with gold.
Laſt o'er the urn the ſacred earth they ſpread,
And rais'd a tomb, memorial of the dead. *Pope's Homer.*

Or, as it is more ſtrongly expreſſed by the ſame elegant tranſlator, in the account of the funeral of Patroclus:

High in the midſt they heap the ſwelling bed
Of riſing earth, memorial of the dead. *Ib.* xxiii. 319.

The Grecian barrows, however, do not ſeem to have been all equally ſimple. The barrow of Alyattes, father of Crœſus king of Lydia, is deſcribed by Herodotus as a moſt ſuperb monument, inferior only to the works of the Egyptians and Babylonians. It was a vaſt mound of earth heaped on a baſement of large ſtones by three claſſes of the people; one of which were compoſed of girls, who were proſtitutes. Alyattes died, after a long reign, in the year 562 before the Chriſtian era. Above a century intervened, but the hiſtorian relates, that to his time five ſtones (ὅροι *termini* or *ſtelæ*) on which letters were engraved, had remained on the top, recording what each claſs had performed; and from the meaſurement it had appeared, that the greateſt portion was done by the girls. Strabo likewiſe has mentioned it as a huge mound raiſed on a lofty baſement by the multitude of the city. The circumference was ſix ſtadia, or three quarters of a mile; the height two plethra, or two hundred feet; and the width thirteen plethra. It was cuſtomary among the Greeks to place on barrows either the image of ſome animal or *ſtelæ*, commonly round pillars with inſcriptions. The famous barrow of the Athenians in the plain of Marathon, deſcribed by Pauſanias, is an inſtance of the latter uſage. An ancient monument in Italy by the Appian-way, called *the ſepulchre of the Curiatii*, has the ſame number of *termini* as remained on the barrow of Alyattes; the baſement, which is ſquare, ſupporting five round pyramids. Of the barrow of Alyattes the apparent magnitude is deſcribed by travellers as now very much diminiſhed, and the bottom rendered wider and leſs diſtinct than before, by the gradual increaſe of the ſoil below. It ſtands in the midſt of others by the lake Gygæus; where the burying-place of the Lydian princes was ſituated. The barrows are of various ſizes, the ſmaller made perhaps for children of the younger branches of the royal family. Four or five are diſtinguiſhed by their ſuperior magnitude, and are viſible as hills at a great diſtance. That of Alyattes is greatly ſuper-eminent.

Barrows, or ſimilar tumuli, are alſo found in America. Theſe are of different ſizes, according to Mr. Jefferſon's account of Virginia, p. 156, ſome of them conſtructed of earth, and ſome of looſe ſtones. That they were repoſitories of the dead has been obvious to all; but on what particular occaſion conſtructed, was matter of doubt. Some have thought they covered the bones of thoſe who have fallen in battles fought on the ſpot of interment. Some aſcribed them to the cuſtom ſaid to prevail among the Indians, of collecting at certain periods the bones of all their dead, whereſoever depoſited at the time of death. Others again ſuppoſed them the general ſepulchres for towns, conjectured to have been on or near theſe grounds; and this opinion was ſupported by the quality of the lands in which they are found (thoſe conſtructed of earth being generally in the ſofteſt and moſt fertile meadow-grounds on the river ſides), and by a tradition ſaid to be handed down from the aboriginal Indians, that, when they ſettled in a town, the firſt perſon who died was placed erect, and earth put about him, ſo as to cover and ſupport him; that, when another died, a narrow paſſage was dug to the firſt, the ſecond reclined againſt him, and the cover of earth replaced, and ſo on. "There being one of theſe barrows in my neighbourhood (ſays Mr. Jefferſon), I wiſhed to ſatisfy myſelf whether any, and which of theſe opinions were juſt. For this purpoſe, I determined to open and examine it thoroughly. It was ſituated on the low grounds of the Rivanna, about two miles above its principal fork, and oppoſite to ſome hills, on which had been an Indian town. It was of a ſpheroidical form, of about forty feet in diameter at the baſe, and had been of about twelve feet altitude, though now reduced by the plough to ſeven and a half, having been under cultivation about a dozen years. Before this, it was covered with trees of twelve inches diameter, and round the baſe was an excavation of five feet depth and width, from whence the earth had been taken. I firſt dug ſuperficially in ſeveral parts of it, and came to collections of human bones, at different depths, from ſix inches to three feet below the ſurface. Theſe were lying in the utmoſt confuſion, ſome vertical, ſome oblique, ſome horizontal, and directed to every point of the compaſs, entangled, and held together in cluſters by the earth. Bones of the moſt diſtant parts were found together; as, for inſtance, the ſmall bones of the foot in the hollow of a ſkull, many ſkulls would ſometimes be in contact, lying on the face, on the ſide, on the back, top or bottom, ſo as on the whole to give the idea of bones emptied promiſcuouſly from a bag or baſket, and covered over with earth, without any attention to their order. The bones of which the greateſt numbers remained, were ſkulls, jaw-bones, teeth, the bones of the arms, thighs, legs, feet, and hands. A few ribs remained, ſome vertebræ of the neck and ſpine, without their proceſſes, and one inſtance only of the bone which ſerves as a baſe to the vertebral column. The ſkulls were ſo tender, that they generally fell to pieces on being touched. The other bones were ſtronger. There were ſome teeth which were judged to be ſmaller than thoſe of an adult; a ſkull which, on a ſlight view, appeared to be that of an infant, but it fell to pieces on being taken out, ſo as to prevent ſatisfactory examination; a rib, and a fragment of the under-jaw of a perſon about half-grown; another rib of an infant; and part of the jaw of a child which had not yet cut its teeth. This laſt furniſhing the moſt deciſive proof of the burial of children here, I was particular in my attention to it. It was part of the right half of the under-jaw. The proceſſes by which it was articulated to the temporal bones were entire; and the bone itſelf firm to where it had been broken off, which, as nearly as I could judge, was about the place of the eye-tooth. Its upper edge, wherein would have been the ſockets of the teeth, was perfectly ſmooth. Meaſuring it with that of an adult, by placing their hinder proceſſes together, its broken end extended to the penultimate grinder of the adult. This bone was white, all the others of a ſand colour. The bones of infants being ſoft, they probably decay ſooner, which might be the cauſe ſo few were found here. I proceeded then to make a perpendicular cut through the body of the barrow, that I might examine its internal ſtructure. This paſſed about three feet from its centre, was opened to the former ſurface of the earth, and was wide enough for a man to walk through and examine its ſides. At the bottom, that is, on the level of the circumjacent plain, I found bones; above theſe a few ſtones, brought from a cliff a quarter of a mile off, and from the river one-eighth of a mile off; then a large interval of earth, then a ſtratum of bones, and ſo on. At one end of the ſection were four ſtrata of bones plainly diſtinguiſhable; at the other three; the ſtrata in one part not ranging with thoſe in another. The bones neareſt the ſurface were leaſt decayed. No holes were diſcovered in any of them, as if made with bullets, arrows, or other weapons. I conjectured that in this barrow might have been a thouſand ſkeletons. Every one will readily ſeize the circumſtances above related, which militate againſt the opinion that it covered the bones only of perſons fallen in battle; and againſt the tradition alſo which would make it the common ſepulchre of a town, in which the bodies were placed upright, and touching each other. Appearances certainly indicate that it has derived both origin and growth from the accuſtomary collection of bones, and depoſition of them together; that the firſt collection had been depoſited on the common ſurface of the earth, a few ſtones put over it, and then a covering of earth; that the ſecond had been laid on this, had covered more or leſs of it in proportion to the number of bones, and was then alſo covered with earth, and ſo on. The following are the particular circumſtances which give it this aſpect. 1. The number of bones. 2. Their confuſed poſition. 3. Their being in different ſtrata. 4. The ſtrata in one part having no correſpondence with thoſe in another. 5. The different ſtates of decay in theſe ſtrata, which ſeem to indicate a difference in the time of inhumation. 6. The exiſtence of infant bones among them. But on whatever occaſion they may have been made, they are of conſiderable notoriety among the Indians: for a party paſſing, about thirty years ago, through the part of the country where this barrow is, went through the woods directly to it, without any inſtructions or inquiry; and, having ſtaid about it ſome time with expreſſions of ſorrow, they returned to the high road, and purſued their journey. There is another barrow, much reſembling this in the low grounds of the ſouth branch of Shenandoah, where it is croſſed by the road leading from the Rockfiſh-gap to Staunton. Both of thoſe have, within theſe dozen years, been cleared of their trees and put under cultivation, are much reduced in their height, and ſpread in width by the plough, and will probably diſappear in time. There is another on a hill in the blue ridge of mountains, a few miles north of Wood's-gap, which is made of ſmall ſtones thrown together. This has been opened, and found to contain human bones as the others do."

Barrow (Iſaac), a very eminent mathematician and divine of the 17th century, was born at London, in October, 1630, being the ſon of Thomas Barrow, then a linen-draper of that city, but deſcended from an ancient family in Suffolk. He was at firſt placed at the Charter-houſe ſchool, where his behaviour afforded but little hopes of ſucceſs in the profeſſion of a ſcholar; but, being removed to Felſted in Eſſex, his diſpoſition took a different turn; and, having ſoon made a great progreſs in learning, he was firſt admitted a penſioner of Peter-houſe in Cambridge; but when he came to join the univerſity, in Feb. 1645, he was entered at Trinity-college. He now applied himſelf with great diligence to the ſtudy of all parts of literature, eſpecially natural philoſophy. He afterward turned his attention to the profeſſion of phyſic, and made a conſiderable progreſs in anatomy, botany, and chemiſtry: he next ſtudied divinity; then chronology, aſtronomy, geometry, and the other branches of the mathematics; with what ſucceſs, his writings afterwards moſt eminently ſhewed.

When Dr. Duport reſigned the chair of Greek profeſſor, he recommended his pupil Mr. Barrow for his ſucceſſor, who, in his probation exerciſe, ſhewed himſelf equal to the character that had been given him by this gentleman; but, being ſuſpected of favouring Arminianiſm, he was not preferred. This diſappointment it ſeems determined him to quit the college, and viſit foreign countries; but his finances were ſo low, that he was obliged to diſpoſe of his books, to enable him to execute that deſign. He left England in June 1655, and viſited France, Italy, Turkey, &c. At ſeveral places, in the courſe of this tour, he met with kindneſs and liberal aſſiſtance from the Engliſh ambaſſadors, &c. which enabled him to benefit the more from it, by protracting his ſtay, and prolonging his journey. He ſpent more than a year in Turkey, and returned to England by way of Venice, Germany, and Holland, in 1659. At Conſtantinople he read over the works of St. Chryſoſtom, once biſhop of that ſee, whom he preferred to all the other fathers.

On his return home Barrow was epiſcopally ordained by biſhop Brownrig; and, in 1660, he was choſen to the Greek profeſſorſhip at Cambridge. In July 1662, he was elected profeſſor of geometry in Greſham-college: in which ſtation, he not only diſcharged his own duty, but ſupplied likewiſe the abſence of Dr. Pope the aſtronomy profeſſor. Among his lectures, ſome were upon the projection of the ſphere and perſpective, which are loſt; but his Latin oration, previous to his lectures, is ſtill extant. About this time Mr. Barrow was offered a good living; but the condition annexed, of teaching the patron's ſon, made him refuſe it, as thinking it too like a ſimonial contract. Upon the 20th of May, 1663, he was elected a fellow of the Royal Society, in the firſt choice made by the council after their charter. The ſame year the executors of Mr. Lucas having, according to his appointment, founded a mathematical lecture at Cambridge, they ſelected Mr. Barrow for the firſt profeſſor; and, though his two profeſſorſhips were not incompatible with each other, he choſe to reſign that of Greſham-college, which he did May the 20th, 1664. In 1669 he reſigned the mathematical chair to his learned friend Mr. Iſaac Newton, being now determined to quit the ſtudy of mathematics for that of divinity. On quitting his profeſſorſhip, he had only his fellowſhip of Trinity-college, till his uncle gave him a ſmall ſinecure in Wales; and Dr. Seth Ward, biſhop of Saliſbury, conferred upon him a prebend in his church. In the year 1670, he was created doctor in divinity by mandate; and, upon the promotion of Dr. Pearſon, maſter of Trinity-college, to the ſee of Cheſter, he was appointed to ſucceed him, Feb. 15, 1672; upon which occaſion the king was pleaſed to ſay, "he had given it to the beſt ſcholar in England." In this his majeſty did not ſpeak from report, but from his own knowledge; for, as the doctor was then his chaplain, he uſed often to converſe with him, and, in his humorous way, to call him, an "unfair preacher," becauſe he exhauſted every ſubject, and left no room for others to come after him. In 1675 he was choſen vice-chancellor of the univerſity; and he omitted no endeavours for the good of that ſociety, nor, in the line of his profeſſion as a divine, for the promotion of piety and virtue; but his uſeful labours were abruptly terminated by a fever on the 4th of May, 1677, in the forty-ſeventh year of his age. He was interred in Weſtminſter-abbey, where a monument, adorned with his buſt, was ſoon after erected by the contribution of his friends.

Dr. Barrow's works are very numerous, and indeed various, mathematical, theological, poetical, &c. and ſuch as do honour to the Engliſh nation. They are principally as follow: 1. Euclidis Elementa. Cantab. 1655, 8vo. 2. Euclidis Data. Cantab. 1657, 8vo. 3. Lectiones Opticæ xviii. Lond. 1669, 4to. 4. Lectiones Geometricæ xiii. London 1670, 4to. 5. Archimedis Opera, Appollonii Conicorum libri iv. Theodoſii Sphericorum lib. iii. nova methodo illuſtrata, et ſuccincte demonſtrata. Lon. 1675, 4to. The following were publiſhed after his deceaſe, viz. 6. Lectio, in qua theoremata Archimedis de ſphæra et cylindro per methodum indiviſibilium inveſtigata, ac breviter inveſtigata, exhibentur. Lon. 1678, 12mo. 7. Mathematicæ Lectiones habitæ in ſcholis publicis academiæ Cantabrigienſis, an. 1644, 5, 6, &c. Lond. 1683. 8. All his Engliſh works in three volumes, Lond. 1683, folio. Theſe are all theological, and were publiſhed by Dr. John Tillotſon. 9. Iſaaci Barrow Opuſcula, viz. Determinationes, Conciones ad Clerum, Orationes, Poemata, &c. Lond. 1687, folio. Dr. Barrow left alſo ſeveral curious papers on mathematical ſubjects, written in his own hand, which were communicated by Mr. Jones to the author of "The Lives of the Greſham Profeſſors," a particular account of which may be ſeen in that book, in the Life of

Barrow. Moſt of his Latin works have alſo been tranſlated into Engliſh, and publiſhed.

Dr. Barrow muſt ever be eſteemed, in all the ſubjects which exerciſed his pen, a perſon of the cleareſt perception, the fineſt fancy, the ſoundeſt judgment, the profoundeſt thought, and the cloſeſt and moſt nervous reaſoning. "The name of Dr. Barrow (ſays the learned Mr. Granger) will ever be illuſtrious for a ſtrength of mind and a compaſs of knowledge that did honour to his country. He was unrivalled in mathematical learning, and eſpecially in the ſublime geometry; in which he has been excelled only by his ſucceſſor Newton. The ſame genius that ſeemed to be born only to bring hidden truths to light, and to riſe to the heights or deſcend to the depths of ſcience, would ſometimes amuſe itſelf in the flowery paths of poetry, and he compoſed verſes both in Greek and Latin. He at length gave himſelf up entirely to divinity; and particularly to the moſt uſeful part of it, that which has a tendency to make men wiſer and better."

Several anecdotes are told of Barrow, as well of his great integrity, as of his wit, and bold intrepid ſpirit and ſtrength of body. In his voyage between Leghorn and Smyrna, the ſhip was attacked by an Algerine pirate, which after a ſtout reſiſtance they compelled to ſheer off, Barrow keeping his poſt at the gun aſſigned him to the laſt. And when Dr. Pope in their converſation aſked him, "Why he did not go down into the hold, and leave the defence of the ſhip to thoſe to whom it did belong?" he replied, "It concerned no man more than myſelf: I would rather have loſt my life, than to have fallen into the hands of thoſe mercileſs infidels."

Being once on a viſit at a genleman's houſe in the country, where the privy was at the end of a long garden, and conſequently at a great diſtance from the room where he ſlept; as he was going to it before day, a fierce maſtiff, that uſed to be chained up all day, and let looſe at night for the ſecurity of the houſe, perceiving a ſtrange perſon in the garden at that unuſual time, ſet upon him with great fury. The doctor caught him by the throat, grappled with him, and, throwing him down, lay upon him: once he had a mind to kill him; but he altered his reſolution, on recollecting that this would be unjuſt, ſince the dog did only his duty, and he himſelf was in fault for rambling out of his room before it was light. At length he called out ſo loud, that he was heard by ſome of the family, who came preſently out, and freed the doctor and the dog from the danger they both had been in.

Among other inſtances of his wit and vivacity, they relate the following rencontre between him and that wicked wit lord Rocheſter. Theſe two meeting one day at court, while the doctor was king's chaplain in ordinary, Rocheſter, thinking to banter him, with a flippant air, and a low formal bow, accoſted him with, "Doctor, I am yours to my ſhoe-tie:" Barrow perceiving his drift, and determined upon defending himſelf, returned the ſalute with, "My lord, I am yours to the ground." Rocheſter, on this, improving his blow, quickly returned it, with, "Doctor, I am yours to the centre;" which was as ſmartly followed up by Barrow, with, "My lord, I am yours to the antipodes." Upon which, Rocheſter, diſdaining to be foiled by a muſty old piece of divinity, as he uſed to call him, exclaimed, "Doctor, I am yours to the loweſt pit of hell;" upon which Barrow, turning upon his heel, with a ſarcaſtic ſmile, archly replied, "There, my lord, I leave you."

Barrow, *ſ.* In the ſalt-works, are wicker caſes, almoſt in the ſhape of a ſugar-loaf, wherein the ſalt is put to drain.

Barrow, a river of Ireland, which riſes in the northern part of Queen's county, and runs into Waterford bay.

Barrow (Little), a river of Ireland, which runs into the Barrow: about four miles eaſt of Portarlington.

Barrow Point, a cape on the ſouth coaſt of Ireland, in the county of Cork: five miles eaſt of Kinſale.

BAR'ROWISTS. See Browniſts.

BARRULET', *ſ.* In heraldry, the fourth part of the bar, or the one half of the cloſſet; an uſual bearing in coat-armour.

BAR'RULY, *ſ.* in heraldry, is when the field is divided bar-ways, that is, acroſs from ſide to ſide, into ſeveral parts.

BAR'RY (Girald), commonly called *Giraldus Cambrenſis*, i. e. 'Girald of Wales,' an hiſtorian and eccleſiaſtic in the reigns of Henry II. and Richard I. was born at the caſtle of Mainarper, near Pembroke, in 1146. By his mother he was deſcended from the princes of South Wales; and his father, William Barry, was one of the chief men of that principality. When he was about twenty years of age, he was ſent to the univerſity of Paris; where he continued three years, and became a moſt excellent rhetorician. On his return, he entered into holy orders, and obtained ſeveral benefices both in England and Wales. He was called to court by Henry II. who appointed him one of his chaplains, and ſent him into Ireland, A. D. 1185, with prince John. By this prince he was offered the united biſhoprics of Ferne and Leighlin; but declined them, and employed his time in collecting materials for his Topography of Ireland, and his hiſtory of the conqueſt of that iſland. His Topography conſiſted of three books, which he publiſhed at Oxford in 1187, in the following manner, in three days. On the firſt day he read the firſt book to a great concourſe of people, and afterwards entertained all the poor of the town; on the ſecond day he read the ſecond book, and entertained all the doctors and chief ſcholars; and, on the third day, he read the third book, and entertained the younger ſcholars, ſoldiers, and burgeſſes. "A moſt glorious ſpectacle! (ſays he) which revived the ancient times of the poets, and of which no example had been ſeen in England." On the acceſſion of Richard I. he was ſent for by that prince into Wales to preſerve the peace of that country, and was joined in commiſſion with William Longchamp, biſhop of Ely, as one of the regents of the kingdom. He was offered preferment, but refuſed the biſhopric of Bangor in 1190, and that of Landaff the year after. The ſee of St. David's, which had long been the object of his ambition, becoming vacant in 1198, he was unanimouſly elected by the chapter; but met with ſo powerful an adverſary in Hubert archbiſhop of Canterbury (who oppoſed his promotion with great violence), that it involved him in a litigation which laſted five years, coſt him three journies to Rome, at a great expence, and in which he was at laſt defeated, 1203. Soon after this he retired from the world, and ſpent the laſt ſeventeen years of his life in privacy, compoſing many books, of which we have a catalogue in the Biographia Britannica. That Girald of Wales was a man of uncommon activity, genius, and learning, is undeniable; but theſe and his other good qualities were much tarniſhed by his inſufferable vanity.

Barry (James), Lord Sautry, of Ireland, was an eminent ſtateſman in the reign of Charles II. He was chairman of the committee of convocation which voted the king's reſtoration in 1660. He died in 1672.

Barry, *ſ.* in heraldry, is when an eſcutcheon is divided bar-ways, that is, acroſs from ſide to ſide, into an even number of partitions, conſiſting of two or more tinctures, interchangeably diſpoſed: it is to be expreſſed in the blazon by the word *barry*, and the number of pieces muſt be ſpecified; but if the diviſions be odd, the field muſt be firſt named, and the number of bars expreſſed.

Barry-bendy, *ſ.* is when an eſcutcheon is divided evenly, bar and bend-ways, by lines drawn tranſverſe and diagonal, interchangeably varying the tinctures of which it conſiſts.

Barry-pily, *ſ.* is when a coat is divided by ſeveral lines drawn obliquely from ſide to ſide, where they form acute angles.

BARS, a town of Hungary, and chief place of a county of the ſame name: eight miles weſt of Leventz.

BAR'SA, an iſland on the coaſt of France, in the Engliſh Channel, Itinerary: *Baſepool* according to ſome; but according to others, *Bardſey*.

BAR'SABAS, [of בר a ſon, שבא reſt, Syr. i. e. the ſon of reſt; or of בר a ſon, and שיב to return, Syr. and Heb. i. e. the ſon of converſion.] The name of one of the ſeventy diſciples.

BARSALLACH' POINT, a cape of Scotland, on the coaſt of the county of Wigton, in Luce bay: eight miles north-weſt of Burrowhead.

BARSAL'LI, a kingdom of Africa, bordering on the river Gambia, inhabited by a tribe of negroes called *Jaloffs*. It is a moſt deſpotic monarchy; all people being obliged to proſtrate themſelves on the earth when any of the royal family appear. The kingdom is divided into a number of provinces, over which governors called *bumeys* are appointed. Theſe are abſolute within their juriſdictions; but they ſeldom carry their prerogative ſo far as to incur the diſlike of the people, which would quickly prove fatal to them. The Mahometan religion is profeſſed by the king and his court; though little regard is paid to it by his ſubjects. The general dreſs of the people is a kind of looſe calico ſurplice, that hangs down below the knee; which they ſometimes plait about the waiſt in a very agreeable manner. They wear a number of gold trinkets in their hair, ears, noſes, and round their necks, arms, and legs; but the women are moſtly fond of theſe ornaments. The king of Barſilli, whom Moore ſaw in 1732, had a prodigious number of women: but when he went abroad he was ſeldom attended by more than two, who ſeemed to be dreſſed out in the whole finery of the ſeraglio. He had likewiſe a number of brethren; but it was ſeldom that he deigned to ſpeak to them: if ever he did, they were obliged to fall proſtrate on the earth the moment they came into his preſence, notwithſtanding they were the preſumtive heirs of the crown. It is indeed uſual for the king's children to diſpute the right of ſucceſſion with his brethren, and the longeſt ſword bears away the prize.

BARSAN'TI (Franciſco), an eminent muſical performer and compoſer, was born at Lucca in 1690. He ſtudied the civil law in the univerſity of Padua; but afterwards choſe muſic for his profeſſion. He put himſelf under the tutition of ſome able maſters in Italy; and, having attained a conſiderable proficiency in practical compoſition, he came to England with Geminiani in 1714. He was a good performer on the hautboy and flute. He publiſhed, with a dedication to the earl of Burlington, ſix ſolos for a flute with a thorough-baſs, and afterwards ſix ſolos for a German flute and a baſs. He alſo made into ſonatas, for two violins and a baſs, the firſt ſix ſolos of Geminiani. He afterwards compoſed twelve concertos for violins; and likewiſe, Sei Antiſone, in which he ſucceſsfully imitated the ſtyle of Paleſtrina and the old compoſers.

BAR'SERS, a town of Norway, fifty miles north-eaſt of Romſdal.

BARSILE'A, a daughter of Cœlus and Terra, who was mother of all the gods. *Diod.* An iſland on the north of Gaul, famous for its amber. Alſo an iſland in the Euxine ſea. *Plin.*

BAR'SINE, or Barsene, a daughter of Darius, who married Alexander, by whom ſhe had a ſon called Hercules. Caſſander ordered her and her child to be put to death. *Juſtin.*

BAR'SIR, a town of Perſia, in the province of Kerman, ſixty miles north-eaſt of Sirgian.

BARTAPOUR', a town of India, in the country of Kemaoon, on an iſland in the Ganges: ninety-three miles eaſt of Bereilly, and ninety north of Lucknow.

BAR'TAS (William de Saluſte du), a French poet of the 16th century. He was employed by Henry IV. of France, in England, Denmark, and Scotland; and commanded a troop of horſe in Gaſcony, under the marechal de Martignan. He was a Calviniſt; and died in 1590, aged forty-ſix. He wrote many poems; the principal of which are, 1. The Week, or Creation of the World; 2. The Poem of Judith; and 3. The Battle of Ivry, gained by Henry IV. in 1590.

BAR'TEN, a town of Pruſſia, and capital of a ſmall country, called *Bartenland*, in the province of Natangen: forty miles ſouth-eaſt of Konigſberg.

BAR'TENSTEIN, a town of Pruſſia, in the province of Natangen, ſituated on the river Alle: twenty-eight miles ſouth of Konigſberg.

Bartenstein, a town and caſtle of Germany, in the circle of Franconia, and principality of Hohenlohe.

To BAR'TER, *v. n.* [*baratter*, Fr. to trick in traffic; from *barat*, craft, fraud.] To traffic by exchanging one commodity for another, in oppoſition to purchaſing with money.—A man has not every thing growing upon his ſoil, and therefore is willing to *barter* with his neighbour. *Collier.*

To Barter, *v. a.* To give any thing in exchange for ſomething elſe.—I ſee nothing left us, but to truck and *barter* our goods, like the wild Indians, with each other. *Swift.*—Sometimes it is uſed with the particle *away* before the thing given.—If they will *barter away* their time, methinks they ſhould at leaſt have ſome eaſe in exchange. *Decay of Piety.*

Barter, *ſ.* The act of practice of trafficking by exchange of commodities; ſometimes the thing given in exchange.—He who corrupteth Engliſh with foreign words, is as wiſe as ladies that change plate for china; for which the laudable traffic of old clothes is much the faireſt *barter*. *Felton.*

Barter, *ſ.* A rule in the commercial part of arithmetic. See the article Arithmetic, p. 179 of this volume.

BAR'TERER, *ſ.* He that traffics by exchange of commodities.

BAR'TERY, *ſ.* Exchange of commodities.—It is a received opinion, that, in moſt ancient ages, there was only *bartery* or exchange of commodities againſt moſt nations. *Camden.*

BARTH, or Bart (Jean), a brave fiſherman of Dunkirk, who roſe to the rank of an admiral; and is celebrated for his ſignal valour and naval exploits, in the annals of France. The following remarkable anecdote is told of Bart. In May, 1696, the Engliſh admiral Benbow failed with a ſquadron, in order to block him up in the harbour of Dunkirk; but he found means to eſcape through the whole ſquadron; and, ſteering north-eaſtward, attacked a fleet of Dutch merchant-ſhips in the Baltic, which was convoyed by five frigates. The whole of the convoy he made prize of, together with near half of the merchantmen, which he carried ſafe into Dunkirk. A clamour was raiſed againſt him on his return for not following his inſtructions, which were to *ſink*, *burn*, and *deſtroy*. Bart demanded an audience of the king, and bluntly told him, that he thought he had done much better in bringing home theſe ſhips than in deſtroying them, becauſe they were laden with corn, which at that time was very ſcarce and dear. The king was greatly pleaſed, and, as a proof of it, gave him a draft on his banker for a preſent of 30,000 livres. The rough-hewn ſeaman immediately ſallied out, enquiring for the houſe of the banker. This he ſoon found, and aſked the porter if he was at home. The porter anſwered in the affirmative; but ſaid he had company; and that he muſt come again at a certain hour, if he had buſineſs with him. "I only aſked you," ſays Bart, "if your maſter was at home;" and, ruſhing into the houſe, he ſoon found the apartment where the banker was at dinner with a large company. "Which of you is the king's banker?" ſaid Bart. "It is me," anſwered the banker. "Then pay me this," ſays Bart. The banker took the note in his hand, but preſently returning it over his ſhoulder, and dropping it on the floor, ſaid, "Return at four o'clock." Bart drew his hanger, exclaiming at the ſame time, "Riſe immediately, and honour his majeſty's ſignature, or your head ſhall fly off upon the table." The banker ſaid to his company, "*Excuſez, meſſieurs; Du Bart n'entend pas raillerie*; Excuſe my abſence, gentlemen; Du Bart is not to be trifled with;" then, picking up the note, he went into the bank to count the money. As he was telling it in ſilver, which was the general circulation in France, Bart ſaid to him, "You raſcal, do you take me for a porter? pay me in gold." The affrighted banker was obliged to comply, and Du Bart marched off in triumph. He died in 1702, aged fifty-one.

BARTHE de NESTES (La), a town of France, and principal place of a diſtrict, in the department of Higher Pyrenées: ſix leagues ſouth-eaſt of Tarbes. Lat. 43. 4. N. lon. 18. 3. E. Ferro.

BARTHELEMY', (Jean Jacques), the celebrated author of the elegant and learned Travels of the Young Anacharſis, was born 20th Jan. 1716, at Caſſis, a ſmall ſeaport of the Mediterranean, where his mother was viſiting her relations. His father reſided at Aubagne, and ſent him at twelve years of age to the college de l'Oratoire at Marſeilles, whence he was transferred to the ſeminary of the Jeſuits; where he received the tonſure. He applied with unwholeſome ſedulity to the ſtudy of Greek, Hebrew, Chaldean, and Syriac; and of a young Maronite who came to Marſeilles from the Levant he took leſſons in Arabic, and delivered a ſermon in that language before an oriental audience. At the beginning of theſe purſuits, when he was about twenty-one years of age, ſome merchants of Marſeilles came to him with a kind of beggar who had made his appearance on 'change, who gave himſelf out for a Jewiſh rabbi, learned but diſtreſſed, and who boldly deſired to have his pretenſions inveſtigated by ſome oriental ſcholar. The abbé Barthelemy endeavoured to evade the taſk, by repreſenting that his mode of ſtudy could at moſt enable him to read, but not at all to converſe in, the dialects of the eaſt: but there was no reſiſting. The Jew began to repeat the firſt pſalm in Hebrew. The abbé recogniſed it, ſtopped him at the end of the firſt verſe, and addreſſed him with one of the colloquial phraſes from his Arabic grammar. The Jew then repeated the ſecond verſe, and the abbé another phraſe, and ſo on to the end of the pſalm, which compriſed the whole ſcriptural knowledge of the rabbi. The abbé cloſed the conference with another ſentence in Arabic, and good-naturedly ſaid that he ſaw no reaſon to intercept the intended charity of the merchants. The Jew, delighted beyond expectation, declared that he had travelled over Turkey and Egypt, but had no where met with the equal of this young theologian; who acquired prodigious honour by the ridiculous adventure. In vain he endeavoured to tell the ſtory fairly: every one choſe the marvellous colouring: he was extolled as a prodigy: the rabbi had procured him a reputation at Marſeilles.

In 1744 he went to Paris, carrying a letter of recommendation to M. de Boze, keeper of the royal medals; a learned man, whoſe age and infirmity prediſpoſed him to retire from labour, and who had thoughts of taking M. de la Baſtie as his aſſociate. The latter reſpectable antiquary having died ſuddenly, Barthelemy was choſen in his ſtead. In 1747 he was elected of the academy of inſcriptions, and in 1753 ſucceeded to his patron M. de Boze. In 1754 M. de Stainville, afterwards duke de Choiſeul, was appointed ambaſſador to Rome, and invited Barthelemy to follow him: in conſequence of which the abbé went, accompanied by M. de Cotte, into Italy; where his reception was ſuch as his ſplendid reputation had prepared, and whence he returned with Madame de Stainville. This excellent couple are deſcribed in the Anacharſis under the names of Arſames and Phedima. It was in 1758 that he obtained, through the influence of theſe friends, an important acceſſion to his income, which they gradually increaſed to about 35,000 livres. His opulent leiſure was not unproductive: he had in 1788 completed and publiſhed the travels of Anacharſis, and in the following year was admitted into the Academy of Forty. His attention to official duties was never interrupted during this period, his aſſiduity having doubled the number of medals in the royal collection: four hundred thouſand pieces paſſed through his hands, of which he ſelected for purchaſe about twenty thouſand.

In the year 1792 his health began alarmingly to decline, and he grew ſubject to fainting fits: he was now ſeventy-eight years of age. On the 30th of Auguſt 1793, under the tyranny of Robeſpierre, he was denounced by one Chretien, under pretext of ariſtocracy, and was led to priſon on the ſecond of the following September, where Madame de Choiſeul went to viſit him. The committee of public ſafety were ſoon informed of the levity of this denunciation, and he was releaſed at eleven the ſame evening. In the enſuing month of October, the honorary office of librarian in chief having become vacant, it was offered to him in the moſt flattering manner, but refuſed on account of his growing infirmities. On the 6th Floreal (25th of April) 1795, he died at three in the afternoon, without ſtruggle or apparent pain: at one o'clock he was reading Horace, in company with his nephew. 'He leaves (ſays his biographer) each of his relations a father to bewail, his friends an irreparable loſs to regret, the learned of all countries an example to follow, and the men of all times a model to imitate.' His buſt had been happily taken by Houdon.

BAR'THIUS (Gaſpar), a learned and copious writer, born at Cuſtrin in Brandenburgh, the 22d of June 1576. At twelve years of age he tranſlated David's Pſalms into Latin verſe of every meaſure, and publiſhed ſeveral Latin poems. Upon the death of his father (who was profeſſor of civil law at Francfort, counſellor to the elector of Brandenburgh, and his chancellor at Cuſtrin), he was ſent to Gotha, then to Eiſenach, and afterwards paſſed through all the univerſities in Germany. When he had finiſhed his ſtudies, he began his travels; he viſited Italy, France, Spain, England, and Holland, improving himſelf by the converſation and works of the learned in every country. Upon his return to Germany, he took up his reſidence at Leipſic, where he publiſhed a number of books; the principal of which are, 1. His *Adverſaria*, a large volume in folio; the ſecond and third volumes of which he left in manuſcript. 2. A Tranſlation of Æneas Gazæus. 3. A large volume of Notes upon Claudian, in 4to. 4. Three volumes upon Statius, &c. He died at Leipſic, in 1658, aged ſeventy-one.

BARTHOLI'NUS (Caſpard), a learned phyſician and anatomiſt, born at Malmoe, in the province of Schonen, which then belonged to Denmark. At three years of age he had ſuch a capacity, that in fourteen days he learned to read; and in his thirteenth year he compoſed Greek and Latin orations, and pronounced them in public. When he was about eighteen he went to the univerſity of Copenhagen, and afterwards ſtudied at Roſtock and Wirtemberg. He next ſet out upon his travels; during which he neglected no opportunity of improving himſelf at the different univerſities to which he came, and every where received marks of reſpect. In 1613 he was choſen profeſſor of phyſic in that univerſity, which he enjoyed eleven years; when, falling under a ſevere illneſs, he made a vow, that, if it ſhould pleaſe God to reſtore him, he would ſolely apply himſelf to the ſtudy of divinity. He recovered, and kept his word; and ſoon after obtained the profeſſorſhip of divinity, and the canonry of Roſchild. He died the 13th of July 1629, having written ſeveral works on metaphyſics, logic, and rhetoric.

BARTHOLINUS (Thomas), a celebrated phyſician, ſon of the former, was born at Copenhagen in 1616. After ſtudying ſome years in his own country, he went to Leyden, Paris, and Montpelier, improving himſelf under the phyſicians of thoſe univerſities. Afterwards going to Italy, he continued three years at Padua; and at length went to Baſil, where he obtained the degree of doctor of philoſophy. Soon after, he returned to Copenhagen; where in 1647 he was appointed profeſſor of the mathematics; and next year was nominated to the anatomical chair, an employment better ſuited to his genius and inclination; which he diſcharged with great aſſiduity for thirteen years, and diſtinguiſhed himſelf by ſeveral diſcoveries with reſpect to the lacteal veins and lymphatic veſſels. His cloſe application, however, having rendered his conſtitution infirm, he reſigned his chair in 1661; but the king of Denmark allowed him the title of *honorary profeſſor*. He now retired to a little eſtate at Hageſted, near Copenhagen, where he hoped to have ſpent the remainder of his days in tranquillity; but, his houſe being burnt in 1650, his library, and all his books and manuſcripts, were deſtroyed. In conſideration of this loſs the king appointed him his phyſician with a handſome ſalary, and exempted his land from taxes; the univerſity of Copenhagen alſo appointed him their librarian; and, in 1675, the king gave him a ſeat in the grand council of Denmark. He wrote, 1. *Anatomia Caſpari Bartholini Parentis novis Obſervationibus primum locupletata*, 8vo. 2. *De Monſtris in Natura et Medecina*, 4to. 3. *De Armillis Veterum, præſertim Danorum Schedion*, 8vo. and ſeveral other works. This great man died on the 4th of December 1680.

BARTHO'LOMEW, [ברתולמי of בר a ſon, תלה hanging or elevating, and מים Heb. waters, i. e. the ſon of him who makes the waters to mount.] A proper name of men.

BARTHOLOMEW, a county of South Carolina, in the United States of America.

BARTHOLOMEW, ſee SAINT BARTHOLOMEW.

St. BARTHOLOMEW'S DAY, a feſtival of the Chriſtian church, celebrated on the 24th of Auguſt. St. Bartholomew was one of the twelve apoſtles; and is eſteemed to be the ſame as Nathaniel, one of the firſt diſciples that came to Chriſt. It is thought this apoſtle travelled as far as India, to propagate the goſpel; for Euſebius relates, that a famous philoſopher and Chriſtian, named *Pantænus*, deſiring to imitate the apoſtolical zeal in propagating the faith, and travelling for that purpoſe as far as India, found there, among thoſe who yet retained the knowledge of Chriſt, the goſpel of St. Matthew, written, as the tradition aſſerts, by St. Bartholomew, one of the twelve apoſtles, when he preached the goſpel in that country. From thence he returned to the more northern and weſtern parts of Aſia, and preached to the people of Hierapolis; then in Lycaonia; and laſtly at Albania, a city upon the Caſpian Sea; where his endeavours to reclaim the people from idolatry were crowned with martyrdom, he being flayed alive, and crucified with his head downwards. There is mention made of a goſpel of St. Bartholomew, in the preface to Origen's Homilies on St. Luke, and in the preface to St. Jerome's commentary on St. Matthew: but it is generally ſuppoſed to be ſpurious, and is placed by pope Gelaſius among the apocryphal books.

St. Bartholomew's day is diſtinguiſhed in hiſtory as the anniverſary of that horrid and atrocious ſacrifice of human blood, called the *Pariſian maſſacre*. This ſhocking ſcene of religious phrenzy was marked with ſuch barbarity as would ſurpaſs all belief, were it not atteſted by the moſt authentic evidence. In 1572, in the reign of Charles IX. numbers of the principal proteſtants were invited to Paris, under a ſolemn oath of ſafety, to celebrate the marriage of the king of Navarre with the French king's ſiſter; viz. the king of Navarre's mother, Coligni admiral of France, with many other nobles. The queen-dowager of Navarre, a zealous proteſtant, was poiſoned by a pair of gloves before the marriage was ſolemnized; and on the 24th of Auguſt 1572, being Bartholomew's day, about the morning twilight, upon the toll of the bell of the church of St. Germain, the maſſacre began. The admiral Coligni was baſely murdered in his own houſe; and then thrown out of the window, to gratify the malice of the duke of Guiſe: his head was afterwards cut off, and ſent to the king and queen-mother; and his body, after a thouſand indignities offered to it, was hung up by the feet on a gibbet. After this, the murderers ravaged the whole city of Paris, and butchered above ten thouſand perſons of all ranks. An horrible ſcene, ſays Thuanus, when the very ſtreets and paſſages reſounded with the groans of thoſe who were dying, and the ſhrieks of ſuch as were juſt going to be murdered; the bodies of the ſlain thrown out of the windows; the courts and chambers of the houſes filled with them; the dead bodies of others dragged thro' the ſtreets, their blood running down the channels in ſuch plenty, that torrents ſeemed to empty themſelves into the neighbouring river: and, in a word, an innumerable multitude of men, women with child, maidens, and children, were all involved in one common deſtruction; and the gates and entrances of the king's palace all beſmeared with blood. From Paris the maſſacre ſpread throughout the kingdom. In the city of Meaux they threw above two hundred into gaol; and after they had raviſhed and killed a great number of women, and plundered the houſes of the Proteſtants, they executed their fury on thoſe they had impriſoned, and, calling them out one by one, they were killed in cold blood, like ſheep in a market; the bodies of ſome were flung into ditches, and others into the river Maine. At Orleans they murdered above five hundred men, women, and children, and enriched themſelves with their ſpoil. The ſame cruelties were exerciſed at Angers, Troyes, Bourges, La Charité, and eſpecially at Lyons, where they inhumanly deſtroyed above eight hundred proteſtants, puting ropes about the necks of ſome, dragging them through the ſtreets, and throwing them, mangled, torn, and half dead, into the river. It would be endleſs to mention the butcheries committed at Valence, Romaine, Rouen, &c. It is aſſerted that above thirty thouſand ſouls periſhed on this dreadful occaſion. Thuanus, in abhorrence of the maſſacre of St. Bartholomew's day, uſed to repeat theſe words of P. Statius, Silv. v. iii. ver. 88, &c.

> Excidat illa dies ævo, ne poſtera credant
> Secula. Nos certe taceamus, et obruta multa
> Nocte tegi propriæ patiamur crimina gentis.

In the words of Job, chap. iii. ver. 3, &c. "Let that day periſh; and let it not be joined unto the days of the year. Let darkneſs and the ſhadow of death ſtain it," &c. And yet, as though this had been the moſt heroic tranſaction, and pregnant with immortal glory, medals were ſtruck at Paris in commemoration of it.

St. BARTHOLOMEW'S HOSPITAL, is a hoſpital for the reception of ſick and wounded poor perſons. It is ſituated on the ſouth-eaſt ſide of Smithfield, and incorporated by the name of the Hoſpital of the Mayor, Commonalty, and Citizens, of London, Governors for the Poor, called Little St. Bartholomew's, near Weſt Smithfield. This hoſpital formerly belonged to the priory of St. Bartholomew, in Smithfield, founded by one Rahere, about the year 1102. At the diſſolution of the monaſteries, Henry VIII. left five hundred marks a-year to it, on condition that the city ſhould add five hundred marks per annum for the relief of ſick and poor people; but it was more largely endowed for the uſe of ſick and lame perſons only, by Edward VI. by the munificence of the city and private benefactors. This hoſpital, having eſcaped the dreadful fire in 1666, was repaired and beautified by the governors in the year 1691. But the building became by length of time ſo ruinous and dangerous, that a ſubſcription was entered into in 1729, for defraying the expence of rebuilding it, on a plan comprehending four detached piles of building to be joined by ſtone gateways, about a court or area. Four piles have been erected and finiſhed; one of theſe piles contains a large hall for the reſort of the governors at general courts, a compting-houſe for the committees, and other neceſſary offices: the other three piles contain wards for the reception of the patients. It is governed by a preſident, treaſurer, &c. It is attended by three phyſicians, and three ſurgeons, beſides as many aſſiſtant ſurgeons, and an apothecary and chaplain. This hoſpital, ſince its enlargement, is capable of accommodating four hundred and twenty patients: it extends relief alſo to a great number of out-patients. By the report of 1780, it appears that this hoſpital adminiſtered relief to 10846 patients in the courſe of the preceding year.

BARTHO'LOMITES, *ſ.* A religious order founded at Genoa in 1307; but, the monks leading very irregular lives, the order was ſuppreſſed by pope Innocent X. in 1650, and their effects were confiſcated. In the church of the monaſtery of this order at Genoa is preſerved the image which it is pretended Chriſt ſent to king Abgarus.

BARTOLOC'CI (Julius), a learned monk, and profeſſor of Hebrew at Rome, was born at Celeno, in 1613; and diſtinguiſhed himſelf by writing an excellent catalogue of the Hebrew writers and writings, in 4 vols. folio; a continuation of which was performed by Imbonati his diſciple. He died in 1687.

BARTOLOME'O (Franciſco), a celebrated painter, born at Savignano, a village near Florence, in 1469, was the diſciple of Coſimo Roſelli, but was much beholden to the works of Leonardo da Vinci for his extraordinary ſkill in painting. He was well verſed in the fundamentals of deſign. Raphael, after quitting the ſchool of Perugino, applied to this maſter; and under him ſtudied the rules of perſpective, with the art of managing and uniting colours. In the year 1500, he turned Dominican friar; and ſome time after was ſent by his ſuperiors to the convent of St. Martin, in Florence. He painted in portrait and hiſtory; but his ſcrupulous conſcience would hardly ſuffer him to draw naked figures. He died in 1517, aged forty-eight.

BAR'TON, or BER'TON, ſ. A word uſed in Devonſhire, for the demeſne lands of a manor; ſometimes the manor-houſe itſelf; and in ſome places for out-houſes and fold-yards. In the ſtatute 2 and 3 Edw. VI. c. 12, barton lands, and demenſe lands, are uſed as ſynonima. Blount ſays it always ſignified a farm diſtinct from a manſion, and *bertonarii* were farmers, huſbandmen that held bartons at the will of the lord. In the weſt, they called a great farm a *berton* or *barton*; and a ſmall farm a *living*.

Barton (Elizabeth), commonly called *The Holy Maid of Kent*, was a religious impoſtor in the reign of Hen. VIII. She was a ſervant at Aldington, in Kent, and had long been troubled with convulſions, which diſtorted her limbs and countenance in the ſtrangeſt manner, and threw her body in the moſt violent agitations; and the effect of the diſorder was ſuch, that after ſhe recovered ſhe could counterfeit the ſame appearance. Maſters, the prieſt of Aldington, with other eccleſiaſtics, thinking her a proper inſtrument for their purpoſe, perſuaded her to pretend that what ſhe ſaid and did was by a ſupernatural impulſe. With this view ſhe would lie as it were in a trance for ſome time; then, coming to herſelf, after many ſtrange contortions, would break out into pious ejaculations, hymns, and prayers; ſometimes delivering herſelf in ſet ſpeeches, ſometimes in uncouth rhymes. She pretended to be honoured with viſions and revelations, to hear heavenly voices, and the moſt raviſhing melody. She declaimed againſt the wickedneſs of the times, againſt hereſy and innovations; exhorting the people to hear maſſes, to uſe frequent confeſſions, and to pray to our lady, and all the ſaints. This artful management, with great exterior piety, virtue, and auſterity of life, not only deceived the vulgar, but many learned perſons, ſuch as Sir Thomas More, biſhop Fiſher, archbiſhop Warkam; the laſt of whom appointed commiſſioners to examine her. She was now inſtructed to ſay, in her counterfeit trances, that the bleſſed Virgin had appeared to her, and aſſured her that ſhe ſhould never recover, till ſhe went to viſit her image, in a chapel dedicated to her in the pariſh of Aldington. Thither ſhe repaired in proceſſion, and in pilgrimage, as it were, attended by above three thouſand people, and many perſons of quality of both ſexes. On her arrival, ſhe fell into one of her trances, and uttered many things in honour of the ſaints, and the papal religion: for herſelf ſhe ſaid, that, by the inſpiration of God, ſhe was called to be a nun, and that Dr. Bocking was to be her ghoſtly father. Dr. Bocking was a canon of Chriſt-church, in Canterbury, and an aſſociate in carrying on the impoſture. Meanwhile, the archbiſhop was ſo ſatisfied with the reports made to him about her, as to order her to be put into the nunnery of St. Sepulchre, Canterbury; where ſhe pretended to have frequent inſpirations and viſions. The prieſts, her managers, having thus ſucceeded in the impoſture, now proceeded to the object of it; and Elizabeth Barton was directed publicly to announce, how God had revealed to her, that "in caſe the king ſhould divorce queen Catherine of Arragon, and take another wife during her life, his life would not be of a month's duration, but he ſhould die the death of a villain." Biſhop Fiſher, and others, in the intereſt of the queen, hearing of this, held frequent meetings with the nun and her accomplices, and at the ſame time ſeduced many perſons from their allegiance, particularly the fathers and nuns of Sion, the Charterhouſe, and Sheen, and ſome of the obſervants at Richmond, Greenwich, and Canterbury. One Peto, preaching before the king at Greenwich, denounced heavy judgments againſt him to his face; telling him, that "he had been deceived by many lying prophets, while himſelf, as a true Micaiah, warned him, that the dogs ſhould lick his blood, as they had licked the blood of Ahab." Henry bore this outrageous inſult with a degree of moderation very remarkable for him: but, to undeceive the people, he appointed Dr. Curwin to preach before him the Sunday following, who juſtified the king's proceedings, and branded Peto with the epithets of "rebel, ſlanderer, dog, and traitor." Curwin, however, was interrupted by a friar, and called "a lying prophet, who ſought to eſtabliſh the ſucceſſion to the crown upon adultery;" and he proceeded with ſuch virulence, that the king was obliged to interpoſe, and commanded him to be ſilent: yet, though Peto and the friar were afterwards ſummoned before the council, they were only reprimanded for their inſolence. Encouraged by this lenity of the government, the eccleſiaſtics reſolved to publiſh the revelations of the nun, in their ſermons, throughout the kingdom: they had communicated them to the pope's ambaſſadors, to whom alſo they introduced the maid of Kent; and they exhorted queen Catherine to perſiſt in her reſolutions. At length this confederacy began to be ſuſpected, and Henry ordered the maid and her accomplices to be examined in the ſtar-chamber. Here they confeſſed all the particulars of the impoſture, and afterwards appeared upon a ſcaffold erected at St. Paul's Croſs, where the articles of their confeſſion were publicly read in their hearing. Thence they were conveyed to the Tower, until the meeting of parliament; who, having conſidered the affair, pronounced it a conſpiracy againſt the king's life and crown. The nun, with her confederates, Bocking, Deering, Biſby, Maſters, and Gould, were attainted of high treaſon, and executed at Tyburn, April 20, 1534. Their heads were afterwards cut off, and placed in different parts of London; that of the holy maid, Stowe ſays, was ſet upon London-bridge.

Barton (Henry), doctor of divinity, and warden of Merton college, Oxford. Of this gentleman many pleaſant anecdotes are in the recollection of his friends: that he was no enemy to a pun, the following bears teſtimony: In the year 1763, on the peace being proclaimed at Oxford, and the heads of the colleges being aſſembled, as is uſual, on a temporary building erected for the purpoſe, Dr. Barton very gravely went up to the ſeveral heads of houſes that were met on the occaſion, and ſaid, "I don't know why the nation ſhould be ſo well pleaſed with the peace; for my own part, I think it a very bad one." "A bad one, doctor! why ſhould you think it a bad one?" "That certainly (ſaid the doctor) is a bad peace which brings ſo many heads to the ſcaffold." He died July 13, 1793.

Barton (Matthew), admiral of the white. There are few perſons who, during the time that their age and ſtrength would permit, have been more actively employed in the ſervice of their country. He went to ſea in 1730, in the Fox, captain Arnold, to South Carolina; returned in Auguſt 1732, and was paid off. In the November following he was made a midſhipman on-board the Falmouth, captain Byng, and went to Liſbon, and the Mediterranean; returned to England in May, 1735, and was turned over to the Cornwall, capt. Vanbrugh, and paid off in March, 1736; in May following was a midſhipman on-board the Edinburgh guardſhip, captain J. Davis; and October in the ſame year was a midſhipman on-board the Eltham, lord Auguſtus Fitzroy; went to Newfoundland, and thence to the Mediterranean. In March 1739 was a midſhipman on-board the Somerſet, admiral Haddock; in September, was made lieutenant of the St. Joſeph prize off Cadiz, and brought her home. In 1739-40 was made lieutenant of the Lenox, when ſhe took the Princeſſa, and came home in the Princeſſa. In October 1740 was removed into the Princeſs Caroline, and went to Jamaica, where admiral Vernon hoiſted his flag on-board the Caroline, and removed all the officers into the Burford; was lieutenant of the Burford at the ſiege of Carthagena; came home, and was paid off in the Burford, but immediately appointed lieutenant of the Nonſuch; was a weſtern cruizer till June, 1743; then went to the Mediterranean, with convoy; was lieutenant of the Nonſuch in the engagement off Toulon with Admiral Matthews. In September 1744 was appointed firſt lieutenant of the Marlborough; in March 1745 was removed into the Neptune, admiral Rowley's ſhip; and in May 1745 was, by the admiral, appointed captain of the Duke fireſhip; in Feb. 1746-7 was made captain of the Antelope by admiral Medley; in April following was appointed to the Poſtilion xebech; in Auguſt 1748 the Poſtilion was ordered to be left at Port Mahon, and he came home with Admiral Byng in the Boyne; was paid off in October 1748, having been only one day unemployed that war. In January 1755 he was made captain of the Litchfield, and ſailed with admiral Boſcawen to Louiſburg and Halifax. In June 1756 took the Arc en Ciel, a French ſhip of war of fifty guns, off Louiſburg; came home in December 1756, and was ordered out ſenior captain to the coaſt of Guinea, and then to the Leeward Iſlands; and in Auguſt 1758 brought home, under convoy, one hundred ſail of ſhips. In November 1758 was appointed one of admiral Keppel's ſquadron againſt Goree; on the 30th of that month was unfortunately caſt away on the coaſt of Barbary; remained on the ſtrand a fortnight without any thing to ſubſiſt upon but a few drowned ſheep that were driven aſhore; himſelf and that part of his crew which eſcaped from the wreck were quite naked. After remaining eighteen months in ſlavery at Morocco, he was ranſomed by government, and, upon coming home, was tried by a court-martial for the loſs of the Lichfield, and honourably acquitted. In October 1760 he was commiſſioned for the Temeraire, and appointed one of admiral Keppel's ſquadron to Belle-iſle, with a diſtinguiſhing pendant. He was appointed by the admiral to command the flat-bottomed boats at the landing, and the ſeamen employed on ſhore: and, when the enemy capitulated, he was publicly thanked for his ſervices by general Hudſon, and ſent home with the account of the ſucceſs of the expedition. Afterwards he convoyed between two and three thouſand troops to Barbadoes, and was at the taking of Martinique. In March 1762 he went to Jamaica with Sir James Douglas, and afterwards to the Havannah with Sir George Pococke. He aſſiſted admiral Keppel and captain Hervey on the day of landing the troops, and afterwards had the command of all the ſeamen employed on ſhore for the firſt five weeks, till he was ſo reduced with fatigue and a fever, that he was obliged to give up the command. After the place was taken, his health was ſo much impaired that he was obliged to change his ſhip from the Temeraire to the Devonſhire, in which he came home, and was paid off in May 1763, at the concluſion of the war. He was promoted to a flag on the 28th of April 1777; was made vice-admiral on the 19th of March 1779, and admiral on the 24th of September 1787; but, his conſtitution having been very much broken by the fever with which he was attacked at the Havannah, and the length of his ſervices, he found himſelf unable, in the laſt and the preſent war, to take upon himſelf any active command, and therefore did not ſolicit it. He died at Hampſtead on the 30th of November, 1795, in the eightieth year of his age.

BARTON-UPON-HUMBER, a large market-town, in Lincolnſhire, conſiſting of ſeveral ſtreets, but not cloſely built. It has two large churches, the one dedicated to St. Peter, the other to St. Mary; and appears by an old regiſter to have been formerly a place of great note, here being ſeveral veſtiges to prove that the town has been of larger extent. In the reign of queen Elizabeth great numbers died here of the plague. The market is held on Monday; and a fair annually on the Thurſday in Trinity-week, for horſes, horned cattle, and ſheep. This town contains about three hundred and eighty houſeholders, and ſeventeen hundred inhabitants; is diſtant from Glamford Briggs eleven miles, Lincoln thirty-four, Caſtor eighteen, Great Grimſby twenty-two, and London 167. The eaſy paſſage daily acroſs the Humber to Hull (ſeven miles) prevents any great trade being carried on at Barton. There is a ferry to Heſsle, called the *King's Ferry*, acroſs the Humber, nearly oppoſite, being about two miles. Near this town is Thornton Abbey, with a beautiful gateway, which is eſteemed a curious piece of antiquity. This abbey was built in the 12th century, by William le Groſs earl of Albemarle, for Auguſtine monks.

BARTRA'MIA, *ſ.* in botany. See TRIUMFETTA.

BART'SIA, *ſ.* [So named by Linnæus, in memory of John Bartſch, M. D. of whom he gives an intereſting melancholy account in his Flora Suecica.] In botany, a genus of the claſs didynamia, order angioſpermia. The generic characters are—Calyx: perianthium one-leafed, tubular, permanent; mouth obtuſe two-lobed, lobes emarginate, coloured at the top. Corolla: monopetalous, ringent; upper lip erect, ſlender, entire, longeſt; lower reflex, trifid, obtuſe, very ſmall. Stamina: filaments four, briſtle-ſhaped, the length of the upper lip; two ſomewhat ſhorter; antheræ oblong, approximating, under the top of the upper lip. Piſtillum: germ ovate; ſtyle filiform, longer than the ſtamens; ſtigma obtuſe, nodding. Pericarpium: capſule ovate, compreſſed, acuminate, two-celled, two-valved; partition contrary to the valves. Seeds: numerous, angular, ſmall. *Obſervation.* This is an intermediate genus between Rhinanthus, Euphraſia, and Pedicularis, diſtinguiſhed by its coloured calyx.—*Eſſential Character.* Calyx, two-lobed, emarginate, coloured. Corolla: coloured leſs than the calyx; upper lip longeſt. Capſules: two celled.

Species. 1. Bartſia coccinea, or red bartſia: leaves alternate, linear, two-toothed on each ſide. This moſt beautiful plant has a ſtem entirely ſimple; the leaves are divided, and crowded towards the top into a ſpike, having a ſingle flower to each leaf; calyxes tinged towards the tip of a very deep red; the fructification is not yet well aſcertained. Ray deſcribes the leaves as hardly an inch long, broad, trifid, with the ſide ſegments narrow, and tinged at the end with red; the flowers ſmall and pale. It was found in Maryland by Vernon, in Virginia by Baniſter and Clayton, and in New York by Kalm.

2. Bartſia pallida, or pale-flowered Bartſia: leaves alternate, lanceolate, quite entire; floral leaves ovate, toothed. Native of Siberia and Hudſon's Bay. Introduced in 1782, by the Hudſon's-bay company.

3. Bartſia viſcoſa, or viſcid bartſia, or yellow marſh eyebright: upper leaves alternate, ſerrate, flowers diſtant, lateral. Stem a foot high, upright, cylindric. The whole plant is clammy. It is an annual plant, native of France, Italy, and Britain: in the marſhes of Cornwall, Devonſhire, Lancaſhire, and Staffordſhire; and of Argyleſhire in Scotland: flowering in July and Auguſt.

4. Bartſia Alpina, or Alpine bartſia: leaves oppoſite, cordate, obtuſely ſerrate. Stem ſimple, ſix or ſeven inches high. Native of the mountains of Lapland, Switzerland, Savoy, monte Baldo, and near Orton in Weſtmoreland.

5. Bartſia gymnandra: two-ſtamened; leaves radical, two-fold, petioled; ſtem moſtly two-leaved, one-ſpiked; ſpike linear, obtuſe; whorls bracted, collected. Stem three or four inches high, round, upright, ſmooth, entirely ſimple. It grows within the arctic circle, on the

north ſide of the frozen rocks in Kamtſchatka, where there is no other vegetation. See EUPHRASIA and RHINANTHUS.

BAR'TULPH, [of *beorht*, and *ulph*, Sax. i. e. help in counſel, or famous helper.] A proper name of men.

BAR'TUS, a town of Hungary, ſixteen miles north-weſt of Palotza.

BAR'VER, a town of Germany, in the circle of Weſtphalia, and county of Diepholz: ſix miles eaſt-north-eaſt of Diepholz.

BARVILIS'KI, a town of Lithuania, in the palatinate of Troki: twenty-eight miles ſouth-weſt of Troki.

BA'RUCH (the prophecy of), one of the apocryphal books, ſubjoined to the canon of the Old Teſtament. Baruch was the ſon of Neriah, who was the diſciple and amanuenſis of the prophet Jeremiah. It has been reckoned part of Jeremiah's prophecy, and is often cited by the ancient fathers as ſuch. Joſephus tells us, Baruch was deſcended of a noble family; and it is ſaid in the book itſelf, that he wrote this prophecy at Babylon. There are extant three copies of it; one in Greek, the other two in Syriac; but which of theſe, or whether any one of them, be the original, is uncertain.

BAR'UD, a town of Egypt, on the eaſt ſide of the Rhine: ſeven miles ſouth-eaſt of Manfalout.

BARUD, a town of Egypt, on the weſt ſide of the Rhine: eighteen miles ſouth of Siut.

BAR'UK, [ברוך Heb. i. e. bleſſed.] A proper name of men.

BARU'LES, *ſ.* in church-hiſtory, certain heretics, who held, that the Son of God had only a phantom of a body; that ſouls were created before the world, and that they lived all at one time.

BAR'UM, a town of Germany, in the circle of Lower Saxony, and principality of Luneburg: ten miles ſouth of Luneburg.

BARUTH', a town of Syria, 60 miles W. of Damaſcus.

BARUTH, a town of Germany, in the circle of Upper Saxony: twenty-two miles ſouth-ſouth-eaſt of Potzdam, and thirty-four north-eaſt of Wittenberg.

BARUTH, *ſ.* An Indian meaſure containing ſeventeen gantans: about 3½ pounds Engliſh avoirdupois.

BAR'WICK (John), an eminent Engliſh divine, born at Wetherſlack in Weſtmoreland, April 20, 1612. He was ſent to Sedberg ſchool in Yorkſhire, where he gave early marks both of genius and piety. In 1631, and the eighteenth of his own age, he was admitted of St. John's college at Cambridge, under the tuition of Mr. Thomas Fothergill. In 1635 he became bachelor of arts, and in 1636 he was created fellow. When the civil war broke out, and Charles I. had written a letter to the univerſity, acquainting them that he was in extreme want, Mr. Barwick concurred with thoſe loyal perſons who firſt ſent him a ſupply in money, and afterwards their college plate; and, upon information that Cromwell lay with a party of foot between Cambridge and Huntington, in order to make himſelf maſter of this ſmall treaſure, Mr. Barwick made one of the party which conveyed it through bye-roads ſafely to Nottingham, where the king had ſet up his ſtandard. When the king was confined in Cariſbrook caſtle, in the Iſle of Wight, ſo cloſely, that guards were poſted at all the avenues, to prevent any correſpondence, Mr. Creſſet, who was placed about him, through the dextrous management of Mr. Barwick, defeated all their diligence, and afforded the king a free intercourſe with his friends. For theſe attachments to his ſovereign he was afterwards committed to the Tower, and put in a dark dungeon, without the uſe of pen, ink, or paper, and of all books but the Bible. When he was placed in this melancholy ſituation, in which he continued fifteen months, he was afflicted with a dreadful cough, ſpitting of blood, and conſumption of the lungs. He was only allowed the ſpare diet of herbs or fruit, or thin water-gruel made of oatmeal or barley, with currants boiled in it, and ſweetened with a little ſugar; but by which he recovered beyond all expectation. A cure ſo perfect, and withal ſo ſtrange, that many phyſicians have noticed it in their writings, as a moſt pregnant inſtance of the power of temperance even in the moſt inveterate diſeaſes. During his confinement, Mr. Otway, and ſome other friends, procured a warrant from preſident Bradſhaw to viſit him; and they were not a little ſurpriſed to find him ſo luſty, and in ſuch good health, whom they had ſeen brought ſo low, as to engage this very Mr. Otway to take care of his burial. At the reſtoration he was made dean of St. Paul's; and he took poſſeſſion of the deanery about the middle of October, 1661. He was afterwards appointed one of the nine aſſiſtants to the twelve biſhops, commiſſioned to hold a conference with the like number of preſbyterian miniſters upon the review of the liturgy; which conference was held at the biſhop of London's lodgings in the Savoy. He was alſo by the unanimous ſuffrage of the clergy of the province of Canterbury choſen prolocutor, on the 18th of February, 1661: in which high office he behaved himſelf in ſuch a manner, as added even to the great reputation he had before acquired. Finding his health decline, he intended to have reſigned his deanery and office of prolocutor, to ſpend the remainder of his days in retirement; but Providence prepared him a ſtill more quiet manſion; for, being ſeized with a pleuriſy, it carried him off in three days. He was attended in his laſt moments by Dr. Peter Gunning, afterwards biſhop of Ely; and, as he lived, ſo he died, with all the marks of exemplary piety, on October 22, 1664.

BARYECOI'A, *ſ.* [βαρυς, heavy, and ακουω, to hear.] A difficulty of hearing.

BARYPHO'NIA, *ſ.* [from βαρυς, dull, and φωνη, the voice.] A difficulty of ſpeaking.

BARYPYC'NI, *ſ.* [βαρυπυκνοι, Gr.] In the ancient muſic, was a name given to ſuch chords as formed the graveſt notes of the ſeveral *ſpiſſa*. There were five baypycni in the ſcale.

BARY'TES, *ſ.* [from βαρυς, heavy.] A earth ſo named from the uncommon weight of its combination with vitriolic acid, which is more plentifully met with than any other, and known by the names of *ponderous ſpar*, or *marmor metallicum*. This combination is found either tranſparent or opake. The tranſparent ſpar in its uſual form is of a ſix-ſided flat priſm, ending in a four-ſided pyramid; but, like all other cryſtals, liable to be varied by the circumſtances attending their formation. The opake ſpecimens, called *cawk* by the miners, are of a white, grey, or fawn, colour; frequently of no regular ſhape, but often in the peculiar figure of a number of ſmall convex lenſes ſet in a ground. Moſt ſpecimens of this earth are more than four times as heavy as an equal bulk of water; which conſtitutes an eſſential difference between them and thoſe of the calcareous genus, becauſe theſe laſt are little more than twice the weight of the water they diſplace on immerſion. The lime-ſtone, or *lapis hepaticus*, contains about one third part of this earth. And it is alſo found combined with fixed air in the mine of Anglezark, near Chorley in Lancaſhire, and alſo at Strontian and Dunglaſs, near Dumbarton in Scotland. See Phil. Tranſ. for 1784.

To obtain ponderous earth in a diſengaged ſtate, the heavy ſpar or vitriolated ponderous may be fuſed with about twice its weight of mild fixed alkali, which will combine with its acid and form a neutral ſalt, to be waſhed off by water; while the ponderous earth remains behind in combination with fixed air. A ſtrong heat drives off the fixed air, and leaves the ponderous earth in a ſtate perfectly reſembling quicklime in taſte, and exhibiting the ſame phenomena with water. This artificial combination of fixed air and ponderous earth differs from the natural in the remarkable circumſtance, that the latter contains no water; and to this it ſeems to be owing that the natural combination does not loſe its acid by mere heat. But, great as the reſemblance is between ponderous earth and lime in many reſpects, yet in others it differs ſo much as to ſhew that they are by no means the ſame ſubſtance. It is ſoluable in about nine hundred times its weight of water, when pure; but requires near twice as much when combined with fixed air, though an exceſs of this acid renders it more ſoluble. Its attraction to the vitriolic acid is ſtronger than that of any other ſubſtance, inſomuch that it affords the beſt teſt of the preſence of that acid in waters or elſewhere. With the nitrous and marine ſalts it affords cryſtallizable ſalts. The marine ſolution is commonly uſed as the teſt liquor for diſcovering vitriolic acid. Ponderous earth affords a deliqueſcent ſalt with acetous acid. It takes the vitriolic acid from its combination with lime; and lime, on the other hand, takes the ſaccharine acid from its combinations. This earth forms an hepatic combination, when treated with ſulphur. No other earth is precipitated by the Pruſſian alkalis; whence it has been ſuſpected to poſſeſs a metallic nature, though no one has yet ſucceeded in reducing it to that form. It is not fuſible alone by the ſtrongeſt heat. The famous Bolognian phoſphorus conſiſts of the vitriolated ponderous earth ignited for a time with ſome combuſtible ſubſtance. For this purpoſe the ſpar is pulverized, then kneaded up with mucilage of gum tragacanth, and formed into pieces as thin as the blade of a knife. Theſe pieces are afterwards dried and ſtrongly coloured by placing them in the midſt of the coals of a furnace. The pieces are cleared of the aſhes by blowing on them with bellows. In this ſtate if they be expoſed to the light for a few ſeconds, and afterwards carried into a dark place, they ſhine like glowing coals; they even ſhine under water. In proceſs of time they loſe this property, but it may be reſtored by a ſecond heating. We are indebted to the celebrated chemiſts Gahn, Scheele, and Bergman, for our knowledge of this earth; and, for the method of obtaining it in a ſuitable degree of purity, ſee the article CHEMISTRY.

In medicine, the *muriated barytes* is conſidered as an evacuant, deobſtruent, and tonic; on exhibition, it has been found in ſmall doſes to encreaſe the flow of urine, promote perſpiration, open the bowels, and improve the appetite and general health. It has been conſidered as highly uſeful in ſcrophulous caſes, cutaneous foulneſſes, and ulcerated legs. In ſome cancers, and conſumptive affections, when not too far advanced, it promiſes to be of advantage. Its doſe is from ſix drops to ten or twenty; but if ever it occaſions vertigo, nauſea, ſevere purging, or pains in the bowels, it muſt be reduced, or omitted. A courſe of this ſhould be begun by ſmall doſes, twice a day, and gradually encreaſed ſo long as they create no inconvenience. See Med. Com. vol. iv. and vi. dec. 2. Medical Communic. London, vol. ii.

BARYTO'NUM, *ſ.* [from *βαρυς*, grave, and *τονος*, accent.] In the Greek grammar, denotes a verb, which having no accent marked on the laſt ſyllable, a grave accent is to be underſtood. In Italian muſic, *barytono* anſwers to our common pitch of baſs.

BARZE'TO, a town of Italy, in the duchy of Parma, ſeventeen miles ſouth-ſouth-weſt of Parma.

BARZIL'LAI, [of ברזלי Heb. of ברזל iron; hard as iron.] A nobleman of the Jews.

BAR'ZOD, a town of Hungary, and capital of a county to which it gives name, ſituated on the Hernach, between Caſſovia and Agria.

BAS, a ſmall iſland in the Engliſh Channel, near the coaſt of France, with a fort to defend the road: there are not above fifty inhabitants. Lat. 48. 46. N. lon. 13. 40. E. Ferro.

BAS CHEVALIERS, low or inferior knights by tenure of baſe military fee, as diſtinguiſhed from bannerets, the chief or ſuperior knights: hence we call our ſimple knights, viz. knights bachelors, *bas chevaliers*. *Kennet's Gloſſ. to Paroch. Antiq.*

BAS EN BASSEL, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Moniſtrol, one league north-weſt of Moniſtrol, and ſix and a half north of le Puy.

BAS-RELIEF. See BASSO-RELIEVO.

BASAL'TES, *ſ.* [from *baſal*, Lat. iron, or *βασαλιζώ*, *diligentur examino.*] An heavy hard ſtone, chiefly black or green, conſiſting of priſmatic cryſtals, the number of whoſe ſides is uncertain. The Engliſh miners call it *cockle*; the German *ſchoerl*. Its ſpecific gravity is to that of water as 3000 or upwards to 1000. It frequently contains iron; and conſiſts either of particles of an indeterminate figure, or of a ſparry, ſtriated, or fibrous, texture. It has a flinty hardneſs, is inſoluble by acids, and is fuſible by fire. It is a volcanic product, the three ſpecies of which are baſaltes, lava, and terra pozzolana.

The moſt remarkable property of this ſubſtance is its figure, being never found in ſtrata like other marbles, but always ſtanding up in the form of regular angular columns, compoſed of a number of joints, one placed upon, and nicely fitted to, another, as if formed by the hands of a ſkilful workman. From the natural hiſtory of this ſtone, it is well aſcertained to have flowed in a liquid ſtate, in prodigious ſtreams, during the eruptions of burning mountains, and afterwards cracked in cooling, and perhaps by the evaporation of ſome volatile ſubſtance, in the ſame manner as clays, ſtarch, and other ſubſtances, are obſerved to crack.

Baſaltes was originally found in columns in Ethiopia, and fragments of it in the river Tmolus, and ſome other places. We now have it frequently, both in columns and ſmall pieces, in Spain, Ruſſia, Poland, near Dreſden, and in Sileſia; but the nobleſt ſtore in the world ſeems to be that called the Giant's Cauſeway in Ireland, and Staffa, one of the Weſtern Iſles of Scotland, (ſee GIANT'S CAUSEWAY and STAFFA.) Great quantities of baſaltes are likewiſe found in the neighbourhood of mount Ætna in Sicily, of Hecla in Iceland, and of the volcano in the iſland of Bourbon. Theſe are the only three active volcanoes in whoſe neighbourhood it is known to be met with; but it is alſo found in the extinguiſhed volcanoes in Italy, tho' not in the neighbourhood of Veſuvius. In Ireland the baſaltes riſes far up the country, runs into the ſea, croſſes at the bottom, and riſes again on the oppoſite land. In Staffa the whole end of the iſland is ſupported by natural ranges of pillars, moſtly above fifty feet high, ſtanding in natural colonnades, according as the bays and points of land have formed themſelves, upon a firm baſis of ſolid unformed rock. Above theſe, the ſtratum, which reaches to the ſoil or ſurface of the iſland, varies in thickneſs, as the iſland itſelf is formed into hills or valleys, each hill, which hangs over the valleys below, forming an ample pediment. Some of theſe, above ſixty feet in thickneſs from the baſe to the point, are formed by the ſloping of the hill on each ſide, almoſt into the ſhape of thoſe uſed in architecture. The pillars of the Giant's Cauſeway ſtand on the level of the beach; from whence they may be traced through all degrees of elevation to the ſummit of the higheſt grounds in the neighbourhood. In moſt places they ſtand perpendicular to the horizon; but in ſome of the capes, and particularly near Uſhet harbour, in the iſle of Baghery, they lie in an oblique poſition. At Doon point in the ſame iſland, and along the Balintoy ſhore, they form variety of regular curves. The ſtone is black, cloſe, and uniform; the varieties of colour are blue, reddiſh, and grey; and of all kinds of grain, from extreme fineneſs to the coarſe granulated appearance of a ſtone which reſembles imperfect granite, abounding in cryſtals of ſchorl chiefly black, though ſometimes of various colours. Though the ſtone be in general compact and homogeneous; yet it is remarkable, that the upper joint of each pillar, where it can be aſcertained with any certainty, is always rudely formed and cellular. The groſs pillars alſo in the capes and mountains frequently abound in theſe air-holes through all their parts, which ſometimes contain fine clay, and other apparently-foreign bodies; and, the irregular baſaltes beginning where the pillars ceaſe, or lying over them, is in general extremely honeycombed; containing in its cells cryſtals of zeolite, little morſels of fine brown clay, ſometimes very pure ſteatite, and in a few inſtances bits of agate. Sir Joſeph Banks obſerves,

ſerves, that the bending pillars of Staffa differ conſiderably from thoſe of the Giant's Cauſeway. In Staffa they lie down on their ſides, each forming the ſegment of a circle; and, in one place, a ſmall maſs of them very much reſembles the ribs of a ſhip. Thoſe of the Giant's Cauſeway which he ſaw, ran along the face of a high cliff, bent ſtrangely in the middle, as if unable, at their firſt formation, while in a ſoft ſtate, to ſupport the maſs of incumbent earth.

The rocks of the Cyclops, in the neighbourhood of Etna, exhibit very magnificent baſaltic pillars, which we have repreſented in the annexed Plate. Near theſe rocks is an iſland, one half of which is compoſed of lava, on a baſe of baſaltes; above which there is a cruſt of pozzolana, combined with a certain white calcareous matter, which is hard and compact; and which, as it is compoſed by the action of the air, appears like a piece of knotty porous wood. The iſland was formerly inhabited; and there ſtill remains a flight of ſteps leading from the ſhore to the ruins of ſome houſes which appear to have been hewn in the rock. Theſe baſaltic columns are of various ſizes and forms; ſome ſquare, others hexagonal, heptagonal, or octogonal. One half of this rock is compoſed of perpendicular columns; the other of another ſpecies of baſaltes diſpoſed in inclined, and almoſt rectilinear, layers. Theſe are in contact with the columns, and are as cloſely connected with them as they are with one another. The layers are longer at the baſe than towards the top of the rock. It is farther to be remarked, that moſt of theſe layers are ſubdivided as they riſe upwards; ſo that, towards theſe upper extremities, one layer preſents to the eye ſometimes one, ſometimes two, and ſometimes three, diviſions. The fragments of baſaltes taken off from theſe layers are of a rhomboidal figure, becauſe the layers break obliquely. Theſe layers, though inclined towards the baſe, become almoſt perpendicular towards the upper part of the rock, where they appear united in a point, and overtop moſt of the viſible and elevated parts of the priſmatic columns. Theſe columns terminate in ſuch a manner as to form a kind of ſtaircaſe. They appear even to riſe under a ſpecies of clay with which they are covered at one extremity, till they re-unite themſelves with the point which is formed by the moſt elevated parts of the layers of baſaltes beſide them.

The promontory of Caſtel d'Iaci, which terminates the baſis of Etna, is almoſt entirely compoſed of baſaltes, but of a kind very different from the former. It conſiſts of a great number of cylinders from the diameter of ſix inches to that of twenty feet. Some of theſe are ſolid, others hollow like cannon; ſome extended in layers, others ſimilar to carrots of tobacco conſiſting of a number of pieces ſqueezed together. Some of theſe cylinders are ſtraight, others curved into a variety of forms. Some look like globes incloſed in the rocks; and in the fractures of theſe globes we perceive the ſtrata of which they are compoſed.

Theſe are delineated at the foot of the annexed Plate. The little mounts into which it appears to be collected, are ſometimes only one French foot in diameter, ſometimes ſix. They are compoſed of ſmall priſms or needles, or of cubic trapezoids, and conſiſt of a matter diſtinguiſhed by the name of *dirty lava.* It is made up of pozzolana, conſolidated by a certain liquid, which, while it has communicated ſolidity to the pozzolana, has at the ſame time ſuffered that ſubſtance to ſhrink conſiderably, in ſuch a manner as to leave large chinks between the pieces of baſaltes, which are thus formed by the operation of the liquid on the pozzolana. It appears alſo to have inſinuated itſelf into the clay with which the promontory is covered; which has become hard in its turn, and which has alſo ſplit into chinks that appear to contain a kind of hard matter. Theſe deſcriptions and figures will ſerve to give a pretty correct idea of the appearance of the baſaltes, which is generally accounted a kind of marble. Wallerius calls it a ſpecies of the corneous or horn-rock; and Cronſtedt enumerates it among thoſe ſubſtances which he calls *garnet-earths.* The largeſt block of this ſtone that ever was ſeen, was placed, according to Pliny, by Veſpaſian in the Temple of Peace. It repreſented the figure of Nilus, with ſixteen children playing about it, denoting as many cubits of the riſe of the river. The ſtatue of Memnon in the Temple of Serapis at Thebes, which ſounded at the riſing of the ſun, was alſo made of the ſame material, if we may believe this author. Moſt of the Egyptian figures are likewiſe made of baſaltes. Some of the ancients call it *lapis Lydius*, from Lydia, where it was formerly found in great abundance. The moderns denominate it the *touch-ſtone*, as being uſed for the trial of gold and ſilver.

It has been a matter of controverſy among many mineralogiſts, whether the baſaltes has been formed by cryſtallization from water, or from volcanic fire. In ſupport of the volcanic origin of the baſaltes, it has been argued: 1. That it agrees almoſt entirely with lava in its elementary principles, in its grain, the ſpecies of the foreign bodies it includes, and all the diverſities of its texture. 2. The iron of the baſaltes is found to be in a metallic ſtate, capable of acting on the magnetical needle, which is alſo the caſe with that found in compact lava. 3. The baſaltes is fuſible *per ſe*; a property which it has in common with lavas. 4. The baſaltes is a foreign ſubſtance ſuperinduced on the original limeſtone-ſoil of the country, in a ſtate of ſoftneſs capable of allowing the flints to penetrate conſiderably within its lower ſurface. 5. Thoſe extenſive beds of red ochre which abound among our baſaltes are ſuppoſed to be an iron earth reduced to this ſtate by the powerful action of heat; for ſuch a change may be produced on iron in our common furnaces, provided there be a ſufficient afflux of freſh air; and the baſaltes itſelf, on ſuch circumſtances, is eaſily reducible to an impure ochre. This is alſo found to take place in the living volcanoes, particularly within their craters; and is therefore ſuppoſed to afford a preſumptive argument of the action of fire in the neighbourhood of baſaltes. 6. Though zeolite is not yet proved to be the actual production of a volcano, yet its preſence is always ſuppoſed to give countenance to this hypotheſis; becauſe zeolite is found in countries where the action of ſubterraneous fire is ſtill viſible, and where there is reaſon to believe that the whole ſoil has been ravaged by that principle. Thus it abounds in Iceland, where the flames of Hecla yet continue to blaze; and in the iſle of Bourbon, where there is ſtill a volcano in force. It is therefore ſuppoſed to ariſe from the decompoſition of the products of a volcano, where the fires have been long extinct. 7. Cryſtals of ſchorl appear in great plenty among many kinds of our baſaltes; and theſe, though not abſolutely limited to volcanic countries, yet, being found in great abundance among the Italian lavas, in circumſtances exactly correſponding to thoſe of our baſaltes, are thought to ſupply a good probable argument in the preſent caſe. 8. The peperino ſtone is thought to be undoubtedly of a volcanic origin. It has frequently the burnt and ſpongy appearance of many of the volcanic products; and that of the Giant's Cauſeway agrees exactly with the peperino of Iceland and Bourbon. 9. Puzzolane earth is met with among the baſaltes of France; and there is very little reaſon to doubt that our baſaltes, if pulveriſed, would agree with it in every reſpect; that is, it would produce a fine ſharp powder, containing the ſame elementary parts, and probably agreeing with it in its valuable uſes as a cement. This earth is alſo found in the Canary iſlands, which are thought to have other marks of fire; it is met with in all the volcaniſed parts of Italy, and is never found excepting where there are other evident marks of fire. 10. Pumice ſtone is univerſally allowed to be produced by fire, and indeed bears the reſemblance of a cinder ſo obviouſly, that one muſt be inſtantly convinced of its original. This is alſo found among the baſaltes of Ireland. 11. There are three living volcanoes, within whoſe neighbourhood the baſaltes and moſt of its uſual attendant foſſils have been obſerved, viz. Etna in Sicily, Hecla in Iceland, and the iſland of Bourbon on the coaſt of Africa. To which it may be added, that it is found throughout all the volcaniſed parts of Italy, though not any where immediately in the neighbourhood of Veſuvius. Sir William Hamilton, however, informs us, that in 1779 he "picked up ſome fragments of large and regular cryſtals of cloſe-grained lava or baſalt; the diameter of which, when the priſms are complete, might have been eight or nine inches." He obſerves, that Veſuvius does not exhibit any lavas regularly cryſtallized, and forming what are called *giants cauſeways*, except a lava that ran into the ſea, near Torre del Græco, in the year 1631, which has a ſmall degree of ſuch an appearance. As the fragments of baſaltes which he found on this mountain, however, had been evidently thrown out of the crater in their proper form, he puts the queſtion, "May not lavas be more ready to cryſtallize within the bowels of a volcano than after their emiſſion? And may not many of the giants cauſeways already diſcovered be the nuclei of volcanic mountains, whoſe lighter and leſs ſolid parts may have been worn away by the hand of time?" M. Faujais de St. Fond gives an example of baſalt columns placed deep within the crater of an extinguiſhed volcano. 12. It is well aſcertained by experience, that there are vaſt beds of pyrites diſperſed through the interior parts of the earth at all depths; and it is alſo a certain fact, that this compound ſubſtance may be decompounded by the accidental effuſion of water, in ſuch a manner as to become hot, and at laſt to burn with great fury. This acceſſion of pyrites is by many ſuppoſed to be the true origin of the volcanic fire; and an argument for this is, that the preſent volcanoes do pour forth great quantities of the component parts of pyrites, particularly ſulphur, iron, and clay. Now, among the ſuperinduced ſubſtances of the county of Antrim, and the ſame may probably be ſaid of every other baſaltic country, it is certain that the quantity of iron and clay diffuſed through almoſt every ſpecies of foſſil, amounts to more than one-half of the whole material; ſo that two of the principal elements of the pyrites are ſtill found there, reduced in many inſtances to a ſlag or ſcoria. The third principle, viz. the ſulphur, cannot be expected to remain; becauſe ſulphur is totally conſumed by combuſtion; and what might perhaps eſcape and be ſublimed would no doubt have ſince periſhed by decompoſition, in conſequence of being expoſed to the air. Another argument, which to Sir William Hamilton appears very convincing is, that glaſs ſometimes takes on the appearance of priſms, or cryſtallizes in cooling. He received ſome ſpecimens of this kind from Mr. Parker of Fleet-ſtreet, who informed him that a quantity of his glaſs had been rendered unſerviceable by taking ſuch a form. Some of theſe were in laminæ which may be eaſily ſeparated, and others reſemble baſaltic columns in miniature, having regular faces. "Many of the rocks of lava in the iſland of Ponza (ſays he) are, with reſpect to their configurations, ſtrikingly like the ſpecimens of Mr. Parker's glaſs above-mentioned; none being very regularly-formed baſaltes, but all having a tendency towards it. Mr. Parker could not account for the accident that occaſioned his glaſs to take the baſaltic form; but I have remarked, both in Naples and Sicily, that ſuch lavas as have run into the ſea are either formed into regular baſaltes, or have a great tendency towards ſuch a form. The lavas of mount Etna, which ran into the ſea near Jacic, are perfect baſaltes; and a lava that ran into the ſea from Veſuvius, near Torre del Græco, in 1631, has an evident tendency to the baſaltic form."

In oppoſition to theſe arguments it is urged, that, in many of the countries where baſaltes moſt abound, there are none of the characteriſtics of volcanic mountains. They aſſert, therefore, that the baſaltes is a foſſil, very extenſively ſpread over the ſurface of the earth; and that, where it is found in the neighbourhood of volcanic mountains, we ought to ſuppoſe theſe to be accidentally raiſed on a baſaltic ſoil rather than to have created it. But the advocates for the volcanic ſyſtem are not much embarraſſed with this argument. According to them, the baſaltes has been formed under the earth itſelf, and within the bowels of theſe very mountains; where it could never have been expoſed to view until, by length of time or ſome violent ſhock of nature, the incumbent maſs muſt have undergone a very conſiderable alteration, ſuch as ſhould go near to deſtroy every exterior volcanic feature. In ſupport of this it may alſo be obſerved, that the promontories of Antrim do bear evident marks of ſome very violent convulſion, which has left them in their preſent ſituation; and that the iſland of Ragherry, and ſome of the Weſtern Iſles of Scotland, do really appear like the ſurviving fragments of a country, great part of which might have been buried in the ocean. It is farther added, that though the exterior volcanic character be in great meaſure loſt in the baſaltic countries; yet this negative evidence can be of little weight, when we conſider, that the few inſtances where the features have been preſerved afford a ſufficient anſwer to this objection. Thus the Montagne de la Coupe in France ſtill bears the marks of its having been formerly a volcano; and this mountain is obſerved to ſtand on a baſe of baſaltic pillars, not diſpoſed in the tumultuary heap into which they muſt have been thrown by the furious action of a volcanic eruption, tearing up the natural ſoil of the country; but arranged in all the regularity of a giant's cauſeway, ſuch as might be ſuppoſed to reſult from the cryſtallization of a bed of melted lava, where reſt and a gradual refrigeration contributed to render the phenomenon as perfect as poſſible. To theſe obſervations we may add another from Mr. Ferber, viz. That at the time he went from Rome to Oſtia they were paving the road with a ſpecies of black lava. In ſome of the broken pieces he obſerved little empty holes, of the bigneſs of a walnut, incruſtated all around their ſides by white or amethyſtine ſemipellucid, pointed, or truncated, pyramidal cryſtallizations, entirely reſembling the agate nodules or geodes, which are commonly filled with quartz cryſtallizations. There was no crack or fiſſure in the ambient compact lava; the cryſtal ſherls were pretty hard, and might rather be called *quartz*. Some fine browniſh duſt lay in the reſt of the holes, as impalpable and light as aſhes. He tells us alſo, that, in the greateſt part of the Paduan, Veroneſe, and Vicentine, lavas, we meet with an infinite quantity of white polygonal ſherl cryſtallizations; whoſe figure is as regular, and more polygonal, than the baſaltes.

Theſe are the principal arguments that have been adduced on the theory of baſaltes; and upon which the late celebrated Mr. Bergman expreſſes himſelf to the following purpoſe: "Ten years ago it was a general opinion, that the ſurface of the earth, together with the mountains, had been produced by moiſture. It is true that ſome declared fire to be the firſt original cauſe, but the greater number paid little attention to this opinion. Now, on the contrary, the opinion that ſubterraneous fire had been the principal agent gains ground daily; and every thing is ſuppoſed to have been melted, even to the granite. My own opinion is, that both the fire and water have contributed their ſhare in this operation; though in ſuch a proportion, that the force of the former extends much farther than the latter; and, on the contrary, that the fire has only worked in ſome parts of the ſurface of the earth. It cannot be doubted that there has been ſome connection betwixt the baſaltic pillars and ſubterraneous fire; as they are found in places where the marks of fire are yet viſible; and as they are even found mixed with lava, tophus, and other ſubſtances produced by fire. As far as we know, nature makes uſe of three methods to produce regular forms in the mineral kingdom. 1. That of cryſtallization or precipitation; 2. The cruſting or ſettling of the external ſurface of a liquid maſs while it is cooling; and, 3. The burſting of a moiſt ſubſtance while it is drying. The firſt method is the moſt common; but, to all appearance, nature has not made uſe of it in the preſent caſe. Cryſtals are ſeldom or never found in any quantity running in the ſame direction; but either inclining from one another, or, what is ſtill more common, placed towards one another

ther in ſloping directions. They are alſo generally ſeparated a little from one another when they are regular. The nature of the thing requires this, becauſe the ſeveral particles of which the cryſtals are compoſed muſt have the liberty of obeying that power which affects their conſtitution. The baſaltic columns, on the contrary, whoſe height is frequently from thirty to forty feet, are placed parallel to one another in conſiderable numbers, and ſo cloſe together that the point of a knife can hardly be introduced between them. Beſides, in moſt places, each pillar is divided into ſeveral parts or joints, which ſeem to be placed on one another. And indeed it is not uncommon for cryſtals to be formed above one another in different layers, while the ſolvent has been viſibly diminiſhed at different times: but then the upper cryſtals never fit ſo exactly upon one another as to produce connected priſms of the ſame length or depth in all the ſtrata taken together; but each ſtratum, ſeparately taken, produces its own cryſtals. Precipitation, both in the wet and dry way, requires that the particles ſhould be free enough to arrange themſelves in a certain order; and, as this is not practicable in a large melted maſs, no cryſtallizations appear, except on its ſurface or in its cavities. Add to this, that the baſaltes in a freſh fracture do not ſhew a plain ſmooth ſurface under the microſcope; but appear ſometimes like grains of different magnitude, and at other times reſemble fine rays running in different directions, which does not correſpond with the internal ſtructure of cryſtals. Hence the opinion of baſaltes being formed by cryſtallization either in the wet or dry method muſt become leſs probable; but it muſt not be omitted, that the ſpars exhibit a kind of cryſtallization, which at firſt ſight reſembles a heap of baſaltes, but upon a cloſer examination a very great difference is to be found. The form of the ſpar is every where alike, but the baſaltes differ from one another in ſize and the number of ſides. The former, when broken, conſiſts of many ſmall unequal cubes; but the baſalt does not ſeparate in regular parts.

"Nature's ſecond method of producing regular forms is that of cruſting the outer ſurface of a melted maſs. By a ſudden refrigeration, nature, to effect this purpoſe, makes uſe of polyhedrous and irregular forms. If we ſuppoſe a conſiderable bed which is made fluid by fire, and ſpread over a plain, it evidently appears that the ſurface muſt firſt of all loſe the degree of heat requiſite for melting, and begin to congeal. But the cold requiſite for this purpoſe likewiſe contracts the uppermoſt congealed ſtratum into a narrower ſpace; and conſequently cauſes it to ſeparate from the remaining liquid maſs, as the ſide expoſed to the air is already too ſtiff to give way. In this manner a ſtratum is produced, running in a parallel direction with the whole maſs; others are ſtill produced by the ſame cauſe in proportion as the refrigeration penetrates deeper. Hence we may very plainly ſee how a bed may be divided into ſtrata. In the ſame manner the refrigeration advances on the ſides; which conſequently divides the ſtrata into polyhedrous pillars, which can hardly ever be exactly ſquare, as the ſtrongeſt refrigeration into the inner parts of the maſs advances almoſt in a diagonal line from the corners. If we add to this, that a large maſs cannot be equal through its compoſition, nor every where liquid in the ſame degree, it will be eaſy to diſcover the cauſe of ſeveral irregularities. If the depth of the bed be very conſiderable in proportion to its breadth, priſmatic pillars without croſs-diviſions will be formed at leaſt lengthwiſe from the uppermoſt ſurface downwards.

"The third way is perfectly ſimilar to the preceding in its effect; but it is different from it by the maſs being ſoaked in water, and by the burſting of it aſunder, being the effect of the contraction while it is drying. If we ſuppoſe ſuch a bed to be ſpread over a level ſpace, the drying advances in the ſame manner as the refrigeration in the former caſe. This ſeparation into ſtrata properly happens when a conſiderable quantity of clay enters into the whole compoſition, becauſe the clay decreaſes more than any other kind of earth in drying. It is moſt probable therefore, that the pillars have been produced out of the baſaltic ſubſtance while it was yet ſoft, or at leaſt not too hard to be ſoftened by exhalations. If we therefore ſuppoſe a bed to be ſpread over a place where a volcano begins to work, it is evident that a great quantity of the water always preſent on ſuch occaſions muſt be driven upwards in exhalations or vapours; which, it is well known, poſſeſs a penetrating ſoftening power, by means of which they produce their firſt effect: but, when they are increaſed to a ſufficient quantity, they force this tough moiſt ſubſtance upwards; which then gradually falls, and during this time burſts in the manner above-deſcribed."

Mr. Kirwan is alſo of opinion, that the baſaltes owe their origin both to fire and water; they ſeem to have been at firſt a lava; but this, while immerſed in water, was ſo diffuſed and diſſolved in it with the aſſiſtance of heat, as to cryſtallize when cold, or coaleſce into regular forms. That baſaltes is not the effect of mere fuſion he concludes from comparing its form with its texture. Its form, if produced by fuſion, ought to be the effect of having flowed very thin; but in that caſe its texture ſhould be glaſſy: whereas it is merely earthy and devoid of cavities. Hence we may underſtand how it comes to paſs that lava perfectly vitrified, and even water, have been found incloſed in baſaltes.

M. Houel, in his *Voyage Pictureſque*, is at conſiderable pains to account for the origin of the different ſpecies of baſaltes he met with in the neighbourhood of Etna. "Some modern writers (ſays he) attribute the configuration of the baſaltes to the ſudden cooling of the lava in conſequence of the effects produced upon it by the coldneſs of ſea-water, when it reaches the ſea in a ſtate of fuſion. They ſuppoſe that the ſhock, which it then receives, is the cauſe of thoſe different configurations which this ſubſtance aſſumes; the moſt remarkable of which have been already mentioned. This aſſertion, however, ſeems to be ill founded. By conſidering the baſaltic rock repreſented in the Plate, we find that the pile is not in its original ſtate, and that the ſeries of columns is at preſent incomplete. It is very probable, that the ſpecies of clay found there, and which is extraneous to the baſaltes, has by ſome means taken poſſeſſion of its place; and it likewiſe appears, that not one of the baſaltes here deſcribed is entire. It ſeems incredible, however, that a maſs of matter reduced by fire to a ſtate of liquefaction, and flowing into the ſea, ſhould be ſuddenly changed into regular figures by the ſhock of coming into contact with cold water; and that all the figures which are thus formed ſhould be diſpoſed in the ſame manner with regard to one another. For, if we ſuppoſe that the water made its way into the cavity of the lava at the inſtant when it retreated backwards, then might the ſame quantity of water penetrate into the moſt remote parts of the maſs; and by that means prolong the cavity which it had begun to form when it firſt entered the maſs. The water then being lodged within this burning maſs, and being in a ſtate of dilatation, would have expelled whatever oppoſed it, and ſwelled the whole maſs in ſuch a manner as to form much larger interſtices than thoſe which appear between the baſaltic columns; ſince theſe are every where in cloſe contact with one another. Beſides, how could the ſudden cooling of the lava divide the upper part and ſides of ſuch an enormous maſs as exactly as if they had been caſt in a mould made on purpoſe?

"It remains alſo for thoſe who adopt the hypotheſis in queſtion to explain how the ſhock occaſioned by the cold water ſhould make itſelf felt beyond a certain depth; ſince the very firſt moment it comes into contact with the liquid lava it muſt ceaſe to be cold; for the lava cannot but communicate to it a greater degree of heat than it communicates of cold in return, as the water is more eaſily penetrable by the burning lava than the maſs of lava by the ſurrounding water. But farther, if at the firſt moment after the lava enters the water it were cooled and contracted, the water would ſoon prevent, by the contraction of its whole ſurface, any continuation of the effect which it had firſt occaſioned. This ſeems to be the great difficulty: for how is it poſſible for the water to extend its influence to the centre of any very conſiderable maſs; and, even ſuppoſing it to act at the centre, how could it be able to fix the common centre of all the different columns? Let us next conſider what a degree of ebullition muſt take place in the water when it receives ſuch a vaſt quantity of lava heated not only more intenſely than common fire, but than red-hot iron! Though that maſs, 100 fathoms in diameter, were to proceed from the bottom of the ſea; or, though it were immerſed in it, the degree of ebullition would ſtill be the ſame; and it is difficult to conceive what ſhock can be occaſioned by a cold which does not exiſt, on a maſs which burns, or cauſes to boil, whatever comes near it.

“ One peculiarity attending the baſaltes is, that it remains fixed in the receſs which it has once occupied. Another, not leſs eſſential, is its power of dividing itſelf in the midſt of any one of its hardeſt parts, and to form two diſtinct pieces, one of which is always concave and the other convex; a diviſion which ſeems the moſt ſingular curioſity of the whole. A third peculiarity might ſtill be found in the interior part of theſe columns, if we were to meet with any that had ſuffered more by the lapſe of time than thoſe already deſcribed; but it is impoſſible for all this to be effected by water. How can water, which is every where the ſame, and which may be expected always to produce the ſame effects, produce ſuch a variety on baſaltes by mere contact? The cauſe of all theſe varieties, therefore, ſeems to be this, that theſe lavas are originally compoſed of materials extremely different in their natures, and from which ſuch a variety of effects naturally proceed. The ſame ſpecies of matter, when actuated by the ſame cauſe, will conſtantly produce the ſame effects. This variety of effects, therefore, is much leſs owing to the influence of the water than to the variety of materials of which thoſe lavas are compoſed; and theſe are combined in different forms and quantities, according to the nature and quantity of the various materials which have been reduced by the volcano to a ſtate of fuſion.

“ The forms of the baſaltes therefore proceed from two cauſes. One of them, viz. the cooling, belongs indifferently to every ſpecies, independent of its meeting with water. The other is the diverſity of the quantities and of the materials of which the lava is compoſed. From theſe cauſes alone proceed all the beauties and varieties which are beheld with admiration in this claſs of bodies. Theſe take place, from the moſt irregular fractures in the lava, to thoſe which diſplay the greateſt exactneſs and ſymmetry. Every new erupted lava differs from thoſe which preceded it, and from thoſe which will follow. In the various principles of theſe lavas we muſt ſeek for the cauſes of thoſe cavities diſcoverable in the baſaltes, and for the cauſes which produce thoſe baſaltes, at the time when the matter of which it is compoſed contracted itſelf, and conſolidated all its parts. In the act of condenſation it appears to have formed various foci, around which we may diſtinguiſh the line which ſets bounds to the power of each of them; and this is the line which marks the ſpaces intervening between the different pieces; becauſe all of them are poſſeſſed of the ſame attractive force. The fire emitted by the lava, at the time the baſaltes is formed, produces upon it the ſame effect that is produced by the evaporation of the aqueous moiſture from thoſe bodies where water forms a part of the original conſtitution; which bodies harden in proportion as they become dry, by reaſon of the approach of their conſtituent parts to one another. The abſtraction of fire produces the ſame effect upon baſaltes, by ſuffering its component parts to come into cloſer union.

“ Whatever variety of forms we meet with among the baſaltes, and whatever diviſions and ſubdiviſions may be obſervable among theſe varieties, they are owing, 1. To the minuteneſs; 2. To the homogeneous nature; or, 3. To the diverſity among the particles which compoſe the baſaltes. Among the varieties already enumerated, we find reddiſh, earthy, ſoft, and porous, ſubſtances, together with the zeolite cryſtals. We ſee others extremely hard and compact, very finely grained, and containing likewiſe ſchoerl and zeolite cryſtals. Others are very hard and denſe, which appear to be a mixture of ſmall grey and white bodies; and of each of theſe colours many different ſhades, from lighter to darker, containing alſo zeolite cryſtals. Laſtly, we find ſome conſiſting of a matter ſimilar to clay, mixed with round black ſand. It may be objected, that the late eruptions of Etna afford no baſaltes, nor have they any diviſions ſimilar to thoſe above-mentioned. But to this we may reply, that, if they afford neither ſuch baſaltes, nor ſuch regular diviſions, the reaſon is, that neither their quantity, nor the ingredients of which they are compoſed, are ſuch as are neceſſary for the production of baſaltes: and for a proof of this we may refer to lavas of the moſt remote antiquity, which have no more reſemblance to baſaltes than thoſe that are more modern. Laſtly, an argument, to which no plauſible reply can be made, that the baſaltes are not formed by ſea-water is, that, in the year 1669, the lava of mount Etna ran into the ſea for two leagues and a half, without having the leaſt appearance of being converted into baſaltes.”

Upon the whole, an extenſive field of enquiry is here offered to the geological philoſopher in his attempts to aſcertain the alterations to which the globe has been ſubjected. The enquiries of the chemiſt equally co-operate in theſe reſearches, and tend likewiſe to ſhew what uſeful purpoſes this and other ſubſtances may be applied to. See CHEMISTRY. Bergman found than the component parts of various ſpecimens of baſaltes were, at a medium, 52 parts of ſilex, 15 pure clay, 8 chalk or mild calcareous earth, and 25 iron. The differences ſeem however to be conſiderable, for Faujais de St. Fond gives theſe proportions: 46 ſilex, 30 clay, 10 lime, 6 magneſia, and 8 iron.

BA'SAN, or BASHAN, anciently a territory beyond Jordan, mentioned in Scripture. By Joſephus, Euſebius, and Jerom, it is called *Batanæa*. On the entering of the Iſraelites into the land of Canaan, the whole of the country beyond Jordan, from that of the Moabites, or Arabia, as far as mount Herman and Lebanon, was divided into two kingdoms, viz. that of Sihon king of the Amorites, and of Og king of Baſan or Baſhan; the former to the ſouth, and the latter to the north. The kingdom of Sihon extended from the river Arnon and the country of Moab to the river Jabbok; which, running in an oblique courſe from the eaſt, was at the ſame time the boundary of the Ammonites, as appears from Numb. xxii. 24, and Deut. ii. 37, and iii. 16. The kingdom of Sihon fell to the lot of the Reubenites and Gadites, and Baſan to the half-tribe of Manaſſeh. To this was annexed a part of the hilly country of Gilead, and the diſtrict of Argob; yet ſo that Baſan continued to be the principal and greateſt part: but, after the Babyloniſh captivity, Baſan was ſubdivided; ſo that only a part was called *Batanæa* or *Baſan*, another *Trahonitis*, a third *Aurunitis* or *Ituræa*, and ſome part alſo *Gaulonitis*; but to ſettle the limits of each of theſe parts is a thing now impoſſible. Baſan was a country famous for its paſtures and breed of large cattle.

BASARU'CO, ſ. a ſmall baſe coin in the Eaſt Indies, made of tin. There are two ſorts of this coin, a good and a bad; the bad is one-ſixth in value lower than the good.

BASCIA'NO, a town of Italy, in the kingdom of Naples, and province of Abruzzo Ultra, four miles ſouth-ſouth-eaſt of Teramo.

BASCULUMBA'I, a town of Aſiatic Turkey, in the province of Natolia, thirty-ſix miles eaſt of Pergamo.

BASE, *adj.* [*bas*, Fr. *baſſo*, Ital. *baxo*, Span. *baſſus*, low Lat. βασις, Gr.] Mean; vile; worthleſs: of things.—Pyreicus was only famous for counterfeiting all *baſe* things, as earthen pitchers, a ſcullery; whereupon he was ſurnamed Rupographus. *Peacham.*—Of mean ſpirit; diſingenuous; illiberal; ungenerous; low; without dignity of ſentiment;

ſentiment: of perſons.—Since the perfections are ſuch in the party I love, as the feeling of them cannot come unto any unnoble heart; ſhall that heart, lifted up to ſuch a height, be counted *baſe?* *Sidney.*—Of low ſtation; of mean account; without dignity of rank; without honour.—If the lords and chief men degenerate, what ſhall be hoped of the peaſants and *baſer* people? *Spenſer.*

He, whoſe mind
Is virtuous, is alone of noble kind;
Though poor in fortune, of celeſtial race;
'Tis he commits the crime who calls him *baſe.* *Dryden.*

Baſe-born; born out of wedlock, and by conſequence of no honourable birth; illegitimate:

But ſee thy *baſe-born* child, thy babe of ſhame,
Who, left by thee, upon our pariſh came. *Gay.*

Applied to metals, without value. It is uſed in this ſenſe of all metal except gold and ſilver.—A guinea is pure gold, if it has nothing but gold in it, without any alloy or *baſer* metal. *Watts.*—Applied to ſounds; deep, grave. It is more frequently written *baſs*, though the comparative *baſer* ſeems to require *baſe.*—In pipes, the lower the note-holes be, and the further from the mouth of the pipe, the more *baſe* ſound they yield. *Bacon.*

BASE, *ſ.* [*bas*, Fr. *baſis*, Lat.] The bottom of any thing: commonly uſed for the lower part of a building:

What if it tempt thee tow'rd the flood, my lord?
Or to the dread ſummit of the cliff,
That beetles o'er his *baſe* into the ſea? *Shakeſpeare.*

The pedeſtal of a ſtatue.—Men of weak abilities in great place, are like little ſtatues ſet on great *baſes*, made the leſs by their advancement. *Bacon.*—That part of any ornament which hangs down, as houſings.—Phalaſtus was all in white, having his *baſes* and capariſon embroidered. *Sidney.*—The broad part of any body; as, the bottom of a cone. Stockings, or perhaps the armour for the legs, [from *bas*, Fr.]

Nor ſhall it e'er be ſaid that wight,
With gauntlet blue and *baſes* white,
And round blunt truncheon by his ſide,
So great a man-at-arms defy'd. *Hudibras.*

The place from which racers or tilters run; the bottom of the field; the *carcer*, the ſtarting-poſt:

He ſaid; to their appointed *baſe* they went;
With beating heart th' expecting ſign receive,
And, ſtarting all at once, the barrier leave. *Dryden.*

The ſtring that gives a baſe ſound:

At thy well-ſharpened thumb, from ſhore to ſhore,
The trebles ſqueak for fear, the *baſes* roar. *Dryden.*

An old ruſtic play, written by Skinner *bays*, and in ſome counties called *priſon bars.*

BASE, in chemiſtry. See BASIS.

BASE, or BASIS, in architecture, denothes the lower part of a column or pilaſter. See ARCHITECTURE.

BASE, in geometry, the loweſt ſide of any figure. Any ſide of a figure may be conſidered as its baſe, according to the poſition in which it may be conceived as ſtanding; but commonly it is underſtood as of the loweſt ſide: as the baſe of a triangle, of a cone, cylinder, &c.

To BASE, *v. a.* [*baſier*, Fr.] To embaſe; to make leſs valuable by admixture of meaner metals.—I am doubtful whether men have ſufficiently refined metals, which we cannot *baſe:* as, whether iron, braſs, and tin, be refined to the height. *Bacon.*

BASE COURT, [*baſſe cour*, Fr.] Any inferior court, that is not of record, as the court-baron, &c. *Kitch.* 95.

BASE COURT. Lower court; not the chief court that leads to the houſe; the back yard; the farm yard. *Obſolete:*

My lord, in the *baſe court* he doth attend,
To ſpeak with you. *Shakeſpeare.*

BASE ESTATE, [*bas eſtat*, Fr.] That eſtate which baſe tenants have in their lands. And baſe tenants, according to Lambard, are thoſe who perform villainous ſervices to their lords; but there is a difference between a baſe eſtate and villenage; for to hold in pure villenage is to do all that the lord will command him; and, if a copy-holder have but a baſe eſtate, he, not holding by the performance of every commandment of his lord, cannot be ſaid to hold in villenage. *Kitch.* 41. See TENURES.

BASE FEE, is a tenure in fee at the will of the lord, diſtinguiſhed from ſocage free tenure: but lord Coke ſays, that a baſe fee, or qualified fee, is what may be defeated by limitation, or on entry, &c. *Co. Lit.* 1, 18. *Baſſa tenura*, or baſe tenure, was a holding by villenage, or other cuſtomary ſervice, oppoſed to *alta tenura*, the higher tenure in *capite* or by military ſervice.

BASE LINE, in perſpective, denotes the common ſection of the picture and the geometrical plane.

BASE-MINDED, *adj.* Mean-ſpirited; worthleſs.—It ſignifieth, as it ſeemeth, no more than abject, *baſe-minded*, falſe-hearted, coward, or nidget. *Camden.*

BASE RING, of a cannon, is the great ring next behind the vent or touch-hole.

BASELE'CE, a town of Italy, in the kingdom of Naples, and province of Capitanata, ſeven miles ſouth-ſouth-weſt of Volturara.

BASEL'LA, *ſ.* [*a baſiis fucatis*, Lin. a Malabar name. *Rheede.*] In botany, a genus of the claſs pentandria, order trigynia, natural order holoraceæ. The generic characters are—Calyx: none. Corolla: ſeven-cleft, pitcher-ſhaped; the two outer diviſions broader, one within the reſt, converging above, fleſhy at the baſe. (Gærtner calls this the calyx, and ſays that the clefts are from five to ſeven.) Stamina: filaments five, ſubulate, equal, faſtened to the corolla, and ſhorter than it; antheræ roundiſh. Piſtillum: germ ſuperior, ſubglobular; ſtyles three, filiform, the length of the ſtamens; ſtigmas oblong, on one ſide the tops of the ſtyles. Pericarpium: corolla permanent, cloſed, fleſhy, counterfeiting a berry. Seed: ſingle, roundiſh.—*Eſſential Character.* Calyx none. Corolla ſeven-cleft; two oppoſite diviſions ſhorter, at length berried. Seed one.

Species. 1. Baſella rubra, or red Malabar nightſhade: leaves flat, peduncles ſimple. This has thick ſtrong ſucculent ſtalks and leaves, of a deep purple colour. The plant requires to be ſupported, for it will climb eight or ten feet high, when the plants are kept in a ſtove or glaſs-caſe, and produce a great number of ſide branches; but, if they are expoſed to the open air, they will not grow ſo large, nor will they perfect their ſeeds, except it be in very warm ſeaſons; when they are placed in the bark-ſtove, they will often live through the winter, and produce great quantities of flowers and ſeeds. The flowers of this plant have no great beauty, but the plant is preſerved for the odd appearance of the ſtalks and leaves. The fruit is a ſort of ſpurious berry, of a very dark red colour, flatted a little, furrowed croſſwiſe at top, formed out of the calyx (or corolla), and containing a ſingle nut, of a ſubglobular form, with five very obſcure ſtreaks, and a large umbilical aperture at the baſe. Medicus affirms, that the nut has naturally three cells, with one ſeed in each. It is a native of the Eaſt Indies, Amboyna, Japan, &c. and was cultivated in 1739 by Mr. Miller. From the berries of this ſort a beautiful colour is drawn; but, when uſed for painting, does not continue very long, but changes to a pale colour; though perhaps this beautiful colour might be fixed, ſo as to become very uſeful; for we have been aſſured, that the juice of theſe berries has been uſed for ſtaining callicoes in India.

2. Baſella alba, or white Malabar nightſhade. This has ſmaller ſtalks, the leaves are oblong and flaccid, and the flowers and fruit are ſmaller than the foregoing. It is a native of China and Amboyna.

3. Baſella lucida, or ſhining Malabar nightſhade: leaves ſubcordate; peduncles crowded, branching. This is a native of the Eaſt Indies. All the three ſorts have a very

near relation; they keep themſelves however diſtinct in our gardens.

4. Baſella nigra, or black Malabar nightſhade: leaves round-ovate, ſpikes lateral. Stem perennial; flowers purple and white, few, in ſimple long ſolitary ſpikes. This is a native both of China and Cochin, in the hedges and fences of their gardens.

Propagation and Culture. Theſe plants are propagated by ſeeds, which ſhould be ſown on a hot-bed in the ſpring; and, when the plants are fit to remove, they ſhould be each planted into a ſeparate pot filled with rich earth and plunged into the tan-bed, where they muſt be treated in the ſame manner as other tender exotics. They may alſo be propagated by cuttings, which ſhould be laid to dry a day or two after they are taken from the plants, before they are planted, that the wound may heal, otherwiſe they will rot. Theſe cuttings muſt be planted into pots filled with light freſh earth, and plunged into a moderate hot-bed of tanners' bark, where they will take root in a fortnight or three weeks time, when they ſhould be treated in the ſame manner as the ſeedling plants. But, as theſe riſe ſo eaſily from ſeeds, it is ſeldom they are propagated any other way, becauſe they are plants of ſhort duration. Theſe flower from June to autumn, and the ſeeds ripen in September and December. They will climb to a conſiderable height, and ſend forth a great number of branches, ſo that they ſhould have a place near the back of the ſtove, where they may be trained up to a trelliſe, or faſtened to the back of the ſtove, otherwiſe they will twiſt themſelves about whatever plants ſtand near them, and be very injurious to the other plants; whereas, when they are regularly trained to a trelliſe, they will have a good effect in adding to the variety.

BA'SELY, *adv.* In a baſe manner; meanly; diſhonourably:

The king is not himſelf, but *baſely* led
By flatterers. *Shakeſpeare.*

BA'SEMENT, *ſ.* in architecture, a continued baſe, extended a conſiderable length, as about a houſe, a room, or other piece of building.

BA'SENESS, *ſ.* Meanneſs; vileneſs; badneſs.—When a man's folly muſt be ſpread open before the angels, and all his *baſeneſs* ript up before thoſe pure ſpirits, this will be a double hell. *South.*—Vileneſs of metal.—We alleged the fraudulent obtaining his patent, and the *baſeneſs* of his metal. *Swift.*—Illegitimacy of birth:

Why brand they us
With baſe? with *baſeneſs?* baſtardy? *Shakeſpeare.*

Deepneſs of ſound.—The juſt and meaſured proportion of the air percuſſed toward the *baſeneſs* or trebleneſs of tones, is one of the greateſt ſecrets in the contemplation of ſounds. *Bacon.*

To BASH, *v. n.* [probably from *baſe.*] To be aſhamed; to be confounded with ſhame:

His countenance was bold, and *baſhed* not
For Guyon's looks, but ſcorful eye-glance at him ſhot.
Spenſer.

BASHA'RIANS, a ſect of Mahometans, being a branch or ſubdiviſion of the Motazalites. The Baſharians are thoſe who maintain the tenets of Baſhar Ebn Motamer, a principal man among the Motazalites, who varied, in ſome points, from the general tenets of the ſect, as carrying man's free agency to a great length, and even to the making him independent.

BASHAW', PASCHA, or PACHA, a Turkiſh governor of a province, city, or other diſtrict. All Egypt is, on the part of the grand ſeignior, governed by a baſhaw, who has in reality but little power; but ſeems to have been appointed for the purpoſe of communicating to his divan of beys, and to the divans of the ſeveral military ogiacs, the orders and commands of the grand ſeignior, and to ſee that they be executed by the proper officers. If he farms the country of the grand ſeignior, the fines that are paid, when any life drops upon the lands, belong to him; for the lands of Egypt belonged to the grand ſeignior; and the Porte ſtill looks on them as its own: but, the grand ſeignior's power being now loſt, they all go to the next heir; who muſt, however, be inveſted by the baſhaw, and is glad to compound for a ſmall ſum. The nature of the baſhaw's office requires him to be ever attempting means to cut off ſuch as are too aſpiring, or engaged in deſigns that may be any way prejudicial to the Porte. This often occaſions his own depoſition; but he is unconcerned about that, as his perſon is always ſacred; and the loſing his poſt is only a ſtep to higher preferment. Baſhaws include beglerbegs, and ſometimes ſangiachegs; though a diſtinction is often made, and the name baſhaw is appropriated to the middle ſort, or ſuch as have two enſigns or horſe-tails carried before them. Thoſe who have the honour of three tails are called *beglerbegs*; and thoſe who have only one, *ſangiachegs.* A baſhaw is made with the ſolemnity of carrying a flag or banner before him, accompanied with muſic and ſongs, by the mirialem, an officer on purpoſe for the inveſtiture of baſhaws. Baſhaw, uſed abſolutely, denotes the prime vizier; the reſt of the denomination being diſtinguiſhed by the addition of the province, city, or the like, which they have the command of; as the baſhaw of Egypt, of Paleſtine, &c. The baſhaws are the emperor's ſponges. We find loud complaints among Chriſtians of their avarice and extortion. As they buy their governments, every thing is venal with them. When glutted with wealth, the emperor frequently makes them a preſent of a bow-ſtring, and becomes heir to all their ſpoils. The appellation baſhaw is given by way of courteſy to almoſt every one of any figure at the grand ſeignior's court.

BASHE'E ISLANDS, five iſlands in the Chineſe Sea; three of them are large, and four of them inhabited; they are ſaid to be ſo called by Dampier, from the name of a liquor uſed by the inhabitants made of the juice of the ſugar-cane, and a ſmall black grain: this name was given to the moſt eaſterly iſland, and became general to them all: the productions are plantains, bananas, pine-apples, ſugar-canes, potatoes, yams, and cotton; their quadrupeds are goats and hogs. The names of the iſlands are Orange, Grafton, Monmouth, Iſle of Goats, and Baſhee or Bachi: they are ſituated to the ſouth of Formoſa.

BASHEE, or BACHI, an iſland in the Chineſe Sea, the moſt eaſterly of five, called from this the *Baſhee Iſlands*; the form appears circular, about two leagues in diameter. It has a town of the ſame name. Lat. 21. 45. N. lon. 121. 30. E. Greenwich.

BASH'FUL, *adj.* [This word, with all thoſe of the ſame race are of uncertain etymology. Skinner imagines them derived from *baſe*, or mean; Minſhew, from *verbaeſen*, Dut. to ſtrike with aſtoniſhment; Junius, from *βασις*, Gr. which he finds in Heſychius to ſignify 'ſhame.' The conjecture of Minſhew ſeems moſt probable.] Modeſt; ſhamefaced:

I never tempted her with word too large;
But, as a brother to his ſiſter, ſhew'd
Baſhful ſincerity, and comely love. *Shakeſpeare.*

Sheepiſh; viciouſly modeſt.—He looked with an almoſt *baſhful* kind of modeſty, as if he feared the eyes of man. *Sidney.*

Hence, *baſhful* cunning!
And prompt me, plain and holy innocence. *Shakeſpeare.*

BASH'FULLY, *adv.* Timorouſly; modeſtly.

BASH'FULNESS, *ſ.* Modeſty, as ſhewn in outward appearance.—Philoclea a little muſed how to cut the thread even, with eyes, cheeks, and lips, whereof each ſang their part, to make up the harmony of *baſhfulneſs.* *Sidney.*

Such looks, ſuch *baſhfulneſs*, might well adorn,
The cheeks of youths that are more nobly born. *Dryden.*

Vicious or ruſtic ſhame.—There are others who have not altogether ſo much of this fooliſh *baſhfulneſs*, and who aſk every one's opinion. *Dryden.*

BASHFULNESS was painted by the ancients as a virgin, clothed in white, as a token of chaſtity; veiled, to ſhew that a virtuous woman ought not to expoſe her beauty; in her hand a lily, as the emblem of modeſty; and ſtanding on a tortoiſe, to ſhew that chaſte women ſhould not be given to rambling.

BASIA'TIO, *ſ.* [from *baſio*, Lat. to kiſs.] Venereal connection between the ſexes.

BASIEN'TO, a river of Naples, which runs into the gulph of Tarento, eight miles eaſt of Bernaldi, in the province of Baſilicata.

BASIER', or BASI'RE, (Iſaac,) a learned divine, born in the iſle of Jerſey, in 1607. For ſome time he was maſter of the free-ſchool at Guernſey: but afterwards became chaplain to Thomas Morton, biſhop of Durham, who gave him the rectory of Stanhope, and the vicarage of Eggleſcliff, both in the county of Durham. In July, 1640, he had the degree of doctor of divinity conferred upon him at Cambridge, by mandate; and was incorporated in the ſame at Oxford, and made chaplain to Charles I. On the 12th of December, 1643, he was inſtalled into the ſeventh prebend in the church of Durham, to which he was collated by his generous patron biſhop Morton. But he did not long enjoy theſe preferments; for, in the beginning of the civil wars, having his livings ſequeſtered, he reſolved to go and propagate the doctrine of the Engliſh church in the eaſt, among the Greeks, Arabians, &c. Leaving therefore his family in England, he went firſt to Zante, an iſland near the Morea, where he had good ſucceſs in ſpreading among the Greek inhabitants the doctrine of the Engliſh church, the ſum whereof he imparted to them in a Greek tranſlation of our church catechiſm. The effect of it was ſo remarkable, that it drew envy and perſecution upon him from the Latins. This occaſioned his voluntary receſs into the Morea, where the metropolitan of Achaia prevailed upon him to preach twice in Greek, at a meeting of ſome of his biſhops and clergy, which was well taken. From thence, after he had paſſed through Apulia, Naples, and Sicily, again, (in which laſt, at Meſſina, he officiated for ſome weeks on-board a ſhip,) he embarked for Syria; and, after ſome months ſtay at Aleppo, where he had frequent converſation with the patriarch of Antioch, he left a copy of our church catechiſm, tranſlated into Arabic, the native language of that place. From Aleppo he went to Jeruſalem, and ſo travelled over all Paleſtine. At Jeruſalem he received much honour, both from the Greeks and Latins. Returning to Aleppo, he paſſed over the Euphrates, and went into Meſopotamia, where he intended to ſend the church catechiſm in Turkiſh to ſome of their biſhops, who were moſtly Armenians. This Turkiſh tranſlation was procured by the care of Sir Tho. Bendyſhe, the Engliſh ambaſſador at Conſtantinople. After his return from Meſopotamia, he wintered at Aleppo, where he received ſeveral courteſies from the conſul, Mr. Henry Riley. In the beginning of 1653, he departed from Aleppo, and came to Conſtantinople by land, being 600 miles, in the company of twenty Turks, who uſed him courteouſly; the rather, becauſe he was by the way phyſician to them and their friends. After his arrival at Conſtantinople, the French Proteſtants there deſired him to be their miniſter. And, though he declared to them his reſolution to officiate according to the Engliſh liturgy, yet they orderly ſubmitted to it, and promiſed to ſettle on him, in three reſpoſible men's hands, a competent ſtipend. Upon the reſtoration, Dr. Baſier was recalled to England; and returning, in the year 1661, he was reſtored to his preferments and dignities; and made chaplain in ordinary to Charles II. He wrote ſeveral books on divinity. Having, for many years after the reſtoration, quietly enjoyed his large revenues, he died on the 12th of October, in the year 1676, and in the ſixty-ninth of his age.

BA'SIL, [βασλευς, regal or kingly.] A proper name of men.

BASIL (St.) the Great, one of the moſt learned and eloquent doctors of the church, was born at Cæſarea in Cappadocia, about the year 328; and went to finiſh his ſtudies at Athens, where he contracted a friendſhip with St. Gregory Nazianzen. He returned to his native country in 355, where he taught rhetoric. Some time after, he travelled into Syria, Egypt, and Libya, to viſit the monaſteries of theſe countries; and the monaſtic life ſo much ſuited his diſpoſition, that upon his return home he reſolved to follow it, and he was the firſt inſtitutor thereof in Pontus and Cappadocia. His reputation became ſo great, that, upon the death of Euſebius biſhop of Cæſarea, in 370, he was choſen his ſucceſſor. It was with ſome difficulty that he accepted of this dignity; and, no ſooner was he raiſed to it, than the emperor Valens begans to perſecute him becauſe he refuſed to embrace the doctrine of the Arians. Baſil had a ſhare in all the diſputes which happened in his time in regard to the doctrine of the church; and died the 1ſt of January, 379. There have been ſeveral editions of his works in Greek and Latin. The beſt is that of father Garnier, in 3 vols. fol. St. Baſil's ſtyle is pure and elegant, his expreſſions are grand and ſublime, and his thoughts dignified and full of energy.

BASIL, BASLE, or BALE, the name of one of the cantons of Switzerland, before the irruption of the French, the ninth in order, and the firſt of thoſe called *New.* It is about eight leagues long, and rather more than five broad, bounded on the ſouth-weſt, ſouth, and ſouth-eaſt, by the cantons of Soleure; on the north-eaſt by Rhenfelden, one of the foreſt-towns; and on the north-weſt by France. This canton is fruitful in corn and wine, and the lower parts are fit for paſture; but the mountains are extremely barren. Here are many medicinal ſprings and baths, and the air is wholeſome and temperate.

BASIL, or BALE, (Biſhopric of,) late a principality of Germany, in the circle of the Upper Rhine, bounded on the north by the Sundgaw, on the weſt by France, on the ſouth and eaſt by the cantons of Baſil, Berne, and Soleure; beginning at the lake Bienne, and croſſing mount Jura, it reaches almoſt to the city of Baſil; about twenty-four leagues in length, and ſixteen in breadth. A defenſive alliance was made between the ſeven Roman Catholic cantons and the biſhop of Baſil in 1579, which was ſolemnly renewed in 1655, 1695, and 1712. According to the matricula of imperial contributions, as ordered in the year 1521, the biſhop ought to furniſh fifteen foot and two horſemen, or eighty-four florins monthly, at his own choice. The eccleſiaſtical juriſdiction extends to the dioceſes of Lauſanne, Conſtance, Straſburgh, Toul, and Beſançon, and contains ſix towns, of which Porentrui, the reſidence of the biſhop, and Delemont are the chief, and 170 ſmaller towns and villages. The ſee was firſt founded at Augſt, and from thence removed to Baſil: the biſhop is elected by the cantons of the church, of which there are eighteen, who ought to be of noble families, and Germans. After the canons have made their election, and their choice is confirmed by the pope, the emperor inveſts him in his temporalities. The country is fertile, and a great number of forges are employed in manufactures of iron and ſteel. The militia amount to 11,000, divided into nine regiments.

BASIL, the capital of the canton of that name, is the largeſt city in Swiſſerland, having 220 ſtreets, and ſix market-places or ſquares. Its environs are pictureſque and beautiful, conſiſting of a fine level tract of fields and meadows. The city ſtands on the banks of the Rhine, over which there is a handſome bridge, which divides it into the Upper and Lower town. It is thought by ſome to have riſen on the ruins of the old Auguſta Rauracorum. For its name of *Baſilia* it is indebted to Julian the Apoſtate, who would have it ſo called in honour of his mother Baſilina. It is fortified with walls, moats, towers, and baſtions, and contains ſeveral churches, beſides the cathedral, which is a fine Gothic ſtructure; a public granary and arſenal; a ſtately town-houſe, in which is an exquiſite painting of the ſufferings of Chriſt, by Holbein; and a ſtatue of Munatius Plancus, a Roman general, who, about fifty years before Chriſt, built the ancient city of Auguſta Rauracorum; an univerſity, founded by pope Pius II. in 1459; a gymnaſium; a ſtately palace, belonging to the margrave of Baden-Durlach; beſides a chamber of curioſities, ſeveral hoſpitals, &c. In the arſenal is ſhewn the armour in which Charles the Bald loſt his life, with the furniture of his horſe, and the kettle-drums and trumpets of his army. Oppoſite the French church, on a long covered wall, is painted the dance of death; where the king of terrors is repreſented as mixing with all ranks and ages, and complimenting them, in German verſes, on their arrival at the grave. Holbein, and the two Buxtorffs, were natives of this city; and the celebrated Eraſmus died here in 1536, and was buried in the great church. The clocks of the city are always kept an hour faſter than elſewhere; a circumſtance which ſome aſcribe to the following anecdote: About 400 years ago, the city was threatened with an aſſault by ſurpriſe. The enemy was to begin the attack when the large clock of the tower ſhould ſtrike one after midnight. The artiſt who had the care of the clock, being informed that this was the ſignal, cauſed the clock to be altered, and it ſtruck two inſtead of one; ſo the enemy, thinking they were an hour too late, gave up the attempt: and, in commemoration of this deliverance, all the clocks in Baſil have ever ſince been kept an hour too faſt. Leſt this account ſhould not be ſatisfactory, they ſhew, by way of confirmation, a head, which is placed near the clock, with the face turned to the road by which the enemy was to have entered. This head lolls out its tongue every minute, in the moſt inſulting manner; and was originally a piece of mechaniſm added by the clockmaker, who framed it in deriſion of the enemy, whom he had ſo dexterouſly deceived. It has been repaired, renewed, and enabled to thruſt out its tongue every minute for theſe 400 years, by the care of the magiſtrates, who are ſedulous in commemorating this event. Three melancholy epochas are marked in the annals of Baſil; an earthquake in the year 1356, which deſtroyed a great number of houſes; and two malignant fevers; one in 1314, which carried off 11,000 perſons, and another in 1564, when 7000 died. The principal manufactures of this place are ribbons, ſilk ſtuffs, painted linens, gloves, and cutlery. The biſhop has had no power in Baſil ſince the time of the reformation in 1519, when the biſhop and chapter were compelled to quit the town, and have from that time reſided at Porentrui. Baſil is fifteen poſts and a half ſouth of Straſburg, and fifty-nine and a quarter eaſt-ſouth-eaſt of Paris. Lat. 47. 40. N. lon. 25. 15. E. Ferro.

Ba'sil, *ſ.* The angle to which the edge of a joiner's tool is ground away.

Basil, *ſ.* The ſkin of a ſheep tanned. This ſhould more properly be written *baſen.*

Basil, *ſ.* in botany. See Clinopodium.

To Basil, *v. a.* To grind the edge of a tool to an angle. —Theſe chiſſels are not ground to ſuch a *baſil* as the joiner's chiſſels, on one of the ſides, but are *baſiled* away on both the flat ſides; ſo that the edge lies between both the ſides in the middle of the tool. *Moxon.*

BASILAN', one of the Philippine iſlands: twelve leagues in circumference, very fertile, eſpecially in fruit and rice, ſix leagues ſouth-weſt of Mindanao. Lat. 5. 50. N. lon. 121. 0. E. Greenwich.

BASILE'US, *ſ.* a title aſſumed by the emperors of Conſtantinople, excluſive of all other princes, to whom they give the title *rex,* 'king.' The ſame quality was afterwards given by them to the kings of Bulgaria, and to Charlemagne, from the ſucceſſors of which laſt they endeavoured to wreſt it back again. The title *baſileus* has been ſince aſſumed by other kings, particularly the kings of England, *Ego Edgar totius Angliæ* baſileus *confirmavi.* Hence alſo the queen of England was titled *baſilea* and *baſiliſſa.*

BA'SILI, a river of European Turkey, which runs into the gulf of Colokitia, four miles north-north-eaſt of Colokitia.

BASI'LIA, a town of Poland, in the palatinate of Volhynia, thirty-two miles weſt-north-weſt of Conſtantinow.

BASI'LIAN MONKS. Religious of the order of St. Baſil. That ſaint, having retired into a deſert, in the province of Pontus, founded a monaſtery for the convenience of his numerous followers: and, for the better regulation of this new ſociety, he drew up in writing the orders and rules he would have them follow. This new order ſoon ſpread all over the eaſt; nor was it long before it paſſed into the weſt. The rule of St. Baſil was approved by pope Liberius, the ſame year in which it was written; and afterwards by ſeveral other popes; and, in theſe laſt ages, by pope Gregory XIII. who approved the abridgment made of it by cardinal Beſſarion, in the pontificate of Eugenius IV. Some authors pretend, that St. Baſil, before he died, ſaw himſelf the ſpiritual father of more than 90,000 monks, in the eaſt only. But this order, which flouriſhed ſo greatly for more than three centuries, was afterwards conſiderably diminiſhed by hereſy, ſchiſm, and a change of empire. The greateſt ſtorm it felt, was in the reign of Conſtantine Copronymus; who perſecuted the monks of St. Baſil, impriſoning ſome, and baniſhing others; inſomuch that the monaſteries were abandoned, and ſpoiled of all their property. The hiſtorians of this order boaſt, that it has produced 1805 biſhops; and beatified, or acknowledged as ſaints, 3010 abbots, 11,805 martyrs, and an infinite number of confeſſors and virgins. They likewiſe place among the religious of the order of St. Baſil fourteen popes, ſome cardinals, and a great number of patriarchs, archbiſhops, and biſhops. They likewiſe boaſt of ſeveral emperors and empreſſes, kings and queens, princes and princeſſes, who have embraced this rule. This order was introduced in the weſt in 1057; and was reformed in 1569, by pope Gregory XIII. who united the religious of this order in Italy, Spain, and Sicily, into one congregation; of which the monaſtery of St. Saviour at Meſſina is the chief, and enjoys pre-eminence over the reſt. Each community has its particular rule, beſides the rule of St. Baſil, which is very general, and preſcribes little more than the common duties of a Chriſtian life.

BA'SILIC, or Basilica, *ſ.* [βασιλικη, royal.] In the ancient architecture, denotes a public hall or court of judicature, where the princes or magiſtrates ſat to adminiſter juſtice. The baſilics conſiſted of a great hall, with ailes, porticos, tribunes, and tribunals. The bankers alſo had one part of the baſilica allotted for their reſidence. The firſt baſilica was built at Rome by Cato the elder, whence it was called *Portia*; the ſecond was called *Opimia*; the third was that of Paulus, built at a great expence, and with much magnificence, whence it was called by ſome *regia Pauli*; another was built by Julius Cæſar, called *baſilica Julia*; of which Vitruvius tells us he had the direction. The baſilica Julia not only ſerved for the hearing of cauſes, but for the reception and audience of foreign ambaſſadors. It was ſupported by a hundred marble pillars in four rows, and enriched with decorations of gold and precious ſtones. In it were thirteen tribunals or judgment-ſeats, where the prætors ſat to adminiſter juſtice.

Basilic is uſed, in eccleſiaſtical writers, for a church. In which ſenſe, this name frequently occurs in St. Ambroſe, St. Auſtin, St. Jerom, Sidonius, Apollinaris, and other writers, of the fourth and fifth centuries. It is thought that the name was thus applied, from many of the ancient churches having been formed of the Roman halls mentioned above. In reality, on the converſion of Conſtantine, many of the ancient baſilicæ were given to the church, and turned to another uſe, viz. for Chriſtian aſſemblies to meet in, as may be collected from that paſſage in Auſonius, where, ſpeaking to the emperor Gratian, he tells him, the baſilicæ, which heretofore were wont to be filled with men of buſineſs, were now thronged with votaries praying for his ſafety. By which he muſt mean, that the Roman halls or courts were turned into Chriſtian churches: and hence, we conceive, the name baſilicæ came to be a general name for churches in after-ages. *Baſilic* is chiefly applied, in modern times, to churches of royal foundation; as thoſe of St. John de Lateran, and St. Peter of the Vatican at Rome, founded by the emperor Conſtantine. Baſilics were alſo little chapels built by the ancient Franks over the tombs of their great men, ſo called, as reſembling the figure of the ſacred *baſilicæ*, or churches. Perſons of inferior condition had only *tumbæ* or *porticuli* erected over them. By an article in the Salique law, he that robbed a *tumba* or *porticulus*, was to be fined fifteen ſolidi; but he that robbed a *baſilica*, thirty ſolidi.

BASI'LICA, *ſ.* The middle vein of the arm, ſo called by way of pre-eminence.

Basilica, or Basilicus, the ſame as *Regulus* or *Cor Leonis*, being a fixed ſtar of the firſt magnitude in the conſtellation Leo.

BASI'LICAL, or Basi'lic, *adj.* Belonging to the baſilic vein.—Theſe aneuriſms following always upon bleeding the *baſilic* vein, muſt be aneuriſms of the humeral artery. *Sharp.*

BASILICA'TA, a province of the kingdom of Naples, bounded on the north by the Capitanata and Bari, on the eaſt by the gulf of Tarento, on the ſouth by Principato Citra and Calabria Citra, and on the weſt by the Principato Ultra: about ſixty-ſix miles in length, and fifty in breadth. It produces corn, wine, oil, ſaffron, cotton, honey, and wax, in abundance. The principal towns are Melfi, Acerenza, Potenza, Turſi, and Venoſa.

BASI'LICI, *ſ.* a denomination given in the Greek empire to thoſe who carried the emperor's orders and commands.

BASI'LICON, *ſ.* [from βασιλικος, royal.] In pharmacy, a name given to ſeveral compoſitions to be found in ancient medical writers. Of late years it has been confined to three officinal ointments, diſtinguiſhed by their colours, viz. black, yellow, and green. The laſt reviſed pharmacopœia of the London college retains only the two firſt, under the names of *unguentum reſinæ flavæ*, and *unguentum picis*. See Pharmacy.

BA'SILICS, *ſ.* a name ſuppoſed to have been given by the emperor Leo to a collection of laws in honour of his father Baſilius Macedo, who began it in the year 867, and in the execution chiefly made uſe of Sabbathius Protoſpatharius, who carried the work as far as forty books. Leo added twenty books more, and publiſhed the work in the year 880. The whole, thirty years after, was corrected and improved by Conſtantine Porphyrogenitus, ſon of Leo; whence many have held him the author of the baſilica. Six books of the baſilica were tranſlated into Latin in 1557, by Gentian Hervetus. An edition of the Greek baſilics, with a Latin verſion, has been ſince publiſhed at Paris, in 1647, by Annib. Fabrottus, in ſeven volumes. There ſtill want nineteen books, which are ſuppoſed to be loſt. Fabrottus has endeavoured to ſupply in ſome meaſure the defect from the ſynopſis of the baſilica, and the gloſſes; of which ſeveral had been made under the ſucceeding emperors, and contained the whole Juſtinian law, excepting the ſuperfluities, in a new and more conſiſtent order, together with the later conſtitutions of the emperors poſterior to Juſtinian. The whole collection, conſiſting of ſixty books, was for that reaſon called εξηκονταβιβλος.

BASI'LICUM, *ſ.* in botany. See Ocymum.

BASI'LIDES, the father of Herodotus, who, with others, attempted to deſtroy Strattes tyrant of Chios. *Herodot.* A family who held an oligarchial power at Erythræ. *Strabo.* A prieſt of mount Carmel, who foretold many momentous events to Veſpaſian when he offered ſacrifices. *Tacitus.*

BASILI'DIANS, ancient heretics, the followers of Baſilides, an Egyptian, who lived near the beginning of the ſecond century. He was educated in the Gnoſtic ſchool, over which Simon Magus preſided; with whom he agreed that Chriſt was a man in appearance, that his body was a phantom, and that he gave his form to Simon the Cyrenian, who was crucified in his ſtead. We learn from Euſebius, that this hereſiarch wrote twenty-four books upon the goſpel, and that he forged ſeveral prophets; to two of which he gave the names *Barcaba* and *Barcoph*. We have ſtill the fragment of a Baſilidian goſpel. His diſciples ſuppoſed there were particular virtues in names; and taught, with Pythagoras and Plato, that names were not formed by chance, but naturally ſignified ſomething. Baſilides, to imitate Pythagoras, made his diſciples keep ſilence for five years together. The Baſilidians held much the ſame opinions with the Valentinians, another branch of the Gnoſtic family. They aſſerted, that all the actions of men are neceſſary; that faith is a natural gift, to which men are forcibly determined, and ſhould therefore be ſaved though their lives were ever ſo irregular. Irenæus and others aſſure us, they acted conſiſtently with their principle; committing all manner of impurities, in confidence of their natural election. They had a particular hierarchy of divine perſons, or Æons. Under the name *Abraxas*, they are ſaid to have worſhipped the ſupreme God, from whom, as a principle, all other things proceeded. There are ſeveral gems ſtill ſubſiſting, inſcribed with the name *Abraxas*, which were uſed by the Baſilidians as amulets againſt diſeaſes and evil ſpirits.

BASILIP'PUM, anciently a town of Bætica in Spain; now *Cantillana*, a citadel of Andaluſia, above Seville, on the Guadalquiver.

BA'SILISK, *ſ.* [*baſiliſcus*, Lat. of βασιλισκος, Gr. of βασιλευς, a king.] A ſpecies of lizard, for particulars of which ſee the generic title Lacerta.

Basilisk, in the older artillery, was a large piece of ordnance ſo called from its reſemblance to the fabulous reptile of that name. It threw an iron ball of 200lbs. weight; and was in great repute in the time of Solyman emperor of the Turks, in the wars of Hungary; but it is now grown out of uſe in moſt parts of Europe. Paulus Jovius relates the terrible ſlaughter made in a Spaniſh ſhip by a ſingle ball from one of theſe baſiliſks; after paſſing through the beams and planks in the ſhip's head, it killed upwards of thirty men. And Maffeus ſpeaks of baſiliſks made of braſs, each of which required 100 yoke of oxen to draw them. More modern writers alſo give the name baſiliſk to a much ſmaller and ſizeable piece of ordnance, made of fifteen feet long by the Dutch, but of only ten by the French, and carrying a ball of 48lb.

BASI'LIUS, ſurnamed the *Macedonian* emperor of the Greeks. He was a common ſoldier, and of an obſcure family in Macedonia, and yet raiſed himſelf to the throne; for, having pleaſed the emperor Michael by his addreſs in the management of his horſes, he became his firſt equerry, and then his great chamberlain. He at length aſſaſſinated the famous Bardas, and was aſſociated to the empire in 849. He held the eighth general council at Conſtantinople; depoſed the patriarch Photius, but in 858 reſtored him to the patriarchate; and declared againſt the popes, who refuſed to admit him into their communion. He was dreaded by his enemies the Saracens, whom he frequently vanquiſhed; and loved by his ſubjects, for his juſtice and clemency. He died in 886. Under his reign, the Ruſſians embraced Chriſtianity, and the doctrine of the Greek church. He ought not to be confounded with Baſilius the Young, who ſucceeded Zemiſces in 975, and after a reign of fifty years died in 1025.

BA'SIN, *ſ.* [*baſin*, Fr. *bacile*, *bacino*, Ital. It is often written *baſon*, but not according to etymology.] A ſmall veſſel to hold water for waſhing, or other uſes:

Let one attend him with a ſilver *baſin*,
Full of roſe-water, and beſtrew'd with flowers. *Shakeſ.*

A ſmall pond.—On one ſide of the walk you ſee this hollow *baſin*, with its ſeveral little plantations lying conveniently under the eye of the beholder. *Spectator.*—A part of the ſea incloſed in rocks, with a narrow entrance:

The ſpacious *baſins* arching rocks incloſe,
A ſure defence from ev'ry ſtorm that blows. *Pope.*

Any hollow place capacious of liquids. A dock for repairing and building ſhips. In anatomy, a round cavity ſituated between the anterior ventricles of the brain. A concave piece of metal, by which glaſs-grinders form their convex glaſſes. A round ſhell or caſe of iron placed over a furnace, in which hatters mould the matter of a hat into form.

Baſins of a balance, are the ſame with the ſcales; one to hold the weight, the other the thing to be weighed.

BA'SING, [of *baſing*, Sax. a coat of mail.] A village and caſtle of Hampſhire, famous for its obſtinate reſiſtance to the parliament army, in the civil wars of Charles I. This famous houſe or fortreſs belonged to the then marquis of Wincheſter, anceſtor of the duke of Bolton. This houſe, garriſoned by a reſolute band of old ſoldiers, under the command of the marquis, was a great curb to the parliament-party throughout that whole war; till, after a vigorous defence, it was taken, and the brave marquis in it, by Cromwell, who, in revenge for the obſtinate reſiſtance it made, put almoſt all the garriſon to the ſword, and burnt down the noble fabric to the ground, which, he ſaid, was fitter for the reſidence of an emperor than a ſubject; and the ſtrength of the building was ſuch as to reſiſt the battery of cannon in ſeveral attacks. It is incredible what booty the garriſon of this place picked up, lying, as they did, juſt on the great weſtern road, where they intercepted the carriers, plundered the waggons, and ſuffered nothing to paſs, to the great interruption of the trade of the city of London. Baſing is but a ſmall diſtance from Baſingſtoke.

BA'SINGE (John), more commonly known by the name of Baſingſtochius, or de Baſingſtoke, was born at Baſingſtoke in Hampſhire, and from thence took his furname. He was a perſon highly eminent for virtue and learning. He was a perfect maſter of the Latin and Greek languages, and alſo an eminent orator, a complete mathematician, a ſubtil philoſopher, and a ſound divine. The foundation of his great learning was laid in the univerſity of Oxford, and, for his farther improvement, he went to Paris, where he reſided ſome years. From thence he travelled to Athens, that early ſeat of the muſes, and the mother of all polite literature, where he made many curious obſervations, and perfected himſelf in his ſtudies, particularly in the knowledge of the Greek tongue. At his return to England, he brought over with him ſeveral curious Greek manuſcripts, and introduced the uſe of the Greek numeral figures into this kingdom. He became alſo a very great promoter and encourager of the ſtudy of that language, which was much neglected in theſe weſtern parts of the world: and, to facilitate it, he tranſlated from Greek into Latin a grammar, which he entitled The Donatus of the Greeks. He died in 1252.

BASINGSTO'KE, a market-town in Hampſhire, pleaſantly ſituated in a fine, open, and fruitful, country. It is a great thoroughfare from London to the weſt of England. It is a town-corporate, conſiſting of a high-ſteward, mayor, recorder, ſeven aldermen, ſeven burgeſſes, and two ſerjeants at mace. The town is very ancient, and on the downs near it a bloody battle was fought in 871, between the Saxons and the Danes. The remains of Holy Ghoſt chapel ſtand on a conſiderable eminence, which overlooks town, and appears to have been formerly a fine edifice. It was erected in the reign of Henry VIII. and is ſaid to have been curiouſly ornamented, and that the hiſtory of the prophets and Chriſt's apoſtles was repreſented on the roof; but it has been ſuffered to fall to ruin. There is a building, to the weſtward of the remains of the chapel, which has of late years been uſed for a ſchool. It is endowed with a good eſtate, given by Henry VIII. for the ſupport of a prieſt to inſtruct the youth of Baſingſtoke, and to perform divine ſervice. Baſingſtoke has a manufacture of druggets and ſhalloons, which employs a great number of poor. It has a large corn-market every Wedneſday. Alſo four fairs in the year, viz. on Eaſter-Tueſday, for ſheep; Whit-Wedneſday and Michaelmas-day, for cattle, &c. and on the 23d of September, for ſheep. On the 10th of October, it has a ſtatute for ſervants. It has a navigable canal to the river Wey, which opens a communication by water from thence to London, and has already proved of conſiderable advantage to the town and neighbourhood, as well as to the country through which it paſſes. Baſingſtoke is diſtant from Wincheſter eighteen miles, Andover eighteen, Reading ſixteen, Newbury ſixteen, Alresford twelve, Alton ten, Odiham ſeven, Overton eight, and forty-five from London.

In the neighbourhood of Baſingſtoke is Kempſhot, the ſeat of his royal highneſs the prince of Wales, who ſpends much of his time there, in ſhooting and hunting. At the diſtance of one mile is Hackwood, late the ſeat of his grace the duke of Bolton, lord-lieutenant of the county of Hants, a moſt elegant, rural, and romantic, ſituation; celebrated in a well-written poem, entitled, 'Hackwood Park.' The park is about eight miles in circumference; and before each front a fine ſheet of water agreeably ſtrikes the beholder. The park is well wooded and watered, and the connoiſſeur has frequent opportunities of gratifying his taſte in this delightful ſpot, there being many very fine ſtatues, urns, obeliſks, &c. agreeably diſperſed; among which a fine equeſtrian ſtatue of George I. particularly claims attention. The houſe is a ſtately and magnificent building; the apartments are capacious, and the diſpoſition of them diſplays the abilities of the architect. The furniture is elegant, and the pictures, which are very numerous, are the performances of ſome of the beſt Flemiſh and Italian maſters. The adjacent country, though ſurrounded with woods, is rich in paſture. Many thouſand acres of the adjoining downs have been lately incloſed, and now produce abundant crops of all kinds of grain.

BASIOGLOS'SUS, *ſ.* [from *βασις*, the baſe, and *γλωσση*, the tongue.] A muſcle ariſing from the baſe of the os hyoides. See ANATOMY.

BASIOPHARYN'GÆUS, *ſ.* [from *βασις*, the foundation, and *φαρυγξ*, the fauces.] A muſcle, ſo called from its poſition.

BA'SIS, *ſ.* [from *βαινω*, Gr. to proceed from, or rather from בסיס Chal.] The foundation or ſupport of any thing, as of a building.—It muſt follow, that Paradiſe, being raiſed to this height, muſt have the compaſs of the whole earth for a *baſis* and foundation. *Raleigh.*—The loweſt of the three principal parts of a column, which are the *baſis*, *ſhaft*, and *capital*. That on which any thing is raiſed. The ground-work or firſt principle of any thing:

> The friendſhips of the world are oft
> Confederacies in vice, or leagues of pleaſure;
> Ours has ſevereſt virtue for its *baſis*. *Addiſon.*

BASIS, or BASE, in geometry. See BASE.

BASIS, or BASE, in chemiſtry, any body diſſolved by another body, which it receives and fixes, and with which it forms a compound, is called the *baſis* of that compound. Chemical philoſophers have long been in the habit of conſidering the acids as bodies poſſeſſing an activity peculiar to themſelves; and have, in general, overlooked the circumſtance, that an equal activity, or power of attraction, muſt exiſt in thoſe ſubſtances with which they combine, and are by that means deprived of their diſtinctive properties. The ſubſtances with which acids enter into combination, and are ſaid to be neutralized, are for the moſt part leſs volatile than the acids themſelves; and accordingly communicate a degree of fixity to thoſe acids. From both theſe reaſons, writers have been led to diſtinguiſh the ſubſtance which is united with any acid, by the name of the *baſis* of the compound, or neutral ſalt. As a conſiderable advantage, with regard to chemical language, is obtained from the uſe of this term, which is not altogether improper, it is ſtill much uſed by chemical authors. Thus, we ſay, ſalts with earthy baſes, ſalts with alkaline baſes, or ſalts with metallic baſes, accordingly as the caſe may be; by which it is to be underſtood, that theſe ſubſtances are united with an acid. And ſo, likewiſe, the expreſſions, vitriolic ſalt with baſis of clay, nitrous ſalt with baſis of vegetable alkali, marine ſalt with baſis of iron, and other ſimilar expreſſions, are uſed to advantage by chemical writers who wiſh to deſcribe combinations, and at the ſame time to avoid the uſual names which in many inſtances refer to theories either exploded or doubtful.

To BASK, *v. a.* [*backeren,* Dut. Skinner.] To warm by laying out in the heat: uſed almoſt always of animals:

'Tis all thy buſineſs, buſineſs how to ſhun,
To *baſk* thy naked body in the ſun. *Dryden.*

To Bask, *v. n.* To lie in the warmth:

Some in the fields of pureſt ether play,
And *baſk* and whiten in the blaze of day. *Pope.*

BAS'KERVILLE (John), eminent in letter-founding and printing. He was born in 1706 at Woverly in Worceſterſhire, and was heir to an eſtate of 60l. a-year; the whole of which he allowed to his parents till their death. In his early years he conceived a love for fine writing, and commenced writing-maſter, in Birmingham, when about twenty years of age. The improvements in different manufactures ſoon drew his attention, and he applied to the japan buſineſs, which he carried on with ſucceſs. In 1750 he began letter-founding, the bringing of which to perfection coſt him much labour and expence. In a few years he proceeded to printing; and his firſt work was an edition of Virgil, royal quarto, which now ſells at a high price. In a ſhort time he obtained leave from the univerſity of Cambridge to print a Bible in royal folio, and editions of the Common Prayer in three ſizes; for which he paid a large ſum to that univerſity. He afterwards printed Horace, Terence, Catullus, Lucretius, Juvenal, Salluſt, and Florus, in royal quarto; Virgil in octavo; and likewiſe ſome of the Engliſh claſſics. The merit of theſe performances is obvious from the eſtimation in which they are held; and Mr. Baſkerville's name is deſervedly ranked among thoſe who, in modern times, have brought the art of printing to its greateſt perfection. He died in July, in the year 1775.

BAS'KET, *ſ.* [*baſged,* Welſh; *baſcauda,* Lat.] A veſſel made of twigs, ruſhes, or ſplinters, or ſome other ſlender bodies interwoven:

Thus, while I ſung, my ſorrows I deceiv'd,
And bending oſiers into *baſkets* weav'd. *Dryden.*

As a meaſure, it denotes an uncertain quantity; as, a baſket of medlars is two buſhels, of aſafœtida from twenty to fifty pounds weight, &c. The ancient Britons were noted for their ingenuity in weaving baſkets, which they exported in large quantities. Theſe baſkets were of very elegant workmanſhip, and bore a high price; and are mentioned by Juvenal among the extravagant expenſive furniture of the Roman tables in his time:

Adde et baſcaudas et mille eſcaria.

Add baſkets, and a thouſand other diſhes.

That theſe baſkets were manufactured in Britain, we learn from the following epigram of Martial:

Barbara de pictis veni baſcauda Britannis,
Sed me jam mavult dicere Roma ſuam.

A baſket I, by painted Britons wrought,
And now to Rome's imperial city brought.

Baskets of Earth, in the military art, called by the French *corbeilles,* are ſmall baſkets uſed in ſieges, on the parapet of a trench, being filled with earth. They are about a foot and a half high, about a foot and a half in diameter at the top, and eight or ten inches at bottom; ſo that, being ſet together, there is a ſort of embraſures left at their bottoms, through which the ſoldiers fire, without expoſing themſelves to the enemy.

Basket-Fish, a name given by the fiſhermen of North America, to the *caput Meduſæ.* See Asterias, p. 301 of this volume.

Basket-Hilt, *ſ.* [from *baſket* and *hilt.*] A hilt of a weapon ſo made as to contain the whole hand, and defend it from being wounded:

His puiſſant ſword unto his ſide,
Near his undaunted heart, was ty'd:
With *baſket-hilt* that would hold broth,
And ſerve for fight and dinner both. *Hudibras.*

Basket-Salt, that made from ſalt-ſprings, being purer, whiter, and compoſed of finer grains, than the common brine-ſalt. See Salt.

Basket-Woman, [from *baſket* and *woman.*] A woman that plies at markets with a baſket, ready to carry home any thing that is bought.

BASKING SHARK. See Squalus.

BASNA'GE (James), the learned paſtor of the Walloon church at the Hague, was born at Rouen in Normandy Auguſt 8, 1653. He went to Geneva, where he began his divinity ſtudies under Meſtrezat, Turretin, and Tronchin; and finiſhed them at Sedan, under the profeſſors Jurieu and le Blanc de Beaulieu. He then returned to Rouen, where was received as miniſter, September 1676; and remained till the year 1685. The exercise of the Proteſtant religion being ſuppreſſed at Rouen, he obtained leave of the king to retire to Holland, where Heinſius got him choſen one of the paſtors of the Walloon church at the Hague, intending not only to employ him in religious but in ſtate affairs. He was employed in a ſecret negociation at the congreſs of Utrecht; and he executed it with ſo much ſucceſs, that he was afterwards entruſted with ſeveral important commiſſions. The abbé du Bos, who was at the Hague in 1716, to negociate a defenſive alliance between France, England, and the States General, was ordered by the duke of Orleans, regent of France, to apply himſelf to M. Baſnage, and to follow his advice: they accordingly acted in concert, and the alliance was concluded in 1717. He wrote, 1. The Hiſtory of the Religion of the Reformed Churches. 2. Jewiſh Antiquities. 3. Hiſtory of the Old and New Teſtament; and many others. He died in 1723.

Basnage (Henry), Sieur de Beauval, ſecond ſon to Henry Baſnage, and brother to James mentioned in the preceding article. He applied himſelf to the ſtudy of the law, and was admitted advocate in the parliament of Rouen in 1679. He practiſed with great reputation till the year 1687, when the revocation of the edict of Nantz obliged him to fly to Holland, where he compoſed the greateſt part of his works, and died there in March 1710. His chief work is *Hiſtoire des Ouvrages des Sçavans.* Rotterd. 24 vols. in duodecimo.

BA'SON. See Basin.

BASO'VA, a town of Siberia, on the river Lena; twenty miles ſouth of Orſenga.

BAS'QUES (Les), a country of France, before the revolution, ſituated between the ſea, Spain, the river Adour, and Bearn.

BASQUE'VILLE, a town of France, in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Dieppe: three leagues ſouth-ſouth-weſt of Dieppe, and ſeven and a half north-north-weſt of Rouen.

BAS'RAH. See Bassora.

BASROU'CHE, a town of Perſia, in the province of Taberiſtan: twenty-ſeven miles weſt of Farabat.

BASS, *ſ.* [Suppoſed by Junius to be derived, like *baſket,* from ſome Britiſh word ſignifying *a ruſh*; but perhaps more properly written *bos,* from the French *boſſe.*] A mat uſed in churches.

Bass, *ſ.* [Of uncertain etymology; whether from the Greek word βασις, 'a foundation;' or from the Italian adjective *baſſo,* ſignifying 'low.'] The loweſt in the four parts of muſic. Of all the parts it is the moſt important, and it is upon this that the chords proper to conſtitute a particular harmony are determined. Hence the maxim among muſicians, that, when the baſs is properly formed, the harmony can ſcarcely be bad.

Thorough-Bass is the harmony made by the baſs-viols, or theorbos, continuing to play both while the voices ſing and the other inſtruments perform their parts, and alſo filling up the intervals when any of the other parts ſtop.

It played by figures marked over the notes, on the organ, ſpinet, harpſichord, &c. and frequently ſimply and without figures on the baſs-viol and baſſoon. *Counter-baſs* is a ſecond or double baſs, where there are ſeveral in the ſame concert.

Bass-Viol, a muſical inſtrument of the like form with that of a violin, but much larger. It is ſtruck with a bow as that is; has the ſame number of ſtrings; and has eight ſtops, which are ſubdivided into ſemi-ſtops. Its ſound is grave, and has a noble effect in a concert.

Bass (Iſle of), a rock, about a mile in circumference, in the mouth of the Frith of Forth, at a ſmall diſtance from the town of North Berwick in Eaſt Lothian. It is ſteep and inacceſſible on all ſides, except to the ſouth-weſt; and even there it is with great difficulty that a ſingle man can climb up with the help of a rope or ladder. It was formerly kept as a garriſon. A party of king James's adherents ſurpriſed it at the revolution, and it was the laſt place in the three kingdoms that ſubmitted to the new government. In ſummer, this remarkable rock, which fearfully overhangs the ſea, and riſes to a great height in form of a cone, is quite covered with ſea-fowl which come hither to breed. The chief of theſe are the ſolon geeſe, which arrive in June, and retire in September. The force of the tides has now almoſt worn an aperture quite through this rock.

BAS'SA. See Bashaw.

BAS'SAN (James du Pont), a celebrated Venetian painter, born in 1510. His ſubjects generally were peaſants and villagers, buſy at their rural occupations, according to the various ſeaſons of the year; cattle, landſcapes, and hiſtorical deſigns. His touch is free and ſpirited; and the diſtances in his landſcapes are always true. His works are ſpread all over Europe: and many of them were purchaſed by Titian. They are more readily known than thoſe of moſt other painters; from the ſimilitude of characters and countenances, in the figures and animals; from the taſte in the buildings, utenſils, and draperies; and, beſides, from a violet or purple tint that predominates in every one of his pictures. Yet the genuine pictures of his hand are not ſo eaſily aſcertained; becauſe he frequently repeated the ſame deſign, and his ſons were moſtly employed in copying the works of their father, which he ſometimes retouched. As he lived to be very old, he finiſhed a great number of pictures; though the real pictures of Baſſan are not commonly met with. Many of thoſe which are called originals by purchaſers as well as dealers, being at beſt no more than copies by his ſons, who were far inferior to him; or perhaps by ſome painters of ſtill meaner abilities. But the true pictures of Baſſan always bear a conſiderable price if they happen to be undamaged. He died in 1592, aged eighty-two. Francis and Leander, his ſons, both diſtinguiſhed themſelves in the ſame art.

BASSA'NI (Giovanni Battiſta), of the cathedral church of Bologna in 1650, was a very voluminous compoſer of muſic, having given to the world thirty-one different works. He is equally celebrated both as a compoſer for the church and for concerts; and was beſides a celebrated performer on the violin, and, as it is ſaid, taught Corelli on that inſtrument. His compoſitions conſiſt of maſſes, pſalms, motets with inſtrumental parts, and ſonatas for violins: his fifth opera in particular, containing twelve ſonatas for two violins and a baſs, is much eſteemed; it is written in a ſtyle wonderfully grave and pathetic, and abounds with evidences of great learning and fine invention. The firſt and third operas of Corelli are apparently formed after the model of this work. Baſſani was one of the firſt who compoſed motets for a ſingle voice with accompaniments of violins.

BASSA'NO, a town of Italy, in the Treviſano, on the Brenta: twelve miles north of Vicenza. A battle was fought near this town, between the Auſtrians and the republican French, in the beginning of September, 1796, in which the republicans were victorious, and took five hundred priſoners.

Bassano, a town of Italy, near which Dolabella defeated the Etruri and the Boij: three miles weſt of Orta.

BASSAN'TIN (James), a Scottiſh aſtronomer of the ſixteenth cetury, born in the reign of James IV. of Scotland. He was a ſon of the laird of Baſſantin in the Merſe. After finiſhing his education at the univerſity of Glaſgow, he travelled through Germany and Italy, and then ſettled in the univerſity of Paris, where he taught the mathematics with great applauſe. Having acquired ſome property, he returned to Scotland in 1562, where he died ſix years after. From his writings it appears he was no inconſiderable aſtronomer; but, according to the faſhion of the times, he was addicted to judicial aſtrology. It was doubtleſs to him that Sir James Melvil alludes in his Memoirs, when he ſays that his brother Sir Robert, when he was uſing his endeavours to reconcile the two queens Elizabeth and Mary, met with one Baſſantin, a man learned in the high ſciences, who told him, "that all his travel would be in vain; for, ſaid he, they will never meet together; and next, there will never be any thing but diſſembling and ſecret hatred for a while, and at length captivity and utter wreck to our queen from England." He added, "that the kingdom of England at length ſhall fall, of right, to the crown of Scotland: but it ſhall coſt many bloody battles; and the Spaniards ſhall be helpers, and take part to themſelves for their labour." Baſſantin's works are, 1. *Aſtronomia Jacobi Baſſantini Scoti, opus abſolutiſſimum, &c.* Genev. 1599, fol. This is the title given it by Tornœſius, who tranſlated it into Latin from the French, in which language it was firſt publiſhed. 2. *Paraphraſe de l'Aſtrolabe.* Lyons 1555. Paris 1617, 8vo. 3. *Mathematica Genethliaca.* 4. *Arithmetica.* 5. *Muſica ſecundum Platonem.* 6. *De Matheſi in Genere.*

BASSA'RIDES, prieſteſſes of Bacchus; ſo called from Baſſarius, the ſurname of Bacchus. *Perſius.*

BASSA'RIUS, a ſurname of Bacchus. It is pretended that this is the cry which was heard at the feſtivals of this god; but it is moſt likely that this word ſignifies no more than grape-gatherer.

BAS'SE, *ſ.* [*baiſer*, Fr. *baſium*, Lat.] A kiſs. *Obſolete.*

BASSE'E (La), a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Lille: formerly a place of conſiderable ſtrength, but was diſmantled by Louis XIV. and it is ſituated on the Duele: two leagues eaſt of Bethune, and three and three quarters ſouth-weſt of Lille.

BASSEEN', a town of Hindoſtan, on the weſtern coaſt of the peninſula of India, in the country of Baglana; twenty miles north of Bombay, and 152 ſouth of Surat.

BASSEN'TO, a river of Italy, in the kingdom of Naples, which runs into the Grati, near Coſenza.

BAS'SERSTORF, a town of Swiſſerland, in the canton of Zurich: four miles north-eaſt of Zurich.

BAS'SET, or Basette, *ſ.* A game of chance, with cards, ſaid to have been invented by a noble Venetian, for which he was baniſhed. This is the game now called *faro*, ſo much the vogue in England. See Faro.

Basset (Peter), gentleman of the privy-chamber to Henry V. was a conſtant attendant on that brave prince, and an eye-witneſs of his moſt glorious actions both at home and abroad; all which he particularly deſcribed in a volume intitled 'The Acts of King Henry V.' which remains in MS. in the college of heralds.

BASSE'TERRE, a general name given by the French to the low lands of the Weſt-India iſlands.

Basseterre Town, a ſeaport town on the ſouth coaſt of the iſland of St. Chriſtopher in the Weſt Indies, and capital of the iſland, ſituated at the mouth of the river, opening into a bay, called *Baſſeterre Road*; the town contains about 800 houſes, and is defended by three batteries. Lat. 17. 24. N. lon. 62. 37. W. Greenwich.

Basseterre Town, a ſeaport town on the ſouth-weſt coaſt of the iſland of Guadaloupe, defended by a citadel. Lat. 16. 5. N. lon. 61. 58. W. Greenwich.

BAS'SETING, *ſ.* In the coal-mines, denotes the riſe of the vein of coal towards the ſurface of the earth, till it come within two or three feet of the ſurface itſelf. This is alſo called by the workmen *croping*; and ſtands oppoſed to *dipping*, which is the deſcent of the vein to ſuch a depth that it is rarely, if ever, followed to the end.

BAS'SIA, *ſ.* [Named by Koenig, in honour of Ferdinando Baſſi, curator of the botanic garden at Bologna.] In botany, a genus of the claſs dodecandria, order monogynia, natural order dumoſæ. The generic characters are—Calyx: perianthium four-leaved; leaflets coriaceous, ovate, permanent. Corolla: monopetalous, bell-ſhaped; tube inflated, ovate, fleſhy; border ſhorter than the tube, eight-parted; diviſions ovate, almoſt upright. Stamina: filaments ſixteen; eight below the jaws, and eight in the middle of the tube; antheræ linear, ſaggitate, acute, villoſe on the inſide, ſhorter than the corolla. Piſtillum: Germ ſuperior, ovate; ſtyle ſubulate, twice as long as the corolla; ſtigma acute. Pericarpium: drupe fleſhy, milky. Seeds: nuts five, oblong, three cornered.—*Eſſential Character.* Calyx four-leaved. Corolla eight-cleft; tube inflated. Staminas ſixteen. Drupe five-ſeeded.

Species. 1. Baſſia longifola: leaves ovate-lanceolate, peduncles axillary. This is a lofty tree, with the outermoſt branches recurved, thickiſh and covered with a grey down. Leaves on the extreme branches alternate, a foot long; berry fleſhy, milky, with five ſeeds, one in each cell, very ſmooth, ſhining, yellow with a white band. Native of Malabar and Ceylon.

2. Baſſia dubia.

3. Baſſia obovata: leaves obovate, peduncles heaped, terminating. Native of the iſle of Tanna, in the South Seas.

BAS'SING, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Dieuze: one league and a half north-eaſt of Dieuze.

BASSOON', or BASSON, *ſ.* [*baſſon*, Fr.] A muſical inſtrument of the wind kind, blown with a reed, and furniſhed with eleven holes, which are ſtopped like other large flutes; its diameter at bottom is nine inches, and it ſerves for the baſs in concerts of hautboys, &c.

BASSO'RA, or BASRAH, a city of Aſia, in the Arabian Irak, ſituated on a navigable canal, weſt of the Euphrates, built in the year 656, by order of Omar, the ſecond caliph, to hinder the commerce of the Perſians; this canal is navigable for veſſels of fifty tons to the Euphrates, and thence to the Gulf of Perſia, from which it lies about fifteen leagues north-weſt. It is a place of very conſiderable trade, veſſels from Europe and Aſia are always found in the port. The troubles of Perſia were of conſiderable advantage to the trade of Baſſora. Merchants of Arabia, Turkey, Armenia, Greece, Jews, and Indians, reſide there, the Engliſh and Dutch have their conſuls, and their ſhips come from India loaded with merchandize: thoſe from Bengal, which arrive from the month of March to June, bring white linens, ſilks, muſlins, baſtard-ſaffron, ſandal, and other woods, benzoin, varniſh, rice, lead, European tin, and iron. From the coaſt of Coromandel they bring thicker cloths, white or blue, with which the Arabians clothe themſelves. From the coaſt of Malabar they bring cardamom ſeeds, pepper, &c. From Surat all kinds of gold and ſilver ſtuffs, turbans, blue cloths, indigo, and ſteel, of which the Perſians are the chief purchaſers, to make their ſabres. The principal merchandizes of the Dutch are ſpices and coffee from Java. The veſſels which arrive from Surat belong chiefly to Muſſulman merchants, but the Europeans are the moſt numerous. Some Arabians bring ſlaves, others bring pearls. The neighbouring countries furniſh alſo merchandize for exchange; the moſt conſiderable of which are the ancient copper of Perſia, grain when the exportation is allowed, dates, wine, and dry fruits of Perſia, &c. Baſſora rather belongs to the Arabs than the Turks, and the language of the former is chiefly ſpoken. The prince pays but little reſpect to the Ottoman court. As to religion, beſides Mahometans, there are Syrian Jacobites and Neſtorians, and monks from Europe; there are beſides, ſome modern Sabeans, whom they call *diſciples of John.* The number of inhabitants is computed to be 50,000; the town is of very great extent, and ſurrounded by a wall of clay, ſaid to be twelve miles in circumference: 210 miles ſouth-weſt of Iſpahan, and 606 ſouth-eaſt of Aleppo. Lat. 29. 30. N. lon. 44. 30. E. Greenwich.

BAS'SO RELIE'VO, or BASS-RELIEF, *ſ.* A piece of ſculpture, where the figures or images do not protuberate, or ſtand out, far above the plane on which they are formed. Whatever figures or repreſentations are thus cut, ſtamped, or wrought, ſo that not the entire body, but only part of it, is raiſed above the plane, are ſaid to be done in *relief* or *relievo*; and when that work is low, flat, and but little raiſed, it is called *low relief.* When a piece of ſculpture, a coin, or a medal, has its figure raiſed ſo as to be well diſtinguiſhed, it is called *bold,* and we ſay its *relief is in a ſtrong and bold ſtyle.*

BASSOU'ES, a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Mirande: five leagues weſt-ſouth-weſt of Auch.

BASSO'VIA, *ſ.* in botany, a genus of the claſs pentandria, order monogynia. The generic characters are—Calyx: perianthium one-leafed, permanent, five-parted; parts ovate, acute. Corolla: one-petalled; tube very ſhort; border five-cleft, ſpreading; clefts ovate, acute, larger than the calyx. Stamina: filaments five, inſerted into the tube of the corolla, and oppoſite to its clefts; antheræ ovate. Piſtillum: germ ovate, ſitting on a glandule; ſtyle ſhort; ſtigma thickiſh, obtuſe. Pericarpium: Berry ovate, knobbed. Seeds: very many, kidney-ſhaped, girt with a membrane, neſtling in pulp.—*Eſſential Character.* Corolla five-cleft, ſpreading, with a very ſhort tube. Berry ovate, knobbed, with many ſeeds.

Only one ſpecies called baſſovia ſylvatica. The ſtem is herbaceous, three or four feet high, branched. Leaves alternate, ovate acute, ſmooth, quite entire, on a petiole about an inch in length; the largeſt are ten inches long, and four and a half broad. Flowers in axillary corymbs, green and very ſmall. Native of Guiana, in wet foreſts, flowering and fruiting in June.

BASSUE', a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Vitry la Françoiſe: ſix miles north-north-eaſt of Vitry.

BAS'SUM, a town of Germany, in the circle of Weſtphalia, in the county of Hoya, with a noble abbey: ſixteen miles weſt of Hoya.

BAS'SUS AU'FIDIUS, an hiſtorian in the age of Auguſtus, who wrote on the Germanic war. *Quint.* Cœſius, a lyric poet, in Nero's age, to whom Perſius addreſſes his ſixth ſatyr. Some of his verſes are ſtill extant. Julius, an orator in the reign of Auguſtus, ſome of whoſe orations have been preſerved by Seneca. A man ſpoken of by Horace, and deſcribed as fond of wine and women.

BAS'TA (George), of Rocca near Tarentum, a general officer in the ſervice of the emperor Rhodolphus II. author of two celebrated military tracts. He died in 1607.

BASTA, a town of Egypt, forty miles north-eaſt of Cairo, and thirty-one ſouth-ſouth-eaſt of Manſora.

BAS'TAN, a town of Aſiatic Turkey, in the province of Natolia: thirty miles ſouth-weſt of Amaſia.

BAS'TARD, *ſ.* [*baſtardus*; fancifully derived from the Greek βασσαρις, *meretrix*; more truly from the Brit. *baſtaerd*, *nothus*, *ſpurius*; or according to Spelman from the German, *baſtart*, *bas*, low, and *ſtart*, riſen, Sax. *ſteort*; as upſtart, *homo novus*, ſuddenly riſen up.] A perſon born out of wedlock, ſo that, according to order of law, his father is not known. *Ayliffe.*

> Him to the Lydian king Lycimnia bare,
> And ſent her boaſted *baſtard* to the war. *Dryden.*

Any thing ſpurious or falſe:

> Words
> But rooted in your tongue; *baſtards* and ſyllables
> Of no allowance to your boſom's truth. *Shakeſpeare.*

Bastard, *adj.* Begotten out of wedlock; illegitimate. —Peace is a very apoplexy, lethargy, inſenſible, a getter of more *baſtard* children than war is a deſtroyer of men. *Shakeſpeare.*—Spurious; not genuine; ſuppoſititious; falſe; adulterate. In this ſenſe, any thing which bears ſome relation or reſemblance to another, is called ſpurious or *baſtard.*—Men who, under the diſguiſe of public good, do but purſue their own deſigns of power, and ſuch *baſtard* honours as attend them. *Temple.*

By our *Engliſh* laws, a *baſtard* is one that is not only begotten, but born, out of lawful matrimony. The civil and canon laws do not allow a child to remain a baſtard, if the parents afterwards intermarry; and herein they differ moſt materially from our common law; which though not ſo ſtrict as to require that the child ſhall be begotten, yet makes it an indiſpenſible condition, to make it legitimate, that it ſhall be born, after lawful wedlock. Blackſtone obſerves, that the reaſon of our Engliſh law is ſurely much ſuperior to that of the Roman, if we conſider the principal end and deſign of the marriage contract taken in a civil light. He then recapitulates ſeveral motives, which he concludes we may ſuppoſe actuated the peers at the parliament of Merton, when they refuſed to enact that children born before marriage ſhould be eſteemed legitimate. 1 *Com.* 456. 1 *Inſt.* 224.

If a man marries a woman groſsly big with child by another, and within three days after, ſhe is delivered, the iſſue is no baſtard. 1 *Danv. Abr.* 729. If a child is born within a day after marriage between parties of full age, if there be no apparent impoſſibility that the huſband ſhould be the father of it, the child is no baſtard, but ſuppoſed to be the child of the huſband. 1 *Rol. Abr.* 358. As all children born before matrimony are baſtards; ſo are all children born ſo long after the death of the huſband, that by the uſual courſe of geſtation they could not be begotten by him. But, this being a matter of ſome uncertainty, the law is not exact as to a few days. *Cro. Jac.* 451. On the whole it appears that what is commonly conſidered as the uſual period is forty weeks, or 280 days. But, though the child is born ſome time after, it only affords preſumption, not proof, of illegitimacy. In ſupport of this, the information of the late celebrated anatomiſt Dr. Hunter, is given. 1. That the uſual period is nine calendar months; (from 270 to 280 days;) but there is very commonly a difference of one, two, or three, weeks. 2. A child may be born alive at any time, from three months, but we ſee none born with powers of coming to manhood, or of being reared, before ſeven calendar months, or near that time; at ſix months it cannot be. 3. The doctor ſaid he had known a woman bear a living child, in a perfectly natural way, fourteen days later than nine calendar months: and he believed two women to have been delivered of a child alive, in a natural way, above *ten* calendar months from the hour of conception. This caſe of birth of children after the death of the huſband, gives occaſion to the writ *de ventre inſpiciendo.* But if a man dies, and his widow ſoon after marries again, and a child is born within ſuch a time, as that by the courſe of nature it might have been the child of either huſband, in this caſe he is ſaid to be more than ordinarily legitimate, for he may, when he arrives to years of diſcretion, chooſe which of the fathers he pleaſes. 1 *Inſt.* 8. For this reaſon by the ancient Saxon laws, in imitation of the civil law, a widow was forbidden to marry for twelve months. *Ll. Ethl. A. D.* 1008. *Ll. Canut.* c. 71.

Children born during wedlock, may alſo in ſome circumſtances be baſtards. As if the huſband be out of the kingdom of England (or, as the law ſomewhat looſely phraſes it, *extra quatuor maria*) for above nine months, ſo that no acceſs to his wife can be preſumed, her iſſue during that period ſhall be baſtards. 1 *Inſt.* 244. But generally, during the coverture, acceſs of the huſband ſhall be preſumed, unleſs the contrary can be ſhewn. *Salk.* 123. 3 *P. Wms.* 276. *Stra.* 925. Although a feme covert may on a queſtion of baſtardy give evidence of the fact of criminal converſation, yet ſhe ſhall not be admitted to prove the non-acceſs of her huſband. *Annal.* 79. There are determinations by which it appears that the child of a married woman may be proved a baſtard by other circumſtantial evidence than that of the huſband's non-acceſs. 4. *Term Rep.* 251. 356.

In a divorce *à menſâ et thoro*, if the wife has children, they are baſtards; for the law will preſume the huſband and wife conformable to the ſentence of ſeparation, unleſs acceſs be proved; but, in a voluntary ſeparation by agreement, the law will ſuppoſe acceſs unleſs the negative be ſhewn; and the children, *primâ facie*, ſhall not be eſteemed baſtards. *Salk.* 123. In caſe of divorce in the ſpiritual court *à vinculo matrimonii*, all the iſſue born during the coverture are baſtards; becauſe ſuch divorce is always upon ſome cauſe, that rendered the marriage unlawful and null from the beginning. 1 *Inſt.* 235. If a man or woman marry a ſecond wife or huſband, the firſt being living; and have iſſue by ſuch ſecond wife or huſband, the iſſue is *baſtard.* See *Bott*, (*Ed.* 1793 by *Conſt.*) 397. *pl.* 521.

A man hath iſſue a ſon by a woman before marriage, and afterwards marries the ſame woman, and hath iſſue a ſecond ſon born after the marriage; the firſt of theſe is termed in law a *baſtard eigné*, and the ſecond a *mulier*, or *mulier puiſné*; by the common law, as hath been ſaid, ſuch *baſtard eigné* is as incapable of inheriting as if the father and mother had never married; but yet there is one caſe in which his iſſue was let into the ſucceſſion, and that was by the conſent of the lord and perſon legitimate; as if upon the death of the father the *baſtard eigné* enters, and the *mulier* during his whole life never diſturbs him, he cannot upon the death of the *baſtard eigné* enter upon his iſſue, *Co. Lit.* 245. To exclude the *mulier* from the inheritance, there muſt not only be an uninterrupted poſſeſſion of the *baſtard eigné* during his life, but a deſcent to his iſſue. *Co. Lit.* 244. 1 *Rol. Abr.* 624.

No man can baſtardize another after his death, that was a *mulier* by the laws of holy church, and who carried the reputation of legitimate during his life; for a man muſt be baſtardized by the rules of the civil or common law: by the rules of the civil law, this perſon is by ſuppoſition legitimate; and, if the common law be made the judge, he cannot be baſtardized; for it is a rule of common law, that a perſonal defect dies with the perſon, and cannot after his death be objected to his ſucceſſor that repreſents him; and this rule of law was taken from the humanity of the ancients, which would not allow the calumny of the dead; as alſo from an important reaſon of convenience, for pedigrees are often derived through ſeveral perſons, concerning whom there remains little knowledge or remembrance of any thing, but only of their being; and therefore it were an eaſy matter to throw on them the aſperſion of baſtardy by any forged evidence, which cannot be confronted by oppoſite proof; and ſo it is fit to limit a time in which all proofs of baſtardy are to be diſallowed. 7 *Co.* 44. *Jenk. Rep.* 268. 1 *Brownl.* 42. *Co. Lit.* 245. In the caſe of Pride *v.* the earls of Bath and Montague, it was held that the rule that a perſon ſhall not be baſtardized after his death, is only good in the caſe of *baſtard eigné* and *mulier puiſné.* 1 *Salk.* 120. 3 *Lev.* 410. If there be an apparent impoſſibility of procreation on the part of the huſband, natural or accidental, as in caſe of the huſband being only eight years old, or diſabled by diſeaſe, there the iſſue of the wife ſhall be a baſtard. 1 *Inſt.* 244.

The rights of a baſtard are very few, being only ſuch as he can acquire; for he can inherit nothing, being looked upon as the ſon of nobody, and ſometimes called *filius nullius*, ſometimes *filius populi. Forteſc. de Ll.* c. 40. Yet he may gain a ſurname by reputation, though he has none by inheritance. 1 *Inſt.* 3, 123. Where a remainder is limited to the eldeſt ſon of Jane S. whether legitimate or illegitimate, and ſhe hath iſſue, a baſtard ſhall take this remainder, becauſe he acquires the denomination of her iſſue by being born of her body; and ſo it was never uncertain, who was deſigned by this remainder. *Noy*, 35. If parents are married, and afterwards divorced, this gives the iſſue the reputation of children; and ſo doth a ſubſequent marriage of the parents. 6 *Co.* 65. *Hugh's Abr.* 363. If a man, in conſideration of natural affection and love, covenants to ſtand ſeiſed to the uſe of a baſtard, this is not good; for he is not *de ſanguine patris*; but it is ſaid that a woman may give lands in frank-marriage with her baſtard, becauſe he is of the blood of the mother; but he hath no father, but from reputation only. *Dyer* 374. *And.* 79. 6 *Co.* 77. A court of equity will not ſupply the want of a ſurrender of a copyhold eſtate, in favour of a baſtard, as it will for a legitimate child. *Preced. Chan.* 475.

The incapacity of a baſtard conſiſts principally in this, that he cannot be heir to any one, neither can he have heirs but of his own body; for being as well before ſaid *nullius filius*, he is therefore of kin to nobody, and has no anceſtor from whom any inheritable blood can be derived. But, though baſtards are not looked upon as children to any civil purpoſes, yet the ties of nature hold as to maintenance, and many other purpoſes; as particularly that a man ſhall not marry his baſtard ſiſter or daughter. 3 *Salk.* 66, 7. *Ld. Raym.* 68. *Comb.* 356. A baſtard was, in ſtrictneſs of law, incapable of holy orders, and though that were diſpenſed with, yet he was utterly diſqualified from holding any dignity in the church. *Forteſc.* c. 40. 5 *Rep.* 58. But this doctrine ſeems now obſolete; and there is a very ancient deciſion that a felon ſhould have the benefit of clergy, though he were a baſtard. *Bro. Clergy* 20. In all other reſpects therefore, except thoſe mentioned, there is no diſtinction between a baſtard and another man. 1 *Comm.* 459. A baſtard may be made legitimate, and capable of inheriting, by the power of an act of parliament, and not otherwiſe. 4 *Inſt.* 36; as was done in the caſe of John of Gaunt's baſtard children, by ſtat. Rich. II.

Baſtardy in relation to pariſh expences, and the ſeveral manners of its trial, is diſtinguiſhed into *general*, and *ſpecial*, baſtardy. Till the ſtat. of Merton, 20 Hen. III. the queſtion, whether born before or after marriage, was examined before the eccleſiaſtical judge, and his judgment was certified to the king or his juſtices, and the king's court either abided by it or rejected it at pleaſure. But after the ſolemn proteſt made by the barons at Merton, againſt the introduction of the doctrine of the civil and canon law in this reſpect, ſpecial baſtardy has been always triable at common law; and general baſtardy alone has been left to the eccleſiaſtical judge, who in this caſe agrees with the temporal. 2 *Inſt.* 99.

General baſtardy, tried by the biſhop, in its notion contains two things. 1ſt, It ſhould not be a baſtard made legitimate by a ſubſequent marriage. 2dly, That it ſhould be a point collateral to the original cauſe of action. Formerly baſtards had a way in ſuch iſſues to trick themſelves into legitimation; for they uſed to bring feigned actions, and get ſuborned witneſſes before the biſhop to prove their legitimation, and then got the certificate returned of record, and after that their legitimation could never be conteſted; for being returned of record as a point adjudged by its proper judges, and remaining among the memorials of the court, all perſons were concluded by it; but this created great inconveniences, as ſpecified in the preamble of ſtat. 9 Hen. VI. c. 11, in the caſe of ſeveral perſons of quality; for the evidence of the contrary parties concerned was never heard at the trial, and yet their intereſt was concluded: to remedy this inconvenience without altering the rules of law, it was enacted, that, before any writ to the biſhop, there ſhould be a proclamation made in the court, where the plea depends, and, after that, the iſſue ſhould be certified into Chancery, where proclamation ſhould be made once in every month for three months, and then the chancellor ſhould certify to the court where the plea depends, and afterwards it ſhall be again proclaimed in the ſame court, that all that are concerned may go to the ordinary to make their allegations; and without theſe circumſtances, any writ granted to the ordinary, and all proceedings thereupon, ſhall be utterly void. If the ordinary certify or try baſtardy without a writ from the king's temporal courts, it is void; for the ſpiritual juriſdiction within theſe kingdoms is derived from the king, and therefore it muſt be exerciſed in the manner the king hath appointed; for it would be injurious if they they ſhould declare legitimation where the rights of inheritance are ſo nearly concerned, without any apparent neceſſity. 1 *Rol. Abr.* 361.

The certificate muſt be under the ſeal of the ordinary, and not under the ſeal of the commiſſary only; for the command is to the biſhop himſelf to certify, and therefore the execution of the command muſt appear to be by the biſhop in proper perſon. If a man be certified baſtard, this binds perpetually, though the perſon ſo adjudged a baſtard is not party to the action, for all perſons are eſtopped to ſpeak againſt the memorial of any judicatory; becauſe the act of the public judicatory under which any perſon lives, is his own act; and, were he not thus bound, there might be contradiction in certificates. If a man be certified baſtard, that doth not bind a ſtranger till returned of record, becauſe it is no judicial act till recorded in the place appointed for ſuch tranſactions; nor doth it bind the party to the action till judgment thereon, becauſe if he avoid the action he avoids all conſequences of the action; and therefore if the defendant be certified baſtard by the ordinary, yet if the plaintiff be non-ſuit they cannot go to trial, and the biſhop's certificate never appears of record, and therefore is not binding. If a man be certified *mulier*, no man is eſtopped to baſtardize him, for, though he may be a *mulier* by the ſpiritual law, yet he may be a baſtard by our law; and therefore any man, notwithſtanding the certificate, may plead the iſſue of ſpecial baſtardy. 1 *Rol. Abr.* 362.

Special baſtardy, is two fold: 1ſt, Where the baſtardy is the gift of the action, and the material part of the iſſue. 2dly, Where thoſe are baſtards by the common law that are *muliers* by the ſpiritual law. 1 *New Abr.* 314. *Co. Lit.* 134. If a man receives any temporal damage by being called a baſtard, and brings his action in the temporal courts, and the defendant juſtifies that the plaintiff is a baſtard, this muſt be tried at common law, and not by writ to the biſhop; for otherwiſe you ſuppoſe an action brought in a court which hath not a capacity to try the cauſe of action. 1 *Brownl.* 1. *Hob.* 179. *Godol.* 479. If it be found by an aſſiſe taken at large that a man is a baſtard, the temporal courts are judges of it; for the jury cannot be eſtopped to ſpeak truth which may fall within their own knowledge, and what they find becomes the record of the temporal courts, and ſo within their conuzance. *Bro. Baſtardy* 97.

By ſtat 18 Eliz. c. 3, two juſtices of peace may make an order on the mother or reputed father of a baſtard to maintain the infant by weekly payments or otherwiſe: and, if the party diſobey ſuch order, he or ſhe may be committed to gaol, until they give ſecurity to perform it; or to appear at the ſeſſions. By ſtat. 7 Jac. I. c. 4, the juſtices may commit the mother of a baſtard, likely to become chargeable, to the houſe of correction for a year; or for a ſecond offence till ſhe give ſecurity for her good behaviour. By ſtat. 13 and 14 Car. II. c. 12, if the putative father or lewd mother run away from the pariſh, the overſeers may, by authority of two juſtices, ſeize, and by order of the ſeſſions ſell, the effects of the father or mother to maintain the child. By ſtat. 6 Geo. II. c. 31, the mother of a baſtard may, before or after it is born, ſwear it to any perſon; and the putative father ſhall then on application by the overſeer of the pariſh be apprehended and committed; unleſs he give ſecurity to indemnify the pariſh; or to appear at the next ſeſſions: but if the woman die or marry before delivery, or miſcarry, or prove not to be with child, the reputed father ſhall be diſcharged. Any juſtice near the pariſh, on application of the reputed father in cuſtody, ſhall ſummon the overſeer to ſhew cauſe againſt his being diſcharged; and if no order be made in purſuance of ſtat. 43 Eliz. c. 2, (for the maintenance of the child,) within ſix weeks after the woman's delivery, he ſhall be diſcharged. By the ſaid ſtat. 6 Geo. II. c. 31, it is expreſsly provided that, "It ſhall not be lawful for the juſtice to ſend for any woman before ſhe ſhall be delivered, or for a month after, in order to be examined concerning her pregnancy; or to compel any woman before her delivery to anſwer any queſtion relating to her pregnancy." By ſtat. 13 Geo. III. c. 82, baſtards born in any licenſed hoſpital for pregnant women, are ſettled in the pariſhes to which their mothers belong. And the like proviſion is made by ſtat. 20 Geo. III. c. 36, as to baſtards born in houſes of induſtry.

The putative father of a baſtard, although no legal relationſhip ſubſiſts between them, is ſo far conſidered as its natural guardian, as to be intitled to the cuſtody of it, for its maintenance and education. 2 *Stra.* 1162; and therefore while under his care and protection, and not likely to become chargeable to the pariſh, the pariſh officers have no concern with it. 1 *Mod.* 43. 1 *Sid.* 444. Baſtards are within the meaning of the marriage act. Stat. 26 Geo. II. c. 33, which requires the conſent of the father, &c. 1 *Term Rep.* 96. And the rule that a baſtard is *filius nullius* applies only to the caſe of inheritances. *Ib.* 101. As however, without the protection of its natural parents, a baſtard is ſettled in the pariſh in which it is born; unleſs ſuch birth be procured by fraud, *Sel. Ca.* 66.; or happen under an order of removal, 1 *Seſſ. Ca.* 33. *Salk.* 121; or in a ſtate of vagrancy, ſtat. 17 Geo. II. c. 5; or in the houſe of correction, 2 *Bulſt.* 358; or under a certificate, *Stra.* 186; and the pariſh of conſequence becomes charged with its maintenance, then, and not before, the authority of the churchwardens and overſeers begins, *Say.* 93; and they may act without an order from the juſtices. 3 *Term Rep. C. P.* 253. It ſeems however, that until a baſtard attain the age of ſeven years, it cannot be ſeparated from its mother, *Cald.* 6; but may be removed to the place of her ſettlement, while the age of nurture continues, and muſt under theſe circumſtances be maintained by the pariſh where it was born. *Doug.* 7.

An order of baſtardy muſt be made by two juſtices, on complaint, 1 *Barn. K. B.* 261; and the examination of the woman muſt be taken in the preſence of both the juſtices, 6 *Mod.* 180. 2 *Black. Rep.* 1027; but it is not neceſſary that the putative father ſhould be preſent to hear what ſhe depoſes, although he muſt be ſummoned before an order of filiation can be made, 8 *Mod.* 3. 1 *Sett. Ca.* 179; for he cannot be compelled to give ſecurity, or be committed, until he has made default, *Ld. Raym.* 853, 8. 3 *Salk.* 66; but if an order of filiation is once made, the fact of baſtardy is eſtabliſhed until the order is reverſed. *Cro. Jac.* 535. The juſtice may commit if the putative father neglect to pay the maintenance therein ordered for the ſupport of the child, unleſs he give a bond to bear the pariſh harmleſs, or to appear at the ſeſſions. 1 *Sid.* 363. *Ld. Raym.* 858. The order can only be reverſed by an appeal to the ſeſſions, which muſt be to the next ſeſſions after notice of the order; and, if the ſeſſions reverſe the order of the two juſtices, yet they may on ſummons make another, on the ſame or on any other perſon; for in this reſpect they have an original juriſdiction. 2 *Bulſt.* 355. 1 *Stra.* 475. *Doug.* 632. The order however may before appeal to the ſeſſions be removed by *certiorari*, into *K. B.* and there quaſhed for errors on the face of it. *Cald.* 172. But no order of baſtardy made at ſeſſions can be quaſhed in *K. B.* unleſs the putative father is preſent in court, 2 *Salk.* 475; for, on its being quaſhed, he ſhall enter into a recognizance to abide the order of the ſeſſions below. 1 *Bl. Rep.* 198. In an ancient *MS. temp. E.* 3, it is ſaid that he who gets a baſtard in the hundred of Middleton in Kent, ſhall forfeit all his goods and chattels to the king.

By ſtat. 21 Jac. I. c. 27, it is enacted, "That if any woman be delivered of any iſſue of her body, which being born alive ſhould by the laws of this realm be a baſtard, and ſhe endeavour privately, either by drowning or ſecret burying thereof, or any other way, either by herſelf, or the procuring of others, ſo to conceal the death thereof, as it may not come to light, whether it were born alive or not, but be concealed; in every ſuch caſe the ſaid mother ſo offending ſhall ſuffer death, as in caſe of murder; except ſuch mother can make proof by one witneſs at the leaſt, that the child, whoſe death was by her ſo intended to be concealed, was born dead." It hath been adjudged, that, in order to convict a woman by force of this laſt ſtatute, there is no need that the indictment be drawn ſpecially, or conclude againſt the form of the ſtatute; for the ſtatute doth not make a new offence, but only makes ſuch concealment an undeniable evidence of murder. 2 *Hawk. P. C.* c. 46. Alſo, it hath been agreed, that where a woman appears to have endeavoured to conceal the death of ſuch child within the ſtatute, there is no need of any proof that the child was born alive, or that there were any ſigns of hurt upon the body, but it ſhall be undeniably taken that the child was born alive, and murdered by the mother. But it hath been adjudged, that where a woman lay in a chamber by herſelf, and went to bed without pain, and waked in the night, and knocked for help but could get none, and was delivered of a child, and put it in a trunk, and did not diſcover it till the following night, yet ſhe was not within the ſtatute, becauſe ſhe knocked for help. Alſo, it hath been agreed, that if a woman confeſs herſelf with child beforehand, and afterwards be ſurprized and delivered, nobody being with her, ſhe is not within the ſtatute, becauſe there was no intent of concealment, and therefore in ſuch caſes it muſt appear by ſigns of hurt upon the body, or ſome other way, that the child was born alive.

If a woman be with child, and any gives her a potion to deſtroy the child within her, and ſhe takes it, and it works ſo ſtrongly that it kills the woman, this is murder; for it was not given to cure her of a diſeaſe, but unlawfully to deſtroy the child within her; and therefore he that gives her a potion to this end, muſt take the hazard, and, if it kills the mother, it is murder. 1 *Hal. H. P. C.* 429. If a woman be quick or great with child, if ſhe take, or any other give her, any potion to cauſe an abortion, or if a man ſtrike her, whereby the child within her is killed; though it be a great crime, yet it is not murder nor manſlaughter by the law of England, becauſe the child is not yet *in rerum naturâ*, nor can it legally be known whether it were killed or not: ſo it is, if ſuch child were born alive, and after die of the ſtroke given to the mother, this is not homicide. The offender however may be indicted for a miſdemeanor, at common law. If a man procure a woman with child to deſtroy her infant when born, and the child is born, and the woman, in purſuance of that procurement, kill the infant; this is murder in the mother, and the procurer is acceſſary. 1 *Hal. H. P. C.* 433.

To BASTARD, *v. n.* To convict of being a baſtard; to ſtigmatize with baſtardy.—She lived to ſee her brother beheaded, and her two ſons depoſed from the crown, *baſtarded* in their bloom, and cruelly murdered. *Bacon.*

BASTARD, *ſ.* In reſpect of artillery, is applied to thoſe pieces which are of unuſual or illegitimate make or proportion. Theſe are of two kinds, long and ſhort, according as the defect is on the redundant or defective ſide. The long baſtards again, are either common or uncommon. To the common kind belong the double culverin extraordinary, falcon extraordinary, &c. The ordinary baſtard culverin carries a ball of eight pounds.

BASTARD ALKANET. See LITHOSPERMUM. BALM. See MELITTIS. CABBAGE-TREE. See GEOFFROYA. CEDAR. See THEOBROMA GUAZUMA. CRESS. See THLASPI. FEVERFEW. See PARTHENIUM. GENTIAN. See SAROTHRA. HARE'S EAR. See PHYLLIS. HATCHET VETCH. See BISERRULA. HEMP. See DATISCA. HIBISCUS. See ACHANIA. JESUIT'S BARK TREE. See IVA. INDIGO. See AMORPHA. KNOT-GRASS. See CORRIGIOLA. LUPINE. See TRIFOLIUM LUPINASTER. ORPINE. See ANDRACHNE. PIMPENEL. See CENTUNCULUS. PLANTAIN. See HELICONIA BIHAI and CENTUNCULUS. QUINCE. See MESPILUS CAMÆMESPILUS. SAFFRON. See CARTHAMUS. TOADFLAX. See THESIUM. VETCH. See PHACA.

To BAS'TARDIZE, *v. a.* To convict of being a baſtard. To beget a baſtard.—I ſhould have been what I am, had the maidenlieſt ſtar in the firmament twinkled on my *baſtardizing*. *Shakeſpeare*.

BAS'TARDLY, *adv.* In the manner of a baſtard; ſpuriouſly:

Good ſeed degenerates, and oft obeys
The ſoil's diſeaſe, and into cockle ſtrays;
Let the mind's thoughts but be tranſplanted ſo
Into the body, and *baſtardly* they grow. *Donne.*

BAS'TARDS, *ſ.* An appellation given to a kind of faction or troop of banditti who roſe in Guienne about the beginning of the 14th century, and, joining with ſome Engliſh parties, ravaged the country, and ſet fire to the city of Xaintes. Mezeray ſuppoſes them to have conſiſted of the natural ſons of the nobility of Guienne, who being excluded the right of inheriting from their fathers, put them-at the head of robbers and plunderers to revenge and maintain themſelves.

BAS'TARDY, *ſ.* An unlawful ſtate of birth which diſables the perſon from ſucceeding to an inheritance:

Once ſhe ſlandered me with *baſtardy*;
But whether I be true begot, or no,
That ſtill I lay upon my mother's head. *Shakeſpeare.*

Euſtathius ſays, baſtards among the Greeks were in equal favour with legitimate children, as low as the Trojan war; but the courſe of antiquity ſeems againſt him. Potter and others ſhew, that there never was a time when baſtardy was not in diſgrace. Though, in the reign of William the Conqueror, baſtardy ſeems not to have implied any reproach, if we may judge from the circumſtances of that monarch himſelf not ſcrupling to aſſume the appellation of *baſtard*. His epiſtle to Alan count of Bretagne begins, *Ego Willielmus cognomento baſtardus*.

Arms of BASTARDY, *ſ.* in heraldry, are croſſed with a bar, fillet, or traverſe, from the left to the right. Baſtards were not allowed to carry the arms of their father, and therefore they invented arms for themſelves; and this is ſtill done by the natural ſons of a king.

Right of BASTARDY, *Droit de batardiſe*, In the former French laws, was a right, in virtue whereof the effects of baſtards dying inteſtate devolved to the king or the lord.

BASTAR'NÆ, or BASTERNÆ, a people of German origin, manners, and language; who extended themſelves a great way to the eaſt of the Viſtula, among the Sarmatæ, as far as the mouth of the Iſter and the Euxine; and were divided into ſeveral nations. An army of them was deſtroyed by a ſudden ſtorm, as they were purſuing the Thracians. *Livy.*

BASTAR'NICÆ ALPES, mountains extending between Poland, Hungary, and Tranſylvania, called alſo the *Carpates*, and now the *Carpathian* mountains.

BASTAVO'E, a bay on the eaſt ſide of Yell, one of the Shetland iſlands.

To BASTE, *v. a.* particle paſſ. *baſted*, or *baſten*, [*baſtonner*, Fr. *bazata*, in the Armoric dialect, ſignifies to ſtrike with a ſtick; from which perhaps *baſton*, a ſtick, and all its derivatives, or collaterals, may be deduced.] To beat with a ſtick.

Baſtings heavy, dry, obtuſe,
Only dulneſs can produce;
While a little gentle jerking
Sets the ſpirits all a-working. *Swift.*

To drip butter, or any thing elſe, upon meat as it turns upon the ſpit.—Sir, I think the meat wants what I have, a *baſting*. *Shakeſpeare.*—To moiſten meat on the ſpit by falling upon it.—The fat of roaſted mutton falling on the birds, will ſerve *to baſte* them, and to ſave time and butter. *Swift.*—To ſew ſlightly; from *baſtir*, Fr. to ſtitch.

BASTEL'LICA, a town of the iſland of Corſica, five leagues eaſt-north-eaſt of Ajaccio.

BASTE'RIA, *ſ.* in botany. See CALYCANTHUS.

BAS'TI, anciently a town of the province of Bætica in Spain, ſituated to the weſt of the Campus Spartarius. Now *Baza* in Granada.

BAS'TIA, a town of Italy, in the duchy of Modena, on the Panaro, eight miles north-eaſt of Modena.

BASTIA, a city and ſeaport of Corſica, and capital of the iſland, commanded by a lofty mountain about 400 fathoms in length, and 100 in width, in the centre of which the ſea forms a ſmall bay, defended by a mole. It is ſuppoſed to be the *Mantinum* of the ancients. It is divided into two parts, called *Terra Nuova*, and *Terra Vecchia*, in the former of which is a citadel, ſurrounded with fortifications. The harbour is good, but ſmall, and fit only for ſmall veſſels: the commerce is conſiderable. In 1745, it received conſiderable damage from a bombardment by the Engliſh. In 1748, it was beſieged by the Auſtrians; but without ſucceſs. In 1794, lord Hood, after the ſurrender of Morbello and St. Fiorenza, proceeded to Baſtia, where he arrived the 10th of May. The number of perſons capable of bearing arms in Baſtia originally amounted to no more than 3000 men. The fortifications were not in the beſt ſtate, and the garriſon but indifferently provided; yet they made a moſt gallant defence againſt the united efforts of the Britiſh fleet and army, joined by a conſiderable corps of Corſicans, which Paoli had collected and diſpatched thither, and reſiſted till the 19th of May, when lord Hood, "in conſideration of the very gallant defence made by the garriſon of Baſtia, and from principles of humanity," offered honourable terms to the commandant, Gentili; which, in the ſituation of the garriſon, it would have been deſperation to reject. In conſequence of this negociation, on the 24th, they marched out with the honours of war, and Baſtia was taken poſſeſſion of by the Engliſh, and annexed to the Britiſh dominions. It was however abandoned, and given up to the natives, in 1797. The number of inhabitants is ſuppoſed to be about 6000. Lat. 42. 35. N. lon. 27. 12. E. Ferro.

BASTIA, a ſea-port town of Iſtria, in the Adriatic, eight miles ſouth-ſouth-eaſt of Umago. Lat. 39. 41. N. lon. 38. 0. E. Ferro.

BASTI'DE (La), a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Caſtel-Jaloux, two leagues and three quarters weſt-ſouth-weſt of Tonneins, and three quarters north of Caſtel-Jaloux.

BASTIDE DE MONTFORT (La), a town of France, in the department of the Tarn, and chief place of a canton, in the diſtrict of Gaillac, five miles north-eaſt of Gaillac.

BASTIDE DE SERON (La), a town of France, in the department of the Arriege, and chief place of a canton, in the diſtrict of Taraſcon, four leagues and a half north-weſt of Taraſcon.

BASTIDE DE JOURDANS (La), a town of France, in the department of the Mouths of the Rhone, and chief place of a canton, in the diſtrict of Apt, four leagues ſouth-eaſt of Apt.

BASTIDE D'ARMAGNAC (La), a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Nogaro, four leagues and three quarters north-north-weſt of Nogaro, and one and three quarters north-weſt of Cazaubon.

BASTIDE DE BEARN, a town of France, in the department of the Lower Pyrenées, four leagues weſt of Orthez.

BASTI'LE, *ſ.* [from *baſtion*, a fortification; or probably from *baſter*, to appeaſe or ſuffice; the king's wrath being appeaſed on commitment of the offender.] A ſtate-priſon of France, ſomewhat ſimilar to the Tower of London. It was long the ſcourge of the French nation, as will appear from the following facts in its hiſtory; for which reaſon it was demoliſhed by the people at an early period of the late revolution. The caſtle of the Baſtile was begun building in the reign of Charles V. by Hugh d'Aubriot, mayor of Paris, who laid the firſt ſtone on the 22d of April, 1370; and, as if the hand of Providence was againſt him, he was the firſt priſoner confined in it.

His mind ſeems to have been too elevated for the country he lived in; and ſome expreſſions that eſcaped him with reſpect to the clergy, drew on him the reſentment of the church. He was accuſed of hereſy; condemned to paſs the reſt of his days in priſon; and his enemies, adding mockery to injuſtice, cauſed him to be ſhut up in that very tower of the Baſtile, the firſt ſtone of which he had fixed with his own hands; and which ſeems thus early to have been conſecrated to the purpoſes of ſuperſtition and revenge.

The Baſtile, as planned by d'Aubriot, conſiſted only of two round towers, one on each ſide of the road leading into Paris, from the ſuburb St. Anthony. They were joined together with a high and ſtrong wall, in the centre of which was the gate of the town. Some years afterwards two other towers were built oppoſite to the two firſt, and there is reaſon to think, that the road continued in the ſame line, as a gate was found walled up between thoſe towers, correſponding with the other gate. Under king Charles VI. other towers were added, and joined together, by walls immenſely thick, and meaſuring on the inſide eighty feet in height above the level of the court. The road was then turned off to the right of the caſtle; the ancient gates were ſhut up; a new gate was made between the towers, and the whole building was encloſed with a broad ditch and fortification, having a counterſcarp in maſonry nearly thirty-ſix feet high from the bottom. About the middle of the ſeventeenth century, was completed the advanced work, a piece of modern fortification, the interior of which was converted into a garden. The ditch was dry, excepting during the floods of the Seine, when the water roſe in it, though not to any great height. The entry to the Baſtile was ſtill from the ſtreet St. Anthony. Over the firſt gate was an armoury. To the right of the entrance was a guard-room. In the firſt encloſure were barracks for the garriſon; coach-houſes and ſtables for the governor and officers; and ſhops for ſutlers. A gate led from thence to the arſenal. The way into the ſecond encloſure was by a draw-bridge. On the left in entering was a guard-room, and on the right the governor's houſe. At the end of this court there was a terrace, with rows of trees, and a pavilion. The end of the terrace fartheſt from the caſtle, was cloſed by an iron railing that ſeparated it from the garden of the arſenal. On the right in going to the caſtle, were the kitchens and their offices, erected on a kind of blind bridge thrown acroſs the ditch. The paſſage into the caſtle was by a draw-bridge; within the gate, on the right, was a guard-room. The firſt court was 102 feet long, and ſeventy-two broad, with ſix towers. Thoſe on the right of the entrance were called *Tour de la Conté*; *du Treſor*; *de la Chapelle*. Thoſe on the left, *de la Baſiniere*; *de la Bertaudiere*; *de la Liberté*. The court was terminated by a modern building, on the ground-floor of which was the council-chamber, the library, and ſome lodging-rooms. The upper ſtories contained quarters for the *lieutenant du roi*, the major, ſurgeon, and the other officers. Formerly the kitchens were in this building, but when others were erected, the places occupied by them were converted to other purpoſes. The reſt of the edifice conſiſted in apartments for priſoners of diſtinction. The ſecond court was ſeventy-two feet long, and forty-two broad: the length ran parallel with the breadth of the other. At the two extreme angles were towers; one named *du Coin*, the other *du Puit*, from a well that was contiguous to it. Between theſe towers were lodgings for perſons belonging to the caſtle. In the firſt court was the clock that marked the heavy hours to the ſolitary and unhappy priſoners. It was once decorated with two ſtatues of men in chains, as if invented by cruelty to inſult wretchedneſs; but theſe ill-imagined ornaments were removed by order of the baron de Breteuil, when miniſter of Paris. The tops of the towers, and of the curtains that joined them, were flat with a parapet wall; having an agreeable walk within them, where the priſoners were ſometimes indulged. On the towers ſome pieces of cannon were mounted. The entrances to the towers were ſecured by double doors of oak, three inches thick. In each tower was a winding ſtaircaſe, which deſcended to a dungeon below, and led to the rooms above it. The roof of the dungeon was about the level of the court, and the floor of it conſiderably above that of the ditch. Thoſe dungeons were arched, paved, and lined with ſtone. Moſt of them had a ſlit towards the ditch, that let in air, and a very ſmall degree of light; though ſome of them had no light at all. It was in theſe dungeons the unfortunate princes of Armagnac, ſons of James who was beheaded, were confined by Lewis XI. The eldeſt loſt his ſenſes in priſon; the youngeſt obtained his liberty, after the death of the tyrant, by one of the firſt ſteps taken under the reign of his ſucceſſor, Charles VIII. In a memorial, written by that prince of Armagnac in 1483, he relates ſufferings that now almoſt exceed belief, and that humanity would ſhudder at the mention of; although they were at that time fully credited. Above the dungeons were four ſtories, containing each a ſingle room. The three firſt ſtories were irregular polygons of about eighteen feet diameter, and as many high; the fourth, or the room at the top of the tower called *la Calotte*, was not quite ſo large, nor ſo high, and was arched to ſupport the ſtone-roof or platform: ſome had a ceiling under the arch. The walls were ſtrongly built of ſtone and mortar. They were near ſeven Engliſh feet thick at top, and the thickneſs gradually increaſed towards the foundation. The rooms had but one window each, with an iron grate immenſely ſtrong near the ſurface of the wall without, and another about the centre of its thickneſs. A glaſs-window made in the manner of a door opened inward. In ſome rooms the embraſure of the window came down to the level of the floor; in others there were ſteps that went up to it, and in many it was high enough to enable a perſon to walk forward to the window with eaſe. The windows of the lower ſtory were built half way up with ſtone and mortar, or had planks fixed to that height on the outward grate to prevent the priſoner from being ſeen by any one from abroad. The walls were perfectly dry, and, owing to their extreme thickneſs, perſons who had been long confined in the Baſtile have ſaid, that they never found themſelves ſo much incommoded by the cold in winter, or heat in ſummer, in theſe rooms, as they would have been at the ſame ſeaſons in the houſes of Paris. All the rooms, except the dungeons, had a fire-place or ſtove; and the vents of the chimneys were ſecured by ſtrong iron grates placed at certain diſtances from each other. The walls and ceilings were plaſtered and white-waſhed. Some floors were laid with tiles, and others with ſtone, in the manner of moſt of the anti-chambers in Paris. The furniture of the rooms in general conſiſted of a ſmall bed with green ſerge curtains, a table, an armed chair, a baſon and ewer, a large earthen pot to hold water, a braſs candleſtick, a chamber-pot, a night-ſtool, a tin goblet, a broom, and a tinder-box and matches. For priſoners of high rank there were apartments furniſhed with greater care. Some were permitted to ſend for things of their own. Madame de Staal informs us that ſhe was allowed to hang her room with tapeſtry; but, for priſoners in general, the furniture and conveniences are ſuch as above deſcribed. The doors of the rooms were double, and with as many locks and bars as thoſe that ſhut the entrances to the towers. Many of the rooms had double cielings: one of lath and plaſter, and at ſome diſtance over that another of oak, which ſupported the tile or ſtone floor of the room above it. The ſtairs were lighted from the courts by narrow windows with iron grates like thoſe of the rooms. Each tower had its particular name, and each chamber was numbered, by which means there was no occaſion ever to pronounce the name of a priſoner; as, in the cant of the place, he was called by the number of his chamber, and the name of the tower, where he was confined; as No. 1, de la Bertaudiere, and ſo on.

Different authors who have written on the Baſtile have mentioned cages of iron for confining priſoners, and inſtruments for putting them to the torture: but no ſuch inſtruments were found, nor any traces of them diſcovered, when the caſtle was demoliſhed; though it has been ſaid, that the officers of the Baſtile, expecting what would happen, had previouſly deſtroyed them. Yet the four porters or turnkeys that belonged to the Baſtile when it was taken, as well as ſome of their predeceſſors, who were examined, all declared that none were ever ſeen by them, and that they never heard of any priſoner being put to the torture there. La Porte, however, in relating the methods that were taken during his confinement, to make him divulge the ſecrets of the queen his miſtreſs, in the reign of Lewis XIV. ſays, the commiſſary took out of his pocket an order which he ſaid was for putting him to the torture, and made him go down to a room where he ſhewed him the inſtruments. Such cages however, though not found in the Baſtile, were to be ſeen in other places. They are ſaid to have been invented during the reign of Lewis XI. by Triſtan l'Hermite, a friend and ſervant worthy of ſuch a cruel maſter. Boulainvilliers ſays, that he ſaw at Chateau Dupleſſis, the *cachot de fer*, wherein the cardinal de la Balue had been confined. Lewis XII. while duke of Orleans, being taken priſoner at the battle of St. Aubin, was ſent to the caſtle of Bourges, and it is ſaid was for ſome time ſhut up during the night in one of theſe cages. He referred to what he then ſuffered when he replied to a nobleman who was more reſentful than his maſter, that "it did not become the king of France to avenge the injuries that had been done to the duke of Orleans." As a farther proof of theſe cages, the publiſher of a Leyden Gazette, who had printed a ſatire on Lewis XIV. was ſecretly ſeized in Holland, brought away from thence, and ſhut up in a cage at St. Michel, a conventual priſon in Lower Normandy, where he died after many years confinement. What a contraſt! Yet the pen of penſioned flattery gave this vain man the appellation of *Great!* The cage ſtill remains, and is ſhewn as a ſymbol of the former mode of perſecution in France; a kind of lingering cruel death, a thouſand times more abhorrent than the deciſive ſtroke of the guillotine. This cage is about nine feet long, ſix broad, and eight high, not of iron, but of ſtrong bars of wood. It is fixed in the middle of a ſtrong room; and, as the priſoner could not poſſibly eſcape from thence, it was evidently intended for cruelty rather than ſecurity. On the inſide of the bars are figures and landſcapes, which are ſaid to have been cut with the nails of the laſt unhappy man who was ſtarved in it. His death, it is ſaid, terminated this ſhocking ſpecies of cruelty, as we find no inſtance of it ſince.

The library of the Baſtile is ſaid to have been founded about the year 1700, by a priſoner who had been long confined there, and to have been augmented by ſome of his ſucceſſors. It contained about five hundred volumes, of which the priſoners were generally allowed the uſe; but thoſe who were not indulged with the liberty of going thither, depended on their keepers for the choice of their ſtudies. Scarcely any of the books were entire, ſome priſoners having written in them what was thought improper to be ſeen by others. If they wrote on the margin, it was cut off, but, as they ſometimes wrote between the lines, many volumes were found with whole leaves torn out of them. Yet ſome have eſcaped the vigilance of thoſe whoſe duty it was to examine them, and are now to be found with curious notes in the hand-writing of the priſoners. Towards the bottom of the firſt court, on the left, was the chapel. One maſs was ſaid there every morning, and three maſſes on the holidays and Sundays. There were ſix covered niches for as many priſoners, where they could hear without ſeeing or being ſeen. Thoſe who went to maſs, were ſeparately conducted to their places and taken back to their rooms. If there happened to be many priſoners, they performed their public devotions by rotation.

The eſtabliſhment and garriſon of the Baſtile conſiſted of a governor, the lieutenant du roi, a major, two adjutants or officers under the major, a ſurgeon and his aſſiſtant, a chaplain, four turnkeys, and a company of invalids, with its uſual number of officers; all of whom lodged in the caſtle. A phyſician; two prieſts, who were paid 400 livres a year each, to aſſiſt the chaplain in ſaying maſſes on Sundays and holidays; a keeper of the records, and a clerk; and a ſuperintendant of the buildings, and engineer: theſe lodged abroad. As the king allowed the governor a certain daily ſum for the maintenance of each priſoner, the perſons belonging to the kitchens were hired and paid by him. The eſtabliſhed allowances appear to have been, for a prince of the blood fifty livres a day; for a maréchal of France thirty-ſix livres; a lieutenant-general twenty-four livres; a perſon of quality, or member of the parliaments, fifteen livres; an ordinary judge, a prieſt, or perſon in the finances, ten livres; a decent bourgeois five livres; and, for ſervants who were arreſted or permitted to attend their maſters, fifty ſols. There was likewiſe an allowance made to the governor for fire, candles, and waſhing. The governor was immediately under the authority of the miniſter of the department of Paris. The lieutenant-general of the police, as the delegate of the miniſter, correſponded with the governor, the lieutenant du roi, and the major. He came occaſionally to inſpect the Baſtile, and ſometimes was preſent at the examination of priſoners. If a priſoner wanted any thing, he applied to him. If he had permiſſion to write to his friends, the letters were ſent to the police-office, from whence a meſſenger came regularly twice a day, at noon and in the evening, to receive them; but, out of the numbers that were written, few were delivered, and it has been ſuſpected, that this apparent indulgence to priſoners was one of the many artifices that were employed to diſcover their ſecrets, and the perſons with whom they were connected. The ordinary treatment of the priſoners was committed to the major, who nevertheleſs, as well as all the other officers, were conſtantly ſubject to the orders of the governor. The following are tranſlations of papers regarding the police and diſcipline of the Baſtile, which were found in it when it was demoliſhed:

"The officer commanding the guard muſt not permit any one who enters the caſtle to wear his ſword, excepting his majeſty, the dauphin, the princes of the blood, the ſecretaries of ſtate, the maréchals of France, the captains of the body guards, the dukes and peers, and the officers belonging to the place. The ſerjeants and corporals muſt make themſelves acquainted with the perſons and names of every one belonging to the place, and of all thoſe who daily come into and go out of the caſtle. They ought likewiſe to learn, immediately, the names of the towers, to be able to ſay with accuracy in which they may have remarked any thing while on duty in the night. The ſentinel at the gate is to open and ſhut the wicket, but he muſt not permit any one to go out, or come in, with whom he is unacquainted; ſhould any attempt to do ſo, he muſt arreſt him. The ſentinel within the court muſt obſerve the ſame. When there is even doubt, the perſon is to be arreſted until the arrival of the officer commanding the guard, who will give his orders. The ſentinel in the court muſt ſtrike the bell every quarter of an hour, from ten in the evening till ſix in the morning. He muſt ring for maſs, and, as ſoon as he has done ſo, he muſt retire into the guard-room, and ſhut the window, until ſuch time as he may be ordered to return to the door of the chapel, where he muſt remain till the maſs is ended. He muſt then return to the guard-room as before, until ordered to go back to his poſt in the court. The ſentinel in the court muſt conſtantly keep in view the priſoners who may be permitted to walk there: he muſt be attentive to obſerve if they drop any paper, letter, note, or any thing elſe: he muſt prevent them from writing on the walls, and render an exact account of every thing he may have remarked whilſt on duty. All perſons whatſoever, except the officers of the ſtaff and turnkeys, are forbidden ever to ſpeak to any priſoner, or even to anſwer him, under any pretence whatever,

ever. As ſoon as night ſets in, the ſentinels muſt challenge all who may preſent themſelves, and let no one paſs until they have obſerved him, and know him to be one who has leave to do ſo. Before the bridge of the caſtle be drawn up, the officer of the guard muſt ſend to inform the governor. Thoſe who may be with him, that ſleep in the caſtle, muſt then retire within the place. As ſoon as the bridge is drawn up, the officer of the guard muſt carry the keys to the lieutenant du roi, from whom he is to receive them, in caſe any order arrives from the king, and at the ſtated hour for opening the gates.

"Whenever an order comes from one of the ſecretaries of ſtate for receiving, or ſetting at liberty, a priſoner, the governor muſt return a meſſage to that miniſter, by acknowledging the receipt of it. He will likewiſe take care that the miniſter of Paris be inſtantly informed of whatever orders may be ſent by any other miniſter, as the Baſtile is immediately within his department. When the governor receives a letter from the lieutenant-general of the police, for admitting a priſoner, or ſetting one at liberty; that letter is called *lettre d'anticipation*, until ſuch time as the king's orders can be ſent in form. Therefore, as ſoon as he receives ſuch a letter, he muſt communicate the ſame to the miniſter of Paris. Whenever the governor receives orders from the king, or letters from the lieutenant-general of the police, regarding any thing to be done in the caſtle, he will not confide thoſe orders to any one but the proper officers, whoſe buſineſs it is to execute them. As it ſometimes happens that men of rank ſurrender themſelves at the Baſtile, who are themſelves the bearers of the *lettre de cachet*, and deliver it with their ſword to the governor; whenever ſuch a caſe happens, the governor muſt immediately give information to the miniſter by whom the *lettre de cachet* is counterſigned, and deſire his inſtructions reſpecting the manner in which the priſoner is to be treated. The governor muſt endeavour to gain regular information of whatever paſſes in the caſtle; of the complaints of the priſoners, and of all other matters reſpecting them. On the arrival of a priſoner, the officer muſt order the ſoldiers to retire into the guard-room, taking care that he is not ſeen by any one. The gate is to be opened at five in the morning in ſummer, and at ſix in the winter. If workmen ſhould be employed in the caſtle, as many ſentinels muſt be put over them as may be thought neceſſary, who muſt obſerve them with the ſame attention they do the priſoners, in order that they may not approach theſe, nor do any thing that may be contrary to the rules of the place. When a corporal or any other is ordered to attend a priſoner, who may have permiſſion to walk in the garden, or on the towers, it is expreſsly forbidden, that he ſpeak to him. He is to obſerve his actions, to take care that he make no ſigns to any one without, and to bring him back at the hour fixed, delivering him over to an officer, or one of the turnkeys, as may have been ordered.

"The governor of the Baſtile, or he who may command there for the time, is only to obey ſuch orders as come from his majeſty, or one of his ſecretaries of ſtate. The rules eſtabliſhed for the exterior as well as interior ſervice of the caſtle, can in no reſpect be altered but by the order of the governor; and, in caſe of his abſence, nothing is to be changed but by the expreſs order of the miniſter who has the department of Paris. The governor is not to lie abroad, but by permiſſion of the above miniſter. The lieutenant du roi, the major, and other officers, muſt conſtantly paſs the night in the caſtle; and, if it ſhould at any time be thought neceſſary, on account of ſickneſs, that the lieutenant du roi or major ſhould be conveyed to any other place, the governor muſt firſt appriſe the miniſter. No officer belonging to the caſtle is ever to go out of Paris without the permiſſion of the governor. It is his majeſty's will that all the officers of the ſtaff make one round at leaſt daily; that all thoſe officers as above-mentioned ſleep in the caſtle; and that, in the day-time, two conſtantly remain in it. The king, having himſelf received the oath of fidelity from the governor, authoriſes him to adminiſter it to the other officers. It is his majeſty's will, that, in caſe of the abſence of the governor by leave or otherwiſe, the officer, who may command in the mean time in his ſtead, ſhall not allow any one from abroad to ſee or ſpeak to any of the priſoners, unleſs upon production of an order from his majeſty; and that then the priſoner ſhall receive the viſit in the council-room, in the preſence of two officers. The officers of the ſtaff muſt take their turn in viſiting the priſoners every day in their rooms, except ſuch priſoners as the governor may forbid them to go to. They muſt render an account of their viſits to the governor, or to him who may command in his abſence. His majeſty orders the governor of his caſtle of the Baſtile to cauſe the above regulations to be obſerved; and commands all officers and other perſons belonging to it ſtrictly to conform to them according to their reſpective duties and occupations. Done at Verſailles, the 20th of September, 1764. (Signed) LOUIS."

When the Baſtile was deſtroyed, ſeveral regiſters were found of the priſoners. The firſt contained their names, the day of their arrival, the time of their diſcharge or death, the tower where they were lodged, and remarks and obſervations upon them. Another book contained likewiſe their names, quality, day of arrival, and an inventory of the effects found on them. A third, called the diſcharge-book, contained the priſoner's receipt for his effects, which were always delivered to him when he was ſet at liberty. In this book he likewiſe ſigned a declaration, to which he took his oath, that he would never reveal any thing he had heard or ſeen in the Baſtile: but, as many perſons have publiſhed what they learnt there, we muſt ſuppoſe that, as the oath was compulſatory, they thought themſelves diſpenſed from obſerving it. All that has come to light of theſe books, as well as other papers belonging to the Baſtile, is only by detached parts. The books that have appeared refer to others that are wanting. The papers belonging to the priſoners were generally ſent to the police-office; and without theſe, without the books mentioned as wanting, and the examinations of the priſoners, the account given of them muſt for ever be imperfect.

The manner of arreſting perſons may have differed, according to their importance with the public, or other circumſtances attending them; ſome were arreſted in their houſes; ſome ſecretly in the roads or in the ſtreets at night; and ſome were even ſeized and brought away from foreign countries. M. Bertin de Frateaux was ſeized at Marybone in London, carried to Graveſend, put on-board a veſſel there, landed at Calais, and was from thence conveyed to the Baſtile. His misfortunes ſeem to have been owing to an unnatural father; who, being on terms of intimacy with the miniſter, obtained a *lettre de cachet* to arreſt and confine his own ſon!

The mode of treating all priſoners, after they arrived at the Baſtile, ſeems to have been nearly the ſame, except that ſome had a greater degree of liberty than others, more conveniences, and a better table. But, if the offence was important, or, which was the ſame thing, if it was thought ſo by the miniſter, the priſoner, however high in rank, was totally denied any communication with the reſt of mankind, except with thoſe who belonged to the place, and were ſent to him by the governor. So great was the ſecrecy obſerved in this priſon, that perſons have been privately arreſted and confined in it for years, without its being known even to their friends or families what had become of them, till they were able, on being diſcharged, to tell their ſtory; and, even then, the dread of being again deprived of their liberty induced them to be extremely circumſpect in what they ſaid. As ſoon as a priſoner arrived at the Baſtile, he was conducted to the council-chamber, where he was examined by the major in preſence of the lieutenant du roi. The uſual queſtions reſpected his birth, country, occupations, and matters of a public nature. Every thing was taken from him that could be employed to commit any violence on himſelf or others, or facilitate his eſcape. Theſe were put into a box, with a label on the outſide of it, mentioning the tower and number of the chamber where he was to be confined. The boxes containing the effects of the priſoners were all ranged in a room near the council-chamber. Having ſigned the inventory of the things that were taken from him, and a copy of his examination, he was then ſent to his room. He was next examined by one of the king's commiſſaries, and ſometimes in the preſence of the lieutenant of the police. The examinations of ſome priſoners were frequently repeated, and it appears by the teſtimony of many, that they were made with much art, or rather with that ſort of cunning which is nurſed under deſpotiſm, and there ſucceſsfully employed either to conceal or diſcover guilt. The priſoners were not allowed to be ſhaved, until after the ſecond examination; or until all had been obtained from them that was required. There are inſtances of ſome remaining ſeveral months without obtaining this indulgence; which, and the hearing maſs, and the uſe of books, were conſtantly denied them until leave came in writing, from the miniſter of Paris, through the lieutenant of the police. They were ſhaved by the aſſiſtant-ſurgeon of the Baſtile, who likewiſe pared their nails; the turnkey or a ſoldier conſtantly attending, leſt they ſhould attempt to ſeize the inſtrument by violence. It was not until the officers had full experience of a priſoner's calmneſs and reſignation that he was permitted to have a knife to cut his victuals, or even tongs for his fire: nor could any of the regulations on this head be deviated from, but by expreſs permiſſion. Yet, notwithſtanding thoſe extreme precautions, there are ſeveral inſtances of priſoners who deſtroyed themſelves. One threw himſelf from the top of one of the towers, on which account the walks there were for ſome time forbidden, and never permitted but to perſons in whom the governor thought he could confide. We find a remarkable circumſtance mentioned in a letter to M. de Sartine, from M. Chevalier, major of the Baſtile, dated the 19th of November, 1767, of which the following is an extract:

“ The priſoner Drohart in going through the court flew back to his room. The turnkey followed him. He ſtood at the door to defend the entry; the turnkey tried to force it, not perceiving that he had a knife in his hand, till he received a wound in his belly, of which it is thought he will probably die before the morning, and he has accordingly received the ſacraments. The priſoner immediately gave himſelf a wound alſo, and expired about ten minutes after.”

M. de Sartine writes in reply: “ I have learnt with very great concern, the melancholy and unlucky accident that happened this morning at the caſtle. If the precaution of not leaving a knife or any other inſtrument with the priſoners, had been exactly obſerved, and their rooms and perſons regularly ſearched, this misfortune would have been prevented. I hope, ſir, that you will redouble your zeal and attention, for the good of the ſervice, and ſecurity of the priſoners. I am, &c. DE SARTINE.”

Viſits to priſoners, if from perſons abroad, was an indulgence ſeldom granted, and extended only to thoſe who enjoyed ſome particular protection, and were confined for ſlight offences. Perhaps we cannot give the reader a better idea of the manner in which the general claſs of priſoners was treated, than by communicating to him what was related by a perſon of ſcrupulous veracity upon his examination, after he had been confined in the Baſtile above eight months.

“ About five in the morning on the 2d of April, 1771, I was awaked by a violent knocking at my chamber-door, and was commanded, in the name of the king, to open it. I did ſo, and an exempt of the police, three men who appeared to be under his orders, and a commiſſary, entered the room. They deſired me to dreſs myſelf, and began to ſearch the apartment. They ordered me to open my drawers, and, having examined my papers, they took ſuch as they choſe, and put them into a box, which, as I found afterwards, was carried to the police-office. The commiſſary aſked me my name, my age, the place where I was born, how long I had been at Paris, and the manner I ſpent my time. The examination was written down by him; a liſt was made of every thing found in the room, which, together with the examination, I was deſired to read and ſign. The exempt then told me to take all my body linen and ſuch clothes as I choſe, and to come along with them. At the word *all* I ſtarted; I gueſſed where they were about to take me, and it ſeemed to announce to me a long train of miſery. Having ſhut and ſealed the drawers, they deſired me to follow them; and, in going out, they locked the chamber-door and took the key. On coming to the ſtreet, I found a coach, into which I was deſired to go, and the others followed me. After ſitting for ſome time, the commiſſary told me they were carrying me to the Baſtile, and ſoon afterwards I ſaw the towers. They did not go the ſhorteſt and direct road; which I ſuppoſe was to conceal our deſtination from thoſe who might have obſerved us. The coach ſtopped at the gate in the ſtreet St. Anthony. I ſaw the coachman make ſigns to the ſentinel, and ſoon after the gate was opened: the guard was under arms, and I heard the gate ſhut again. On coming to the firſt drawbridge, it was let down, the guard there being likewiſe under arms. The coach went on, and entered the caſtle, where I ſaw another guard under arms. It ſtopped at a flight of ſteps at the bottom of the court, where, being deſired to go out, I was conducted to a room that I heard named the council-chamber. I found three perſons ſitting at a table, who, as I was told, were the lieutenant du roi, the major, and his deputy. The major aſked me nearly the ſame queſtions which the commiſſary had done, and obſerved the ſame formalities in directing me to read and ſign the examination. I was then deſired to empty my pockets, and lay what I had in them on the table. My handkerchief and ſnuff-box being returned to me, my money, watch, and indeed every thing elſe, were put into a box that was ſealed in my preſence, and, an inventory having been made of them, it was likewiſe read and ſigned by me. The major then called for the turnkey whoſe turn of duty it was, and, having aſked what room was empty, he ſaid, the *Calotte de la Bertaudiere*. He was ordered to convey me to it, and to carry thither my linen and clothes. The turnkey, having done ſo, left me and locked the doors. The weather was extremely cold, and I was glad to ſee him return ſoon afterwards with firewood, a tinder-box, and a candle. He made my fire, but told me, on leaving the tinder-box, that I might in future do it myſelf when ſo inclined. Priſoners who were not allowed to have a ſervant of their own, ſometimes were indulged with an invalid ſoldier to attend them; but thoſe who had neither, made their bed, lighted their fire, and ſwept their room, themſelves. From the time the *exempt* of the police came into my room, I had not ceaſed to form conjectures about the cauſe of my impriſonment. I knew of none, unleſs it were ſome verſes and ſketches relative to the affairs of the times. Though they were indiſcreet, they were of little importance. The only writing that might have ſeriouſly given offence to the government, I had never ſhewn, but to one perſon in whom I thought I could confide: I found afterwards he had betrayed me. When I heard the double doors ſhut upon me a ſecond time, caſting my eyes round my habitation, I fancied I now ſaw the extent of all that was left to me in this world for the reſt of my days. Beſides the malignity of enemies, and the anger of a miniſter, I felt that I ran the riſk of being forgotten; the fate of many who have no one of influence to intercede for them, or who have not particularly attracted the notice of the public. Naturally fond of ſociety, I confeſs I looked forward to the abyſs of lonely wretchedneſs, that I thought awaited me, with a degree of horror that cannot eaſily be deſcribed. It was different from any thing I had felt before. I even regretted now, what I had formerly conſidered as the greateſt bleſſing, a healthy conſtitution that had never been affected by diſeaſe. I recollect with humble gratitude the firſt gleam of comfort that ſhot acroſs this gloom. It was the idea, that neither maſſive walls, nor tremendous bolts, nor all the vigilance of ſuſpicious keepers, could conceal me from the ſight of God. This thought I fondly cheriſhed, and it gave me infinite conſolation in the courſe of my impriſonment, and principally contributed to enable me to ſupport it with a degree of fortitude and reſignation that I have ſince wondered at. I no longer felt myſelf alone. At eleven, my reflections were interrupted by the turnkey, who entered with my dinner. Having ſpread the table with a clean napkin, he placed the diſhes on it, cut the meat, and retired, taking away the knife. The diſhes, plates, fork, ſpoon, and goblet, were of pewter. The dinner conſiſted of ſoup and *bouillie*, a piece of roaſted meat, a bottle of good table wine, and a pound loaf of the beſt kind of houſehold bread. In the evening at ſeven he brought my ſupper, which conſiſted of a roaſt diſh and a ragout. The ſame ceremony was obſerved in cutting the meat, to render the knife unneceſſary to me. He took away the diſhes he had brought for dinner, and returned at eight the next morning to take away the ſupper-things. Fridays and Saturdays being faſt or *maigre* days, the dinners conſiſted of ſoup, a diſh of fiſh, and two diſhes of vegetables; the ſuppers, of two diſhes of garden-ſtuff, and an omelet, or ſomething made with eggs and milk. The dinners and ſuppers of each day of the week were different, but every week was the ſame: ſo that the ordinary claſs of priſoners ſaw in the courſe of the firſt week their bill of fare for fifty years, if they ſtaid ſo long.

"I had remained in my room about three weeks, when I was one morning carried down to the council-chamber, where I found the commiſſary. He began by aſking moſt of the queſtions that had been put to me before. He then aſked if I had any knowledge of ſome works he named, meaning thoſe that had been written by me;—if I was acquainted with the author of them; whether there were any perſons concerned with him; and if I knew whether they had been printed? I told him, 'That, as I did not mean to conceal any thing, I ſhould avoid giving him needleſs trouble; that I myſelf was the author of the works he had mentioned, and gueſſed I was there on that account; that they never had been printed; that the work, which I conceived was the cauſe of my confinement, had never been ſhewn to any but one perſon, whom I thought my friend; and, having no accomplices, the offence, if there was any, reſted ſolely with myſelf.' He ſaid my examination was one of the ſhorteſt he had ever been employed at, for it ended here.—I was carried back to my room, and the next day was ſhaved for the firſt time ſince my confinement. A few days afterwards I wrote to the lieutenant of the police, requeſting to be indulged with the uſe of books, pen, ink, and paper, which was granted; but I was not allowed to go down to the library to chooſe the books. Several volumes were brought to me by the turnkey, who, when I deſired it, carried them back and brought others. After my laſt examination, I was taken down almoſt daily, and allowed to walk about an hour in the court within view of the ſentinel: but my walks were frequently interrupted; for, if any one appeared, the ſentinel called out '*Au cabinet!*' and I was then obliged to conceal myſelf haſtily in a kind of dark cloſet in the wall near the chapel. The ſheets of my bed were changed once a fortnight, I was alloweſt four towels a week, and my linen was taken to be waſhed every Saturday. I had a tallow candle daily, and in the cold ſeaſon a certain number of pieces of firewood. I was told that the allowance of fire to the priſoners began the 1ſt of November and ceaſed on the 1ſt of April, and that my having a fire in April was a particular indulgence. After being detained above eight months, I was informed that an order had come to diſcharge me. I was deſired to go down to the council-chamber: every thing I had brought with me was returned, together with the key of my apartment, which I found exactly in the ſtate I left it on the morning of the 2d of April, 1771. During my confinement I wrote many letters to ſeveral of my friends, which were always carried away with civility, but not one of them had been delivered."

Among the diſtreſſing wants to which perſons confined in this priſon were expoſed, the moſt important, perhaps, was, that they were prevented ſeeing any one in whom they could place confidence, from whom they could aſk advice, or receive the conſolation that is to be found in friendſhip. Ever obliged to be on their guard in all they ſaid; uncertain of their own deſtiny, and of the fate of the wife, the child, or the miſtreſs, they had left behind them; ignorant of what paſſed beyond the walls of their chamber, their thoughts, ſhut up in their own boſoms, conſtantly ruminated upon their unhappy fate, to which they ſaw no end. The day, the year, revolved in one continued ſcene of ſilent wretchedneſs; and the mind never being diverted from the object of its grief, not even by freſh misfortunes, it cannot ſeem ſurpriſing that many perſons, who had never before ſhewn ſymptoms of inſanity, loſt, with their liberty, their reaſon.

It appears that the profits of the governor were in proportion to the number of his priſoners; the commiſſary was paid a certain ſum for each examination; hence it became the advantage of the one to detain, and of the other to torment, them: the ſentiments of humanity were thereby conſtantly oppoſed by ſelf-intereſt, which could aſſume the maſk of zeal and duty. It is ſaid, that they ſometimes confined a ſpy of the police in the ſame room with a priſoner, who, under the appearance of a fellow-ſufferer, tried to diſcover his ſecrets; and, when they had obtained what they wiſhed to know, or found the attempt ineffectual, he was withdrawn, under the pretence of removing him to another apartment. Some priſoners had permiſſion, at ſtated times, to walk on the top of the caſtle, and in the garden; but this indulgence was but ſeldom granted. The idea that was entertained, that priſoners were ſometimes privately put to death, ſeems to be entirely a popular prejudice. A ſkeleton that was brought out when the place was deſtroyed, confirmed the notion, and gave birth to a variety of idle ſtories. A moment's reflection was ſufficient to convince any one, that, if ſo deteſtable a crime had been committed, the body would have been interred; and it afterwards appeared that the ſkeleton had been brought thither by the ſurgeon, for his ſtudies in anatomy. It was announced in the newſpapers, that, in demoliſhing the foundations of the Baſtile, three ſkeletons had been found; and it was inſinuated that they were the remains of perſons who had been privately put to death. But two advertiſements afterwards appeared, one from the *lieutenants de maire*, and committee who had the direction of the public works, the other from ſome members of the Academy of Sciences, to ſay, that they had carefully inquired into the ſubject; that the ſkeletons were found twenty-five feet under the ſurface of the earth, in the ruins of ſome old works that had formerly ſtood where the outwork was; that they muſt conſequently have been buried there before that work was conſtructed, and from this circumſtance, and their appearance, might have lain there ſome centuries. Upon the whole, it does not appear that any one has either been privately put to death, or to the torture, ſince the time of Louis XIV. If a priſoner died in the Baſtile, the governor immediately appriſed the miniſter of Paris, and the lieutenant-general of the police. The king's commiſſary of the Baſtile came thither, and, in the preſence of the major, the phyſician, and ſurgeon, made out what is called a *procès verbal*, or declaration, that, being called to the Baſtile on ſuch a day and hour, he ſaw a perſon named ſo and ſo, lying dead; that he was informed by ſuch perſons, naming the phyſician, ſurgeon, &c. that he died of ſuch a diſeaſe; that he found in the room ſuch and ſuch articles, and ſo on. This being done, orders were given to bury the body. The interment was always in the evening, at the burying-ground of St. Paul's, and at leaſt two perſons belonging to the Baſtile accompanied it, who ſigned the pariſh regiſter; but the name of the deceaſed inſerted there was frequently a fictitious one.

If a priſoner was to be tried by a court of juſtice, the governor was appriſed by a letter from the miniſtér, and directed to ſend him to the place where he was to be tried, as often as the court required it. An officer properly authoriſed came to demand him: he was then ſent under a guard, that waited to bring him back. The major and another officer went in a coach with him, nor was he permitted to ſpeak to any one but when before the court. There are inſtances, however, that priſoners of this deſcription have been allowed to ſee their counſel; but always in the preſence of the king's commiſſary and other officers. Perhaps it was the abuſe of the *lettres de cachet*, rather than their inſtitution, that merited the execration in which they were held; for, however extraordinary it may ſeem, they were not unfrequently uſed to ſerve the purpoſes of humanity. There are many inſtances of perſons, who, on account of private diſputes, or affairs of ſtate, would have been expoſed to public puniſhment, that were ſhut up by a lettre de cachet until the danger was paſt, or the matter accommodated or forgotten. It may undoubtedly be objected, that keeeping a perſon from juſtice is itſelf a crime againſt the public; but, in forming a judgment upon this ſubject, we ought to take into conſideration the prejudices entertained in the country where this authority was employed. It ſhould be remembered, that, by an old and barbarous practice, the diſgrace attending a capital puniſhment, inflicted by the laws, was reflected upon all the family of the criminal; and that in many inſtances it required a public act of the ſupreme power to wipe off the ſtain, and again enable them to ſerve their country. Inaſmuch, therefore, as the lettres de cachet counteracted the effects of theſe prejudices, they were uſeful; but though they were ſigned by the king, from the idea that it was proper to have them ready for caſes of emergency, miniſters, and governors of provinces, &c. were generally furniſhed with them in blank, to be filled up at their diſcretion; and the friends and favourites of thoſe miniſters ſometimes obtained them for revengeful purpoſes. If we compare the number of perſons that were confined, with the population of the kingdom, it certainly bears no proportion. After examining the regiſters of entries for forty-ſix years, the priſoners received during that period at the Baſtile appear to be about 2000. When the Baſtile was taken, only ſeven priſoners were found in it. The people, who anxiouſly look after the wonderful, though in ſcenes of miſery, ſeemed ſurpriſed, and even diſappointed, to find ſo few. The horror of ſuch a priſon, however, was not diminiſhed by this circumſtance; every one felt that it might be extended to himſelf; the mind was nurſed in a ſtate of abject fear; men were denied that ineſtimable privilege, the free communication of their thoughts and ſentiments; and diſſimulation became neceſſary to their ſafety. The towers of the Baſtile and other priſons of ſtate ſeemed to ſtand aloft over the kingdom for the purpoſe of ſcaring its inhabitants. We ſhall now mention the names of a few of the perſons who were from time to time confined here, with the offence they had committed; as extracted from the regiſter before-mentioned.

In 1663, the ſieur de la Baſiniere, treaſurer of the épargne. It is imagined this priſoner gave the name to the tower called *la Baſiniere*, in which it appears he was long confined.—Pardier, for writing newſpapers.—Madame la Roche Tudeſquin, named Margaret Carita, ſuſpected of being concerned in a treaſonable deſign againſt the king of Denmark.—Edmund Coquier, for having a printing-preſs found in his houſe, where a book in defence of M. Fouquet was clandeſtinely printed.—In 1664, the count de Cruſſol. The letter directs that he ſhould neither be permitted to ſee, nor ſpeak to, any one.—Pierre le Mounier, a bookbinder; condemned to be whipped, and ſent to the galleys for nine years.—In 1665, M. de Buſſy Rabutin, for writing *L'Hiſtoire Amoureuſe des Gaules*.—In 1674, the chevalier de Rohan, who was beheaded the 29th of November that year.—In 1680, the maréchal de Luxembourg, being involved in an information given againſt a woman named *La Voiſin*, who pretended to foretel events, ſold poiſons, and was burnt on the 22d of February, 1680.—Stephen de Bray, for blaſphemy, ſacrilege, and poiſoning. It is to be obſerved, that poiſoning, about this period, and ſome years before, had become very frequent in France. He was condemned, and burnt at the Greve.—Paul Trovato, Don André Trovato, and Victorina Trovato, ſuſpected of compoſing and ſelling improper drugs and poiſons.—In 1684, Don Thomas Criſafi, knight of Malta, formerly colonel of the regiment of Criſafi at Meſſina; and Don Antonio Criſafi, his brother; ſuſpected of intrigues with the Spaniſh ambaſſador againſt the intereſts of the king.—Pierre His, an inhabitant of Paſſy, for having aſſiſted ſeveral perſons to go clandeſtinely to America.—Joſeph Jarin, or Jarina, a footman of the Venetian ambaſſador, for having ſaid, in an antichamber at Verſailles, amongſt a number of other ſervants, "Who can hinder me from killing the king?"—Beſnoit, called Arnonville, an evil-minded woman, who held improper diſcourſe.—Cha. Combon, called count de Longueval, a maker of horoſcopes, a fortune-teller, and ſeller of drugs to procure abortions.—The ſieur Beranger de la Berliere, major in the regiment of Burgundy, for a plot againſt the king's perſon.—The count de Morlot, native of the Hague, ſuſpected of intrigues with the prince of Orange.—In 1686, Deſvallons, for ſpeaking inſolently of the king.—The ſieur Duprez, his wife, daughter, and ſervant: of the pretended reformed religion, for endeavouring to leave the kingdom.—In 1687, L. Lémiere, ſhoemaker, and his wife, for dangerous diſcourſe about the king.—In 1689, Paupillard, for being a bad catholic.—In 1690, the ſieur Cardel, for reaſons regarding the ſafety of the king's perſon.—Saint Vigor, affecting to be a hermit, but a man of licentious manners.—The ſieur Braconneau, on account of religion. He died on the 2d of March, 1691, of a wound he gave himſelf with a knife on the 18th of February.—In 1691, P. J. Mere, profeſſing himſelf a phyſician, for ſelling improper drugs. After thirty years confinement at the Baſtile, he was ſent to Charenton, having loſt his ſenſes.—In 1692, Jonas de Lamas, a baker, for execrations againſt the king. After being detained for twenty years at the Baſtile, he was ſent inſane to Bicêtre.—In 1696, Iſaac-Amet de la Motte, a gentleman of Burgundy, was detained fifty-four years five months, and then tranſported to Charenton, inſane.—John Haſtings, an Engliſhman, captain in the navy of the king of Denmark, ſuſpected of deſigns againſt the ſtate, particularly of a plot for burning his majeſty's ſhips in the port of Breſt.—In 1697, John de Pardieu, a prieſt, for marrying Proteſtants.—John Frederic Ex, or Hick, a Saxon, formerly a lieutenant in the troops of Brandenburg, detained on ſuſpicion. He pretended that he was ſent to France by a colonel Puirkholtz, in the ſervice of the elector of Saxony, to communicate a project for diſpatching the elector, and getting the crown of Poland for the prince of Conti. He ſays that Puirkholtz was likewiſe able to take off the prince of Orange by means of a trumpeter in his guards.—The part of the regiſter in which the celebrated priſoner with the iron-maſk is ſuppoſed to have been mentioned, is wanting. He arrived at the Baſtile, from the iſland of St. Marguerite, on the 18th of September, 1698. It would be in vain to hope for any information about him from the papers that were found at the Baſtile, as it appears, by unqueſtionable authority, that as much pains were taken there, after his death, to deſtroy every thing that could poſſibly lead to diſcover who he was, as had been obſerved, during his life, to conceal him from the eye of the public. For particulars on this ſubject, ſee MASQUE.—On the 30th of January, 1699, the count de Bozzelli, of Bergam, and his ſon, were arreſted and ſent to the Baſtile by the order of Colbert. The cauſe does not appear.—Bailly, a hatter, for a deſign to eſtabliſh a hat manufactory in a foreign country.—In 1701, Louiſa Simon, a widow: pretends to tell fortunes, to have ſecrets for inſpiring love, and to be able to make marriages. It appears that ſhe cohabits with an abbé named Mazures.—In 1702, John Galembert, of the genſdarmes, a great traveller, ſuſpected of correſponding with the enemies of the ſtate.—The ſieur La Perche, a fencing-maſter, accuſed of having ſaid, 'that the king oppreſſed his ſubjects, and only thought of amuſing himſelf with his old woman, madame de Maintenon; that he would ſoon be a king of beggars; that his officers were ſtarving; that he had ruined the kingdom by driving away the Hugonots; and that *le roi ſe —— de ſon peuple.*'—Francis Theodore Fleurand, a capuchin friar, and native of Brandenbourg, a ſpy in the ſervice of the houſe of Auſtria; a dangerous perſon; calling himſelf of the family of Montmorenci; in correſpondence with the queen-dowager of Spain and ſome of the nobility of that kingdom. After having been detained thirteen years at the Baſtile, he was ſent to the fortreſs at Liſle.—The prince de Riccia, one of the party at Naples that is againſt the French ſucceſſion. Has declared, in the courſe of his examination, 'that he knew of the conſpiracy that was formed by ſome Spaniards to get the kingdom of Naples to declare for the archduke; and that the principal agent in that affair was Sotto Mayor, governor of the caſtle of St. Helen.' This priſoner was firſt arreſted at Marſeilles, was ſent to the caſtle at Vincennes, from thence to the Baſtile, from whence he was ſent in 1713 to Orleans till farther orders; what became of him afterwards was never known.—The ſieur le Cocq, and Caſimir his valet de chambre, a ſpy of the duke of Marlborough, and connected with the counteſs of Montroyal.—Nicholas Buiſſen, for inſolent letters againſt Samuel Bernard, a famous court banker, with an intention to hurt his credit.—The ſieur de Soulange, formerly a captain of infantry in the regiment of Orleannois, a rogue and ſpy on both ſides.—In 1712, a Franciſcan friar, with his hands bound, and with ſtrict orders that no one, but ſuch as were appointed by the lieutenant-general of the police, ſhould be permitted to ſee or ſpeak to him.—In 1716, Laurence d'Houry, for diſreſpect to king George, in not mentioning him in his almanac as king of Great Britain.—Francis Arouet de Voltaire, for writing againſt the regent and other perſons in high offices. Amongſt the ſatires that appeared at that time, were ſome verſes that ended

> "J'ai vu ces maux, et je n'ai pas vingt ans."

This was nearly the age of Voltaire, and he had already been ſuſpected of being the author of other ſatires that had given equal offence. He was arreſted and ſent to the Baſtile, where he remained near a year. For ſome months he was denied the uſe of books and materials for writing; but he was afterwards indulged with them, and it was during his confinement that he compoſed the greateſt part of the *Henriade.* The day after he was ſet at liberty he was preſented to the regent, who received him with kindneſs; and, deſiring to know if he had any thing to aſk, Voltaire replied, *Monſeigneur, je trouverai fort bon ſi ſa majeſté voulait deſormais ſe charger de ma nourriture; mais je ſupplie votre alteſſe de ne plus ſe charger de mon logement.* "Sir, I ſhould be very glad if his majeſty would enable me to eat; but I beg that your highneſs will by no means trouble yourſelf in future to provide me with lodging."—Duſpoint, for enticing clothiers to leave the kingdom.—Charles la Baume de Montron, accuſed of having given falſe intelligence to the regent, in order to obtain rewards. He pretended that he had means of knowing the ſecrets of the Spaniſh ambaſſador, while an accomplice, named Mainbille, gave equally falſe information to the ambaſſador, telling him that his ſecretary betrayed him to the regent.—On the 29th of December, 1718, mademoiſelle de Launay, afterwards madame de Staal, together with other perſons of the houſehold of the duke and ducheſs of Maine, whoſe intrigues with the court of Madrid were diſcovered by the diſpatches of the Spaniſh ambaſſador that were ſeized at Poictiers by order of the regent. The chevalier de Menil, the marquis and marchioneſs de Pompadour, and ſeveral others, were ſent thither about the ſame time, and on the ſame account.—On the 28th of April, 1719, the duke de Richlieu was ſent to the Baſtile for the third time: it was ſaid to be for a ſecret correſpondence with the court of Spain, but unconnected with the intrigues of the duke and ducheſs of Maine.—John le Fevre, a prieſt of the dioceſe of Troyes, for having ſaid, That, unleſs the regent changed his conduct, ſome misfortune would ſoon happen to him; that he would not go on long.—In 1728, the abbé Blondel, called friar Laurence, for writing againſt the conſtitution.—In 1731, the ſieur Louis René de Boure, formerly an officer in the navy. He had written an addreſs againſt the cardinal de Fleury. In the regiſter it is obſerved, that he is 'a diſcontented ſchemer, who wrote libels againſt perſons in office, becauſe they neglected his projects.'—The ſieur Hugy. It is ſaid: 'It is his majeſty's pleaſure, that this priſoner ſhall have every indulgence and conveniency that is compatible with ſecurity; ſo that no one from with without be permitted to ſee or ſpeak to him.'—The ſieur Morvant, curate of Vincennes, and la Piſſot, for giving falſe information againſt the Janſeniſts.—In 1732, the ſieur Teraſſon, for a deſign of carrying into foreign countries the ſecrets and plans of the manufactory at Lyons. He died at the Baſtile after twelve years confinement. It appears that he was treated with lenity, and allowed to walk about the place. Perhaps his not being ſet at liberty was owing to his having been forgotten.—D. Paul Sulian, Benedictine, of the abbey of Rebais, arreſted at the requeſt of the biſhop of Laon, for having adminiſtered the ſacraments to the abbé Tilories, without obſerving the uſual ceremonies and reſpect. He had carried them in his pocket to avoid being diſcovered, as he and the abbé Tilories were Janſeniſts.—James Mercier, ſon of a painter, for ſelling a print, repreſenting the roaſting of a pope larded with jeſuits.—Francis Torcaſſi, a native of Italy, for ſelling improper drugs, pretending they would produce the appearances and advantages of youth.—The chevalier Desfonds, a gentleman of Vivarais, formerly a lieutenant of the regiment of Conti, for declaiming indecently againſt his majeſty's miniſters and generals, eſpecially againſt M. de Louhendal.—Louis Broeg, innkeeper at the village of Bouy. Three months after his arrival at the Baſtile, he threw himſelf from the tower du Coin, and was killed on the ſpot. It appeared afterwards, that he had been falſely accuſed of being an accomplice in the murder of two officers of the cuſtoms.—Pierre Santuron, accuſed of teaching perſons to counterfeit convulſions.—In 1733, the abbé Vaillant, chief of the ſect called *Eliſéens,* who pretended that he was the prophet Elias, ſent back to the earth for the converſion of the Jews. After being confined twenty-two years in the Baſtile, he was ſent to Vincennes.—The ſieur Heudes, a prieſt of Rouen in Normandy, for debauchery.—In 1735, Alexander d'Arnaud, called friar Amboiſe, ſaying he was the prophet Enoch.—Malbay, convicted with the duke of Nivernois, one of thoſe who contributed to derange his fortune, arreſted at the requeſt of the duke of Nevers.—The count d'Auvergne: he taught his ſon, about five years of age, to have convulſions, and diſſipated his fortune amongſt impoſtors.—The chevalier Wittering, an Engliſhman, falſely accuſed by M. the chevalier de Rozen, to whom he had lent money.—In 1736, the ſieur de la Combe, director of the poſt at Turin, for an affair of ſtate.—The ſieur Carré de Montgeron, counſellor of the parliament; a convulſionary. He preſented to the king, at Verſailles, a book entitled The Truth of the Miracles of M. Paris.—In 1738, father Leonard Avril, called Boucheron, of the order of La Trappe; a libertine and cheat.—In 1739, the duke de l'Eſpare; by way of correction for youthful follies.—The ſieur Broudin, a captain in the troops of Bavaria, accuſed of having committed an aſſaſſination by order of the czarina.—Colonel St. Clair, in the ſervice of Sweden.—The count Drummond, called lord Edward, a convulſionary. In 1740, John Lewis Tanier, curate of Saint Denis, accuſed of ſeducing women.—The chevalier de Mony, employed by the lieutenant-general of the police to write for him, but who ſecretly gave copies of what he wrote to the maréchal de Belle Iſle, the cardinal de Toncſin, the duke de Richlieu, and the count de Saxe.—The Sieur George Huſquin Beaudouin, called *Bellecour*, a man of bad conduct, and violent enemy of M. Orry de Tulvy, the king's commiſſary for the affairs of the Eaſt-India company. In 1742, and onwards to the commencement of the reign of Louis XVI. the priſoners conſiſted chiefly of authors, printers, and bookſellers, who had written or publiſhed ſtrictures on religion, or on the king and government.

Upon the acceſſion of Louis XVI. he evinced great clemency and juſtice, by inſpecting the regiſters of the Baſtile, and ſetting many priſoners at liberty, which ſeems to account for the ſmall number found in the Baſtile when it was deſtroyed. Among the liberated was an old man, who had groaned in confinement for forty-ſeven years. Hardened by adverſity, which ſtrengthens both the mind and the conſtitution, he had reſiſted the horrors of his long impriſonment with an invincible and manly ſpirit. His locks, white, thin, and ſcattered, had almoſt acquired the rigidity of iron; whilſt his body, environed for ſo long a time as it were by a coffin of ſtone, had borrowed from it a firm and compact habit. The narrow door of his cell, turning upon its grating hinges, opened not as uſual by halves; and an unknown voice announced his liberty, and bade him depart. Believing this to be a dream, he heſitated; but at length roſe up and walked forth with trembling ſteps, amazed at the ſpace he traverſed: the ſtairs of the priſon, the halls, the court, ſeemed to him vaſt, immenſe, and almoſt without bounds. He ſtopped from time to time, and gazed around like a bewildered traveller: his viſion was with difficulty reconciled to the clear light of day: he contemplated the heavens as a new object: his eyes remained fixed, and he could not even weep. Stupified with the newly-acquired power of changing his poſition, his limbs, like his tongue, refuſed, in ſpite of his efforts, to perform their office; at length he got through the formidable gates. When he felt the motion of the carriage prepared to tranſport him to his former habitation, he ſcreamed out, and uttered ſome inarticulate ſounds; and, as he could not bear this new movement, he was obliged to deſcend. Supported by a benevolent arm, he ſought out the ſtreet where he had formerly reſided: he found it, but no trace of his houſe remained; one of the public edifices occupied the ſpot where it had ſtood. He now ſaw nothing that brought to his recollection, either that particular quarter, the city itſelf, or the objects with which he had formerly been acquainted. The houſes of his neareſt neighbours, which were freſh in his memory, had aſſumed a new appearance. In vain were his looks directed to all the objects around him; he could diſcover nothing of which he had the ſmalleſt remembrance. Terrified, he ſtopped and fetched a deep ſigh. To him what did it import that the city was peopled with living creatures? None of them were alive to him; he was unknown to all the world, and he knew nobody: and, whilſt he wept, he regretted his dungeon.

At the name of the Baſtile, which he often pronounced and even claimed as an aſylum, and the ſight of his clothes that marked a former age, the crowd gathered round him: curioſity, blended with pity, excited their attention. The moſt aged aſked him many queſtions, but had no remembrance of the circumſtances he recapitulated. At length accident brought in his way an ancient domeſtic, now a ſuperannuated porter, who, confined to his lodge for fifteen years, had barely ſufficient ſtrength to open the gate: even he did not know the maſter he had ſerved; but informed him that grief and misfortune had brought his wife to the grave thirty years before, that his children were gone abroad to diſtant climes, and that of all his relations and friends none now remained. This recital was made with the indifference which people diſcover for events long paſt, and almoſt forgot. The miſerable man groaned, and groaned alone. The crowd around, offering only unknown features to his view, made him feel the exceſs of his calamities even more than he would have done in the dreadful ſolitude that he had left. Overcome with ſorrow, he preſented himſelf before the miniſter to whoſe humanity he owed that liberty which was now a burden to him. Bowing down, he ſaid, "Reſtore me again to that priſon from which you have taken me: I cannot ſurvive the loſs of my neareſt relations; my friends, and, in one word, of a whole generation: is it poſſible in the ſame moment to be informed of this univerſal deſtruction, and not to wiſh for death? This general mortality, which to the reſt of mankind comes ſlowly and by degrees, has to me been inſtantaneous, the operation of a moment. Whilſt ſecluded from ſociety, I lived with myſelf only; but here I can neither live with myſelf nor with this new race, to whom my anguiſh and deſpair appear only as a dream. There is nothing terrible in dying; but it is dreadful indeed to be the laſt." The miniſter was melted; he cauſed the old domeſtic to attend this unfortunate perſon, as only he could talk to him of his family. This diſcourſe was the ſingle conſolation that he received: for he ſhunned all intercourſe with a new race, born ſince he had been exiled from the world; and he paſſed his time in the midſt of Paris in the ſame ſolitude as he had done whilſt confined in a dungeon for almoſt half a century. But the chagrin and mortification of meeting no perſon who could ſay to him, 'We were formerly known to one another,' ſoon put an end to his exiſtence.

Such was the caſtle of the Baſtile; and this famous ſtate-priſon, which had been the ſcene of miſery and diſtreſs to ſo many innocent perſons for upwards of four hundred years, and had become a ſubject of wonder and alarm to every free country in Europe, was demoliſhed on the 14th of July, 1789. The demolition of this engine of deſpotiſm may be ranked among the firſt ſymptoms of the revolution in France. Upwards of 12,000 citizens, armed with muſkets, ſabres, and hatchets, and headed by the grenadier guards, aſſembled early in the morning of the above day, and demanded of the governor, M. de Launay, that the priſoners ſhould be ſet at liberty, and that the Baſtile ſhould be ſurrendered into their hands. The governor diſſembled, but ſaid he would comply; and ordered the outer gate to be opened, under pretence of admitting a party to take poſſeſſion of it. But no ſooner had they entered, than the gate was ſhut upon them, and the drawbridge over which they had paſſed was inſtantly taken up. The governor then ordered the ſoldiers of the garriſon to fire upon them through loop-holes and turrets, until every perſon admitted was either killed or wounded. The people without, on hearing the firing, and learning the perfidy of the governor, inſtantly aſſaulted the caſtle in all quarters. They fetched the cannon from the king's *garde-meuble* in the place Louis XV. one of which was inlaid with ſilver; theſe they planted againſt the Baſtile until a breach was made, when it was taken by ſtorm. The above treachery of the governor has been palliated by ſome writers, and totally denied by others; who aſſert, that the whole was owing to a miſtake; and that in the confuſion of the moment the people fired upon one another, and imputed the deſtruction they made among themſelves to the ſoldiers on the walls and ramparts. But that the contrary was the fact, ſeems little to be doubted; for when the breach was carried, and the governor ſaw almoſt every part of the Baſtile filled with people, and that no hope remained for themſelves, he attempted to ſet fire to the magazine, containing 250 barrels of gunpowder, which would not only have deſtroyed every living creature about the premiſes, but probably half the city of Paris. From the execution of this deſperate attempt he was prevented by two of his own ſerjeants, named Ferrand and Beguard, who caught him by the arm, and wreſted the piſtol from him, juſt as he was about to fire into an open barrel of gunpowder. The enraged multitude then ſeized the governor and other officers; took poſſeſſion of the guard-rooms, armory, and magazine; broke the windows, ſet fire to the furniture, and threw open the doors of the priſons. Their inhabitants, who till that inſtant had been ignorant of what had paſſed, and ſtill thought of the world in the ſtate they had left it, were brought out, careſſed, and carried in triumph through the ſtreets. The fate of the garriſon was very different. The officers and ſoldiers were ſeized and dragged towards the Place de Greve, where a committee was ſitting. M. de Launay, the governor, was ſtabbed in ſeveral places, and then beheaded at the Greve. M. de Loſme Salbray, major of the Baſtile, was killed in defending the place. M. de Miray, aid-major, was killed in the ſtreet Tournelle. M. Peirſon, lieutenant of the invalids, was killed in his way to the Greve. M. Caron, lieutenant in the ſame company, after receiving four wounds, was carried to the Hotel Dieu, where he recovered. The priſoners at this time confined in the Baſtile were no more than ſeven; a high proof of the mildneſs of the government under Louis XVI. Their names were as follow: Tavernier, a perſon ſaid to have been committed for ſeveral offences, appeared to be inſane. Pujade, La Roche, Caurege, and Bechade, charged with a capital forgery on Meſſrs. Tourton, Ravel, and Santerre, bankers in Paris. The count de Solayes, arreſted in Languedoc, in 1782, by an order from the miniſter, M. Amelot, at the requeſt of his father, for diſſipation, and other circumſtances of miſconduct. Having heard the firing, he inquired of the turnkey, who had juſt brought up his dinner, what it meant. He ſaid, it was occaſioned by a revolt of the people on account of the ſcarcity of bread. At this inſtant the door opened, and the room was filled with armed men. The other priſoner, whoſe name was White, had been arreſted by an order from M. de Sartine, in 1784. He was born of Iriſh parents at Rochelle, and was a major in the French infantry. The cauſe of his impriſonment did not appear. The people now, with the concurrence of the committee, ſet about the entire demolition of the Baſtile. The city architects were employed to conduct the work, and that immenſe edifice was ſoon levelled with the ground. Many cannon-balls were found ſtuck in the walls, ſuppoſed to have been fired during the war of the Fronde, at the battle in the ſuburbs St. Anthony, where the royal army was commanded by Turenne, and that of the Fronde by the great Condé. See the article FRANCE.

The fame of the Baſtile will live for ever; and, as the edifice is now deſtroyed, the repreſentation of what it once was will hereafter become a matter of curioſity and value. We have for this reaſon ſubjoined a plan and elevation of it, which may be depended on as authentic. The deſcription of the ground plan is as follows: A. Tour du coin. B. Tour de la chapelle. C. Tour du treſor. D. Tour de la comté. E. Tour du puit. F. Tour de la liberté. G. Tour de la Bertaudiere. H. Tour de la Baſiniere. I. Council chamber. K. The library. L. The chapel. M. Rooms for the archives, &c. N. The guard-room. O. Ancient gate of the city. P. Gate leading to the baſtion. Q. Drawbridge and gate of the caſtle. R. Great court of the caſtle. S. The ſmall court. On the top of the building the roof was flatted, and the walks round the ramparts were extenſive. The whole was ſurrounded by a regular fortification, which cut off all intercourſe from without.

BASTIMON'TOS, ſmall iſlands on the coaſt of America and the iſthmus of Darien, at the mouth of the bay of Nombre de Dios. Lat. 9. 32. N. lon. 79. 40. W. Greenwich.

BASTINA'DE, or BASTINADO, *ſ.* [*baſtonnade*, Fr.] The act of beating with a cudgel; the blow given with a cudgel.—But this courteſy was worſe than a *baſtinado* to Zelmane; ſo with rageful eyes ſhe bade him defend himſelf. *Sidney.*—It is alſo the puniſhment of beating an offender on the ſoles of his feet. The Romans called it *fuſtigatio*, *fuſtium admonitio*, or *fuſtibus cædi*; which differed from the *flagellatio*, as the former was done with a ſtick, the latter with a rod or ſcourge. The fuſtigation was a lighter puniſhment, and inflicted on freemen; the flagellation a ſeverer, and reſerved for ſlaves. It was alſo called *tymponum*, becauſe the patient here was beat with ſticks like a drum. The puniſhment is much in uſe in the eaſt to this day. The method here practiſed is thus: the criminal being laid on his belly, his feet are raiſed, and tied to a ſtake, held faſt by officers for the purpoſe; in which poſture he is beaten by a cudgel on the ſoles of his feet, back, chin, &c. to the number of 100 or more blows.

To BASTINADE, *v. a.* [from *baſtonner*, Fr.] To beat; to treat with the *baſtinade*.—Nick ſeized the longer end of the cudgel, and with it began *to baſtinade* old Lewis, who had ſlunk into a corner, waiting the event of a ſquabble. *Arbuthnot.*

BAS'TION, *ſ.* in the modern fortification, a large maſs of earth at the angles of a work, connecting the curtains to each other; and anſwers to the bulwark of the ancients. It is formed by two faces, two flanks, and two demigorges. The two faces form the ſalient angle, or angle of the baſtion; the two flanks form with the faces, the *epaules* or ſhoulders; and the union of the other two ends of the flanks with the curtains forms the two angles of the flanks. See the article FORTIFICATION.

Compoſed BASTION, is when the two ſides of the interior polygon are very unequal, which makes the gorges alſo unequal.

Cut BASTION, is that which has a re-entering angle at the point, and is ſometimes called a *Baſtion with a Tenaille*, whoſe point is cut off, making an angle inwards, and two points outwards. This is uſed when the ſalient angle would be too ſharp, or when water or ſome other impediment prevents it from being carried out to its full extent.

Deformed or *Irregular* BASTION, is when the irregularity of the lines and angles throws the baſtion out of ſhape: as when it wants one of the demigorges, one ſide of the interior polygon being too ſhort, &c.

Demi BASTION, or HALF BASTION, alſo otherwiſe called an *Epaulment*, has but one face and flank.

Double BASTION, is when one baſtion is raiſed within, and upon the plane of another baſtion.

Flat BASTION, is one built in the middle of the curtain, when it is too long to be defended by the uſual baſtions at the extremities.

Regular BASTION, is that which has its due proportion of faces, flanks, and gorges.

Solid BASTION, thoſe that are entirely filled up with earth to the height of the rampart, without any void ſpace towards the centre.

Void or *Hollow* BASTION, has the rampart and parapet ranging only round the flanks and ſpaces, ſo that a void ſpace is left within towards the centre, where the ground is ſo low, that, if the rampart be taken, no retrenchment can be made in the centre, but what will lie under the fire of the beſieged.

BASTION of FRANCE, a fortreſs on the coaſt of Barbary, belonging to the French.

BASTITA'NI, anciently a people of the province of Bætica in Spain.

BASTO'GNE, a city of the Netherlands, in the duchy of Luxemburg, near the foreſt of Ardennes; it is ſo populous, ſo well built, and has ſo much trade, that it is not unfrequently called *Paris in Ardennes*. This city was in poſſeſſion of the French from 1684 to 1698, when, by the peace of Ryſwick, it was reſtored with its juriſdiction to Spain, from whom it deſcended to the houſe of Auſtria. The juriſdiction, which is part of the ancient comté of Ardennes, comprehends one hundred and forty-five villages and hamlets; twenty-two miles north-weſt of Luxemburg, and thirty-five ſouth of Liege. Lat. 50. 6. N lon. 23. 11. E. Ferro.

BAS'TON, *ſ.* [*baton*, Fr.] A ſtaff, or club. In heraldry, it is borne as a mark of illegitimacy. In the ſtatutes it ſignifies one of the wardens of the Fleet's ſervants or officers, who attend the king's courts with a red ſtaff, for taking ſuch into cuſtody who are committed by the court. Stats. 1 Rich. II. c. 12. 5 Eliz. c. 23. See Tipstaff.

Baston, or Batoon, *ſ.* in architecture, a moulding in the baſe of a column, called alſo a *tore* or *torus*.

Baston (Robert), a Carmelite monk, afterwards prior of the convent of that order at Scarborough, and alſo poet laureat and public orator at Oxford, flouriſhed in the fourteenth century. King Edward I. in his expedition into Scotland in 1304, took Baſton with him, to celebrate his victories over the Scots; but the poet, being taken priſoner, was obliged to ſing the ſucceſſes of Robert Bruce. He wrote ſeveral books in Latin, on the Wars of Scotland, the Luxury of Prieſts, Synodical Sermons, &c. and alſo a volume of tragedies and comedies, in Engliſh. He died in 1310.

BASTO'VA, a town of European Turkey, in Albania: eighteen miles ſouth of Duraxzo.

BAST'WICK (Dr. John), born at Writtle in Eſſex, in 1593; practiſed phyſic at Colcheſter; but, being a man of warm imagination, applied himſelf to religious controverſy. About 1633, he printed in Holland a Latin treatiſe intitled, *Elenchus religionis Papiſticæ*, with *Flagellum pontificis et epiſcoporum Latialium*, in which the Engliſh prelates thinking themſelves aimed at, he was fined 1000l. in the high commiſſion court, excommunicated, prohibited practiſing phyſic, his books ordered to be burnt, and himſelf to remain in priſon until he made a recantation. Inſtead of recanting, he wrote in priſon, *Apologeticus ad præſules Anglicanos*; wherein he ſeverely exclaimed againſt the proceedings of that court. Pyrenne and Burton coming under the laſh of the ſtar-chamber court at the ſame time, they were all cenſured as ſcandalous ſeditious perſons, condemned to a fine of 5000l. each, to be pilloried, to loſe their ears, and to perpetual impriſonment in three remote parts of the kingdom. The parliament in 1640 reverſed theſe proceedings; and ordered Dr. Baſtwick a reparation of 5000l. out of the eſtates of the commiſſioners and lords who had proſecuted him, which the enſuing confuſions prevented his receiving: however, his wife had, in 1644, an allowance ordered for her and her huſband's maintenance. What became of him afterwards is not known.

BASZE'U, a river of European Turkey, which runs into the Pruth, near Stephanowze, in Moldavia.

BAT, *ſ.* [*bat*, Sax. This word ſeems to have given riſe to a great number of words in many languages; as, *battre*, Fr. to beat; *baton*, *battle*, *beat*, *batty*, and others. It probably ſignified a weapon that did execution by its weight, in oppoſition to a ſharp edge; whence *whirlbat* and *brickbat*.] A heavy ſtick or club. Alſo the inſtrument uſed to ſtrike the ball, in the game of cricket.

Bat, Bate, or Batz, a ſmall copper coin, mixed with a little ſilver, current in ſeveral cities of Germany: it is worth four crutzers. It is alſo a coin in Switzerland, current at five livres, or 100 ſols, French money. The bat or fladermouſe, at Nuremburg, is equal to four crutzers; at Zurich, to $\frac{1}{28}$ of the French crown; at Baſil, Schaffhauſen, &c. to $\frac{1}{27}$; and at Bern and Friburg to $\frac{1}{30}$ of the ſame crown. Theſe laſt are called *ſhort bats*.

Bat, *ſ.* in zoology. See Vespertilio.

Bat-fowling, *ſ.* [from *bat* and fowl.] A particular manner of bird-catching in the night-time, while they are at rooſt upon perches, trees, or hedges. They light torches or ſtraw, and then beat the buſhes; upon which the birds, flying to the flames, are caught either with nets, or otherwiſe.—Bodies lighted at night by fire, muſt have a brighter luſtre than by day; as ſacking of cities, *bat-fowling*, &c. *Peacham.*

BA'TA, *ſ.* in botany. See Calycanthus.

BA'TABLE GROUND, *ſ.* Land that lay between England and Scotland, heretofore in queſtion, when they were diſtinct kingdoms, to which it belonged; litigious or debatable ground, i. e. land about which there is debate; and by that name Skene calls ground that is in controverſy.

BATACO'LA, a ſeaport town of India, on the coaſt of Malabar, where the Engliſh had once a ſettlement; but they were all maſſacred by the natives in 1670: twenty miles north of Barcelor.

BATAHA'NO, a town of the iſland of Cuba, on the weſtern coaſt, oppoſite the iſland of Pines.

BATAL'HA, a village in the province of Eſtremadura, in Portugal, remarkably environed with mountains, ſixty miles north of Liſbon. This village is enriched with a noble church and monaſtery, which affords one of the beſt ſpecimens of Gothic architecture now exiſting. Mr. Murphy, an Iriſh architect of great celebrity, made a journey on purpoſe to inveſtigate this building, with a view to reſtore the principles of Gothic architecture. In this he has completely ſucceeded; and his work, entitled *Batalha*, has been received with every mark of diſtinguiſhed approbation. See Architecture, p. 78, of this volume.

BATAN', a town of Aſiatic Turkey, in the province of Natolia: twenty miles ſouth of Kutaia.

BA'TANISTS. See Batenites.

BATASEK', a town of lower Hungary, ſeated on the Danube. Lat. 46. 30. N. lon. 19. 50. E.

BATA'TAS, *ſ.* in botany. See Convolvulus.

BATA'VIA, a ſeaport on the north coaſt of the iſland of Java, in the kingdom of Jacatra, and capital of the Dutch ſettlements in the Eaſt Indies. It is ſituated in a low and marſhy plain, at the union of ſome ſmall rivers, which deſcend from mountains, and render the internal navigation eaſy: in moſt of the ſtreets are canals filled with almoſt ſtagnant water; ſome of which canals extend into the country. The city occupies a great ſpace, becauſe the houſes are large, convenient, and airy; the ſtreets are very wide and ſtraight. The borders of the canals are ſhaded with large trees, which ſtop the exhalations of the marſhy land, hinder a free circulation of air, and render it unwholeſome; this unwholeſomeneſs is much increaſed by the cuſtom of depoſiting the black and putrid mud on the ſides of the canal to dry. The public buildings are without elegance; the church of the Croſs is large and handſome: the town-houſe is well ſituated; the hoſpital is convenient and large. It is ſurrounded with a rampart of ſtones or bricks, at the foot of which runs a rapid river. At the end of the town is a caſtle, with lofty and thick walls, well furniſhed with artillery, which commands the place of landing, and contains large apartments, magazines, workſhops, &c. At ſome diſtance from the town are forts and redoubts, to command the canals and the roads; but the chief defence is from its marſhy ſituation. The harbour is the moſt beautiful in India; it is large, and the bottom ſecure. Round the harbour and in the bay are ſeveral iſlands, among which are Edam, whether they ſend criminals to hard labour; it is about one league and a half in circumference: Purmerent, in which is an hoſpital: Kuyper, or Cooper, in which are magazines of rice and other merchandize: Onruſt; this iſland is two leagues from the town, and well fortified; here is a timber-yard, where three or four hundred carpenters are kept conſtantly employed, with magazines of ſtores to furniſh veſſels with whatever they may want. Batavia is ſaid to contain within the walls 1242 Dutch houſes, and 200 Chineſe, and nearly as many in the ſuburbs; the population is ſuppoſed to be 60,000 ſouls, of which 17,000 are Europeans, or the deſcendants of Europeans. The heat is moderated during the day by a wind which blows from the ſea, and during the night the air is cooled by winds blowing from the land. The environs are ſpread with country houſes and large gardens, covered with lofty trees, and interſected with rivers and canals; but in the midſt of cultivated lands are found marſhes, bogs, and brackiſh waters, which produce fevers and epidemic diſorders; inſomuch that every countenance announces debility and languor. The following inſtance of the precarious tenure by which life is holden at Batavia, is given by Dr. Thunberg, in his Travels through Aſia, publiſhed in 1795. Shortly before the author's departure for Japan, he ſat down at table in the houſe of his friend Dr. Hoffman with twelve other perſons; and on his return, in the ſpace of only three weeks, he found that eleven of them had been carried off by fevers; ſo that Dr. Hoffman and himſelf were the only ſurvivors out of the thirteen. Surely we cannot but exclaim with the poet, *Quid non mortalia pectora cogis, Auri ſacra fames?* when we find perſons eagerly ſoliciting appointments in ſuch a peſtilential climate as this; nor need we wonder at their rapacious haſte in accumulating treaſures produced in the midſt of ſuch hazards. The table of annual deaths of Europeans, in the hoſpital of Batavia, exhibits a melancholy and progreſſively increaſing liſt. The number in the year 1714, when it begins, was 459; that of the concluding year, 1776, was 2877. The moſt rapid augmentation was obſerved after the cutting of a canal from the country to the town in 1733, and after an addition made to the number of ſick accommodated in the hoſpital in 1761. For the ſpace of ten or twelve leagues from Batavia the land is a perfect flat; beyond this are two hills, where men ſeem to poſſeſs ſtrength and colour, where the diſeaſed readily find health, and the rich enjoy a charming retreat. This ſoil, ſo unfriendly to man, is the beſt for vegetation, and produces great quantities of rice, Indian corn, millet, potatoes, indigo, &c. vaſt plantations of the ſugar-cane grow almoſt without culture, and produce a greater quantity of that vegetable ſalt than thoſe of the American iſlands. In the year 1619, Batavia was only a village palliſadoed round with bamboo cane; in a flat country, marſhy, and ſubject to the inundations of a river running through it. At this time the Dutch made a ſettlement here, who demoliſhed the old and built the new town, which they called *Batavia*; they cut canals and drains, to carry off the water upon any land-floods. The bay has ſeventeen or eighteen iſlands, which defend the harbour, capable of containing 1000 veſſels from the violence of the winds and waves; two large piers run out half a mile into the ſea, between which 100 ſlaves are conſtantly employed in taking out the mud or ſoil, waſhed out of the town, without which the mouth of the river would ſoon be choaked up: a boom croſſes it below the town, which is ſhut up at night, and guarded by a detachment from the main-guard. Here all veſſels pay toll. A ſea-gale riſes every morning at ten to bring veſſels into the bar, and a land one at ten at night to carry them out, one from the north, the other from the ſouth. It is the reſidence of the governor-general of the Indies, appointed by the States of Holland every three years. Lat. 6. 10. N. lon. 106. 50. E. Greenwich. See JAVA.

BATA'VIAN REPUBLIC, the name aſſumed by Holland, and the other United States, ſince the French revolution.

BATAVO'RUM INSULA, the iſland of the Batavians, in ancient geography. Of this iſland Tacitus gives the following deſcription. "The Rhine flowing in one channel, or only broken by ſmall iſlands, is divided at its entering Batavia, as it were into two rivers. One continues its courſe through Germany, retaining the ſame name, and violent current, till it falls into the ocean. The other waſhing the coaſt of Gaul, with a broader and more gentle ſtream, is called by the inhabitants *Vahalis*; which name it ſoon changes for that of *Moſa*, by the immenſe mouth of which river it diſcharges itſelf into the ſame ocean." According to Tacitus, therefore, the iſland of the Batavians was bounded by the ocean, the Rhine, and the Vahalis, now the *Wale*. Cæſar extends it to the Moſa, or *Meuſe*; but Pliny agrees with Tacitus. However, this iſland was of greater extent in Tacitus's time than in Cæſar's; Druſus, the father of Germanicus, having by a new canal conveyed the waters of the Rhine into the ocean, a conſiderable way north of the former mouth of that river. The Batavi were a branch of the Catti, who, in a domeſtic ſedition, being expelled their country, occupied the extremity of the coaſt of Gaul, at that time uninhabited, together with this iſland ſituated among ſhoals. Their name Batavi they carried with them from Germany; there being ſome towns in the territory of the Catti called *Battenberg* and *Battenhauſen*. The bravery of the Batavi, eſpecially the horſe, procured them not only great honour from the Romans, being called their *brothers* and *friends*; but an exemption from taxes, being obliged only to furniſh men and arms. The modern name of this iſland is *Betu*, or *Betaw*.

BATAVORUM OPPIDUM, anciently a town in the iſland of the Batavia, mentioned by Tacitus, without any particular name; which has given riſe to ſeveral ſurmiſes about it, ſome ſuppoſing it to be *Nimeguen*, but Cluverius, *Batavadurum* or *Batemburg*, both without the iſland; which ſituation renders both theſe places inadmiſſible, ſince Tacitus places this nameleſs town within the iſland.

BATBER'GEN, a town of Germany, in the circle of Weſtphalia, and biſhopric of Oſnabruck: two miles ſouth of Quakenbruck.

BATCH, *ſ.* [from *bake.*] The quantity of bread baked at one time. Any quantity of any thing made at once, ſo as to have the ſame qualities.

BATCHAJOUK', a town of Aſia, in Armenia: ninety miles ſouth of Erivan.

BAT'CHELOR. See BACHELOR.

BATCHURISCH'KOI, a town of Ruſſia, in the government of Archangel, on the eaſt of the White Sea: eight miles north of Archangel.

BATE, *ſ.* [perhaps contracted from *debate.*] Strife; contention; as, a *make bate.*

To BATE, *v. a.* [contracted from *abate.*] To leſſen any thing; to retrench. To ſink the price.—When the landholder's rent falls, he muſt either *bate* the labourer's wages, or not employ, or not pay, him. *Locke.*—To leſſen a demand.—*Bate* me ſome, and I will pay you ſome, and, as moſt debtors do, promiſe you infinitely. *Shakeſpeare.*—To cut off; to take away.—*Bate* but the laſt, and 'tis what I would ſay. *Dryden.*

To BATE, *v. n.* To grow leſs. To remit: with *of* before the thing.

Abate thy ſpeed, and I will *bate of* mine. *Dryden.*

BATE ſeems to have been once the preterite of *bite*, as Shakeſpeare uſes *biting faulchion*; unleſs in the following lines, it may rather be deduced from *beat*.

Yet there the ſteel ſtaid not, but inly *bate*
Deep in his fleſh, and open'd wide a red flood gate. *Spenſ.*

BATE (George), an eminent phyſician, born at Morton, near Buckingham, in 1608. In 1637, he took his degree of doctor in phyſic, and became very eminent in his profeſſion, inſomuch that, when king Charles kept his court at Oxford, he was his principal phyſician. When the king's affairs declined, Dr. Bate accommodated himſelf ſo well to the times, that he became phyſician to the Charter-houſe, fellow of the college of phyſicians, and afterwards principal phyſician to Oliver Cromwell. Upon the reſtoration, he again got into favour with the royal party, was made principal phyſician to the king, and fellow of the Royal Society; and this, we are told, was owing to a report that he gave the protector a doſe which haſtened his death. Dr. Bate wrote in Latin an account of the commotions in England, and ſome other pieces. He died at his houſe in Hatton-garden, and was buried at Kingſton in Surrey.

BATE (Julius), an eminent Engliſh divine, rector of Sutton, near Petworth in Suſſex. He publiſhed Critica Hebræa, or an Hebrew-Engliſh Dictionary, without points, 4to. 1767. An Hebrew Grammar, 1750. A literal Tranſlation of the Scriptures out of the original Hebrew, as far as the end of the ſecond book of Kings; with many religious tracts.

BATE'AB, a town of North America, in the province of Yucatan: 190 miles ſouth-ſouth-weſt of Merida.

BATE'CUMBE, or BADECOMBE (William), an eminent mathematician, flouriſhed about the year 1420, in the reign of Henry V. He ſtudied at Oxford, where he applied himſelf to natural philoſophy in general, but chiefly to the mathematics, in which he made a great proficiency. He wrote, 1. Of the Formation and Uſe of the Concave Sphere. 2. Of the Solid Sphere. 3. Of the Uſe of the Aſtrolabe. 4. Philoſophical Concluſions.

BATE'FUL, *adj.* [from *bate* and *full.*] Contentious.

BATE'MAN (William), biſhop of Norwich in the fourteenth century, and founder of Trinity-hall, in Cambridge, was born at Norwich, and educated at Cambridge, where he applied himſelf to the ſtudy of the civil law, in which he took the degree of doctor before he was thirty years of age, a thing then uncommon. In 1328, he was collated to the archdeaconry of Norwich: after which he went and ſtudied at Rome, where he was promoted by the pope to the place of auditor of his palace. He was likewiſe advanced to the deanery of Lincoln; and ſo great an opinion had he of his capacity, that he ſent him twice as his nuncio, to procure a peace between Edward III. king of England, and the king of France. Upon the death of Anthony de Beck, biſhop of Norwich, the pope conferred that biſhopric upon our Bateman, on the 23d of January, 1343, and conſecrated him with his own hands. Being inveſted with that dignity, he returned into his native country after many years abſence, and lived in a very hoſpitable manner. Of pope Clement VI. he obtained for himſelf and ſucceſſors the firſt-fruits of all vacant livings within his dioceſe; which occaſioned frequent diſputes between himſelf and his clergy. In the year 1347 he founded Trinity-hall in Cambridge, for the ſtudy of the civil and canon laws; and another hall dedicated to the Virgin Mary, for the ſtudy of philoſophy and divinity. In 1354 he was by order of parliament diſpatched to the court of Rome, with Henry duke of Lancaſter, and others, to treat of a peace, then in agitation between the crowns of France and England. This journey proved fatal to him; for he died at Avignon, where the pope then reſided, on the 6th of January, 1354-55, and was buried with great ſolemnity in the cathedral of that city.

BATE'MENT, *ſ.* [from *abatement.*] Diminution: a term only uſed among artificers.—To abate, is to waſte a piece of ſtuff; inſtead of aſking how much was cut off, carpenters aſk what *batement* that piece of ſtuff had. *Moxon.*

BATE'NITES, a ſect of apoſtates from Mahometaniſm diſperſed through the eaſt, who profeſſed the ſame abominable practices with the Iſmalians and Karmatians. The word ſignifies *eſoteric*, or people of inward or hidden light.

BA'TERSEA, [once called *Patrick's Ea*, i. e. Patrick's Iſle.] A village in Surrey on the Thames.

BATES (William), an eminent preſbyterian divine, born in 1625. He was admitted in Emanuel college, Cambridge, and from thence removed to King's college in 1644. He was one of the commiſſioners, at the conference in the Savoy, for reviewing the public liturgy, and was concerned in drawing up the exceptions againſt the Common Prayer: however, ſoon after the reſtoration, he was appointed chaplain to Charles II. and became miniſter of St. Dunſtan's in the weſt, but was deprived of that benefice for nonconformity. He was offered, at the reſtoration, the deanery of Litchfield; which he refuſed. He publiſhed Select Lives of illuſtrious and pious perſons, in Latin; and ſince his death all his works, except his Select Lives, have been printed in one volume folio. He died July 14, 1699, in the 74th year of his age.

BATGA'O, a town of Aſia, in the country of Mocaumpour: ten miles ſouth of Carmandu, and 140 north of Patna. Lat. 28. N. lon. 28. 15. E. Greenwich.

BATH, *ſ.* [*bath*, Sax. *bad*, Teut.] A pool of water to bathe in. A bath is either hot or cold, either of art or nature. Artificial baths have been in great eſteem with the ancients, eſpecially in complaints to be relieved by revulſion, as inveterate headachs, by opening the pores of the feet, and alſo in cutaneous caſes. But the modern practice has greateſt recourſe to the natural baths; moſt of which abound with a mineral ſulphur, as appears from their turning ſilver and copper blackiſh. The cold baths are the moſt convenient ſprings, or reſervatories, of cold water to waſh in, which the ancients had in great eſteem; and the preſent age can produce abundance of noble cures performed by them.—Why may not the cold *bath*, into which they plunged themſelves, have had ſome ſhare in their cure. *Addiſon.*—A ſtate in which great outward heat is applied to the body, for the mitigation of pain, or any other purpoſe.—In the height of this *bath*, when I was more than half ſtewed in greaſe like a Dutch diſh, to be thrown into the Thames! *Shakeſpeare.*—In chemiſtry, it generally ſignifies a veſſel of water, in which another is placed that requires a ſofter heat than the naked fire. See BALNEUM. *Balneum Mariæ* is a miſtake for *balneum maris*, a ſea or water bath. A ſand heat is ſometimes called *balneum ſiccum*, or *cinereum.*—We ſee that the water of things diſtilled in water, which they call the *bath*, differeth not much from the water of things diſtilled by fire. *Bacon.*—A ſort of Hebrew meaſure, containing the tenth part of an homer, or ſeven gallons and four pints, as a meaſure for things liquid; and three pecks and three pints as a meaſure for things dry.—Ten acres of vineyard ſhall yield one *bath*, and the ſeed of an homer ſhall yield an ephah. *Iſaiah* v. 10.

BATHS (*Vapour*), or *Vapour baths*, are thoſe wherein the ſteam of ſome decoction is received upon the body to promote perſpiration, or to act medicinally by abſorption or otherwiſe. They are alſo called *Balnea Laconica*. Vapour baths are ſo called when the patient is not plunged into what is prepared for the bath, but only receives its ſteam upon thoſe parts of his body which require it: as in ſome diſeaſes of the anus and womb, where the patient ſits and receives the fumes of ſome proper fomentation, &c. To theſe may be added the bagnio; where people are made to ſweat by the heat of a room, or the affuſion of hot water; after which they generally go into a hot bath. A peculiar ſort of vapour bath was uſed by the ancient Mexicans, and is ſtill in uſe among their deſcendants. According to the abbé Clavigero, theſe baths are built of raw bricks, and their form is ſimilar to that of ovens for baking bread: but with this difference, that the pavement of the bath is a little convex, and lower than the ſurface of the earth; whereas that of moſt ovens is a plane, a little elevated for the accommodation of the baker. The greateſt diameter of the bath is about eight feet, and its greateſt height ſix. The entrance, like the mouth of an oven, is wide enough to allow a man to creep eaſily in. In the place oppoſite the entrance is a furnace of ſtone of raw bricks, with its mouth outwards to receive the fire, and a hole above to carry off the ſmoke. The part which unites the furnace to the bath, and which is about two feet and a half ſquare, is ſhut with a dry ſtone of a porous texture. In the upper part of the vault there is an air-hole, like that to the furnace. When any perſon goes to bathe, he firſt lays a mat within the bath, a pitcher of water, and a bunch of herbs or leaves of maize. He then cauſes a fire to be made in the furnace, which is kept burning until the ſtones which join the bath and furnace are quite hot. The perſon who is to uſe the bath enters commonly naked, and generally accompanied, for the ſake of convenience, by one of his domeſtics. As ſoon as he enters, he ſhuts the entrance cloſe, but leaves the air-hole at top for a little time open, to let out any ſmoke which may have been introduced through the chinks of the ſtone; when it is all out, he ſtops up the air-hole. He then throws water upon the hot ſtones, from which immediately ariſes a thick ſteam. While the ſick perſon lies upon the mat, the domeſtic drives the vapour downwards, and gently beats the ſick perſon, particularly on the ailing part, with the bunch of herbs, which are dipped for a little while in the water of the pitcher, which has then become pretty warm. The ſick perſon falls immediately into a ſoft and copious ſweat, which is increaſed or diminiſhed at pleaſure, according as the caſe requires. When the evacuation deſired is obtained, the vapour is let off, the entrance is cleared, and the ſick perſon clothes himſelf, or is conveyed on the mat to his chamber; as the entrance to the bath is uſually within ſome chamber of his habitation. This ſort of bath, called *temazcalli* by the natives, has been regularly uſed in ſeveral diſorders, particularly in fevers. The Indian women uſe it commonly after childbirth, and alſo thoſe perſons who have been ſtung or wounded by any poiſonous animal. It is undoubtedly a powerful remedy for all diſeaſes which ariſe from ſuppreſſed perſpiration, as colds, catarrhs, &c. and would be highly uſeful in Italy, and other countries where the rheumatiſm is ſo frequent and afflicting a diſeaſe.

Baths *(Dry)*, are thoſe made of aſhes, ſalt, ſand, &c. &c. The ancients had many ways of exciting a ſweat, by means of a dry heat; as by the uſe of hot ſand, ſtove-rooms, or artificial bagnios, and even from certain natural hot ſteams of the earth, received under a proper arch or hot-houſe, as we learn from Celſus. They alſo had another kind of bath by inſolation, where the body was expoſed to the ſun for ſome time, in order to draw forth the ſuperfluous moiſture from the inward parts; and to this day it is a practice in ſome nations to cover the body over with horſe-dung, eſpecially in painful chronic diſeaſes. In New England they make a kind of ſtove of turf, wherein the ſick are ſhut up to bathe or ſweat. It was probably from a knowledge of this practice, and of the exploded doctrines of Celſus, that the noted empiric Dr. Graham drew his notions of the ſalutary effects of what he called *earth-bathing*, a practice which, in the way he uſed it, conſigned ſome of his patients to a perpetual manſion under ground!

The like name of *dry* bath is ſometimes given to another kind of bath, made of kindled coals, or burning ſpirit of wine; the patient being placed in a convenient cloſe chair for the reception of the fume, which riſes and provokes ſweat in a plentiful manner; care being taken to keep the head out, and to ſecure reſpiration. This bath has been found very effectual in removing old obſtinate pains in the limbs. Dry bathing of this kind is nearly ſimilar to fumigation, in which the dry vapours of mineral and other ſubſtances being applied to the ſkin, the abſorbent veſſels take up and convey into the blood the ſubtle parts that come in contact with their mouths or orifices. By the ſubtle fumes thus received, much benefit or prejudice may be produced, according to the nature of the caſe, and the conſtitution on which its effects are to be exerted; as is evident from the palſies produced among water-gilders, workers in lead-mines, &c. and alſo from the benefits received in many caſes when the air is impregnated with ſalutary materials. Catarrhs and colds, for inſtance, are relieved by fumes received with the breath; and, by the ſame method, expectoration is aſſiſted in the aſthma; and even ulcers in the lungs are ſaid to have been relieved by this method. But this is ſtill more ſtrongly exemplified by the common practice of curing venereal ulcers, and exciting the general action of quickſilver in the ſyſtem, by incloſing the naked body of the patient in a box fitted to receive the fumes of quickſilver raiſed by ſprinkling cinnaber upon a red-hot iron, or, what is ſtill better, the *Hydrargyrus precipitatus cinereus* of the Pharmacopœia Chirurgica, which, not emitting any ſulphureous vapours like the other, proves leſs inconvenient to the patient. Some authors ſpeak of blood baths, *balnea ſanguinolenta*, prepared eſpecially of the blood of infants, anciently ſuppoſed to be a kind of ſpecific for the leproſy.

Baths (*Metalline)*, are thoſe made of water impregnated with the *ſcoriæ* of metals. The moſt common and uſeful of this kind are thoſe prepared with the ſcoriæ of iron, which are reputed excellent bracers for weak and decayed limbs; and alſo uſeful in ſtopping hemorrhages, and reſtoring the menſtrual flux when obſtructed; inſomuch, that they may even be ſubſtituted for the natural iron baths with great propriety. Adjacent to the ſmelting huts where metals are run from their ore, are to be found large quantities of the ſlag of copper, antimony, and cobalt, which abound with ſuch principles as make ſerviceable baths for ſtrengthening the loſt tone of the muſcular fibres, or relaxing them when they are too rigid. Theſe baths have likewiſe a deterſive and cleanſing virtue; ſo that, with a prudent regard to circumſtances, they may be uſed with advantage on many occaſions. The way of making theſe artificial baths is, either to take the ſlags as they come hot from the furnace, or elſe to heat them afreſh, and throw them into hot water; which is afterwards to be uſed either in the way of bath or fomentation, occaſionally. There are other artificial baths, prepared of alum and quick-lime, by boiling them together in water. Such baths are ſuppoſed to be ſerviceable in paralytic diſorders, and weakneſs of the limbs.

The *pepper bath*, or *peffer waſſer*, on the Alps, is one of the moſt celebrated in Europe, and has been the ſubject of expreſs treatiſes, beſide what has been ſaid of it occaſionally by Scheuchzer and others. It was firſt diſcovered in the year 1240, and is of the periodical kind. The water breaks forth in a dreadful chaſm of the earth, ſcarcely acceſſible to the ſun-beams, or indeed to men, unleſs of the greateſt fortitude and courage. Theſe ſtreams have this ſingularity, that they commonly break forth in May, with a great impetuoſity, bringing with them beech-leaves, crabs, or other wood-fruit; and that their courſe ceaſes in September or October. Scheuchzer profeſſes himſelf of opinion that theſe waters are not impregnated with any minerals, or, if they do contain any, that their virtues in curing diſtempers and preſerving health do not proceed from them. They are exceedingly clear, and have neither colour, taſte, nor ſmell.

Baths made a part of the ancient *gymnaſia*, though they were frequented more for the ſake of pleaſure than health. The moſt magnificent baths were thoſe of Titus, Paulus Æmilius, and Diocleſian, of which there are ſome ruins ſtill remaining. It is ſaid that at Rome there were 856 public baths. Fabricius adds, that the exceſſive luxury of the Romans appeared in nothing more viſible than in their baths. Seneca complains, that the baths of plebeians were filled from ſilver pumps; and that the freedmen trod on gems. Macrobius tells us of one Sergius Oratus, a voluptuary, who had pendant baths hanging in the air. According to Dion, Mæcenas was the firſt who conſtructed a bath at Rome. Yet there are inſtances of public baths prior to this; but they were of cold water, ſmall, and but poorly decorated. Agrippa, in his ædilate, built 160 places for bathing, where the citizens might be accommodated, either with hot or cold water, *gratis*. After this example, Nero, Veſpaſian, Titus, Domitiam, Severus, Gordian, Aurelian, Maximian, Diocleſian, and moſt of the emperors who had ſtudied to gain the affections of the people, erected baths laid with the richeſt marble, and wrought according to the rules of the moſt delicate architecture. The rich had baths at home, and frequently very magnificent ones, eſpecially after the time that the practice of pillaging the provinces had begun; but they only uſed them on extraordinary occaſions. The great men, and even the emperors themſelves, ſometimes bathed in public with the reſt of the people. Alexander Severus was the firſt who allowed the public baths to be opened in the night-time during the heats of ſummer.

The Greek baths were uſually annexed to *paleſtræ* or *gymnaſia*, of which they were conſidered as a part. Theſe baths conſiſted of ſeven different apartments, uſually ſeparated from each other, and intermixed with other buildings belonging to the other ſorts of exerciſes. Theſe were, firſt, the cold bath, *frigida lavatio*; 2dly, The *elæotheſium*, or room where they anointed with oil; 3dly, The *frigidarium*, or cooling room; 4thly, The *propnigeum*, or entrance of the *hypocauſtum*, or ſtove; 5thly, The vaulted room for ſweating in, or vapour-bath, called *concamerata ſudatio*, or *tepidarium*; 6thly, The *laconicum*, or dry ſtove; 7thly, The hot bath called *callida lavatio*. As for the baths ſeparate from the *paleſtræ*, they appear to have been uſually double, one for men, the other for women; but ſo near, that the ſame furnace heated both. The middle part was poſſeſſed by a large baſon that received water by ſeveral pipes, and was ſurrounded by a baluſtrade, behind which there was an area for the reception of thoſe who waited to uſe the bath. They were vaulted over, and only received light from the top.

In the Roman baths, the firſt part that appeared was a large baſon, called κολυμϐηθρα, in Greek, and *natatio* or *piſcina* in Latin. In the middle was the *hypocauſtum*, which had a row of four apartments on each ſide, called *balnearia*: theſe were the ſtove, the bath, cold bath, and *tepidarium*. The two ſtoves, called *laconicum* and *tepidarium*, were circular and joined together. Their floor was hollow and ſuſpended, in order to receive the heat of a large furnace, which was communicated to the ſtoves through the interpoſing vacuities. This furnace alſo heated another room called *vaſarium*, in which were three large brazen veſſels called *milliaria*, reſpectively containing hot, warm, and cold, water; which were ſo diſpoſed, that the water might be made to paſs by ſyphons and pipes out of one or other of them into the bath, in order to adjuſt its temperature. The deſcription is given by Vitruvius. At three in the afternoon, which is what Pliny calls *hora octava et nona*, the Romans all repaired to the baths, either the public or the private ones: this was called the *bath hour*, *hora balnei*, which in winter was at nine, in ſummer at eight. The public baths were all opened by the ſound of a bell, and always at the ſame hour; and thoſe who came too late, of courſe ſtood the chance of bathing with little advantage or comfort to themſelves. They began with hot water; after which, as the pores were opened, and might cauſe too plentiful a perſpiration, they thought it neceſſary for health to cloſe them again, either with the cold bath, or at leaſt with a ſprinkling of cold water. During the bath, the body was ſcraped with a kind of knives, or ſmall ſtrigils, ſuch as are ſtill found in the cabinets of the curious. After bathing ſucceeded unction and perfuming, from which they went freſh to ſupper. The Romans, when they found their ſtomachs overcharged with meat, went to the bath, as we learn from Juvenal, who inveighs againſt thoſe who, having gorged themſelves with eating, were forced to go into the baths, to give themſelves relief. They found alſo that a bath was good to refreſh themſelves after any conſiderable fatigue or trouble, as Celſus tells us; which makes Plautus ſay, that all the baths in this world were not ſufficient to remove the wearineſs he felt. After Pompey's time the humour of bathing was carried to ſo great an exceſs, that many were debilitated, and ſeveral brought themſelves to ſuch a pitch, that they could not bear food without bathing firſt. The emperor Titus is ſaid to have loſt his life by this. Hence it is that Pliny inveighs ſeverely againſt thoſe phyſicians who held, that hot baths digeſted the food. The emperor Adrian firſt laid a reſtraint on the immoderate paſſion for bathing, by a public edict, forbidding all perſons to bathe before the eighth hour.

Baths of Agrippa (*thermæ Agrippinæ*) were built of brick, but painted in enamel: thoſe of Nero, *thermæ Neronianæ*, were not only furniſhed with freſh water, but even had the ſea brought into them: thoſe of Caracalla were adorned with 200 marble columns, and furniſhed with 1600 ſeats of the ſame matter. Lipſius aſſures us they were ſo large, that 1800 perſons might conveniently bathe in them at the ſame time. But the baths of Diocleſian, *thermæ Diocleſianæ*, ſurpaſſed all the reſt in magnificence. One hundred and forty thouſand men were employed many years in building them. Great part of theſe, as well as thoſe of Caracalla, are ſtill ſtanding; and with the vaſt high arches, the beautiful and ſtately pillars, the extraordinary plenty of foreign marble, the curious vaulting of the roofs, the prodigious number of ſpacious apartments, and a thouſand other ornaments, conſtitute one of the greateſt curioſities of modern Rome.

Bath, in chemiſtry, a method whereby heat is tranſmitted to various bodies under chemical inveſtigation. The heat communicated from bodies in combuſtion, muſt neceſſarily vary according to circumſtances; and this variation not only influences the reſults of operations, but in many inſtances endangers the veſſels, eſpecially if they be made of glaſs. Among the ſeveral methods of obviating this inconvenience, one of the moſt uſual conſiſts in interpoſing a quantity of ſand, or other matter, between the fire and the veſſel intended to be heated. The ſand-bath and the water-bath are moſt commonly uſed; the latter of which is called *balneum mariæ* by the elder chemiſts. A bath of ſteam may in ſome inſtances be found preferable to the water-bath. Some chemiſts have propoſed baths of melted lead, of tin, and of other fuſible ſubſtances. Theſe may perhaps be found advantageous in a few peculiar operations, in which the intelligent practitioner muſt be left to his own ſagacity. The *water-bath* is nothing more than a pot or veſſel containing water, which is kept boiling, and in which the digeſting or diſtillatory veſſels are kept immerſed. As the heat of boiling water is nearly ſtationary, this temperature is found very advantageous in the diſtillation of eſſential oils, and all other ſubſtances in which an empyreumatic taint is to be feared. It may eaſily be imagined that the form of the bath, as well as of the veſſels, may be varied according to the purpoſes reſpectively aimed at. The *ſand-bath* conſiſts of ſand placed either in an iron pot, or upon an iron hearth, with fire underneath. In this the heat is gradually communicated, although leſs uniformly than by the water-bath; and it may likewiſe be carried to ignition. As the heat is greateſt towards the bottom of the ſand, the operator poſſeſſes a power of moderating it by raiſing the veſſel when neceſſary. The extenſive ſand-bath which is formed by ſpreading ſand upon an iron-hearth, is very uſeful for digeſtion, ſolution, evaporation, and other chemical purpoſes, which may be carried on at the ſame time in a conſiderable number of veſſels.

Bath, in metallurgy, is uſed to ſignify the fuſion of metallic matter in certain operations. In refining or cupelling, for example, the metals are ſaid to be in bath when they are melted. When gold is purified by antimony, this ſemi-metal melted is called by ſome the *bath of gold*; alchemiſts, who conſidered gold as the king of metals, called antimony the *bath of the king* only; becauſe in fact gold only can reſiſt the action of antimony.

BATH. [All the different names that this city has borne in different ages and languages have been taken from its medicinal waters: as the Υδατα Θερμα, or 'hot waters,' of Ptolemy; the *Aquæ Solis*, or 'waters of the ſun,' of Antoninus; the *Caer Baden*, and *Caer Ennant*, i. e. 'the city of baths, and 'the city of ointment,' of the Britons; and the *Ackmancheſter*, or 'the city of valetudinarians,' of the Saxons.] A celebrated city in the county of Somerſet, ſituated in a deep narrow valley, bounded on the north, ſouth, and ſouth-weſt, by lofty hills, forming a very pleaſant natural amphitheatre, and affording the city a double advantage, a barrier againſt the winds, and fountains of the pureſt waters. Theſe hills abound with white free-ſtone, of which the houſes are built. On the north-weſt ſide the valley widens, divided into rich meadows, watered by the river Avon. There are three principal ſprings, or baths; the King's Bath, the Hot Bath, and the Croſs Bath. The Queen's Bath is merely an expanſion of the waters of the King's Bath. The diſcovery of theſe waters is, by ancient hiſtorians, attributed to Bladud, ſon of Lud-Hudibras, who was king of this county 890 years before the birth of Chriſt; but the antiquity of the city and the baths themſelves we are not to refer to any higher period than the arrival of the Romans, a period peculiarly happy in converting the gifts of nature to the propereſt uſes, and in ſupplying her deficiencies by admirable works of art. It was in the year of our Lord 44, and in the reign of the emperor Claudius, that the Roman forces, under the conduct of Flavius Veſpaſian, after having reduced all the Belgic colonies and the weſtern parts of Britain under the ſubjection of the Roman empire, ſat down in this territory, to which they had probably been directed by the native Belgæ. The report of ſuch genial waters

ters as flowed with ſpontaneous heat from the boſom of the earth, in a rude and barbarous country, was a ſufficient inducement to a people who had ſo lately left the luxuries of Italy, where every art was employed in erecting the moſt ſuperb baths and ſudatories, and in fabricating, with immenſe labour and expence, that very article of indulgence which nature in this ſpot furniſhed without the ſmalleſt trouble to their hands. Here they ſtationed the firſt detachment of the ſecond legion, building proper habitations for the officers, and the military in general; and at length, by the arrival of other legions, the place grew into a city, endowed with Roman liberties, and governed by Roman laws. Walls, gates, and temples, were erected, and a little Rome began to adorn a dreary inhoſpitable wild. In the reign of Adrian, about A. D. 118, that ſame detachment of the ſecond legion, ſtill remaining here, was joined by a diviſion of the ſixth; and in that of Severus, a part of the twentieth legion, removed from Devana, or Cheſter, had their ſtation in Aquæ Solis, which was then become the moſt capital city in Roman Britain, and the principal, if not the only, place in this part of the iſland for preparing the legionary arms and enſigns. The old Roman city was built in the form of a pentagon, the area whereof was 1200 feet in length, and the greateſt breadth about 1150. It was ſurrounded by a ſtrong wall, compoſed of layers of ſtone, brick, and terras, nine feet in thickneſs, and twenty feet in height: this wall was flanked by circular towers at each angle, and had four gateways, anſwering nearly to the four cardinal points, from which, in ſubſequent times, the principal ſtreets had their denominations. During the reign of the emperor Theodoſius, Chryſanthus being then governor in Britain, the Roman legions began to leave this place, now increaſed into a great and populous city, inhabited by families unconnected with military concerns, and practiſing the arts of civilization and peace. At length, about the year 444, the Roman army totally withdrew from the place, and left it to the poſſeſſion of the Britons, who, by their intercourſe and intermarriages with the Romans, had before conſtituted a conſiderable part of its inhabitants. The Saxons, who had been invited into Britain, diſperſed themſelves into various parts, and by ſmall degrees erected themſelves into ſeveral petty ſtates, or monarchies. Bath, with a few other conſiderable cities in the weſtern parts of the iſland, remained in the poſſeſſion of the Britons till the year 577, when a large army of the Saxons, under the command of Ceaulin and Cuthwin, advanced towards its walls. They were met by three Britiſh kings of the names of Conmail, Condidin, and Farinmail, who, giving them battle, fell, and Bath was obliged to yield to the Saxon arms. This period afforded a new name and a different proſpect to this memorable city, becoming part of the dominions of the Weſt Saxons, under which it flouriſhed for near 200 years; and perhaps it is owing to this people, that we know ſo little or ſo much of the Roman ſtate of Bath. On the foundation of thoſe walls, which they themſelves had induſtriouſly deſtroyed, freſh bulwarks were erected with the old materials, and with others brought from the ruins of temples, mauſoleums, and triumphal arches, and therein was inſerted a variety of ſculptures, which they had thrown down from their ruined buildings. The interior parts of the city were decorated in a new taſte, and filled with adventitious ſtructures. The Daniſh invaſions interrupted the tranquillity of the city, and the progreſs of its improvements. At length it aſſumed new ſplendour under the Auguſtan reign of Edgar, who, in the year 973, was conſecrated and crowned with great ſolemnity in the church of St. Peter, in the preſence of Oſwald, archbiſhop of York, and ſeveral other prelates of England. This monarch endowed Bath with divers valuable privileges, erecting it into a free borough, granting it a market, and the liberty of coinage, and exempting it from toll, tribute, and taxes; the memory of which benefactions the inhabitants preſerved for many ages in anniverſary games and feſtive pageantries. At the inſtance of biſhop Burnel, in the reign of Edward I. this city firſt ſent repreſentatives to parliament. The government of Bath was originally veſted in a ſheriff; the firſt that appears to have borne this office was Ælfred, who is ſaid to have been a great benefactor to the city, and died in 907. It afterwards had a provoſt, or bailiff. Its firſt charters were confirmed by Edw. III. Rich. II. Hen. V. and Hen. VI. Queen Elizabeth, in the thirty-ſecond year of her reign, granted it a new charter, declaring it to be a ſole city of itſelf, and the citizens to be a body corporate and politic, by the name of mayor, aldermen, and citizens, of Bath. The commerce of Bath, abſtracted from the expenditures of faſhionable company reſorting to it, is now altogether inconſiderable; nor is there any manufacture which deſerves notice. Formerly, however, it was almoſt in a manner maintained by clothing. Leland, who viſited this place in the reign of Henry VIII. informs us, that a little before his time, there were three capital clothiers, of the names of Style, Kent, and Chapman, by whom the town of Bath then flouriſhed; and it is aſſerted, that, at the time of the reſtoration, there were no leſs than ſixty broad looms employed in the ſingle pariſh of St. Michael. The river Avon was made navigable by an act of parliament, 10 Anne; and the firſt barge, laden with deals, pig-lead, and meal, was brought up to the city December 15, 1727. This city, from a very ſmall and mean beginning, is now become ſo large in bulk, ſo elegant in its buildings, and ſo reſpectable in its inhabitants and its viſitors, as to be the pride of England, and the admiration of foreigners. The old city-walls are now built over, and its priſtine ſtate almoſt wholly obliterated by modern improvements. Superb edifices, particularly the Circus, Creſcent, &c. raiſed by the moſt ſkilful architects, riſe in every quarter, and compoſe one of the moſt beautiful cities in the world. In the earlier part of the civil wars, Bath was garriſoned for the ſervice of Charles I. and the ſum of 7000l. was expended on its fortifications. Notwithſtanding which, upon the approach of a ſmall party of dragoons, and the appearance of another party upon the Beechencliff, the gates were thrown open, and the city ſurrendered to the enemy. Hereupon it became one of the principal poſts of the parliament forces in this county, and here Sir William Waller lay for a conſiderable time with his whole army, making incurſions into the country, and inviting together all the diſaffected from the neighbouring clothing towns and villages. But, after the battle of Roundway-down, July 13, 1643, in which Sir William Waller was defeated, and the withdrawing of the garriſon hence to the reinforcement of Briſtol, the king's troops retook poſſeſſion of Bath. In 1715, a deſign was ſet on foot for a general hoſpital, but was not carried into effect till the year 1738, when a ſpacious and very commodious edifice was erected, and an act of parliament procured for incorporating the directors of the charity by the name of The Preſident and Governors of the General Hoſpital or Infirmary at Bath. In 1742, the houſe was opened for the reception of the ſick poor from every part of Great Britain and Ireland, thoſe of Bath only excepted, in regard they always have a readier and leſs expenſive acceſs to the benefit of the waters.

So pleaſant and ſo faſhionable is Bath, that almoſt every perſon of fortune or faſhion in England and Ireland makes a point annually of viſiting this city; and many families, even through economic motives, make it their conſtant reſidence. Proviſions of all kinds are excellent and reaſonable; and the amuſements, though in the genteeleſt and moſt ſuperb ſtyle, are rendered, through the numerous ſubſcribers, far from expenſive. Indeed, no place in Europe, in a full ſeaſon, affords ſo brilliant a circle of polite company as Bath. The young, the old, the grave, the gay, the infirm, and the healthy, all reſort to this vortex of amuſement. Ceremony, beyond the uſual rules of politeneſs, is totally exploded; every one mixes in the rooms upon an equality; and the entertainments are ſo wiſely regulated, that, although there is never a ceſſation of them, neither is there any laſſitude from bad hours, or from an exceſs of diſſipation.

The Pump-room is ſituated on the north ſide of the King's Bath: it was erected in the year 1704, but much enlarged in the year 1751, and is now a handſome piece of building. To this building in 1786 was added a handſome portico for the reception of the chairs, that the company in the Pump-room might not be incommoded by the chairmen. The nobility and gentry aſſemble in it every morning, between the hours of ſeven and ten, to drink the water; for whoſe entertainment a good band of muſic attends during the ſeaſon. In this room is hung up the following curious and beautiful lines:

Alwhyle ye drynke,—'mydſt Age and Ache ybent,
  Ah creepe not comfortleſſe beſide our Streame;
(Sweet Nurſe of Hope) Afflyctions downward ſente
  Wythe ſtyll ſmalle Voyce, to rouſe from thriftleſs Dreame,
    Eache wynge to prune, that ſhyftythe everie Spraie
    In wytleſſe Flyghte, and chyrpythe Lyfe awaie.

Alwhyle ye lave—ſuche Solace may be founde:
  "When kynde the Hand, why 'neath its healynge faynte?
Payne ſhall recure the Heartes corruptede Wounde;
  Farre gone is that whych feelethe not its Playnte.
    By kyndrede Angel ſmote, Betheſda gave
    Newe Vyrtues forthe, and felte her troublede Wave."

Thus drynke, thus lave—nor ever more lamente:
  Oure Springes but flowe pale Anguiſh to befriende.
How fayre the Meed that followethe Contente!
  How bleſte to lyve, and fynde ſuch Anguiſh mend?
    How bleſte to dye—when ſufferynge Faithe makes ſure,
    At Lyfe's high Founte, an everlaſtynge Cure!

EDGAR.

The perſon or patient intending to bathe puts on, at his own lodgings, a bathing-dreſs hired for the purpoſe; and is carried in a cloſe chair to one of the ſlips which open into the bath. There he deſcends by ſteps into the water, where he is attended by a guide. Having ſtaid his ſtated time in the bath, he aſcends again into the ſlip, where he puts off his bathing-dreſs, and, being wrapped up in blankets, is carried home to bed, where he lies for ſome time to encourage perſpiration. The King's Bath is overlooked by the company in the Pump-room; and adjoining to it are places furniſhed with pumps to pour the hot ſtreams on any diſeaſed part of the body.

In Bath there are three churches, ſeveral chapels, and meeting-houſes for moſt kinds of diſſenters. The cathedral church of St. Peter and St. Paul, commonly called the Abbey, (ſuppoſed to be built on the ſpot where ſtood the Roman temple of Minerva, who was the tutelar deity of the hot-ſprings,) is a noble edifice, built in the form of a croſs, and founded in 676, by king Ofric, together with the Abbey-houſe for nuns; but, in the year 775, king Offa placed therein ſecular canons, who, being expelled by king Edgar, he inſtituted Benedictine monks in their ſtead; and it was frequently repaired and augmented, till Oliver King ſet on foot the preſent pile in 1495. This church was formerly called the *Lantern of England*, on account of the number and ſize of its windows; but, as it is now incloſed by houſes to the north and ſouth, the light is much intercepted; it is a ſtately and elegant ſtructure, and affords the curious ſtranger as much ſpeculation as any parochial church of the ſame ſtanding in England. The length from eaſt to weſt is 210 feet, and from north to ſouth 126; the breadth of the body and ſide aiſles is ſeventy-two feet, and the windows are fifty-two in number.

Bath is joined with Wells to form a biſhopric, called the dioceſe of Bath and Wells. The biſhop's ſeat is at Wells. John de Villula, the ſixteenth biſhop, having purchaſed the city of Bath for 500 marks of Henry I. transferred his ſeat to this place in 1088. Diſputes aroſe between the monks of Bath and the canons of Wells, about the election of a biſhop; but they were at laſt compromiſed by Robert the eighteenth biſhop, who decreed, that from henceforward the biſhop ſhould be ſtyled from both places, and that the precedency ſhould be given to Bath; that, in the vacancy of the ſee, the biſhop ſhould be elected by a certain number of delegates from both churches; and that he ſhould be inſtalled in them both; both of them to conſtitute the biſhop's chapter; and all his grants and patents to be confirmed in both. So it ſtood till the reformation. But, in the 35th of Henry VIII. an act paſſed for the dean and chapter of Wells to make one ſole chapter for the biſhop. This dioceſe hath yielded to the church of Rome one cardinal; and to the civil ſtate of England ſix lord chancellors, five lord treaſurers, a lord privy ſeal, a lord preſident of Wales, and principal ſecretary of ſtate. It contains the county of Somerſet, except a few churches in the city of Briſtol; the number of pariſhes amounting to 388, and the churches and chapels to 503. Of the pariſhes 160 are impropriate. It is valued in the king's books at 535l. 1s. 3d. and computed to be worth annually 2200l. The clergy's tenth is 353l. 18s. 0¾d.

There is a public grammar-ſchool in Broad-ſtreet, originally founded and endowed by Edward VI. with part of the land belonging to the diſſolved religious houſes. The preſent building was begun in the year 1752.—Here is alſo a charity-ſchool, which was founded in 1711; and was begun, and for ſome years carried on, by the intereſt and unwearied endeavours of that eminent pattern of learning and piety, Robert Nelſon, Eſq. who engaged dean Willis, (afterwards biſhop of Wincheſter,) and ſeveral other perſons of diſtinction, to aſſiſt him in this arduous and charitable undertaking. It was rebuilt by ſubſcription, and the corporation liberally contributed towards it, as well by their ſubſcriptions as by a grant of the ground on which the preſent ſchool is erected; and, on the 12th of October, 1721, the foundation-ſtone was laid by Mr. Hoare, on which is this inſcription: "God's Providence is our Inheritance."

The Grove, near the Abbey-church, is called Orange-grove, from an obeliſk erected by the late Richard Naſh, Eſq. in compliment to the prince of Orange, who came here for his health juſt before he married the princeſs royal of England, and received great benefit from the waters. A very handſome theatre is eſtabliſhed here by royal patent. It is adorned with columns of the Doric and Ionic orders, and is allowed, of its ſize, to be as complete a theatre as any in Europe.

There are only two fairs held annually in this city, of very trifling note; but on Lanſdown, about three miles diſtant, on the 10th of Auguſt, a fair is annually held for cheeſe, horſes, and moſt kinds of merchandiſe. The principal markets are on Wedneſdays and Saturdays, and plentifully ſupplied with every kind of proviſions, generally at moderate prices. The markets for fiſh are, Mondays, Wedneſdays, and Fridays, and are thought to excel thoſe of any inland town in the kingdom.

In the vicinity of Bath ſtands Midford Caſtle, built by Diſney Roebuck, Eſq. Alſo the magnificent manſion of Prior Park, the ſeat of the late Ralph Allen, Eſq. which commands a proſpect, as delightful as it is poſſible for the imagination to conceive, the city of Bath being the chief object, and towards it the principal front of the houſe is turned. The ſeat conſiſts of a houſe in the centre, two pavilions, and two wings of offices, all united by arcades, and making a continued line of building of above 1000 feet in front, of which the houſe takes about 150 feet, and is of the Corinthian order, elevated upon a ruſtic baſement, and crowned with a baluſtrade; the centre advancing forward, and making one of the largeſt and moſt correct porticos in the kingdom. The order includes two ſtories, and the houſe has fifteen windows in the length of it. The portico, together with a Corinthian hall in the principal ſtory, a chapel on the ſame floor of the Ionic order, ſupporting the Corinthian, and a Corinthian gallery extending over the hall, and the rooms on each ſide of it, all finiſhed with free-ſtone, are the beauties and curioſities of the pile. The gardens conſiſt of two terraces, and two ſlopes, lying northward before the houſe, with winding walks made through a little coppice, opening to the weſtward,

ward, adorned with vaſes and other ornaments, in ſtone-work; and the afflux of water is ſo great, that it is received at three different places, after many little agreeable falls, at the head of one of which there is a ſtatue of Moſes down to the knees, in an attitude expreſſive of the admiration he muſt have felt after ſtriking the rock, and ſeeing the water guſh out of it. The winding walks were made with great taſte, and in ſome places they appear with little cliffs on one ſide, and ſmall precipices on the other.

Lanſdown, near Bath, is one of the moſt conſpicuous and happily-ſituated hills in the weſt of England, and famous for the number of ſheep fattened by its delicate herbage. From hence we have a fine view of the Briſtol Channel, city of Briſtol, part of Wales, and great part of Glouceſterſhire, Worceſterſhire, and Wiltſhire; and there is one point of view where the cities of Bath and Briſtol are both ſeen at the ſame time.

Farley Caſtle, ſix miles from Bath, is a curious piece of antiquity. If we may judge from the extent of its ruins, it ſeems ſurpriſing ſo little ſhould be ſaid of it in hiſtory. The firſt account we find is no farther back than the 16th of Edward III. at which time Farley appears to have been the property of Lord Bergherſh; it was ſold by his grand-daughter, the ſole heireſs, with other eſtates, to Robert lord Hungerford, whoſe coffin now lies, with four others, in the dormitory.

At Stanton-Drew, eight miles from Bath, is another piece of antiquity, ſuppoſed to be the remains of a druid temple, much in the form of that at Stonehenge; conſiſting of a circle of large pillars, about ſix feet high, each of which ſeems to have made a diameter of ninety paces, though there is no appearance of a ditch. The remains of this monument, among the common people, bears the name of a *Wedding*, from a tradition, that, as a bride was going to be married, ſhe and the reſt of the company were changed into pillars of ſtone.

Bath is nineteen miles north-eaſt of Wells, twelve eaſt of Briſtol, thirty-nine north-weſt of Saliſbury, forty-one nearly ſouth-weſt of Glouceſter, ſixty-ſeven ſouth-weſt of Oxford, and 107 weſt of London. Lat. 51. 23. N. lon. 2. 22. W. Greenwich.

Bath Waters, [*Bathoniæ aquæ*; called alſo *ſolis aquæ*, and *badiza aqua.*] The celebrated mineral waters of Bath. Dr. Cheyne accounts for the heat of this water by the following experiment: firſt mixing filings of iron, and the powder of ſulphur, then working them into a paſte with water, and putting them into a cellar, under a cock which drops water gradually and ſlowly, the paſte will ferment ſo, that the water running from it ſhall be of the ſame heat and virtue with thoſe of Bath, though not ſo pleaſant, nor ſo well fitted for medicinal uſes. Tournefort obſerves, "that the filings of iron will grow warm by ſteeping in common water, but much more ſo in ſea-water; and, if powdered ſulphur is added thereto, the mixture will burn." Dr. Cheyne farther obſerves, that the heat of Bath water is owing to a principle in itſelf, as is evident from its retaining its heat longer than any other water heated to the ſame degree: that the ſulphur in the Bath water is evident to the ſenſes, for it is collected from the ſurfaces of the bath; and iron is manifeſtly in it, as appears from the blue tincture which it ſtrikes when mixed with an infuſion of galls; and by analyſis ſea-ſalt is found in it. Moſt hot mineral waters ſeem chiefly to conſiſt of ſulphur and iron, and to differ only as the ſulphur or the iron predominates; where the ſulphur moſt abounds, they are hotter, more nauſeous, and purgative. According to the experiments of Dr. Bryan Higgins, a Wincheſter gallon of Bath water contains,

	dwt.	*gr.*
Of calcareous earth, combined with vitriolic acid in the form of ſelenite - -	3	$19\frac{1}{10}$
Of calcareous earth combined with acidulous gas	0	$22\frac{}{10}$
Of marine ſalt of magneſia - -	0	$22\frac{9}{10}$
Of ſea ſalt - - - -	1	$14\frac{4}{10}$
Of iron combined with acidulous gas -	0	$0\frac{1}{10}$

Acidulous gas, beſides what is contained in the above earth and iron, twelve ounces meaſure; and atmoſpheric air two ounces.

The four principal waters in England that poſſeſs any remarkable heat, are thoſe of Bath, Buxton, Briſtol, and Matlock. The firſt of which raiſes Fahrenheit's thermometer from about 100 to 112; the ſecond to about 80; the third to 76; and the laſt to 66 or 68. Dr. Monro, in ſpeaking of theſe waters, ſhews the higheſt degree of heat attributed to them by the following phyſicians, viz.

	Dr. Howard.	*Charleton.*	*Lucas.*	
The king's bath,	113	116	119	Of Fahrenheit's thermometer.
The hot bath,	114	116	119	
The croſs bath,	108	110	114	

And that, on evaporation, a gallon of them has been found to contain, of iron $\frac{3}{37}$ or $\frac{3}{38}$ parts of a grain; of calcareous earth, $22\frac{1}{2}$ grains; ſelenites, $31\frac{1}{2}$ grains; Glauber's ſalt, $25\frac{2}{3}$ grains; ſea-ſalt, $51\frac{1}{3}$ grains; which were mixed with an oily matter, but not more ſo than is common to all waters. From this and other accounts it appears that the Bath waters are chalybeates, in which iron and earth are kept ſuſpended by means of aërial acid; and that they are impregnated with a ſmall portion of ſelenites, ſea-ſalt, and either Glauber ſalt or vitriolated magneſia. It is from the combination of ſulphureous gas, ſea-ſalt, &c. that the Bath water is ſo uſeful wherever the vital heat requires an increaſe; nothing but iron can make ſuch a ſpeedy improvement as this water does in decayed conſtitutions; and it is the ſoapineſs of it, from the union of its ſulphur and iron, that relaxes ſo as to give vent to gouty and other matters, by perſpiration. It is ſafe and beneficial only when the vigour of the conſtitution is reduced, and when the *vis vitæ* is to be reſtored. Indeed, in all internal diſorders, where iron and ſulphur are preſcribed, the internal uſe of this water is effectual. But ſuch is the tenuity of the ſulphur and iron in theſe waters, from their perfect ſolvend, the fixed air therein, that the niceſt ſealed cork cannot long retain the medical parts; they are therefore moſt powerful when drunk on the ſpot. They operate by urine, and promote perſpiration; and if drunk quickly, and in large draughts, they ſometimes purge: but, if taken ſlowly and in ſmall quantities, they rather incline one to coſtiveneſs; cauſe a ſenſe of heat; and oftentimes a heavineſs of the head; with a propenſity to ſleep, particularly on firſt drinking them. Theſe waters have been much recommended in diſorders of the ſtomach and bowels; in the gout, nephritic complaints, rheumatiſm, palſy, particularly that ſpecies which attacks plumbers, painters, manufacturers in lead, and variety of other complaints. They are likewiſe beneficial for bathing in; and for pumping on diſeaſed limbs. For from hence much relief is obtained from wandering or fixed pains, ſtiffneſs of the joints, contractions of the tendons, waſting of the limbs, palſies, rheumatiſms, &c. When taken internally, as they often heat on the firſt uſing them, it is right to cool the body by taking a doſe or two of ſome mild aperient medicine, and to live on a cooling regimen, before entering into a courſe of them, and for the plethoric, to loſe a few ounces of blood; and during theſe courſes to live regular, and, if inclined to be too coſtive, to take occaſionally a doſe of ſome cooling phyſic. The ſeaſon for drinking the Bath waters is whenever they are wanted; for there is little or no ſenſible difference in them at any one time compared with another. Many who have drank them for ſome time, leave them off for a month in the hotteſt weather, but cold conſtitutions need not, for they find them rather better at that time. With ſome perſons cold weather ſuits the beſt with their drinking it, eſpecially when the ſeaſon is dry, and in clear froſt it is the beſt of all. More than two pints in a day can never be required, which may be taken at three or four times, a few hours intervening betwixt each portion; and in ſuch chronical diſeaſes as require preparations of iron, the artificial

tificial ones may at the time be uſed. See Dr. Cheyne's Account of, and Dr. Falconer's Eſſay on, the Bath Waters; Monro's Treatiſe on Medical and Pharmaceutical Chemiſtry.

BATH AGRICULTURAL SOCIETY. See SOCIETY.

Knights of the BATH, a military order in England, for which ſee the article KNIGHT.

BATH KOL, the daughter of a voice. So the Jews call one of their oracles, which is frequently mentioned in the Talmud; being a mode of divination invented by the Jews, though called by them a revelation from God's will, which he made to his choſen people, after all verbal prophecies had ceaſed in Iſrael. It was in fact a method of divination ſimilar to the *ſortes Virgilianæ* of the Heathens. For as, with them, the firſt words they happened to dip into, in the works of that poet, were a kind of oracle whereby they predicted future events; ſo, with the Jews, when they appealed to Bath-kol, the firſt words they heard from any man's mouth were looked upon as a voice from heaven, directing them in the matter they inquired about. The Chriſtians were not free from this ſuperſtition, making the ſame uſe of the Scriptures as the pagans did of the works of Virgil. It was practiſed by Heraclius, emperor of the eaſt, in the beginning of the ſeventh century: for, being at war with Choſroes king of Perſia, and in doubt, after a ſucceſsful campaign, where to take up his winter quarters, he conſulted the book of the Scriptures in this way of divination, and was determined thereby. In France, it was the practice for ſeveral ages to uſe this kind of divination at the conſecrations of a biſhop, in order to diſcover his life, manners, and future behaviour. This uſage came into England with the Norman conqueſt; for we are told, that, at the conſecration of William the ſecond Norman biſhop of the dioceſe of Norwich, the words which firſt occurred on dipping into the Bible were, *Not this man, but Barabbas:* ſoon after which William died, and Herbert de Lozinga, chief ſimony broker to king William Rufus, ſucceeded him; at whoſe conſecration the words at which the Bible opened were the ſame which Jeſus ſpoke to Judas the traitor; *Friend, wherefore art thou come?* This circumſtance ſo affected Herbert, that it brought him to a thorough repentance of his crime; in expiation of which he built the cathedral of Norwich, the firſt ſtone of which he laid in 1096.

BATH TOWN, a ſea-port of North Carolina, in the United States of America, on the river Pamticoe. Lat. 35. 30. N. lon. 77. 14. W. Greenwich.

BA'THA, BATH, or BA'CHIA, a town of Hungary, ſituated near the Danube; once the ſee of a biſhop, now united to Colocza, taken by the emperor in the year 1686. It is twenty leagues ſouth of Buda. Lat. 45. 34. N. lon. 36. 50. E.

To BA'THE, *v. a.* [*bathian*, Sax.] To waſh, as in a bath:

Others on ſilver lakes and rivers *bath'd*
Their downy breaſt. *Milton.*

To ſupple or ſoften by the outward application of warm liquors.—*Bathe* them, and keep their bodies ſoluble the while by clyſters and lenitive boluſes. *Wiſeman.*—To waſh any thing:

Phenician Dido ſtood,
Freſh from her wound, her boſom *bath'd* in blood. *Dryden.*

To BATHE, *v. n.* To be in the water, or in any reſemblance of a bath:

The gallants dancing by the river ſide,
They *bathe* in ſummer, and in winter ſlide. *Waller.*

BA'THING, the act of uſing or applying a bath; that is, of immerging the body, or part of it, in water or other liquid. Bathing is a practice of great antiquity. The Greeks, as early as the heroic age, are ſaid to have bathed in the ſea, in rivers, &c. We even find mention in Homer of hot baths in the Trojan times; but theſe ſeem to have been only uſed on extraordinary occaſions. The Romans alſo came early into the uſe of baths; the very name of which, *thermæ*, ſhews they borrowed it from the Greeks. As the ancient Romans were chiefly employed in agriculture, their cuſtom was, every evening after work, to waſh their arms and legs, that they might ſit down to ſupper with more decency: for the people of that age went with their arms and legs bare, and conſequently expoſed to duſt and filth. But, every ninth day, when they repaired to the city, either to the nundinæ or to attend at the aſſemblies of the people, they bathed or waſhed all over in the Tyber, or ſome other river.

Although bathing, among the ancients, made, as it were, a part of diet, and was uſed as familiarly as ſleep; yet it was in high eſteem among their phyſicians for the cure of diſeaſes, as appears from Strabo, Pliny, Hippocrates, and Oribaſius; whence the frequent exhortations to waſhing in the ſea, and plunging into cold water. The firſt inſtance of cold bathing, as a medicine, is Melampus's bathing the daughters of the king of Argos; and the firſt inſtance of warm bathing is Medea's uſe of it, who was ſaid to boil people alive, becauſe Pelias king of Theſſaly died in a warm bath under her hands. The cold bath was uſed with ſucceſs by Antonius Muſa, phyſician to the emperor Auguſtus, for the recovery of that prince; but it fell into neglect after the death of Marcellus, who was ſuppoſed to have been deſtroyed by the improper uſe of it. It was again brought into requeſt towards the cloſe of the reign of Nero, by means of a phyſician of Marſeilles named *Charmis*; but, during the ignorance of the ſucceeding ages, the practice was baniſhed for a long time.

Among the Turks, as among the ancients, bathing is a great luxury; and in every town and village there is a public bath. Indeed, the neceſſity of cleanlineſs, in a climate where people perſpire ſo copiouſly, has rendered bathing indiſpenſable; the comfort it produces preſerves the uſe of it; and Mahomet, who knew its utility, has reduced it to a precept. Of theſe baths, and the manner of bathing, particularly at Cairo, the following account is given by M. Savary in his Letters on Egypt:

“ The firſt apartment one finds in going to the bath, is a large hall, which riſes in the form of a rotunda. It is open at the top, to give a free circulation to the air. A ſpacious eſtrade, or raiſed floor, covered with a carpet, and divided into compartments, goes around it, on which one lays one's clothes. In the middle of the building, a jet d'eau ſpouts up from a baſon, and agreeably entertains the eye. When you are undreſſed, you tie a napkin round your loins, take a pair of ſandals, and enter into a narrow paſſage, where you begin to be ſenſible of the heat. The door ſhuts to; and, at twenty paces off, you open a ſecond, and go along a paſſage, which forms a right angle with the former. Here the heat increaſes. They who are afraid of ſuddenly expoſing themſelves to a ſtronger degree of it, ſtop in a marble hall, in the way to the bath properly ſo called. The bath is a ſpacious and vaulted apartment, paved and lined with marble, around which there are four cloſets. The vapour, inceſſantly ariſing from a fountain and ciſtern of hot water, mixes itſelf with the burning perfumes. Theſe, however, are never burnt except the perſons in the bath deſire it. They mix with the ſteam of the water, and produce a moſt agreeable effect. The bathers are not impriſoned here, as in Europe, in a ſort of tub. Extended on a cloth ſpread out, the head ſupported by a ſmall cuſhion, they ſtretch themſelves freely in every poſture, whilſt they are wrapped up in a cloud of odoriferous vapours, which penetrates into all their pores. After repoſing ſome time, until there is a gentle moiſture over the whole body, a ſervant comes, preſſes you gently, turns you over, and, when the limbs are become ſupple and flexible, he makes all the joints crack without any difficulty. He maſſes or gently rubs the body, and ſeems to knead the fleſh without making you feel the ſmalleſt pain. During this operation, he detaches from the ſkin, which is running with ſweat, a ſort of ſmall ſcales, and removes even the imperceptible dirt that ſtops the pores. The ſkin becomes ſoft and ſmooth like ſatin. He then conducts you into a cloſet, pours the lather of perfumed ſoap upon your head, and withdraws. The ancients did ſtill more honour to their gueſts, and treated them in a more voluptuous manner. Whilſt Telemachus was at the court of Neſtor, 'the beautiful Polycaſta, the handſomeſt of the daughters of the king of Pylos, led the ſon of Ulyſſes to the bath; waſhed him with her own hands; and, after anointing his body with precious oils, covered him with rich habits and a ſplendid cloak.' Piſiſtratus and Telemachus were not worſe treated in the palace of Menelaus: 'When they had admired its beauties, they were conducted to baſons of marble, where a bath was prepared: beautiful female ſlaves waſhed them; and, after anointing them with oil, covered them with rich tunics and ſuperb pellices.'

"The cloſet to which one is conducted is furniſhed with a ciſtern and two cocks: one for cold and the other for hot water. There you waſh yourſelf. Soon after the ſervant returns with a depilatory pomatum, which in an inſtant makes the ſuperfluous hair fall off the places it is applied to. Both men and women make general uſe of it in Egypt. It is compoſed of a mineral called *ruſma*, which is of a deep brown. The Egyptians burn it lightly, knead it with water, mixing it with half the quantity of ſlaked lime. This greyiſh paſte, applied to the hair, makes it fall off, without giving the ſlighteſt pain. After being well waſhed and purified, you are wrapped up in hot linen, and follow the guide through the windings that lead to the outer apartment. This inſenſible tranſition from heat to cold prevents one from ſuffering any inconvenience from it. On arriving at the eſtrade, you find a bed prepared for you; and ſcarcely are you laid down before a child comes to preſs every part of your body with his delicate fingers, in order to dry you thoroughly. You change linen a ſecond time, and the child gently grates the calloſity of your feet with pumice-ſtone. He then brings you a pipe and Mocha coffee.

"Coming out of a ſtove where one was ſurrounded by a hot and moiſt fog, where the ſweat guſhed from every limb, and tranſported into a ſpacious apartment open to the external air, the breaſt dilates, and one breathes with voluptuouſneſs. Perfectly maſſed, and as it were regenerated, one experiences an univerſal comfort. The blood circulates with freedom; and one feels as if diſengaged from an enormous weight, together with a ſuppleneſs and lightneſs to which one has been hitherto a ſtranger. A lively ſentiment of exiſtence diffuſes itſelf to the very extremities of the body. Whilſt it is loſt in delicate ſenſations, the ſoul, ſympathiſing with the delight, enjoys the moſt agreeable ideas. The imagination, wandering over the univerſe, which it embelliſhes, ſees on every ſide the moſt enchanting pictures, every where the image of happineſs. If life be nothing but the ſucceſſion of our ideas, the rapidity with which they then recur to the memory, the vigour with which the mind runs over the extended chain of them, would induce a belief that in the two hours of that delicious calm that ſucceeds the bath, one has lived a number of years."

Such are the baths, the uſe of which were ſo ſtrongly recommended by the ancients, and which are ſtill the delight of the Egyptians. It is by means of them that they prevent or diſpel rheumatiſms, catarrhs, and ſuch cutaneous diſorders as are produced by want of perſpiration. Hence likewiſe they find a radical cure for that fatal evil which attacks the ſources of generation, the remedy for which is ſo dangerous in Europe. By the ſame reſource they prevent that uncomfortable feeling ſo common to all nations who do not pay ſo much attention to the cleanlineſs of their bodies. Mr. Tournefort, indeed, who had uſed ſteam-baths at Conſtantinople, where there is leſs refinement in them than at Cairo, is of opinion, that they injure the breaſt. But, according to M. Savary, this is an error which further experience would have corrected. There are no people who make more frequent uſe of them than the Egyptians, and there is no country where there are fewer aſthmatic people. The women are paſſionately fond of theſe baths. They frequent them at leaſt once a week, and take with them ſlaves properly qualified for the purpoſe. More luxurious than the men, after undergoing the uſual preparations, they waſh their bodies, and above all their heads, with roſe-water. It is there that female head-dreſſers form their long black hair into treſſes, which they mix with precious eſſences inſtead of powder and pomatum. It is there that they blacken the edge of their eye-lids, and lengthen their eye-brows with cohel, a preparation of tin burnt with gall-nuts; it is there they ſtain the finger and toe nails with the leaves of henne, a ſhrub common in Egypt, and which gives them a golden colour. The linen and clothing they make uſe of are paſſed through the ſweet ſteam of the wood of aloes; and, when the work of the toilet is at an end, they remain in the outer apartment, where female attendants entertain them with voluptuous ſongs and dances, or tell them tales of love.

From ſuch examples, which appear to combine utility with pleaſure, we cannot wonder that the rage for bathing ſhould have arrived at ſuch a height in England, not only in the tepid waters which flow among the enchanting ſcenes of Bath, but upon the ſea-ſhores quite round the kingdom, inſomuch that the indiſcriminate uſe, we fear, hath often been productive of harm. As this is a matter of no trifling importance, it may be proper here to take a view of the general effects of ſea-bathing, both warm and cold.

Cold ſea-bathing produces a powerful impreſſion upon the ſurface of the body, and from thence on the internal parts; and although in many diſeaſes it is an effectual remedy, yet, when uſed without proper precaution, it may occaſion fatal conſequences. Dr. Reid obſerves, in his late treatiſe on Sea-Bathing, that he has often known young perſons, high in health, after uſing the cold bath for a few times improperly, become pale, languid, loſe their ſtrength and appetite, or ſeized with fevers that have in ſome inſtances terminated fatally. The action of cold water upon the human body when frequently applied, may be compared to labour, or any other debilitating cauſe; and, in the firſt inſtance, ſomewhat ſimilar to the rigor that is the leading ſymptom of fever, producing a ſpaſm upon the extreme veſſels. If there happens to be a ſufficient degree of ſtrength in the ſyſtem to counteract the ſhock of the firſt immerſion, and produce re-action, a general warm glow will enſue. This re-action rouſes the principles of life; or what Dr. Cullen terms the *vis medicatrix naturæ* overcomes the ſpaſm on the extreme veſſels, and increaſes the energy of the conſtitution, of that principle which, in all matter animate and inanimate, is continually labouring for its own preſervation. In this manner it ſhould ſeem, the benefit is produced by cold bathing; and not, as has commonly been ſuppoſed, from increaſing the tone or ſpring of the muſcular fibre, by the mechanical impulſe of the water. Were the good effects of ſea-bathing produced in this way, they would uniformly follow the application, independent of the ſtate of the *vis vitæ*; but our experience proves the contrary; for we often ſee perſons perſiſt in bathing, until their ſtrength is ſo much exhauſted that they can ſcarcely walk from the ſea ſide. When the warm glow immediately, or in a very ſhort ſpace of time, ſucceeds the immerſion; when the ſpirits are light, and the mind cheerful; the bathing will have a ſalutary effect upon thoſe who uſe it. But, after coming out of the water, if they continue cold, chilly, ſhivering, pale, more or leſs languid, the body evidently ſhrunk, and this after ſeveral trials, they ſhould deſiſt, nor again attempt bathing until the conſtitution, by proper remedies, is in a ſtate to bear the action of the water, and produce the ſucceeding warmth ſo eſſentially neceſſary. If the effect of cold water, applied to the ſurface of the body, is ſimilar in ſome degree to the firſt attack of fever, producing a ſimilar re-action of the heart and internal parts, it will be evident how neceſſary it is to uſe this powerful agent with caution, and not without being previouſly aſcertained, whether it is adapted to the conſtitution, ſtrength, or particular diſeaſe then exiſting. To remove as much as poſſible every impediment to this ſalutary vital action, perſons of every age, before they bathe in cold water, ſhould take one or two doſes of ſuch purging medicine as may be proper in their particular ſtate of health; and, if their ſtomach is diſordered, a gentle emetic might precede the cathartic, which will have the beſt effect if taken in the morning faſting. Theſe evacuations are indiſpenſibly neceſſary, not only in guarding againſt fever and other diſagreeable conſequences, but by emptying the firſt paſſages of that fœculent matter which is always lodged in them; the conſtitution being thus relieved from a load more or leſs oppreſſing, the *vis vitæ* is enabled to produce the re-action regularly, and thereby enſure the benefit expected from bathing.

The degree of re-action, and conſequently warm ſenſation, would ſeem to depend in great meaſure upon the relative degree of coldneſs in the water, compared with the temperature of the body at the time of bathing. Delicate nervous women are leſs ſenſible of the warm ſenſation, after bathing in water ſome degrees colder than uſual. When, therefore, the re-action does not properly ſucceed the immerſion, it may be adviſeable for ſuch perſons to try the water two or three degrees higher, which it commonly acquires by noon in warm weather. Or, they may uſe the covered bath, which is generally two degrees warmer than the open ſea. In the action of bathing, it is right that the head ſhould at all times be firſt in the water, to prevent an accumulation of fluid upon the ſurface of the brain, and after one plunge to come out as quick as poſſible; and it is not neceſſary to be very ſolicitous in drying the body afterwards, as being wetted with ſalt water does not occaſion indiſpoſition in the manner freſh water uſually does, probably from their different action upon the extreme veſſels; even the dew that falls heavy in the evening at the ſea-ſide is not attended with any bad conſequence to thoſe who have been expoſed to it. After bathing, moderate exerciſe ſhould be taken, carefully avoiding whatever may fatigue the body, or exhauſt the ſpirits, as that would defeat the intention.

The cuſtom of bathing early in the morning is certainly very proper, and ſhould not be deviated from without good and ſufficient reaſon; but the delicate and weakly, eſpecially females who have been in the habit of lying late in bed, are ſoon fatigued upon riſing ſo much before their uſual time. Such perſons will do well in taking a ſlight breakfaſt early, and two hours after they may go into the ſea with eaſe and ſafety; and, as this may be accompliſhed by ten o'clock, the water, even in the warmeſt part of our ſummer, will not have acquired a perceptible increaſe of heat. Previous to their bathing, ſhould too much exerciſe be taken, it may ſo far induce debility as to prevent, or greatly diminiſh, the ſucceeding warm ſenſation, and thereby leſſen the good effects of the water. The moſt common practice is to bathe two mornings ſucceſſively, and omit one; and to take three dips at each bathing; but in moſt caſes this practice will be found improper. The ſudden ſhock of the cold water rouſes the energy of the ſyſtem; a repetition will not augment, and may probably diminiſh, the effect of the firſt impreſſion. In proportion as any action on the human body is repeated, in proportion it becomes familiar, and its effects gradually leſſen; it being a principle inherent in human nature, and indeed in all animal nature, to become familiar with, and accommodate itſelf to, exiſting circumſtances. Thus, bathing two days in three, if it does not immediately diſagree, will, by its frequency, diminiſh the influence of the water upon the ſyſtem, thereby depriving it of that full ſucceſs it might have, if uſed with moderation. Bathing alternate mornings, and taking one plunge, is as often as is commonly adviſeable.

People of all ages, and in almoſt every condition of health, are accuſtomed, when at the ſea ſide, to drink ſalt water in the morning, under the impreſſion of its being a ſweetener of the blood, and an antiſcorbutic. Salt water taken internally poſſeſſes no quality ſuperior to any other purgative taken in ſuch quantity as will produce ſimilar effects. It is a nauſeous potion, often very rough in its operation; and, when it does not act, always heats and diſorders the body, eſpecially in children. But, when it is taken, the addition of an equal quantity of warm milk will ameliorate the taſte, and render its action upon the bowels leſs painful. But, on the days of bathing, neither ſalt-water nor any other purgative ſhould be taken; becauſe purging univerſally weakens the powers of the ſyſtem, which cold bathing is intended to invigorate.

The air upon the ſea is purer, and more free from noxious effluvia and exhalations, than upon the land. This poſition is proved beyond a poſſibility of doubt, by ſeafaring people, who, with proper precautions, ſuffer leſs from diſeaſes than any other claſs of men; and by a late celebrated and much-lamented circumnavigator having loſt fewer men reſpecting his numbers, in a given time, than would have died, during the ſame period, in the healthieſt ſpot in Europe. The air on the ſea-coaſt partakes in an eminent degree of this ſalubrious quality, provided the ſoil is dry, free from marſhes, and ſtagnant water. Thoſe afflicted with debilitated nervous conſtitutions, and from various cauſes the ſenſations have acquired ſuch an increaſed irritability, that cold bathing may either not be ſuffered, or may be improper, much benefit may be received by moderate walking and riding in the ſea air; always carefully guarding againſt fatigue.

With reſpect to the *warm ſea-bath*, it has hitherto been but little uſed in this country, from the very general opinion that warm water, applied for any length of time to the ſurface of the body, univerſally weakens and diminiſhes the force and action of the muſcular fibre; but Dr. Reid is of opinion, from very great experience, that a tepid ſea-bath, heated from ninety to ninety-ſix degrees on Fahrenheit's ſcale, does not relax the body, diminiſh the ſtrength, or exhauſt the ſpirits, after remaining in it from five to thirty minutes, even in perſons previouſly reduced and greatly weakened by diſeaſe; and that, on coming out of the bath, they feel themſelves refreſhed, and their ſpirits lighter and more cheerful.

The degree of warmth in the water, and the time of the immerſion which we have recommended, probably act upon the ſyſtem as a ſedative, but not ſo as to debilitate. This, on mature conſideration, will probably appear neither an apparent nor a real contradiction. As a ſedative, it removes irritability and other morbid action in the nervous ſyſtem, in a manner ſimilar to opium, cicuta, and medicines of that claſs, without inducing weakneſs or debility. Some perſons, on firſt uſing the warm bath, feel a troubleſome itching, tingling, or glowing heat, on their ſkin; but theſe ſenſations rarely continue after the ſecond bathing. In others, the breathing is much affected upon firſt going into the water, which generally ſoon goes off; but we have known it remain, with ſpaſmodic catching of the breath, ſo that the perſon was obliged to come out after being in only a few minutes; theſe ſymptoms ariſe from an increaſed degree of irritability in the nerves, and are not to be conſidered as of any importance; they ſoon diſappear, and rarely return after the ſecond time of bathing. The uſual effect of the warm bath immediately on coming out is feeling light and cheerful, without any increaſe of animal heat, or quickneſs of the pulſe; yet in ſome inſtances, which indeed rarely occur, it has occaſioned head-ach, heat, difficulty of breathing, reſtleſſneſs, diſturbed ſleep, and ſlight delirium. When theſe ſymptoms appear, they ſufficiently indicate the impropriety of its repetition. In caſes of great debility, where it may be adviſeable to uſe the warm bath, delicate perſons will be able to ſupport it a longer time without inconvenience, by taking a cupful of wine and water, equal parts, brewed with an egg, and made milk warm. Dr. Reid recommends the tender and ſickly to uſe the warm bath in the evening, and to be taken home in a chair, to avoid taking cold from variable weather.

ther. Delicate weakly women, who may have ſuffered from frequent miſcarriages, and the long train of complaints conſequent to ſuch accidents, will not be diſappointed in their expectations of relief from cold ſea-bathing; with the proper precautions it commonly produces manifeſt and permanent benefits. Thoſe who have frequently experienced this caſualty, ſhould continue the uſe of the bath until their pregnancy is far advanced; provided it can be done without any alarm, and being in itſelf perfectly agreeable to their feelings.

When the conſtitution has been much reduced by the long continuance or frequent recurrence of intermitting fevers, the cold ſea-bath will afford conſiderable relief, aided by moderate exerciſe in the open air by the ſea ſide. After diſeaſes of this kind have been of long duration, the abdominal viſcera are more or leſs affected, which requires particular attention. If the ſurface of the body, or whites of the eyes, are tinged with yellow, or the urine high coloured, there is reaſon to ſuſpect obſtructions in the liver and biliary veſſels: until theſe ſymptoms are removed by appropriate medicines, and the uſe of the warm bath if neceſſary, the patient muſt not attempt cold bathing. As cold ſea-bathing is very generally eſteemed a luxury, young people, if not careful, are apt to indulge themſelves to their prejudice. They are diſpoſed not only to uſe it too frequently, but, in warm weather, often ſtay longer in the water than is ſalutary; thereby weakening the firſt impreſſion on the habit, and preventing the benefit they might reaſonably expect.

The cuſtom of bathing children in cold water from early infancy is becoming more and more general; and it is certainly very conducive to health, whether conſidered with a view to cleanlineſs, ſtrengthening the conſtitution, or rendering them leſs ſuſceptible to the great and ſudden changes of the atmoſphere. When it is intended to bathe children in the ſea on account of impaired health, eſpecially at an early age, or under five years, it is eſſentially neceſſary to examine the abdomen, and obſerve if it is larger and fuller than natural, or if there are any ſigns of obſtructions or enlargement of the meſenteric or other internal glands. Theſe affections are very common, and not ſufficiently attended to by thoſe who have the care of the riſing generation. When ſuch ſymptoms are perceived, before they attempt the cold bath, repeated doſes of calomel ſhould be given at bed-time, purging it off in the morning gently, with infuſion of ſenna.

The ſpirit of cleanlineſs, the commendable luxury of the age, is now extenſively diffuſed; and, where cold-bathing is adopted for children from the birth, or at leaſt conſtant waſhing, ſymptoms of the rickets rarely appear.

To thoſe who bathe in the ſea for pleaſure, independent of medical conſiderations, cautions and directions may appear ſuperfluous; yet it is proper to impreſs upon their minds, that many accidents have been occaſioned by going into cold water when the body has been heated and otherwiſe diſordered; fevers, head-achs, vertigoes, and apoplexy, uſually attributed to cramp, are the ſad conſequences. To avoid the chance of being injured in this way, let them go into the water early in the morning, or at ſuch a diſtance of time from having taken food, that the proceſs of digeſtion may have been finiſhed; it being at all times dangerous to bathe in cold or warm water on a full ſtomach. Should they feel the ſmalleſt ſenſation of internal chillineſs while in the water, they ſhould immediately return, and uſe exerciſe.

We ſhall conclude with ſtating in what caſes ſea-bathing may be ſalutary, and in what improper. In all diſorders affecting the head with pain, giddineſs, ſenſe of fulneſs, enlargement, hydrocephalus, and deafneſs; in all diſeaſes of the breaſt, in every ſpecies of pulmonary conſumption, ſpitting of blood, catarrh, aſthma during the fit, and difficulty of breathing, pain, ſtitches in the ſide, or uneaſineſs upon taking a full inſpiration; ſea-bathing is improper. When the viſcera of the lower belly are not in a ſound and healthy ſtate; when the inteſtines are conſtipated, or loaded with fæces; when the liver, the ſpleen, the kidneys, the bladder, give ſigns of enlargement, obſtruction, or any other deviation from a ſound ſtate; when the biliary veſſels are obſtructed by calculi, inſpiſſated bile, or when there is a deficiency in the quantity ſecreted of that fluid, with a yellow tint on the ſkin or whites of the eyes, attended with debility; in a looſeneſs or diarrhœa; ſea-bathing muſt be avoided.

In great debility and proſtation of ſtrength, where the vital principle is ſo much diminiſhed as to prevent the reaction of the ſyſtem and ſucceeding warm glow; in gout, fixed or wandering; in rheumatiſm, acute or chronic; in every ſpecies of dropſy, whether general or particular, whether leucophlegmatic or dropſical diatheſis; in œdematous ſwellings of the lower limbs; in every ſpecies of fever or feveriſh complaint, in which the pulſe is accelerated or the heat of the body materially augmented; in all diſeaſes of an inflammatory nature, eruptions, with red and inflamed baſis; eryſipelas of every ſpecies; in every kind of herpes, ſhingles, &c. and during the period of natural evacuations; in the hemorrhoids or piles, external and internal. In all theſe caſes ſea-bathing muſt be diſpenſed with.

But, in all caſes of impaired health, in which it is deſirable to augment the energy of the vital principle, to increaſe the action and ſtrength of the muſcles, to improve the appetite and aſſiſt the digeſtive organs; to give ſtability and tone to the nervous ſyſtem, to fortify the mind againſt weak and improper impreſſions, and to induce in the conſtitution a general healthy action; the cold ſea-bath will prove a valuable, an effectual, and a permanent, remedy.

In the following complaints and conditions of health, the tepid or warm ſea-bath appears to be unadviſeable. In diabetes it is improper, becauſe the abſorption on the ſurface of the body will increaſe the flux of urine. When great pain precedes the periodical evacuation, warm or tepid bathing will afford much relief; but it muſt not be continued after the pain is removed. In confirmed dropſy relief is ſcarcely to be expected, but it will not produce any augmentation of the diſeaſe. In hemoptiſes, or any internal hemorrhage, it is not to be attempted. Thoſe who have ruptures ſhould not uſe the warm bath, except when they are perfectly reduced, and it will be right to wear a truſs or bandage during the immerſion. On the other hand, the warm ſea-bath, properly regulated, will be found a powerful agent in the cure of œdematous ſwellings of the lower limbs, incipient dropſy, depoſition of fluid in any cavity of the body, or in any part of the cellular membrane; in all caſes where the action of the abſorbents is required to be increaſed; in eruptions of every kind and ſpecies; in ſwellings, ſtiffneſs, and contractions of the joints, whether an original diſeaſe, or the conſequence of gout, rheumatiſm, or external injuries; in ſpaſmodic and convulſive diſorders, by its ſedative operation; in the wandering gout, in rheumatiſm of the chronic kind; in chloroſis, attended with œdematous ſwellings of the limbs; in rickets, and other diſeaſes of children, in which there is hardneſs and enlargement of the abdomen; in jaundice, indurations of the liver, and obſtructions in the biliary veſſels from calculi or inſpiſſated bile. In pulmonary complaints it may alſo be of uſe, under proper regulations; for which ſee the article MEDICINE.

BATH'MIS, *ſ.* [from βαινω, to enter.] The ſeat or baſe: the cavity of a bone, which receives the protuberance of another.

BATH'MONSTER, a town of Hungary, ſeparated from Batha by the Danube.

BATH'RUM, *ſ.* in ſurgery, an inſtrument uſed in the extenſion of fractured limbs.

BA'THURST (Ralph), an eminent phyſician, poet, and divine, born in 1620. He ſtudied divinity in Trinity-college, Oxford; but he changed the courſe of his ſtudies, and applied himſelf to phyſic. He took a doctor's degree in that faculty; in which he roſe to ſuch eminence, that he was, in the time of the uſurpation of Cromwell, appointed phyſician to the ſtate. Upon the reſtoration, he quitted his profeſſion of phyſic; was elected a fellow of the Royal Society, and preſident of his college; and, having entered into holy orders, he was made chaplain to the king, and afterwards dean of Wells. Soon after, he ſerved the office of vice-chancellor of Oxford, and was nominated by king William and queen Mary to the ſee of Briſtol; which he refuſed to accept. He wrote ſeveral poems, both in Engliſh and Latin; and died June 14, 1704, in the eighty-fourth year of his age.

BATHURST (Allen), earl of Bathurſt, born in 1684, was one of the laſt worthies of queen Anne's reign, that ſhining period of triumph, taſte, genius, and elegance. His ſtudies and his education were equally conducive to the brilliant figure he was deſtined to make as a polite ſcholar, a patriot, and a ſtateſman. Theſe talents he had an opportunity to diſplay as early as the year 1705; when, at the requeſt of his father Sir Benjamin Bathurſt, and the ſolicitation of the conſtituents of Cirenceſter, he ſerved in parliament for that borough, his native ſoil, with reputation and integrity. He diſtinguiſhed himſelf particularly in the ſtruggles and debates relative to the union between the two kingdoms, firmly ſupporting this meaſure, calculated to ſtrengthen the vigour of government by uniting its force. In conſideration of his zeal and ſervices, queen Anne advanced him, in 1711, to the dignity of a peer, by the title of baron Bathurſt of Battleſden in Bedfordſhire.

His lordſhip, in the houſe of peers, ſpoke his ſentiments with an undaunted freedom; and became a formidable opponent to the court-meaſures in the reign of George I. and during Sir Robert Walpole's adminiſtration. The acrimony of the proſecution carried on againſt the earl of Oxford, lord Bolingbroke, and the duke of Ormond, ſtimulated his indignation and his eloquence againſt ſuch vindictive proceedings; and he obſerved, "that the king of a faction was but the ſovereign of half his ſubjects." His lordſhip was entirely averſe to continental connections; and animadverted ſeverely upon the monarch whoſe thoughts were turned to foreign concerns and alliances which could never be uſeful; complaining of the immenſe ſums laviſhed in ſubſidies to needy and rapacious princes. His lordſhip concurred, with all his power, in the oppoſition to Sir Robert Walpole. This miniſter, after obſtinate ſtruggles, having been forced to reſign all his employments, lord Bathurſt was ſworn of the privy council, and made captain of the gentlemen-penſioners, which poſt he reſigned in 1744. He was appointed treaſurer to the preſent king, then prince of Wales, in 1757, and continued in the liſt of privy counſellors at his acceſſion to the throne; but, on account of his great age, he choſe to enjoy *otium cum dignitate*.

Lord Bathurſt's integrity gained him the eſteem even of his opponents; and his humanity and benevolence, the affection of all that knew him more intimately. He added to his public virtues all the good breeding, politeneſs, and elegance, of ſocial intercourſe. Dr. Freind, Congreve, Vanbrugh, Swift, Prior, Rowe, Addiſon, Pope, Arbuthnot, Gay, and moſt men of genius in his time, cultivated his friendſhip, and were proud of his correſpondence. Pope, in his Epiſtle to him on the Uſe of Riches, thus addreſſes him:

The ſenſe to value riches, with the art
T' enjoy them, and the virtue to impart;
To balance fortune by a juſt expence,
Join with œconomy magnificence;
With ſplendour, charity; with plenty, health:
O teach us, Bathurſt, yet unſpoil'd by wealth!
That ſecret rare, between th' extremes to move,
Of mad good-nature, and of mean ſelf-love.

And Sterne, in his letters to Eliza, thus ſpeaks of him: "This nobleman is an old friend of mine: he was always the protector of men of wit and genius; and has had thoſe of the laſt century always at his table. The manner in which his notice began of me, was as ſingular as it was polite. He came up to me one day as I was at the princeſs of Wales's court: 'I want to know you,' ſaid he, 'Mr. Sterne; but it is fit you ſhould know alſo who it is that wiſhes this pleaſure: you have heard (continued he) of an old lord Bathurſt, of whom your Popes and Swifts have ſpoken ſo much: I have lived my life with geniuſes of that caſt, but have ſurvived them; and, deſpairing ever to find their equals, it is ſome years ſince I have cloſed my accounts, and ſhut up my books, with thoughts of never opening them again: but you have kindled a deſire in me of opening them once more before I die; which I now do: ſo go home and dine with me.' This nobleman, I ſay, is a prodigy: for at eighty-five he has all the wit and promptneſs of a man of thirty; a diſpoſition to be pleaſed, and a power to pleaſe others beyond whatever I knew! added to which, a man of learning, courteſy, and feeling."

His lordſhip, in the latter part of his life, delighted in rural amuſements; and enjoyed, with a philoſophical ſatisfaction, the ſhade of the lofty trees he had planted himſelf. Till within a month of his death he conſtantly rode out on horſeback two hours before dinner, and generally drank his bottle of claret or Madeira after dinner. He uſed to declare, in a jocoſe manner, he never could think of adopting Dr. Cadogan's method; for Dr. Cheyne had aſſured him, fifty years ago, that he would never live ſeven years longer, unleſs he abridged himſelf of his wine. Purſuant to this maxim, his lordſhip having invited ſeveral of his friends to ſpend a few days with him, and being one evening very loth to break up, his ſon objected to ſitting up any longer, adding that health and long life were beſt ſecured by regularity; he therefore begged to retire. As ſoon as he was gone, the cheerful father ſaid, "Come, my good friends, ſince the *old* gentleman is gone to bed, I think we may venture to crack another bottle." His lordſhip was advanced to the dignity of earl in 1772; and lived to ſee his eldeſt ſon ſeveral years lord high chancellor of Great Britain, and promoted to the peerage in 1771, by the title of *baron Apſley*. Lord Bathurſt married Catharine daughter of Sir Peter Apſley, by whom he had two other ſons and five daughters. His death happened, after a few days illneſs, at his ſeat near Cirenceſter, in the ninety-firſt year of his age, and on the 16th of September 1775.

BATHY'CHRUS COLOUR, *ſ.* in painting, a term uſed by the Greeks to expreſs what the Romans call *auſterus color*. It was coarſe and dull, and wanted the life of the florid colours.

BATHYL'LUS and PYLADES, the inventors of pantomime entertainments on the ſtage. Bathyllus ſucceeded in repreſenting comedy; Pylades in tragedy. The art conſiſted in expreſſing the paſſions by geſtures, attitudes, and dumb ſhow; not, as in modern times, in machinery, and the buffooneries of Harlequin. They flouriſhed at Rome, under Auguſtus, about A. D. 10. Each of them had ſcholars, who perpetuated their maſter's name: for the followers of Bathyllus, who excelled in the comic part, called themſelves *Bathylli*; and thoſe of Pylades, who excelled in the tragic, called themſelves *Pyladæ*.

BATIL'LUS, *ſ.* A muſical inſtrument made of metal, in the form of a ſtaff, furniſhed with metalline rings, which being ſtruck, yield a kind of harmonical ſounds; uſed by the Armenians in their church-ſervice.

BA'TING, or ABATING, *prep.* [from *bate*, or *abate*. This word, though a participle in itſelf, ſeems often uſed as a prepoſition.] Except.—If we conſider children, we have little reaſon to think that they bring many ideas with them, *bating*, perhaps, ſome faint ideas of hunger and thirſt. *Locke.*

BA'TIS, *ſ.* [βατις, the name of an herb, which bears ſome reſemblance to bramble.] In botany, a genus of the claſs dioecia, order tetrandria. The generic characters are—I. Male. Calyx: ament pyramidal, ſcales one-flowered, four-fold, imbricate. Corolla: none. Stamina: filaments four, erect, longer than the ſcales of the ament;

antheræ oblong, twin, incumbent. II. Female on a ſeparate plant. Calyx: ament commonly fleſhy, containing ſome floſcules conglobated into an ovate quadrangular body: involucre two-leaved. Corolla: none. Piſtillum: germ quadrangular, faſtened to the ament; ſtyle none; ſtigma two-lobed, obtuſe, villoſe. Pericarpium: berry conjoined with the reſt, one-celled. Seeds: four, triangular, acuminate.—*Eſſential Character.* Male. Ament four-fold, imbricate. Calyx and Corolla none. Female. Ament ovate; involucre two-leaved. Calyx and Corolla none. Stigma two-lobed, ſeſſile. Berries conjoined, four-ſeeded.

Of this there is but one ſpecies, commonly called batis maritima. It is a ſhrub four feet high or leſs. Stems brittle, round, aſh-coloured, much branched, diffuſed, procumbent: the young branches are four-cornered, four-furrowed, green, oppoſite and upright. Leaves oblong, thicker above, acute, gradually drawing to a point towards the baſe, fleſhy, ſucculent, flat above, convex beneath, ſeſſile, oppoſite, ſcarcely an inch long, numerous. Stigmas white. Fruits yellow or greeniſh yellow. The whole plant is very ſalt to the taſte; and it is burnt for barilla at Carthagena, &c. Native of the Caribbee iſlands, and the neighbouring continent. It is very common on all the ſalt marſhes on the ſouth ſide of Jamaica. Linnæus doubts whether this be diſtinct from the *bucephalon* of Plumier.

BATIS'TE, a fine white kind of linen cloth, manufactured in Flanders and Picardy. There are three kinds of batiſte; the firſt very thin; the ſecond leſs thin; and the third much thicker, called *Holland Batiſte*, as coming very near the goodneſs of Hollands. The chief uſe of batiſte is for neck-clothes, ſurplices, &c.

BAT'LET, *ſ.* [from *bat.*] A ſquare piece of wood, with a handle, uſed in beating linen when taken out of the buck.—I remember the kiſſing of her *batlet*, and the cow's dugs that her pretty chopt hands had milked. *Shakeſpeare.*

BAT'MAN, *ſ.* in commerce, a kind of weight uſed at Smyrna, conſiſting of ſix okes. Forty of theſe batmans make a camel's load, and amount to about ſeven hundred and twenty pounds Engliſh weight. *Batman*, or *battament*, is a weight uſed in Turkey and Perſia. The Turkiſh batman is of two kinds; the larger containing ſix okes, or *ocquos*, at three pounds three quarters Paris weight the *ocquo*; ſo that the batman amounts to about twenty-two Paris pounds and a half; the ſmaller, compoſed likewiſe of ſix ocquos, at fifteen ounces the ocquo, amounting to five pounds ten ounces. The Perſian batman is likewiſe of two kinds: one called the *king's weight*, *batman de chahi*, or *cheray*, uſed for weighing moſt of the neceſſaries of life, equivalent to about twelve pounds and an half Paris weight; the other called *batman of Tauris*, equal to ſix pounds four ounces Paris or Amſterdam weight. Theſe are the proportions given by Tavernier. Chardin rates the Perſian batmans ſomewhat lower, viz. the former at twelve pounds twelve oz. and the latter at five pounds fourteen oz.

BAT'MANSON (John), prior to the Carthuſian monaſtery, or Charter-houſe in the ſuburbs of London. He was a ſtudent at Oxford, but it does not appear that he took any degree in that univerſity. He was intimately acquainted with Edward Lee archbiſhop of York, at whoſe requeſt he wrote againſt Eraſmus and Luther. He died in 1531, and was buried in the chapel belonging to the Charter-houſe. Eraſmus, in one of his letters to the biſhop of Wincheſter, calls him an ignorant fellow. Pits, on the contrary, gives him the character of a man of ſingular genius, zeal, piety, and learning. He wrote, 1. *Animadverſiones in annotationes Eraſmi in Nov. Teſtamentum.* 2. A Treatiſe againſt ſome of Luther's works. Theſe two he afterwards retracted. 3. *Commentaria in proverbia Solomonis.* 4. *In cantica canticorum.* 5. *De unica Magdalena.* 6. *Inſtitutiones noviciorum.* 7. *De contemptu mundi.* 8. *De Chriſto duodenni.* 9. On the words, *Miſſus eſt, &c.*

BAT'NIR, or BATINDA, a town of Hindoſtan, in the Moultan country: 150 miles eaſt-ſouth-eaſt of Moultan, and 170 north-weſt of Agimere.

BA'TO, one of the Ladrone iſlands. Lat. 12. N. lon. 142. G. Greenwich.

BATO, a river of Italy, in the kingdom of Naples, which runs into the Mediterranean: two miles ſouth-eaſt of Scalea, in the province of Calabria Citra.

BATO'A, a ſmall iſland in the eaſtern ſea, near the weſt coaſt of Sumatra, ſituated on the equinoctial line. Lon. 98. E. Greenwich.

BATOON', *ſ.* [*baſton*, or *bâton*, Fr. formerly ſpelt *baſton.*] A ſtaff or club:

That does not make a man the worſe,
Although his ſhoulders with *batoon*
Be claw'd and cudgell'd to ſome tune. *Hudibras.*

A truncheon or marſhal's ſtaff; a badge of military honour.

BATOO'NS *of St. Paul*, BASTONCINI *di San Paolo*, in natural hiſtory, a name given by ſome of the Italian writers, as Auguſtino Scilla, and others, to the *lapides Judaici*, or other ſpines of *echini*. Theſe are found in vaſt abundance in the iſland of Malta; and as every thing there is commemorated with ſome title, with St. Paul at the end of it, theſe are called *Baculi Sti. Pauli*, or *St. Paul's batoons.*

BATOPI'LAH, a town of North America, in the province of New Navarre: 120 miles north of Cinaloa.

BA'TOS, *ſ.* in ichthyology, the name given by Ariſtotle, and all the old writers, to the ſkaite, or ſlaire. They have generally called the male *batos*, and the female *batis*. It is a ſpecies of the RAIA, and is diſtinguiſhed by Artedi by the name of the *variegated ray*, with the middle of the back ſmooth, and with one row of ſpines on the tail. Albertus calls it the *rayte*, and *rubus*.

BATRACHI'TES, *ſ.* [from ϐατραχος, a frog.] The toad-ſtone; ſo called becauſe in ſhape and colour it reſembles a frog.

BATRACHOMYOMA'CHIA, *ſ.* The battle of the frogs and the mice, the title of a fine burleſque poem generally aſcribed to Homer. The ſubject of the work is the death of Pſycharpax, a mouſe, ſon of Toxartes, who, being mounted on the back of Phyſignathus, a frog, on a voyage to her palace, to which ſhe had invited him, was ſeized with fear when he ſaw himſelf in the middle of the pond, ſo that he tumbled off and was drowned. Phyſignathus being ſuſpected to have ſhaken him off with deſign, the mice demanded ſatisfaction, and unanimouſly declared war againſt the frogs.

BATRACHO'SALIS, *ſ.* in ichthyology, a name given by the Greeks to the *lophius*, or *rana piſcatrix* of authors.

BA'TRACHUS, *ſ.* [from ϐατραχος, a frog.] An inflammatory tumour under the tongue; ſo called becauſe they who are infected with it croak like frogs.

BATRACHUS, *ſ.* A ſpecies of the SILURUS.

BAT'TA, *ſ.* [Indian.] A term uſed to denote the extra allowance of pay given to officers ſerving in the field, in the armies of India; and of pay, or proviſions, given to the non-commiſſioned officers and privates.

BATTA, a province of Africa, once a powerful ſtate, but now ſubject to Congo: the principal towns are Batta, the capital, Cangon, and Agiſymba.

BAT'TÆ, a people of Germany, formerly inhabitants of what is now called *Heſſe*. Being diſſatisfied with their ſituation there, they ſettled on the iſland formed by the Vahalis and Rhine, which from them took the name of *Batavia*, or *Batavorum Inſula*. Their government was a mixture of monarchy, ariſtocracy, and democracy. The principal men who exerciſed juriſdiction, and commanded the troops, in their reſpective diſtricts, were choſen, as well as the kings, in an aſſembly of the people. A hundred perſons ſelected from among the people preſided over every country, and acted as chiefs in the different hamlets. The whole nation was, in ſome meaſure, an army always in readineſs. Each family compoſed a body of militia, which ſerved under a captain of their own chooſing.

BATTA'GLIA, a town of Italy, in the kingdom of

Naples, and province of Capatinata: three miles north-weſt of Vieſte.

BAT'TAILOUS, *adj.* [from *bataille*, Fr.] Having the appearance of a battle; warlike; with a military appearance:

> A fiery region, ſtretch'd
> In *battailous* aſpect, and nearer view
> Briſtled with upright beams innumerable
> Of rigid ſpears and helmets throng'd. *Milton.*

BATTA'LIA, *ſ.* [*battaglia*, Ital.] The order of battle.—Next morning the king put his army into *battalia*. *Clarendon.*—The main body of an army in array, diſtinguiſhed from the wings.

BATTAL'ION, *ſ.* [*bataillon*, Fr.] A diviſion of an army; a troop; a body of forces. It is now confined to the infantry, and the number is uncertain, but generally from five to eight hundred men. Some regiments conſiſt of one battalion, and others are divided into two, three, or more:

> The pierc'd *battalions* diſunited fall
> In heaps on heaps: one fate o'erwhelms them all. *Pope.*

BATTARIS'MUS, *ſ.* [from Βαττος, a Cyrenæan prince who ſtammered; hence ϐατταριζω, to ſtammer.] Stammering: a defect in pronunciation.

BAT'TATA, *ſ.* in botany. See DIOSCOREA.

BAT'TATAS, *ſ.* in botany. See HELIANTHUS.

BAT'TEL, a market-town in Suſſex, ſix miles from Haſtings, and fifty-ſeven from London. Its original name was Epiton; but it took the preſent from the deciſive battle fought October 14, 1066, between king Harold and William duke of Normany, in which the former, with 60,000 men on both ſides, were killed. This is commonly called the *battle of Haſtings.* By this deciſive blow in favour of the conqueror, Britain became ſubject to him, and he was ſoon after acknowledged king of England. On Heathfield or rather Headfield-plain, where the battle was fought, (ſo called, probably, from ſo many heads or lives having been loſt on it,) he founded a monaſtery of Benedictines, dedicated to St. Martin, whoſe abbot was mitred, and called it *Battel-abbey*, both in commemoration of his own ſucceſs, and that the monks of it ſhould pray for the ſouls of the ſlain. Its abbots could protect the greateſt villains that fled to it, and even ſave the lives of any that were going to be executed. It was a ſtately pile, and almoſt a mile in compaſs. The gate-houſe, which is almoſt entire, ſerves for the ſeſſions, and other public meetings. The incumbent of the church is called *dean of Battel.* Here is made the fineſt gunpowder in England, very much prized by ſportſmen, called *Battel-powder*, which employs a number of labouring people; the town has elſe very little trade. It has a harbour for barges, and a charity-ſchool for forty boys. There is a hill near it, with a beacon, thence called *Beacon-hill*, though its old name is *Standard-hill*, becauſe the conqueror ſet up his ſtandard on it, the day before his victory. From the beginning of Romney-marſh, that is to ſay, at Sandgate or Sandfoot caſtle, near Hythe, to this place, the country is a rich fertile ſoil, full of feeding-grounds; and an incredible number of large ſheep are fed every year upon them, and ſent up to the London markets; alſo large bullocks, eſpecially thoſe they call *ſtalled* or *houſe-fed oxen*, from their being kept within the farmers ſheds or yards all the latter ſeaſon, where they are fed for the winter-market, and generally deemed the largeſt beef in England. In Romney-marſh are found great timber-trees, lying at length under ground, as black as ebony, and fit for uſe, when dried in the ſun. Market on Thurſday; fairs the 22d of November and Whit-Monday; and on Battel-field the 2d of Auguſt.

BATTEL, or *trial by wager of* BATTEL, *ſ.* in law, a ſpecies of trial of great antiquity, which is ſtill in force, though diſuſed. It ſeems to have owed its origin to the military ſpirit of our anceſtors, joined to a ſuperſtitious frame of mind; it being in the nature of an appeal to Providence, under an apprehenſion and hope (however preſumptuous and unwarrantable), that heaven would give the victory to him who had the right. The deciſion of ſuits, by this appeal to the God of battles, is by ſome ſaid to have been invented by the Burgundi, one of the northern or German clans that planted themſelves in Gaul. And it is true, that the firſt written injunction of judicatory combats that we meet with, is in the laws of Gundebal, A. D. 501, which are preſerved in the Burgundian code. Yet it does not ſeem to have been merely a local cuſtom of this or that particular tribe, but to have been the common uſage of all thoſe warlike people from the earlieſt times. And it may alſo ſeem, from a paſſage in Velleius Paterculus, that the Germans, when firſt they became known to the Romans, were wont to decide all conteſts of right by the ſword: for when Quintilius Varus endeavoured to introduce among them the Roman laws and method of trial, it was looked upon (ſays the hiſtorian) as *novitas incognitæ diſciplinæ, ut ſolita armis decerne jure terminarentur.* And among the ancient Goths in Sweden we find the practice of judicatory duels eſtabliſhed upon much the ſame footing as they formerly were in our own country.

This ſpecies of trial by battel, ſays Sir William Blackſtone, was introduced into England by William the Conqueror; but was only uſed in three caſes, one military, one criminal, and the third civil. The firſt in the court-martial, or court of chivalry and honour; the ſecond in appeals of felony; and the third upon iſſue joined in a writ of right, the laſt and moſt ſolemn deciſion of real property. For in writs of right the *jus proprietatis*, which is frequently a matter of difficulty, is in queſtion; but other real actions being merely queſtions of the *jus poſſeſſionis*, which are uſually more plain and obvious, our anceſtors did not in them appeal to the deciſion of Providence. Another pretext for allowing it, upon theſe final writs of right, was alſo for the ſake of ſuch claimants as might have the true right, but yet by the death of witneſſes or other defect of evidence be unable to prove it to a jury. But the moſt curious reaſon of all is given in the Mirror, that it is allowable upon warrant of the combat between David for the people of Iſrael of the one party, and Goliah for the Philiſtines of the other party: a reaſon which pope Nicholas I. very ſeriouſly decides to be inconcluſive. The laſt trial by battel that was waged in the court of common pleas at Weſtminſter (though there was afterwards one in the court of chivalry in 1631, and another in the county palatine of Durham in 1638) was in the 13th year of queen Elizabeth, A. D. 1571, as reported by Sir James Dyer; and was held in Tothill-fields, Weſtminſter, *non ſine magna juris conſultorum perturbatione*, ſaith Sir Henry Spelman, who was himſelf a witneſs of the ceremony. The form, as appears from the authors before cited, is as follows.

When the tenant in a writ of right pleads the general iſſue, viz. that he hath more right to hold than the demandant hath to recover; and offers to prove it by the body of his champion, which tender is accepted by the demandant; the tenant in the firſt place muſt produce his champion, who, by throwing down his glove as a gage or pledge, thus wages or ſtipulates battel with the champion of the demandant; who, by taking up the gage or glove, ſtipulates on his part to accept the challenge. A piece of ground is then ſet out, of ſixty feet ſquare, incloſed with liſts, and on one ſide a court erected for the judges of the court of common pleas, who attend in their ſcarlet robes; and alſo a bar is prepared for the ſerjeants and barriſters at law. When the court ſits, which ought to be by ſunriſing, proclamation is made for the parties and their champions; who are introduced by two knights, and are dreſſed in a coat of armour, with red ſandals, barelegged from the knee downwards, bareheaded, and with bare arms to the elbows. The weapons allowed them are only batoons, or ſtaves, of an ell long, and a four-cornered leather target; ſo that death very ſeldom enſued this civil combat. In the court military, indeed, they fought with ſword and lance, according to Spelman and

Ruſhworth; as likewiſe in France, only villeins fought with the buckler and batoon, gentlemen armed at all points. And upon this, and other circumſtances, the preſident Monteſquieu hath with great ingenuity not only deduced the ſanguinary cuſtom of private duels upon imaginary points of honour, but hath alſo traced the heroic madneſs of knight-errantry from the ſame original of judicial combats. When the champions arrive within the liſts or place of combat, the champion of the tenant takes his adverſary by the hand, and makes oath that the tenements in diſpute are not the right of the demandant; and the champion of the demandant, then taking the other by the hand, ſwears in the ſame manner that they are. Next an oath againſt ſorcery and enchantment was taken by both the champions, in this or a ſimilar form: "Hear this, ye juſtices, that I have this day neither eat, drank, nor have upon me neither bone, ſtone, nor graſs; nor any inchantment, ſorcery, or witchcraft, whereby the law of God may be abaſed, or the law of the devil exalted. So help me God and his ſaints." The combatants are bound to fight till the ſtars appear in the evening: and, if the champion of the tenant can defend himſelf till the ſtars appear, the tenant ſhall prevail; for it is ſufficient for him to maintain his ground, and make it a drawn battel, he being already in poſſeſſion; but, if victory ſooner declares itſelf for either party, for him is judgment finally given. This victory may ariſe from the death of either of the champions: which indeed hath rarely happened; the whole ceremony bearing a near reſemblance to certain rural athletic diverſions, which are probably derived from this original. Or victory is obtained if either champion proves *recreant*, that is, yields, and pronounces the word of *craven*; a word of diſgrace and obloquy, rather than of any determinate meaning; for it is the higheſt diſgrace to the vanquiſhed champion, ſince, as a puniſhment for forfeiting the land of his principal by pronouncing that ſhameful word, he is condemned as a recreant, *amittere liberam legem*, that is, to become infamous, and not to be accounted *liber et legalis homo*; being ſuppoſed by the event to be proved forſworn, and therefore never to be put upon a jury, or admitted as a witneſs in any cauſe.

In appeals of felony, the trial by battel may be demanded, at the election of the appellee, in either an appeal or an approvement; and it is carried on with equal ſolemnity as that on a writ of right; but with this difference, that there each party hires a champion, but here they muſt fight in their proper perſons. And therefore, if the appellant or approver be a woman, a prieſt, an infant, or of the age of ſixty, or lame, or blind, he or ſhe may counterplead and refuſe the wager of battel; and compel the appellee to put himſelf upon the country. Alſo peers of the realm, bringing an appeal, ſhall not be challenged to wage battel, on account of the dignity of their perſons; nor the citizens of London, by ſpecial charter, becauſe fighting ſeems foreign to their education and employment. So likewiſe, if the crime be notorious; as if the thief be taken with the *mainour*, or the murderer in the room with a bloody knife, the appellant may refuſe the tender of battel from the appellee; and it is unreaſonable an innocent man ſhould ſtake his life againſt one who is already known to be guilty, and therefore half convicted. The form and manner of waging battel upon appeals are much the ſame as upon a writ of right; only the oaths of the two combatants are vaſtly more ſtriking and ſolemn. The appellee, when appealed of felony, pleads *not guilty*; and throws down his glove, and declares he will defend the ſame by his body: the appellant takes up the glove; and replies that he is ready to make good the appeal, body for body. And thereupon, the appellee, taking the book in his right hand, and in his left the right hand of his antagoniſt, ſwears to this effect: *Hoc audi, homo, quem per manum teneo, &c.* "Hear this, O man, whom I hold by the hand, who calleſt thyſelf *John* by the name of baptiſm, that I, who call myſelf *Thomas* by the name of baptiſm, did not feloniouſly murder thy father, *William* by name, nor am any way guilty of the ſaid felony. So help me God, and the ſaints; and this I will defend againſt thee by my body, as this court ſhall award." To which the appellant replies, holding the bible and his antagoniſt's hand in the ſame manner as the other: "Hear this, O man, whom I hold by the hand, who calleſt thyſelf *Thomas* by the name of baptiſm, that thou art perjured; and therefore perjured, becauſe that thou feloniouſly didſt murder my father, *William* by name. So help me God, and the ſaints; and this I will prove againſt thee by my body, as this court ſhall award." The battel is then to be fought, with the ſame weapons, viz. batoons, the ſame ſolemnity, and the ſame oath againſt amulets and ſorcery, that are uſed in the civil combat: and, if the appellee be ſo far vanquiſhed that he cannot or will not fight any longer, he ſhall be adjudged to be hanged immediately; and then, as well as if he be killed in battel, Providence is deemed to have determined in favour of the truth, and his blood ſhall be attainted. But if he kills the appellant, or can maintain the fight from ſunriſing till the ſtars appear in the evening, he ſhall be acquitted. So alſo, if the appellant becomes recreant, and pronounces the horrible word *craven*, he ſhall loſe his *liberam legem*, and become infamous; and the appellee ſhall recover his damages, and alſo be for ever quit, not only of the appeal, but of all indictments for the ſame offence. The reaſon why, on a writ of right, the battel is waged by champions, and not by the parties themſelves, is, becauſe in civil actions, if any party to the ſuit dies, the ſuit muſt abate and be at an end for the preſent; and therefore no judgment could be given for lands in queſtion, if either of the parties were ſlain; and alſo that no perſon might claim an exemption from this trial, as was allowed in criminal caſes. *Co. Lit.* 294. As this form of trial by battel is law at this day, the tenant or defendant in a writ of right has it in his election to chooſe or demand it. 3 *Com.* 431. And it was the only mode of deciſion of ſuch writ of right from the conqueſt till the time of Henry II. who, by conſent of parliament, introduced the *grand aſſize*; a particular ſpecies of trial by jury, in concurrence therewith, giving the tenant his choice of either the one or the other. See *Glanv.* lib. ii. c. 7.

To BAT'TEN, *v. a.* [a word of doubtful etymology.] To fatten, or make fat; to feed plenteouſly:

We drove afield,
Batt'ning our flocks with the freſh dews of night. *Milton.*

To fertilize:

The meadows here, with *batt'ning* ooze enrich'd,
Give ſpirit to the graſs; three cubits high
The jointed herbage ſhoots. *Philips.*

To BATTEN, *v. a.* To grow fat; to live in indulgence:

As at full length the pamper'd monarch lay,
Batt'ning in eaſe, and ſlumbering life away. *Garth.*

BATTEN, *ſ.* A word uſed only by workmen.—A *batten* is a ſcantling of wood, two, three, or four, inches broad, ſeldom above one thick, and the length unlimited. *Moxon.*

BATTEN, a town of Germany, in the circle of the Upper Rhine, and principality of Upper Heſſe: ſixteen miles ſouth-weſt of Waldeck, and ſixteen north-weſt of Marburg.

BAT'TENBORCH, or BATTENBURG, a town of the duchy of Gueldres, ſituated on the north ſide of the Meuſe, nearly oppoſite Raveſtein.

BAT'TENS *of the hatches*, in ſea-language, are nailed along the tarpaulings, and ſerve to keep their edges cloſe down to the hatches, in order to prevent the water which waſhes over the deck from penetrating into the lower apartments of the ſhip.

To BAT'TER, *v. a.* [*battre*, Fr. to beat.] To beat; to beat down; to ſhatter: frequently uſed of walls thrown down by artillery, or of the violence of engines of war.—To appoint *battering* rams againſt the gates, to caſt a mount, and to build a fort. *Ezekiel.*

Be then the naval ſtores the nation's care,
New ſhips to build, and *batter'd* to repair. *Dryden.*

To wear with beating.—If you have a ſilver ſaucepan for the kitchen uſe, let me adviſe you *to batter* it well; this will ſhew conſtant good houſekeeping. *Swift.*—Applied to perſons, to wear out with ſervice.—I am a poor old *battered* fellow, and I would willingly end my days in peace. *Arbuthnot.*

To BATTER, *v. n.* A word uſed only by workmen.—The ſide of a wall, or any timber, that bulges from its bottom or foundation, is ſaid *to batter*. *Moxon.*

BATTER, *ſ.* A mixture of ſeveral ingredients beaten together with ſome liquor; ſo called from its being ſo much beaten:

One would have all things little, hence has try'd
Turkey-poults freſh from th' egg in *batter* fry'd. *King.*

BAT'TERER, *ſ.* He that batters.

BAT'TERING-RAM, *ſ.* A military engine uſed for beating down walls before the invention of gun-powder and the modern artillery. It is ſaid to have been invented by Artemanes of Clazomene, a Greek architect, who flouriſhed 441 B. C. The machine is thus deſcribed by Joſephus: It is a vaſt beam, like the maſt of a ſhip, ſtrengthened at the one end with a head of iron, ſomething reſembling that of a ram, whence it took its name. This engine did moſt execution when it was mounted on wheels, which is ſaid to have been firſt done at the ſiege of Byzantium under Philip of Macedon. Plutarch informs us, that Marc Anthony, in the Parthian war, made uſe of a ram fourſcore feet long: and Vitruvius tells us, that they were ſometimes 106, and ſometimes 120, feet in length; and to this perhaps the force and ſtrength of the engine was in a great meaſure owing. The ram was managed at one time by a whole century of ſoldiers; and they being ſpent were ſeconded by another century, ſo that it played continually without any intermiſſion. See ARTILLERY, p. 231, of this volume.

BATTERING-RAMS, *ſ.* in heraldry, a bearing or coat of arms reſembling the military engine of the ſame name.

BAT'TERY, *ſ.* [from *battre*, or *batterie*, Fr.] The act of battering.—Earthly minds, like mud walls, reſiſt the ſtrongeſt *batteries*. *Locke.*—The inſtruments with which a town is battered, placed in order for action; a line of cannon.

See, and revere th' artillery of heav'n,
Drawn by the gale, or by the tempeſt driven:
A dreadful fire the floating *batt'ries* make,
O'erturn the mountain, and the foreſt ſhake. *Blackmore.*

BATTERY, *ſ.* in electricity, is a combination of coated ſurfaces of glaſs, commonly jars, ſo connected together that they may be charged at once, and diſcharged by a common conductor. See ELECTRICITY.

BATTERY, *ſ.* in law, is the unlawful beating or ſtriking of another. See ASSAULT, p. 280, of this volume.

BATTERY, *ſ.* in the military art, a place raiſed to plant cannon upon, to play with more advantage upon the enemy. It conſiſts of an epaulment or a breaſt-work, of about eight feet high, and eighteen or twenty feet thick. In all batteries, the open ſpaces through which the muzzles of the cannon are pointed, are called *embrazures*, and the diſtances between the embraſures, *merlons*. The guns are placed upon a platform of planks, &c. aſcending a little from the parapet, to check the recoil, and that the gun may be the eaſier brought back again to the parapet: they are placed from twelve to ſixteen feet diſtant from one another, that the parapet may be ſtrong, and the gunners have room to work.

Covered or *Maſked* BATTERY, is when the cannon and gunners are covered by a bank or breaſt-work, commonly made of bruſh-wood, faggots, and earth, called a *faſcine* battery.

Croſs-BATTERIES, are two batteries playing athwart each other upon the ſame object, forming an angle there, and battering to more effect, becauſe what one battery ſhakes, the other beats down.

Mortar BATTERIES differ from the others, in that the ſlope of the parapet is inwards, and it is without embraſures, the ſhells being fired quite over the parapet, commonly at an angle of forty-five degrees elevation.

Open BATTERY, is nothing more than a number of cannon, commonly field-pieces, ranged in a row abreaſt of one another, perhaps on ſome ſmall natural elevation of the ground, or an artificial bank a little raiſed for the purpoſe.

Sunk or *Buried* BATTERY, is when its platform is ſunk, or let down into the ground, ſo that trenches muſt be cut in the earth oppoſite the muzzles of the guns, to ſerve as embraſures to fire through. This is moſtly uſed on the firſt making of approaches in beſieging and battering a place.

BATTERY *d'Enſilade*, is one that ſcours or ſweeps the whole length of a ſtraight line. *Battery en Echarpe*, is one that plays obliquely. *Battery de Reverſe*, or *Murdering Battery*, is one that plays upon the enemy's back. *Camerade* or *Joint Battery*, is when ſeveral guns play upon one place at the ſame time. See FORTIFICATION.

BATTIBA'GLIO, a town of Italy, in the kingdom of Naples, and Principato Citra: eleven miles eaſt-ſouth-eaſt of Salerno.

BAT'TISH, *adj.* [from *bat*.] Reſembling a bat.—To be out late in a *battiſh* humour. *Gentleman Inſtructed.*

BATTIS'TA (Franco), a celebrated painter, born at Venice, was one of the diſciples of Michael Angelo, whoſe manner he followed ſo cloſely, that in the correctneſs of his out-line he ſurpaſſed moſt of the maſters of his time. His paintings are diſperſed all over Italy and other parts of Europe; but, his colouring being very dry, they are not much more eſteemed than the prints etched by his hand. He died in 1561.

BAT'TLE, *ſ.* [*batille*, Fr. The word is alſo written *battel*, *battell*, and *battail*. It is formed from the Latin verb *batuere*, to fence or exerciſe with arms: whence *batualia* and *batalia*, which properly denoted the action or exerciſe of thoſe who learned to fence, and who were hence alſo denominated *batuatores*.] A fight; an encounter between oppoſite armies. We generally ſay a *battle* of many, and a *combat* of two.—The race is not to the ſwift, nor the *battle* to the ſtrong. *Eccleſ.*—A body of forces, or diviſion of an army.—The king divided his army into three *battles*; whereof the vanguard only, with wings, came to fight. *Bacon.*—The main body, as diſtinct from the van and rear.—Angus led the avant-guard, himſelf followed with the *battle* a good diſtance behind, and after came the arreir. *Hayward.*—We ſay to join *battle*; to give *battle*.

To BATTLE, *v. n.* [*battailler*, Fr.] To join battle; to contend in fight:

'Tis ours by craft and by ſurprize to gain:
'Tis yours to meet in arms, and *battle* in the plain. *Prior.*

The ancients never joined battle without much ceremony and preparation; as taking augnries, offering ſacrifice, haranguing the ſoldiers, giving the word or a *teſſera*, &c. The ſignals of battle were, ſounding the *claſſicum* or general charge, and diſplaying a peculiar flag called by Plutarch a *purple robe*; to which may be added, ſinging pæans, raiſing military ſhouts, &c. A Roman legion, ranged in order of battle, conſiſted of *haſtati*, placed in the front; of *principes*, who were all old experienced ſoldiers, placed behind the former; and of *triarii*, heavy armed with large bucklers, behind the *principes*. The *haſtati* were ranked cloſe; the ranks of the principes were much opener, ſo that they could receive the *haſtati*; and thoſe of the *triarii* opener ſtill, inſomuch that they could receive both the *principes* and the *haſtati* within them, without any diſorder, and ſtill facing the enemy. When therefore the *haſtati* found themſelves unable to ſtand the enemy's charge, they retired gently within the *principes*, where joining with them they renewed the combat. If theſe found themſelves too weak to ſuſtain the enemy, both retired among the *triarii*, where, rallying, they formed a new corps, and charged with more vigour than ever. If theſe failed, the battle was loſt: the Romans had no farther reſource. The moderns are unacquainted with this method of inſerting or, embattlimg one company into another; without which the former cannot be well ſuccoured or defended, and their places taken by others; which was a thing the Romans practiſed with great exactneſs. For the *velites*, and in later times the archers and ſlingers, were not drawn up in this regular manner, but either diſpoſed of before the front of the *haſtati*, or ſcattered up and down among the void ſpaces of the *haſtati*, or ſometimes placed in two bodies in the wings. Theſe always began the combat, ſkirmiſhing in flying parties with the foremoſt troops of the enemy. If they were repulſed, which was uſually the caſe, they fell back to the flanks of the army, or retired again in the rear. When they retired, the *haſtati* advanced to the charge. The cavalry was poſted at the two corners of the army, like the wings on a body; and fought ſometimes on foot, ſometimes on horſeback. The auxiliary forces compoſed the two points of the battle, and covered the whole body of the Romans. Other leſs uſual forms of battle among the Romans were the *cuneus*, or wedge; *globus*, or round form; *forfex*, or pair of ſheers; *turris*, or an oblong ſquare figure; *ſerra*, or ſaw. The Greeks were inferior to the Romans in marſhalling their armies for battle, as they drew up their whole army in front, and truſted the ſucceſs of the day to a ſingle force. They had three forms of battle for the horſe, viz. the ſquare, the wedge, and the rhombus or diamond form. The firſt held beſt for the defenſive; the latter for the offenſive; the wedge being preferred as bringing moſt hands to fight.

The Greeks notified the places of their battles and victories by adding the word Νικη; whence Nicomedia, Nicopolis, Theſſalonica, &c. The ancient Britons did the like, by adding the word *Mais*; whence Maiſſeveth, Malmeſbury, &c. The Engliſh by the word *Field*. The Romans had their particular days, called *præliaries dies*, wherein alone it was lawful to join battle; and others wherein it was unlawful, called *dies atri*. The Athenians, by the ancient laws of their country, were not to draw out their forces for battle till after the ſeventh day of the month: and Lucian relates of the Lacedemonians, that by the laws of Lycurgus they were not to fight before full moon. Among the Germans, it was reputed an impiety to fight in the wane of the moon; and Cæſar tells us, that Arioviſtus was beaten by him, becauſe, contrary to the laws of his country, he had fought when the moon was in her wane. The German ſoldiers were intimidated with the apprehenſion, and afforded Cæſar an eaſy victory; *aciæ commiſſa, impeditos religione hoſtes vicit.* It is well known that Jeruſalem was taken by Pompey in an attack on the Sabbath day, when by the Jewiſh law, they were not allowed to fight, or even to defend themſelves. Among the ancients, we find frequent inſtances of battles in the night; it was by the moonlight that Pompey beat Mithridates, and Scipio Aſdrubal and Syphax.

The firſt pitched battle, of which we have any diſtinct account, is that between Crœſus and Cyrus deſcribed by Zenophon, concerning which we have a diſſertation expreſsly by M. Freret, wherein ſeveral points of the ancient tactics are well explained. The moſt remarkable battles recorded in ancient and modern hiſtory, are the following: Of Marathon; the Athenians under Miltiades with 10,000 men defeat Datis at the head of 100,000 Perſian infantry and 10,000 horſe, 490 B. C. Of Leuctra; the Lacedemonians defeated by the Thebans and loſe the dominion of Greece, 371 B. C. *Arund. Marbles.* Of Mantinea; in which the famous Theban general Epaminondas is ſlain, B. C. 361. Of the river Granicus; Alexander the Great defeats the Perſians, B. C. 334. Of Iſſus; in which Darius is totally defeated with the loſs of 100,000 men, B. C. 333. Of Arbela; by which Alexander becomes conqueror of Perſia, B. C. 333. Of Cumæ; in the ſecond Punic war; the Carthaginians defeat the Romans, 40,000 are ſlain, with their conſul Emilius, and 10,000 taken priſoners, B. C. 214. Marius, junior, defeats Hannibal the Carthagenian general, kills 37,000 on the ſpot, and takes 18,000 priſoners, B. C. 209. Scipio defeats Aſdrubal, 80,000 Carthagenians and their allies are ſlain, and 13,000 taken priſoners, B. C. 205. Cl. Nero finally vanquiſhes Aſdrubal, takes him priſoner and beheads him; 50,000 of the confederates are killed, B. C. 203. Sylla, the Roman dictator, with only 16,000 men, defeats Mithridates, king of Pontus, at the head of 120,000, loſing himſelf, as it is related, only twelve men, B. C. 86. Of Pharſalia; Julius Cæſar, with an inferior force, defeats Pompey, B. C. 48. Of Philippi; Brutus and Caſſius, after an obſtinate battle and a bloody engagement at ſea, are totally ſubdued by Octavius Cæſar and M. Antony, which puts an end to the Roman republic, B. C. 42. Cæſar defeats Antony's fleet near Actium, B. C. 31. *Boſſuet. Ancient Hiſt.* Between the emperor Claudius and the Goths, the latter leave 32,000 ſlain on the field, A. D. 269. Between Conſtantine the Great and Licinius, the latter defeated, and 100,000 of his troops are ſlain, A. D. 324. Between Ramirez II. king of Leon and the Aſturias, and the Moors, at Semincas, in which 80,000 Moors were ſlain, 938.

Battles of the Engliſh celebrated in hiſtory. Of Haſtings; in which Harold loſt his life, and William I. gained the Engliſh crown, A. D. 1066. Of Aſcalon in Judea; Richard I. of England defeats Saladin's army, amounting to 300,000 Saracens and other infidels, A. D. 1192. Of Giſors in France; the French, defeated by Richard I. whoſe parole for the day was *Dieu et mon Droit*, ‘God and my Right,’ from this time made the motto to the royal arms of England, 1198. *Rymer.* Of Lincoln; Lewis, dauphin of France, invited over by the diſcontented barons in the laſt year of king John, was acknowledged by them as king of England; but the nobility in general were ſummoned by the Earl of Pembroke to Glouceſter, to crown Henry III. and afterwards marched againſt the dauphin's and the barons army, which was defeated at Lincoln 1217, and the dauphin left the kingdom. Of Lewis; in which Henry III. his couſin Henry king of the Romans, his ſon, and Edward prince of Wales, were taken priſoners by Montford earl of Leiceſter, a rebellious baron, 1264. Of Eveſham; the barons defeated, Montford ſlain, and Henry III. releaſed, 1265. Of Bannockburn, near Stirling in Scotland; the Scots, commanded by king Robert Bruce, with 30,000 men, defeat Edward II. of England, with 100,000 or, as ſome ſay, 200,000, A. D. 1314. Of Halidon-hill near Berwick; the Engliſh gain a ſignal victory over the Scots, 13,000 being ſlain, and only a very inconſiderable number of the Engliſh, 7 Edward III. 1333. Of Creſſy in France; a complete victory gained over Philip of France by Edward III. and his ſon Edward, ſtiled *the black prince*, John king of Bohemia, James king of Majorca, Ralph duke of Lorraine (ſovereign princes), a number of French noblemen and other perſons of high rank, together with 30,000 private men, were ſlain, and the loſs of the Engliſh was trifling, 1346. *Froiſſart. Carte.* The Scots defeated at Durham the ſame year, and David their king taken priſoner by the Engliſh. Of Poictiers in France, gained by Edward the Black Prince; John king of France and his ſon taken priſoners, 1356. Of Agincourt; Henry V. totally vanquiſhes the French; his priſoners ſo numerous, that he is obliged to kill them, 1415. Of Towton; Edward IV. obtains a complete victory over Henry VI. on whoſe ſide 36,776 of his ſubjects are ſlain, 1461. Of Boſworth; Richard III. was ſlain and Henry earl of Richmond crowned king on the field of battle, by the ſtile of Henry VII. 1485. Of Flouden; the Engliſh vanquiſh the Scots, and James IV. is killed, 1513, 4 Henry VIII. Of Pinkney; the Scots defeated by the earl of Hertford protector, 13,000 ſlain, 2 Edward VI. 1547. Of Naſeby, Northampts. Charles I. defeated by Fairfax, loſes all his infantry, artillery, arms, &c. and is never after able to make head againſt the parliament forces, 1645. Of Worceſter; Charles II. vanquiſhed, and obliged to quit the kingdom, 1651. Of the Boyne, Ireland; James II. defeated by William III. and withdraws to France, 1690. Of Blenheim or Hochſtet; a ſignal victory gained by the duke of Marlborough over the French and Bavarians, 4 Anne, 1704. Another complete victory at Ramillies over the ſame combined armies, 1706. Again, over the French at Oudenarde, Flanders, 1708. A convoy for the relief of Liſle attacked by 24,000 French troops; defeated by major-general Webb, who had not 10,000 men under his command, nor any artillery, near the wood of Wynendale, between Bruges and Liſle, 1708. Of Malplaquet, near Mons, Flanders; the duke of Marlborough and prince Eugene win the day from the French, but the ſlaughter and loſs was great on both ſides, each army conſiſted of about 100,000 choice troops, 1709. Mons taken by the ſame generals ſoon after. Of Sheriffmuir; the duke of Argyll defeats the earl of Mar, who commanded the rebel forces, 2 Geo. I. 1715. Of Dettingen; George II. (in perſon) gains a ſignal victory over the French, commanded by marſhal Noailles, 1743. Of Fontenoy; the Engliſh and Hanoverians defeated by the French, after ſignal exertions of valour, owing to the cowardice of the Dutch troops in the Engliſh army, 1745. Of Culloden; the duke of Cumberland entirely defeats the Scotch rebels, headed by the young Pretender, which terminates the rebellion, 1746. Of Laffeldt; the French gain the day from the duke of Cumberland, 1747. Of Lake St. George, North America; general Johnſon defeats the French army, compoſed of French regulars, Canadians, and Indians, 1755. Of Crevelt; prince Ferdinand gains the day from the French, 1758. Of Cofeldt; the duke of Cumberland retreats, but the French ſuſtain the greateſt loſs, 1757. Of Minden; prince Ferdinand, with an army compoſed of Engliſh, Heſſians, and Hanoverians, gains a ſignal victory over the French, 1759. Of Niagara, North America; general Johnſon defeats the French, and takes Niagara, 1759. Of Montmorenci, and the plains of Abraham; general Wolfe, at the latter, conquers Quebec; but falls in the battle, 1760. Of Wandewaſh, in the Eaſt Indies; colonel Coote takes the place, and defeats the French general Lally, 1759. Of Warbourg; Prince Ferdinand defeats the French, 1760. Of Buxar, in India, 1764. Of Lexington, in America; between the Engliſh and the revolted Americans, 1775. Of Bunker's-Hill; between the ſame, 1775. Of Long Iſland, 1776. Of White Plains, near New York, 1776. Of Saratoga, 1777. Of Brandy Wine Creek, 1777. Of Camden, 1780. Of York Town; when lord Cornwallis ſurrendered, 1781. In the Carnatic; where Hyder Ally was defeated by Sir Eyre Coote, 1781.

Battles between European powers, in which England was intereſted by her alliances. Of Lutzingen; Guſtavus Adolphus, king of Sweden, againſt the emperor; the imperialiſts conquer, and Guſtavus, the ſupport of the Proteſtant intereſt in Germany, is killed, 1632; he was in alliance with Charles I. Of Narva; Charles XII. king of Sweden, with 20,000 men, vanquiſhes the Muſcovite army of 100,000, 1700. Of Almanza; the French and Spaniards, headed by the duke of Berwick, defeat the combined forces of England, Holland, and Portugal, commanded by the marquis de las Minas and the earl of Galloway, 1707. Of Pultawa; Charles XII. totally defeated by the czar of Muſcovy, and eſcapes into Turkey with a few attendants, 1709. Queen Anne, the Dutch, and the emperor of Germany, reinſtate him in his paternal dominions. Of Belgrade; the Imperialiſts vanquiſh the Turks, 1717. Of Parma and Guaſtalla; the confederates, England, France, and Spain, againſt the emperor, both bloody engagements with doubtful ſucceſs, 1734. Of Molwitz; gained by the king of Pruſſia over the Auſtrians, in alliance with Great Britain, 1741. Of Czarſlow; the king of Pruſſia again victorious, 1742. Of Friedberg; the moſt ſignal victory obtained by the king of Pruſſia during the war, 1745. Of St. Lazaro; the Auſtrians defeat the French and Spaniards, 1746. Of Lowoſchutz; the king of Pruſſia, now the ally of Great Britain, gains a complete victory over the Auſtrian general, Brown, 1756. Of Prague; the Auſtrians defeated by prince Henry of Pruſſia, and Brown mortally wounded, 1757. The ſame year count Daun, the New Auſtrian general, vanquiſhes the king of Pruſſia at Kolin, and drives him from Prague. Of Roſbach; the king of Pruſſia gains a complete victory over the combined armies of France and Auſtria, November 5. Of Breſlau; the Auſtrians defeat the Pruſſians under prince Beven, November 22, but the engagement was very bloody on both ſides. Of Liſſa; which cloſes this remarkable campaign; the king of Pruſſia vanquiſhes prince Charles of Lorraine, and kills 6,000 Auſtrians in the engagement, December 5, 1757. Of Cunerſclot; the king of Pruſſia, with 50,000 men, ventures to attack the Ruſſian army conſiſting of 90,000, in their camp; at firſt he gains conſiderable advantages; but purſuing them too far, the Ruſſian general, Soltikoff, rallies his troops, and gains a complete victory, the Pruſſians having loſt 20,000 men killed, wounded, and taken priſoners, 1759. Of Pfaſſendorf; the Auſtrians, commanded by Laudohn, are defeated with great ſlaughter by the king of Pruſſia, which prevents the junction of the Ruſſian and Auſtrian grand armies, 1760. The king cloſed this year with a glorious victory at Torgau over the Auſtrians, November 3, Daun being wounded and obliged to retire. The final battle gained by him was before Schweidnitz; when he defeated the Auſtrian army under the generals Laudohn, O'Donnel, and Beck, and retook Schweidnitz; the battle was fought Auguſt 16th, and the city ſurrendered in October 1762; ſoon after which a ſuſpenſion of arms took place. For particulars of all the intereſting battles fought by the French revolutioniſts, ſee the articles ENGLAND, and FRANCE.

BATTLE-ARRAY, *ſ.* Array, or order, of battle.—Two parties of fine women, placed in oppoſite ſide boxes, ſeemed drawn up in *battle-array* one againſt another. *Addiſon.*

BATTLE-AXE, *ſ.* An ancient military weapon. Axes were a principal part of the offenſive armour of the Celtæ. At the ſiege of the Roman Capitol by the Gauls under Brennus, we find one of the moſt diſtinguiſhed of their warriors armed with a battle-axe. And Ammianus Marcellinus, many centuries afterwards, deſcribing a body of Gauls, furniſhes them all with battle-axes and ſwords. Some of theſe weapons have been found in the ſepulchres of the Britons, on the downs of Wiltſhire, and in the north of Scotland. Within theſe four or five centuries the Iriſh went conſtantly armed with an axe. At the battle of Bannock-burn, king Robert Bruce clave an Engliſh champion down to the chine at one blow with a battle axe. The axe of Lochaber hath remained a formidable implement of deſtruction in the hands of our Highlanders nearly to the preſent period; and it is ſtill uſed by the city-guard of Edinburgh in quelling mobs, &c.

BATTLE ROYAL, *ſ.* in cock-fighting, denotes a fight between three, five, or ſeven, cocks, all together; ſo as that the cock which ſtands longeſt gets the day.

BAT'TLEDOOR, *ſ.* [ſo called from *door*, taken for a flat board, and *battle*, or *ſtriking.*] An inſtrument with a handle and a flat board, uſed in play to ſtrike a ball or ſhuttlecock.—Play-things which are above their ſkill, as tops, gigs, *battledoors*, and the like, which are to be uſed with labour, ſhould indeed be procured them. *Locke.*

BAT'TLEFIELD, a village of England, in the county of Salop, near which Henry IV. gained a victory over Piercy, called *Hotſpur:* three miles north of Shrewſbury.

BAT'TLEMENT, *ſ.* [generally ſuppoſed to be formed from *battle*, as the parts from whence a building is defended againſt aſſailants; perhaps only corrupted from *bâtiment*, Fr.] A wall raiſed round the top of a caſtle, tower, or other building, with embraſures, or interſtices, to look through to annoy an enemy.—Thou ſhalt make a *battlement* for thy roof, that thou bring no blood upon thy houſe, if any man fall. *Deuteronomy.*

BAT'TLINGS, *ſ.* [The derivation of the word is difficult to be aſcertained. In the Gloſſary of Du Freſne, the *batus* is explained by 'meaſure of allowance:' poſſibly thence might have been formed *batellus*, ſignifying a 'ſmaller meaſure,' and from that *battlings.*] A term uſed to ſignify 'allowance of money;' as *battles* is applied to expreſs an ‘allowance of proviſions,’ and *to battle* to take that allowance.

BATTO'LOGIST, *ſ.* [βαττολογος, of βαττος, Battus, and λογω, to ſpeak.] A vain babbler.

BATTO'LOGY, *ſ.* [*battologie*, Fr. *battologia*, Lat. of βαττολογια, Gr. either of *Battus* a prince of the Cyrenians, who had a very ſhrill or ſqueaking voice, or *Battus* a very ſilly poet, and λογος, ſpeech.] A vain fooliſh repetition of the ſame words over and over again in the ſame diſcourſe; a vain babbling.

BAT'TORY, *ſ.* a name given by the Hans Towns to their magazines or factories abroad. The chief of theſe battories are thoſe at Archangel, Novogrod, Berghmen, Liſbon, Venice, and Antwerp.

BA'TUA, Butua, Buthoe, or Buthoece, anciently a town of Dalmatia, ſituated on the Adriatic; now *Budoa*, which ſee.

BAT'TUS, in fabulous hiſtory, a famous herdſman, who was witneſs to the theft of Mercury, when he ſtole away ſome of Apollo's cattle. Mercury gave Battus one of the fineſt cows that he had taken, and made him promiſe that he ſhould keep this matter ſecret; but, not altogether confiding in him, he pretended to retire, and came back ſoon after in another ſhape, and with another voice, offering him an ox and a cow if he would tell where the cattle were that he ſought. Battus was tempted with the bribe, and laid open the whole affair; upon which Mercury changed him into a touchſtone, which diſcovers the nature of the metal rubbed upon it.

BATTUSZA'NI, a town of European Turkey, in the province of Moldavia, forty-four miles north-north-weſt of Jaſſy.

BAT'TY, *adj.* [from *bat.*] Belonging to a bat:

Till o'er their brows death, counterfeiting ſleep,
With leaden legs and *batty* wings doth creep. *Shakeſpeare.*

BATZ, a copper coin mixed with ſome ſilver, and current at different rates, according to the alloy, in Nuremberg, Baſil, Fribourg, Lucerne, and other cities of Germany and Switzerland.

BAVANY', a river of Hindoſtan, which runs into the Cauvery, ſeven miles north of Erroad, in Coimbetore.

BAVA'RIA, a circle of Germany, is bounded on the north by Franconia and Bohemia, on the eaſt and ſouth by the circle of Auſtria, and on the weſt by Suabia, and contains about 2830 ſquare leagues. It receives its name from the duchy of Bavaria, which forms the greater part. It is compoſed of twenty ſtates, divided into two benches, the one eccleſiaſtical, and the other ſecular. Theſe ſtates are convoked by the duke of Bavaria, and the archbiſhop of Saltzburgh, who direct alternately; the aſſemblies are held generally at Ratiſbon or Waſſerburg, and they vote in the following order: the archbiſhop of Saltzburg, duke of Bavaria, biſhop of Freyſing, duke of Neuburg and Sulzbach, biſhop of Ratiſbon, landgrave of Leuchtenberg, biſhop of Paſſau, comte Sternſtein, provoſt of Berchtholdſgaden, comte of Haag, abbot of St. Emeran, comte of Ortenburg, abbot of Nieder-Munſter, lord of Ehrerfels, abbot of Ober-Munſter, lord of Sulzburg and Pyrbaum, lord of Hohen-Waldek, lord of Breteneck, and town of Ratiſbon. When the army of the empire is 40,000, this circle is engaged to furniſh 800 horſemen, and 1494 foot, at its contingent.

Bavaria, the electorate or duchy, comprehends the greater part of the circle, and has nearly the ſame bounds, ſixty leagues long, and forty broad, and is divided into Upper and Lower Bavaria, and Upper Palatinate. Towards the ſouth the country is mountainous, interſperſed with foreſts, lakes, and moraſſes, with paſture-grounds, but few corn-fields; towards the north are found large and fertile plains, which produce plenty of corn; there are likewiſe many ſalt-works, medicinal ſprings and baths; mines of copper, ſilver, and lead; quarries of excellent marble; plenty of game, fiſh, and cattle. The principal rivers are the Danube, Larch, Inn, Altmuhl, Nab, and Iſer; they count ſixteen lakes of a larger ſize, and 160 ſmaller; 275 rivers, great and ſmall; 360 foreſts, 720 mountains, and a great number of fiſh-ponds. They reckon forty-eight cities, 123 towns, 1200 villages, 1000 chateaus or noblemen's ſeats, eighty-ſix convents, 1500 pariſhes, 28,709 churches, and about four millions of ſouls. The revenues of the elector amount to about ſix millions of imperial crowns; the military forces amount to about 12,000 in time of peace, and rather more than double in time of war. The ſtates of Bavaria are compoſed of prelates, nobles, cities, and towns, which are aſſembled by the deputies at Munich; but this ſeldom happens. The ſtates of the Upper Palatinate have held no diet ſince the year 1628. The inhabitants of the Upper and Lower Bavaria are the moſt zealous Catholics in Europe. There are however ſome Proteſtants in the Upper Palatinate. The principal manufactures are coarſe cloth, ſtuffs of woollen, cotton and ſilk ſtockings, velvet, carpets, &c. The principal exports are wheat, cattle, wood, ſalt, and iron; which employ and feed the inhabitants, and enrich the prince. The elector holds the fifth place in the electorate college, and the ſecond among the ſecular electors; he has a ſeat and the firſt vote among the college of princes. His aſſeſſment in the matricula of the empire amounts to ſixty horſe, and 277 foot, or 1828 florins for the Roman month. To the chamber of Wetzlar he is rated at 811 rix-dollars, and fifty-eight kreutzers.

Bavaria (Upper), is divided into two governments, or regencies, viz. that of Munich and Burkhauſen. The principal towns of the former are Munich, Pfaffenhauſen, Abenſperg, Ingoldſtadt, Donawert, Friedberg, Wilhem, and Waſſerburg; of the latter, Burkhauſen, Branau, and Scherding.

Bavaria (Lower), is likewiſe divided into two governments, viz. that of Landſhuit, the principal towns of which are Landſhuit, Aerding, Dingelſing, Landau, Vilſhhofen, Oſterhoſen, and Moſburg; and the government of Straubing, the principal places of which are Straubing, Cham, Kelheim, Dietfurt, Stadt-am-Hof, and Deckendorf.

BA'VAROY, *ſ.* A kind of cloak or ſurtout:

Let the loop'd *bavaroy* the fop embrace,
Or his deep cloak be ſpatter'd o'er with lace. *Gay.*

BAVAY', a town of France, in the department of the North, and chief place of a canton, in the diſtrict of le Queſnoy. It was once a conſiderable town, but is now ſcarcely more than a village: two leagues north-eaſt of le Queſnoy, and eleven ſouth-eaſt of Lille. On the 17th of May, 1792, Bavay was attacked and plundered by a body of Auſtrians, but ſoon relieved by marſhal Luckner.

BAUBEE', *ſ.* [It is probably a corruption of the word *baby*, or *babe*, meaning the head or face that is ſtamped on one ſide of it.] A word uſed in Scotland, and the northern counties for a halfpenny:

Though in the drawers of my japan bureau,
To lady Gripeall I the Cæſars ſhew,
'Tis equal to her ladyſhip or me
A copper Otho, or a Scotch *baubee*. *Bramſton.*

BAUBIGNY', a town of France, one league and a half north-eaſt of Paris.

BAUBU'LA, a river of Spain, in the province of Arragon, which runs into the Xalon, about a league below Calataiud.

BAU'CIS, in fabulous hiſtory, a poor aged woman who lived with her huſband Philemon, almoſt as old as herſelf, in a little hut. Jupiter, in a human form, accompanied by Mercury, being deſirous of viſiting Phrygia, was rejected by all the inhabitants of the town near which Baucis and Philemon dwelt, who were the only perſons that received them with hoſpitality. In order to reward them, Jupiter bade them follow him to the top of a high mountain; and, when they looked back, they ſaw not only the town but all the neighbourhood under water, except the little hut, which was changed into a temple. Jupiter promiſed to grant them whatever they deſired, and theſe good people only wiſhed to be attendants in the temple, and to die both at the ſame time. Their wiſhes were accompliſhed; and when they arrived at a great old age, and were tired of life, as they were one day talking at the gate of the temple, Philemon perceived Baucis to be turning into a lime-tree, and ſhe was aſtoniſhed to ſee Philemon changing into an oak; upon which they bade each other their laſt adieu. *Ovid.*

BAUCO'NICA, anciently a town of the Vangiones in Gallia Belgica; nine miles from Mogontiacum, and eleven from Borbitomagum; now ſuppoſed to be *Oppenheim*, in the palatinate of the Rhine, and ſituated on that river.

BAUD, a town of France, in the department of Morbihan, and chief place of a canton, in the diſtrict of Pontivy, three leagues and a half eaſt-north-eaſt of Hennebon, and three and three-quarters ſouth of Pontivy.

BAUDANVIL'LIER, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Blamont: four leagues north of St. Diey, and one and three-quarters ſouth of Blamont.

BAUDELO'T (Charles Cæſar), a learned advocate in the parliament of Paris, diſtinguiſhed by his ſkill in ancient monuments, was received into the Academy of Belles Lettres in 1705. He wrote a treatiſe on the Advantages of Travelling; many letters and diſſertations on Medals, &c. and died in 1722, aged ſeventy-four.

BAU'DEKIN, *ſ.* [*baldicum*, and *baldekinum*.] Cloth of *baudekin*, or gold; it is ſaid to be the richeſt cloth, now called *brocade*, made with gold and ſilk, or tiſſue, upon which figures in ſilk, &c. were embroidered.

BAUDI'ER (Michael), of Languedoc, lived in the reign of Louis XIII. and publiſhed ſeveral books, which procured him the character of a copious author; among them are, 1. An Inventory of the General Hiſtory of the Turks. 2. Hiſtory of the Seraglio. 3. Religion of the Turks. 4. Court of the King of China. 5. Life of Cardinal Ximenes, &c.

BAU'DIUS (Dominic), profeſſor of hiſtory in the univerſity of Leyden, born at Liſle the 8th of Auguſt, 1561. He began his ſtudies at Aix-la-Chapelle, and continued them at Leyden. He removed from thence to Geneva, where he ſtudied divinity. After reſiding here ſome time, he returned to Ghent, and from thence to Leyden, where he applied to the civil law, and was admitted doctor of law in June 1585. Soon after his admiſſion, he accompanied the ambaſſadors from the States to England; where he became acquainted with ſeveral perſons of diſtinction, particularly the famous Sir Philip Sidney. He was admitted advocate at the Hague the 5th of January, 1587; but, being ſoon tired of the bar, he travelled into France, where he remained ten years. He was much eſteemed in that kingdom. Achilles de Harlai, firſt preſident of the parliament, got him admitted advocate of the parliament of Paris in the year 1592. In 1602, he came to England with Chriſtopher de Harlai, the preſident's ſon, who was ſent ambaſſador to the court of London by Henry the Great. The ſame year Baudius having been named profeſſor of eloquence at Leyden, he went and ſettled in that univerſity. He read lectures on hiſtory after the death of Morula, and was permitted alſo to do the ſame on the civil law. In 1611, the States conferred upon him the office of hiſtoriographer in conjunction with Meurſius; and in conſequence thereof he wrote the Hiſtory of the Truce. Baudius was an excellent Latin poet. The firſt edition of his poems was printed in 1587: they conſiſt of verſes of all the different meaſures. He publiſhed ſeparately a book of iambics in 1591, dedicated to cardinal Bourbon. Some of his poems he dedicated to the king of England, and others to the prince of Wales. He died at Leyden in 1613.

BAUDOBRI'GA, anciently a town of the Treviri in Germany; now *Boppart*, in the electorate of Triers.

BAUDRAND' (Michael Anthony), a celebrated geographer, born at Paris in 1633. He travelled into ſeveral countries; and then applied himſelf to the improvement of Ferrarius's Geographical Dictionary. He wrote, 1. Notes to Papirius Maſſo's Deſcription of the Rivers of France. 2. A Geographical and Hiſtorical Dictionary. 3. Chriſtian Geography, or an Account of the Archbiſhoprics and Biſhoprics of the whole World. He died at Paris in 1700.

BAUE'RWITZ', a town of Sileſia, in the principality of Jagerndorf, on the river Zinna, ten miles north-weſt of Ratibor.

BAUGE, *ſ.* a drugget manufactured in Burgundy, with thread ſpun thick, and coarſe wool.

BAUGE', a town of France, and principal place of a diſtrict, in the department of the Mayne and Loire, ſituated on the river Coeſnon; before the revolution the ſeat of a governor, and a royal juſtice: it contains about 4000 inhabitants, and is ſix leagues eaſt-north-eaſt of Angers. In the year 1421, while Henry V. was purſuing his campaign in France, he diſpatched the duke of Clarence with 10,000 men to take this town; where the duke found ſome Scotch troops, with whom he engaged; and, being outnumbered by the enemy, the duke was killed, and his men for the moſt part made priſoners. Lat. 47. 31. N. lon. 17. 33. E. Ferro.

BAU'HIN (John), an eminent botaniſt, was born the middle of the ſixteenth century. He took his doctor's degree in phyſic in 1562, and afterwards became principal phyſician to Frederic duke of Wirtemberg. The moſt conſiderable of his works is his Univerſal Hiſtory of Plants.

BAUHIN (Caſpar, or Gaſpar), younger brother to the preceding, was born at Baſil in 1550; and diſtinguiſhed himſelf by his ſkill in anatomy and botany. In 1580, he was choſen profeſſor of theſe ſciences at Baſil; and, in 1614, was made profeſſor of phyſic, and firſt phyſician of that city, which he held till his death, which happened in 1623, at the age of ſixty-three. He wrote, 1. Anatomical Inſtitutions; 2. Prodromus Theatri Botanici; and other works.

BAUHIN'IA, *ſ.* [ſo named by Plumier in honour of the two famous botaniſts John and Caſpar *Bauhin*.] In botany, a genus of the claſs decandria, order monogynia, natural order lomentaceæ. The generic characters are—Calyx: perianthium oblong, gaping longitudinally on the lower ſide, reclining on the other, gaping alſo five ways at the baſe, with five cohering leaflets above, deciduous. Corolla: petals five, oblong, waved, with attenuated reflected tops, expanding; the lower ones a little larger, the upper one more diſtant, all with claws placed on the calyx. Stamina: filaments ten, declining, ſhorter than the corolla, the tenth much the longeſt; antheræ ovate, always on the tenth, ſeldom on the reſt. Piſtillum: germ oblong, ſitting on a pedicel; ſtyle filiform, declining; ſtigma obtuſe, riſing. Pericarpium: legume long, ſubcolumnar, one-celled. Seeds: many, roundiſh, compreſſed, placed according to the length of the legume.—*Eſſential Character.* Calyx five-cleft, deciduous; petals expanding, oblong, with claws, the upper one more diſtant, all inſerted into the calyx.

Species. 1. Bauhinia ſcandens, or climbing mountain ebony: ſtem cirrhiferous. This riſes with many tender ſtalks, which put out tendrils, and faſten themſelves to the neighbouring trees, whereby they riſe to a great height. Leaves ſix inches long, and three inches and a half broad in the middle, deeply cut into two pointed lobes, each having three prominent ribs running longitudinally. It is a native of both Indies, and has not produced flowers in England. The ſeeds were ſent to Mr. Miller from Campeachy, probably before the year 1752. The flowers are at firſt whitiſh, but turn to a yellowiſh colour. They ſeem to appear but ſeldom even in their place of natural growth. The fruit is ſlender and flat, half a foot or a palm in length, and an inch in breadth, hard, ſmooth, very dark brown; it contains ſix or eight flat bony ſeeds, black, with a ſilvery border.

2. Bauhinia aculeata, or prickly-ſtalked mountain ebony;

ny: ſtem prickly. This is an erect inelegant ſhrub, the height of a man. The flowers are large, white, and have a ſcent which is ſomewhat unpleaſant. Miller ſays, that it riſes to the height of ſixteen or eighteen feet, in Jamaica, where it grows plentifully, and the other ſugar iſlands in America; that the ſtalks are terminated by ſeveral long ſpikes of yellow flowers, which are ſucceeded by bordered pods, about three inches long, containing two or three ſwelling ſeeds; that theſe pods are glutinous, and have a ſtrong balſamic ſcent, as have alſo the leaves when bruiſed; and that it is called in America the *Indian ſavin-tree*, from its ſtrong odour, ſomewhat reſembling the common ſavin. According to Jacquin, it is frequent about Carthagena in woods. Cultivated by Miller in 1752.

3. Bauhinia divaricata, or dwarf mountain ebony: leaves ſmooth; lobes divaricated, acute, two-nerved; petals lanceolate. This is a low ſhrub, ſeldom riſing more than five or ſix feet high, dividing into ſeveral branches. It grows naturally in great plenty on the north ſide of the iſland of Jamaica. Cultivated before 1742, by Robert James lord Petre. It flowers from June to September.

4. Bauhinia ungulata: leaves ovate, lobes parallel. This riſes to the height of twenty feet, with a ſmooth ſtem, dividing into many ſmall branches, which are terminated by looſe bunches of white flowers; and theſe are ſucceeded by very long narrow compreſſed pods, with eight or ten ſeeds in each. Native of America. Miller ſays he received the ſeeds from Campeachy.

5. Bauhinia variegata, or variegated mountain ebony: calyxes one-leafed, burſting; petals ſeſſile, ovate; lobes of the leaves ovate obtuſe. This riſes, with a ſtrong ſtem, upwards of twenty feet high, dividing into many ſtrong branches. The flowers are large, and grow in looſe panicles at the extremity of the branches, of a purpliſh red colour, marked with white, and the bottom yellow. It grows naturally in both Indies, and was introduced here in 1690 by Mr. Bentick.

6. Bauhinia purpurea, or purple mountain ebony: leaves ſubcordate, two-parted, rounded, tomentoſe underneath. This alſo is a tall tree, but differing from the foregoing ſort in having larger leaves, more deeply cut, and a little more contracted on the ſides. Native of the Eaſt Indies, where it flowers the whole year. Mr. Miller affirms, that it grows naturally at La Vera Cruz; but he ſeems to have miſtaken the ſpecies. It was introduced here in 1778.

7. Bauhinia tomentoſa, or downy mountain ebony: leaves cordate, lobes ſemiorbiculate tomentoſe. This grows to the height of two fathoms, with a trunk nearly ſix inches in diameter, and divides into many branches. The leaves are much ſmaller than in the foregoing ſpecies; and the flowers have no ſmell. Native of the Eaſt Indies. Mr. Miller ſays, that it was ſent him from Campeachy in 1730, by the late Dr. Houſton: but he ſeems again to confound the ſpecies. It was cultivated, according to Ray, by Compton biſhop of London in 1687.

8. Bauhinia acuminata, or ſharp-leaved mountain ebony: leaves ovate, lobes acuminate ſemiovate. This is only about the height of a man, with a trunk the thickneſs of the human arm. The flowers are bell-ſhaped, of a very pure white without any ſpots, void of ſcent. Native of the Eaſt Indies. Miller ſays it grows naturally in both Indies, but he has confounded this with the twelfth ſpecies.

9. Bauhinia emarginata: ſtem prickly, leaves cordate with round lobes, tomentoſe underneath. This ſeldom riſes more than ten feet high, dividing into many irregular branches, armed with ſhort crooked ſpines. The flowers grow at the extremity of the branches, two or three together; theſe are large, and of a dirty white colour, and are ſucceeded by ſhort flat pods, each containing two or three ſeeds.

10. Bauhinia rotundata: ſtem prickly; leaves ſubcordate, two-parted, rounded; flowers ſcattered. This riſes twenty feet high, with a ſtrong upright ſtem, which ſends out many branches toward the top; armed with ſpines growing by pairs, which are ſtrong and crooked. The leaves are heart-ſhaped, and grow alternately, having two rounded lobes. The flowers are large and white, coming out thinly at the ends of the branches. Both theſe laſt are natives of Carthagena in New Spain. We give them on Miller's authority; but conceive they are nothing more than varieties of the ſecond ſpecies.

11. Bauhinia aurita, or long-eared mountain ebony: leaves ſubtranſverſe at the baſe; lobes lanceolate, porrected, three-nerved; petals lanceolate. This ſort was cultivated in 1756 by Mr. Miller; and flowers in September.

12. Bauhinia porrecta, or ſmooth broad-leaved mountain ebony: leaves cordate; lobes porrectate, acute, three-nerved; petals lanceolate. This tree riſes about fifteen feet high, having ſeveral ſtraight trunks about as thick as a man's leg, covered with a whitiſh bark, dividing into many branches and twigs, making a pleaſant top. It grows on the hills every where in Jamaica. The wood is very hard, and veined with black, whence the name of ebony. It was cultivated by Miller in 1739; and flowers in July.

13. Bauhinia candida, or white-leaved mountain ebony: leaves cordate, pubeſcent underneath; lobes ovate obtuſe; calyxes attenuated upwards, and elongated. This is a native of the Eaſt Indies, where it was obſerved by Claude Ruſſel, Eſq. It was introduced in 1777 by Patrick Ruſſel, M. D. and flowers in May and June.

The proper place of the eleventh ſpecies is after the third, of which it was ſuppoſed by Linnæus to be only a variety. The twelfth ſhould come in between the ſeventh and eighth. The fifth, thirteenth, and ſixth, ſhould be placed after the eighth. The ninth and tenth may be referred, as varieties, to the ſecond. There are many other ſpecies, both from the Eaſt and Weſt Indies, not yet ſufficiently determined. The whole genus indeed requires to be ſtudied anew, in order to eſtabliſh the ſpecies on better principles than we poſſeſs at preſent.

Propagation and Culture. All theſe plants, being natives of hot countries, will not thrive in England, unleſs they are kept in the bark-ſtove. They are propagated by ſeeds, which muſt be procured from the countries where they grow naturally, for they do not perfect their ſeeds in England. The third ſort has ſeveral times produced pods in the Chelſea garden, but they have never come to maturity. The ſeeds ſhould be brought over in their pods, which will preſerve them good. Theſe muſt be ſown in pots filled with light freſh earth, and plunged into a moderate hot-bed of tanners' bark; if the ſeeds are good, the plants will come up in about ſix weeks, and, in a month after, will be fit to tranſplant; when they ſhould be carefully ſhaken out of the ſeed-pot, ſo as not to tear off the roots, and each planted into a ſeparate ſmall pot filled with light loamy earth, and plunged into the hot-bed again, being careful to ſhade them until they have taken freſh root, after which they ſhould have freſh air admitted to them every day in warm weather. In the autumn they muſt be placed in the bark-ſtove, and treated in the ſame way as other tender exotics, giving them but little water in winter. As theſe plants frequently flower, they are worthy of a place in the ſtove.

BA'VIN, *ſ.* [of uncertain derivation.] A bruſh ſtick like thoſe bound up in ſlender faggots; a piece of waſte wood:

He rambled up and down
With ſhallow jeſters and raſh *bavin* wits,
Soon kindled, and ſoon burnt. *Shakeſpeare.*

BAU'LAS, a town of Syria, fifty miles eaſt of Damaſcus.

To BAULK. See BALK.

BAULTE, a river of Pruſſia, which runs into the Friſch Haff, a little below Frauenburg.

BAUM, *ſ.* in botany. See MELISSA.

BAU'MAN ISLANDS, three iſlands in the Pacific Ocean, diſcovered by Roggewin, in the year 1722, apparently pleaſant and covered with fruit-trees, and divers ſorts of vegetables. The inhabitants are white, ſome of them burned by the ſun: they are numerous, and armed with bows and arrows, but repreſented as of a gentle and humane diſpoſition, and friendly to ſtrangers. The largeſt iſland is about ſeven or eight leagues in circumference, with good anchorage. Lat. 15. 0. S. lon. 208. 45. E. Ferro.

BAUMES-LES-DA'MES, or Baume-les-No'nes, a town of France, and principal place of a diſtrict, in the department of Doubs, on the river Doubs: five leagues N.E. of Beſançon, and 8¾ north of Pontarlier. Five miles from this town is a remarkable cavern, whoſe entrance is twenty paces wide; and, after deſcending 300 paces, the gate of a grotto is ſeen, twice as large as that of a city. The grotto is thirty-five paces deep, ſixty wide, and is covered with a kind of vaulted roof, from which water continually drops. There is alſo a ſmall brook, ſaid to be frozen in ſummer, but not in winter; and at the bottom are ſtones that exactly reſemble candied citron-peel. When the peaſants perceive a miſt riſing out of this cave, they affirm that it will rain the next day.

BAU'MEN, or Bauman, a cave of Lower Saxony in Germany, about a mile from Wernigerode, and eighteen from Goſlar. The entrance is through a rock; and ſo narrow, that not more than one perſon can paſs at a time. There are ſeveral paths in it, which the peaſants have turned up, in ſearching for the bones of animals, which they ſell for unicorn's horns. Some think this cave reaches as far as Goſlar; and the ſkeletons of men have been found in it, who are ſuppoſed to have periſhed by being loſt in its turnings and windings.

BAUMGAR'TEN, a town of Germany, in the archduchy of Auſtria, ſix miles weſt of Feltſburg.

Baumgartén, a town of Bohemia, in the circle of Chrudim, three miles weſt of Politzka.

BAUM'HOLDER, a town of Germany, in the circle of the Upper Rhine, and duchy of Deux Ponts, ten miles weſt of Lautereck, and twenty-five north of Deux Ponts.

BAUMSWALDT', a foreſt of Pruſſia, on the borders of Lithuania, about ten leagues long and ſeven wide.

BAUNACH', a town of Germany, in the circle of Franconia, and biſhopric of Bamberg, near the river Mayne: ſeven miles north of Bamberg.

BAUR (William), an eminent Flemiſh painter, born at Straſburgh. He was ſome time at Rome, where his ſtudies were wholly employed upon architecture and landſcapes. He painted ſmall figures in diſtemper on vellum. He etched with great ſpirit. His largeſt works are in the hiſtorical way; and he has given us many of the ſieges and battles which waſted Flanders in the 16th century. They are rather plans than pictures; and have little to recommend them but hiſtoric truth, and the freedom of the execution. He died at Vienna in 1640.

BAU'RAC ſ. [בורק Arab.] Nitre; borax. The mineral fixed alkaline ſalt.

BAURIN'KEL, a town of Germany, in the circle of Weſtphalia, and county of Lingen, ſix miles north-eaſt of Lingen.

BAUSCHWITZ', a town of Sileſia, in the principality of Neyſze, eight miles eaſt-north-eaſt of Neyſze.

BAUSK, a town of Courland, on the river Muza. Guſtavus Adolphus, king of Sweden, took it from the Poles in the year 1625, and in the year 1705 the czar became maſter of it, after a bloody battle between the Ruſſians and the Swedes. It is ſix leagues ſouth of Mittau.

BAUTRU'E, a celebrated French writer, and one of the firſt members of the French academy; born in 1588, and died in 1665.

BAUTSCH', a town of Moravia, in the circle of Prerau, eighteen miles north of Prerau.

BAUT'ZEN, or Budis'sen, a town of Germany, and capital of Upper Luſatia, (formerly imperial, but now ſubject to the elector of Saxony,) on the river Sprée. It is thirty miles eaſt-north-eaſt of Dreſden, and ſeventy-ſix eaſt of Leipſic. Lat. 51. 11. N. lon. 32. 14. E. Ferro.

BAUX (Les), a town of France, in the department of the Mouths of the Rhone, and chief place of a canton, in the diſtrict of Taraſcon, formerly the chief place of an independent barony. It is two leagues ſouth-eaſt of Taraſcon, and three north-eaſt of Arles.

BAW'BLE, ſ. [*Baubellum*, in barbarous Latin, ſignified a jewel, or any thing valuable, but not neceſſary. *Omnia* baubella *ſua dedit Othoni.* Hoveden. Probably from *beau*, Fr.] A gewgaw; a trifling piece of finery; a thing of more ſhew than uſe; a trifle. It is in general, whether applied to perſons or things, a term of contempt.

BAW'BLING, *adj.* Trifling; contemptible: *a word not now uſed, except in converſation.*

BAW'COCK, ſ. [perhaps from *beau*, or *baude*, and *cock.*] A familiar word, which ſeems to ſignify the ſame as *fine fellow.*—Why, how now, *bawcock?* how doſt thou, chuck? *Shakeſpeare.*

BAWD, ſ. [Some think the word is derived from the old French *baude*, 'bold or impudent;' though Verſtegan has a conjecture which would carry it higher, viz. from *bathe*, anciently written *bade.* In which ſenſe *bawd* originally imported no more than bath-holder, as if bagnios had anciently been the chief ſcenes of ſuch proſtitution.] A perſon who keeps a place of proſtitution, or makes a trade of debauching women, and procuring or conducting criminal intrigues. The Romans had their male as well as female bawds; the former denominated *lenones* and *proagogi*, among us *panders*; the latter, *lenæ.* Donatus, ſpeaking of the habits of the ancient characters in comedy, ſays, *Leno paliis varii coloris utitur.* But the ancient *lenones*, it is to be obſerved, furniſhed boys as well as girls for venereal purpoſes. Another ſort of theſe merchants or dealers in human fleſh were called *mangones*, by the Greeks ανδροκαπηλοι, who ſold eunuchs, ſlaves, &c. By a law of Conſtantine, bawds were to be puniſhed by pouring melted lead down their throats.

The profeſſion of a bawd was repreſented by the ancients as an old woman having a letter-caſe at her girdle, and at her feet a baſket filled with flowers, jewels, and other toys; blowing up with a pair of bellows two hearts, which Cupid is kindling with his torch.

To Bawd, *v. n.* To procure; to provide gallants with ſtrumpets.—Leucippe is agent for the king's luſt, and *bawds*, at the ſame time, for the whole court. *Addiſon.*

Bawd-Money, ſ. in botany. See Æthusa Meum.

BAW'DER, a river of England, which runs into the Taes, about three miles north-north-weſt of Barnard Caſtle, in the county of Durham.

BAW'DILY, *adv.* Obſcenely.

BAW'DINESS, ſ. Obſceneneſs.

BAW'DRY, ſ. [contracted from *bawdery*, the practice of a bawd.] A wicked practice of procuring and bringing whores and rogues together. Obſcenity; unchaſte language.—Cheating and *bawdry* go together in the world. *L'Eſtrange.*

BAW'DY, *adj.* Obſcene; unchaſte: *generally applied to language:*

The *bawdy* wind, that kiſſes all it meets,
Is huſh'd within the hollow mine of earth,
And will not hear 't. *Shakeſpeare.*

Bawdy-House, [*lupanar, fornix.*] A houſe of ill-fame, kept for the reſort and commerce of lewd people of both ſexes. The keeping of a bawdy-houſe comes under the cognizance of the temporal law, as a common nuſance, not only in reſpect of its endangering the public peace by drawing together diſſolute and debauched perſons, and promoting quarrels, but alſo in reſpect of its tendency to corrupt the manners of the people, by an open profeſſion of lewdneſs. Thoſe who keep bawdy-houſes are puniſhed with fine and impriſonment; and all ſuch infamous puniſhment, as pillory, &c. as the court in diſcretion ſhall inflict: and a lodger, who keeps only a ſingle room for the uſe of bawdry, is indictable for keeping a bawdy-houſe. 1 *Salk.* 382. Perſons reſorting to a bawdy-houſe are puniſhable, and they may be bound to their good behaviour, &c. But, if one be indicted for keeping or frequenting a bawdy-

bawdy-houſe, it muſt be expreſsly alleged to be ſuch a houſe, and that the party knew it; and not by ſuſpicion only. A man may be indicted for keeping bad women in his own houſe. 1 *Hawk. P. C.* c. 61. A conſtable upon information, that a man and woman are gone to a lewd houſe, or about to commit fornication or adultery, may, if he finds them together, carry them before a juſtice of the peace without any warrant, and the juſtice may bind them over to the ſeſſions. *Dalt.* 214. Conſtables in theſe caſes may call others to their aſſiſtance, enter bawdy-houſes, and arreſt the offenders for a breach of the peace: in London they may carry them to priſon; and, by the cuſtom of the city, whores and bawds may be carted. 3 *Inſt.* 206. But it is ſaid, a woman cannot be indicted for being a bawd generally; for that the bare ſolicitation of chaſtity is not indictable. 1 *Hawk. P. C.* c. 74.

By ſtat. 25 Geo. II. c. 36, made perpetual by ſtat. 28 Geo. II. c. 19, if two inhabitants, paying ſcot and lot, ſhall give notice to a conſtable of any perſon keeping a bawdy-houſe, the conſtable ſhall go with them before a juſtice of peace, and ſhall, (upon ſuch inhabitants making oath, that they believe the contents of ſuch notice to be true, and entering into a recognizance of 20l. each, to give material evidence of the offence,) enter into a recognizance of 30l. to proſecute with effect ſuch perſon for ſuch offence at the next ſeſſions; the conſtable ſhall be paid his reaſonable expences by the overſeers of the poor, to be aſcertained by two juſtices; and, if the offender be convicted, the overſeers ſhall pay to the two inhabitants 10l. each. On the conſtable's entering into ſuch recognizance as aforeſaid, the juſtice ſhall bind over the perſon accuſed to the next ſeſſions, and, if he ſhall think proper, demand ſecurity for ſuch perſon's good behaviour in the mean time. A conſtable neglecting his duty forfeits 20l. Any perſon appearing as maſter or miſtreſs, or as having the care or management, of any bawdy-houſe, ſhall be deemed the keeper thereof, and liable to be puniſhed as ſuch. The ſame act alſo directs the licenſing by magiſtrates of all public places within twenty miles of the metropolis.

It was always held infamous to keep a bawdy-houſe; yet ſome of our hiſtorians mention bawdy-houſes publicly allowed here in former times till the reign of Henry VIII. and aſſign the number to be eighteen thus allowed on the bank-ſide in Southwark. Mr. Pennant, in his work entitled London, ſpeaks of them; and the following regulations are quoted from an ancient record of the court-leet in the borough of Southwark, when public ſtews or brothel-houſes were permitted within the manor, and under the juriſdiction, of the biſhop of Wincheſter. *Item.* "That no ſtewholder keep any woman within his houſe that hath any *ſickneſs* of *brenning*, but that ſhe be put out, upon pain of making a fyne unto the lord of C ſhillings. *Item.* The women that be at common bordel to be ſeen every day what they be; and a woman that liveth by her body to come and goe where ſhe liſt, only, according to ancient cuſtom, ſhe ſhall pay every week XIV pence for her chamber. *Item.* If any woman of the bordel *let* any man of his way, but ſit ſtill at the door, and let them go or come, and choſe wider they wol; or if they draw any man by his gown, or by his hood, or by any odir thing, ſhe ſhall make a fyne unto the lord of XX ſhillings. *Item.* That, if any woman living by her body take any moneys to lye with a man, and ſhall not lye with them till the morrow, ſhe ſhall make a fyne of VI ſhillings and VIII pence."

Bawdy-houſes are at this time licenſed in Holland, and pay a conſiderable tax towards the public revenue.

To BAWL, *v. n.* [*balo*, Lat.] To hoot; to cry with great vehemence, whether for joy or pain. A word always uſed in contempt:

Loud menaces were heard, and foul diſgrace,
And *bawling* infamy, in language baſe,
Till ſenſe was loſt in ſound, and ſilence fled the place.
Dryden.

To cry as a froward child.—If they were never ſuffered to have what they cried for, they would never, with *bawling* and peeviſhneſs, contend for maſtery. *Locke.*

To BAWL, *v. a.* To proclaim as a crier.—It grieved me when I ſaw labours, which had coſt ſo much, *bawled* about by common hawkers. *Swift.*

BAWO'ROW, a town of Red Ruſſia, in the palatinate of Lemberg, ſixty-four miles eaſt of Lemberg.

BAW'REL, *ſ.* A kind of hawk.

BAW'SIN, *ſ.* A badger.

BAWT, a town of Perſia, in the province of Irak Agemi, eighty miles north of Iſpahan.

BAW'TRY, a market-town in the Weſt Riding of Yorkſhire, eight miles from Doncaſter, and 152 from London, ſituate on the river Idle, about ten miles from its fall into the Trent, and partly in Nottinghamſhire, noted for a trade in mill-ſtones, and being a great thoroughfare in the poſt-road from London to Scotland. The river brings hither from Derbyſhire, not only mill and grind ſtones, but lead and iron-ware from Sheffield, which are conveyed hence to Stockwith, Burton, Hull, &c. it being the centre of all canal exportation from the riding wherein it is ſituated. Its market-days are Wedneſdays and Saturdays. Fairs, four days in Whitſun-week, Old Martinmas, and November 22. The canal-navigation is of vaſt advantage to this town and neighbourhood.

BAXA'NA, *ſ.* [Ind.] A poiſonous tree growing near Ormuz.

BAX'TER (Richard), an eminent divine among the nonconformiſts, was born at Rowton in Shropſhire, November 12, 1615; and diſtinguiſhed himſelf by his exemplary life, his pacific and moderate principles, and his numerous writings. Upon the opening of the long parliament, he was choſen vicar of Kidderminſter. In the heat of the civil wars he withdrew from that town to Coventry, and preached to the garriſon and inhabitants. When Oliver Cromwell was made protector, he would by no means comply with his meaſures, though he preached before him. He came to London and preached before the parliament the day before they voted the return of Cha. II. who upon his reſtoration appointed him one of his chaplains in ordinary. He aſſiſted at the conference in the Savoy, as one of the commiſſioners for ſtating the fundamentals in religion, and then drew up a reformed liturgy. He was offered the biſhopric of Hereford, which he refuſed, affecting no higher preferment than the liberty of continuing miniſter of Kidderminſter; which he could not obtain, for he was not permitted to preach there above twice after the reſtoration. Whereupon he returned to London, and preached occaſionally about the city, till the act of uniformity took place. In 1662, Mr. Baxter was married to Margaret Charleton, daughter to Francis Charleton, Eſq. of the county of Salop. She was a woman of great piety, and entered thoroughly into her huſband's views concerning religion. During the plague in 1665 he retired into Buckinghamſhire; but afterwards returned to Acton, where he ſtaid till the act againſt conventicles expired; and then his audience was ſo large that he wanted room. Upon this he was committed to priſon; but, procuring an habeas corpus, he was diſcharged. After the indulgence in 1672, he returned to London; and in 1682 he was ſeized for coming within five miles of a corporation. In 1684 he was ſeized again; and in the reign of James II. was committed priſoner to the King's Bench, and tried before the lord chief juſtice Jefferies for his Paraphraſe on the New Teſtament, which was called a ſcandalous and ſeditious book againſt the government. He continued in priſon two years; from whence he was at laſt diſcharged, and had his fine remitted by the king. He died December 8, 1691; and was buried in Chriſt-church. He was honoured with the friendſhip of ſome of the greateſt and beſt men in the kingdom, as the earl of Lauderdale, the earl of Balcarras, lord chief juſtice Hales, Dr. Tillotſon, &c. and held correſpondence with ſome of the moſt eminent foreign divines. He wrote above 120 books, and had above ſixty written againſt him. Mr. Granger's character of him is very ſtriking. "Richard Baxter (ſays he) was a man famous for weakneſs of body and ſtrength of mind; for having the ſtrongeſt ſenſe of religion himſelf, and exciting a ſenſe of it in the thoughtleſs and profligate; for preaching more ſermons, engaging in more controverſies, and writing more books, than any other nonconformiſt of his age. He ſpoke diſputed, and wrote, with eaſe; and diſcovered the ſame intrepidity when he reproved Cromwell and expoſtulated with Charles II. as when he preached to a congregation of mechanics. His zeal for religion was extraordinary; but it ſeems never to have prompted him to faction, or carried him to enthuſiaſm." Among his moſt famous works were, 1. The Saints Everlaſting Reſt. 2. Call to the Unconverted, of which 20,000 were ſold in one year; and it was tranſlated not only into all the European languages, but into the Indian tongue. 3. Poor Man's Family Book. 4. Dying Thoughts; and, 5. A Paraphraſe on the New Teſtament. His practical works have been printed in four volumes folio.

Baxter (William), nephew and heir to the former, was an eminent ſchoolmaſter and critic. He was born at Lanlugany in Shropſhire, in 1650; and it is remarkable, that at the age of eighteen, when he firſt went to ſchool, he knew not one word of any language but Welſh; but he ſo well improved his time, that he became a perſon of great and extenſive knowledge. His genius led him chiefly to the ſtudy of antiquities and philology, in which he compoſed ſeveral books. The firſt he publiſhed was a Grammar, in 1679, intitled De Analogia ſeu Arte Latinæ Linguæ Commentariolus. He alſo publiſhed a correct edition of Anacreon, with notes; an edition of Horace; a Dictionary of the Britiſh Antiquities, in Latin: and ſeveral other books. He died May 31, 1723, after being above twenty years maſter of Mercer's School in London.

BAY, *ſ.* [*baye*, Dut.] An opening into the land, where the water is ſhut in on all ſides, except at the entrance. A pond head raiſed to keep in ſtore of water for driving a mill.

Bay, *ſ.* [*abboi*, Fr. ſignifies the laſt extremity; as, *Innocence eſt aux* abbois. Boileau. 'Innocence is in the utmoſt *diſtreſs*.' It is taken from *abboi*, the barking of a dog at hand, and thence ſignified the condition of a ſtag when the hounds were almoſt upon him.] The ſtate of any thing ſurrounded by enemies, and obliged to face them by an impoſſibility of eſcape:

Nor flight was left, nor hopes to force his way;
Embolden'd by deſpair, he ſtood at *bay*;
Reſolv'd on death, he diſſipates his fears,
And bounds aloft againſt the pointed ſpears. *Dryden.*

Some writers, perhaps miſtaking the meaning, have uſed *bay* as referred to the aſſailant, for diſtance beyond which no approach could be made:

All, fir'd with noble emulation, ſtrive;
And with a ſtorm of darts to diſtance drive
The Trojan chief; who, held at *bay*, from far
On his Vulcanian orb ſuſtain'd the war. *Dryden.*

Bay, *ſ.* in architecture, a term uſed to ſignify the magnitude of a building; as, if a barn conſiſts of a floor and two heads, where they lay corn, they call it a barn of two *bays*. Theſe bays are from fourteen to twenty feet long, and floors from ten to twelve broad, and uſually twenty feet long, which is the breadth of the barn.

Bay, *ſ.* A poetical name for an honorary crown or garland, beſtowed as a prize for any kind of victory or excellence:

Beneath his reign ſhall Euſden wear the *bays*. *Pope.*

Bay, in botany, ſee Laurus. Bay (Loblolly), ſee Gordonia.

Bay of Islands, ſo called from the great number of iſlands which line its ſhores, on the coaſt of New England. It affords good anchorage.

Bay of Inlets, a bay on the ſouth-eaſt coaſt of New Holland, between Cape Palmerſton and Cape Townſend. Lat. 21. 30. to 22. 30. S. lon. 209. 36. to 210. 40. W. Greenwich.

To Bay, *v. n.* [*abboyer*, Fr.] To bark as a dog at a thief, or at the game which he purſues:

The hounds at nearer diſtance hoarſely *bay'd*;
The hunter cloſe purſu'd the viſionary maid;
She rent the heav'n with loud laments, imploring aid.
Dryden.

[from *bay*, an incloſed place.] To encompaſs about; to ſhut in:

We are at the ſtake,
And *bay'd* about with many enemies. *Shakeſpeare.*

To Bay, *v. a.* To follow with barking; to bark at:

I was with Hercules and Cadmus once,
When in the woods of Crete they *bay'd* the boar
With hounds of Sparta. *Shakeſpeare.*

Bay-Colour, *ſ.* [In this ſenſe the word *bay* is formed from the Latin *baius*, or *badius*, and that from the Greek βαιος, a 'palm-branch;' ſo that *badius*, or *bay*, properly denotes *color phœniceus*. Hence alſo, among the ancients, thoſe now called *bay* horſes, were denominated *equi palmati*.] A ſort of red inclining to cheſnut, chiefly uſed in ſpeaking of horſes. We have divers ſorts and degrees of bays; as a light bay, a dapple bay, &c. All bay horſes are ſaid to have black manes; which diſtinguiſhes them ſorrels, which have red or white manes.

Bay-Salt. See Salt.

Bay-Yarn, a denomination ſometimes uſed promiſcuouſly with woollen yarn.

BAY'A, a ſea-port town of Africa, in the diſtrict of Soko, on the Gold Coaſt.

BAYAGA'NA, a town on the iſland of St. Domingo.

BAYA'MO, or St. Salvador, a town of the iſland of Cuba, on a river which forms a port, near the South Coaſt. It gives name to a channel, ſituated between the main land of Cuba and the iſlands called the *Queen's Gardens*. Bayamo is 280 miles eaſt of the Havanna. Lat. 16. 5. N. lon. 59. 0. W. Ferro.

BAY'ARD, *ſ.* [from *bay*.] A bay horſe:

Blind *bayard* moves the mill. *Philips.*

Bayard (Peter du Terrail de), eſteemed by his cotemporaries the model of ſoldiers and men of honour, and denominated *The Knight without Fear and without Reproach*, was deſcended from an ancient and noble family in Dauphiné. He was with Charles VIII. in the conqueſt of Naples; where he gave remarkable proofs of his valour, eſpecially at the battle of Fornoue. He was dangerouſly wounded at the taking of Breſcia; at which place he reſtored to the daughters of his hoſt 2000 piſtoles, which their mother had directed them to give him, to prevent the houſe from being plundered; an action that has been celebrated by many hiſtorians. At his return to France, he was made lieutenant-general of Dauphiné. He fought by the ſide of Francis I. at the battle of Marignan; and that prince afterwards inſiſted on being knighted by his hand, after the manner of the ancient knights. The chevalier Bayard defended Mezieres for ſix weeks, againſt Charles V.'s army. In 1524, at the retreat of Rebec, (the general Bonivet having been wounded and obliged to quit the field,) the conduct of the rear was committed to the chevalier Bayard, who, though ſo much a ſtranger to the arts of a court that he never roſe to the chief command, was always called, in times of real danger, to poſts of the greateſt difficulty and importance. He put himſelf at the head of the men-at-arms; and, animating them by his preſence and example to ſuſtain the whole ſhock of the enemy's troops, he gained time for the reſt of his countrymen to make good their retreat. But in this ſervice he received a wound which he immediately perceived to be mortal; and, being unable to continue any longer on horſeback, he ordered one of his attendants to place him under a tree with his face towards the enemy, where he calmly waited the approach of death. Bourbon, who led the foremoſt of the enemy's troops, found him in this ſituation, and expreſſed regret and pity at the ſight. "Pity not me," cried the high-ſpirited chevalier; "I die as a man of honour ought, in the diſcharge of my duty: they indeed are objects of pity, who fight againſt their king, their country, and their oath." The marquis de Peſcara, paſſing ſoon after, manifeſted his admiration of Bayard's virtue, as well as his ſorrow for his fate, with the generoſity of a gallant enemy; and, finding that he could not be removed with ſafety from that ſpot, ordered a tent to be pitched there, and appointed proper perſons to attend him. He died, notwithſtanding their care, as his anceſtors for ſeveral generations had done, in the field of battle. Peſcara ordered his body to be embalmed, and ſent to his relations; and ſuch was the reſpect paid to military merit in that age, that the duke of Savoy commanded it to be received with royal honours in all the cities of his dominions: in Dauphiné, Bayard's native country, the people of all ranks came out in a ſolemn proceſſion to meet it.

The continence and generoſity of the chevalier have been immortalized in the Spectator; and all the hiſtories of his time have celebrated his courage and proweſs.

Being aſked what was the beſt legacy a father could leave his children; he replied, "Valour and virtue, which fear neither rain, ſtorm, tempeſt, nor the ſtrength of man." It was once propoſed to him to enter into the ſervice of the king of England: he anſwered, "I have already two maſters, God and my prince; I will never ſerve any other." In the war between pope Julius II. and the duke of Ferrara in alliance with the French, the duke had agreed with an Italian to poiſon Julius. Bayard, on hearing of this, remonſtrated with the duke in the ſtrongeſt terms againſt ſuch an atrocious action; but the duke endeavoured to excuſe it by ſaying that Julius had once hired a fellow to aſſaſſinate him. "Alas! my lord," replied Bayard, let us never do that ourſelves which we condemn as a crime in others."

It was ſaid of Bayard by the military men of his time, that he aſſaulted like a greyhound, defended himſelf like a lion, and retreated like a wolf, who always retires from his purſuers with his face toward them. His device was a porcupine with this motto: *Vires agminis unus habet*; "One man poſſeſſes the power of a whole troop." This was given him in conſequence of his having ſingly defended a bridge againſt two hundred Spaniards.

BAY'ER (John), a German lawyer and aſtronomer of the latter part of the ſixteenth and beginning of the ſeventeenth century, but in what particular year or place he was born is uncertain: however, his name will be ever memorable in the annals of aſtronomy, on account of that great and excellent work which he firſt publiſhed in the year 1603, under the title of *Uranometria*, being a complete celeſtial atlas of all the conſtellations, with a nomenclature collected from all the tables of aſtronomy, ancient and modern, with the uſeful invention of denoting the ſtars in every conſtellation by the letters of the Greek alphabet, in their order, and according to the magnitude of the ſtars in each conſtellation. See ASTRONOMY.

BAY'ERSDORF, a town of Germany, in the circle of Franconia, and principality of Bayreuth: on the Rednitz, with a ſeat of juſtice, and a large ſynagogue: four miles north of Erlang.

BAYEUX', a town of France, and principal place of a diſtrict, in the department of Calvados. Before the late revolution it was the capital of Beſſin, in Lower Normandy, the ſeat of a governor, a bailywick, and the ſee of a biſhop, whoſe dioceſe included ſix hunred and eleven pariſhes: the cathedral is admired as the moſt beautiful in the department. Beſides the cathedral, there were ſeventeen other churches, a college, a public ſchool, an hotel dieu, a general hoſpital, and ſeveral religious houſes. The number of inhabitants is computed at 8000; the principal commerce is in leather. It is ſituated on the Aure, about four miles from the ſea: four leagues and a half weſt-north-weſt of Caen, and ten and a half north-weſt of Falaiſe. Lat. 49. 17. N. lon. 16. 58. E. Ferro.

BAY'JAH. See BAJA.

BAYLE (Peter), author of the Hiſtorical and Critical Dictionary, was born Nov. 18, 1657, at Carla, a village in France. In 1666 he went to the Proteſtant univerſity at Puylaureus, where he ſtudied with the greateſt application; and in 1669, removed to the univerſity of Toulouſe, whither the Proteſtants at that time frequently ſent their children to ſtudy under the Jeſuits. Here he embraced the Romiſh religion; but, being ſoon ſenſible of his error, he left that univerſity, and went to ſtudy at Geneva. After this he was choſen profeſſor of philoſophy at Sedan: but that Proteſtant univerſity being ſuppreſſed by Louis XIV. in 1781, he was obliged to leave the city; and was ſoon after choſen profeſſor of philoſophy and hiſtory at Rotterdam. The year following he publiſhed his Letter concerning Comets. And father Maimbourg having publiſhed about this time his Hiſtory of Calviniſm, wherein he endeavours to draw upon the Proteſtants the contempt and reſentment of the Catholics, Mr. Bayle wrote a piece to confute his hiſtory. The reputation which he had now acquired, induced the States of Friezland, in 1684, to offer him a profeſſorſhip in their univerſity; but he wrote them a letter of thanks, and declined the offer. This ſame year he began to publiſh his *Nouvelles de la République des Lettres*.

In 1686, he was drawn into a diſpute concerning the famous Chriſtina queen of Sweden. In his Journal for April, he took notice of a printed letter, ſuppoſed to have been written by her Swediſh majeſty to the Chevalier de Terlon, wherein ſhe condemns the perſecution of the Proteſtants in France. He inſerted the letter itſelf in his Journal for May; and in that of June following he ſays, "What we hinted at in our laſt month, is confirmed, that Chriſtiana is the real author of the letter concerning the perſecutions in France, which is aſcribed to her: it is a remainder of Proteſtantiſm." Mr. Bayle received an anonymous letter; the author of which ſays, that he wrote to him of his own accord, being in duty bound to it as a ſervant of the queen. He complains that Mr. Bayle, ſpeaking of her majeſty, calls her only *Chriſtina*, without any title; he finds alſo great fault with his calling the letter "a remainder of Proteſtantiſm." He blames him likewiſe for inſerting the words "I am," in the concluſion of the letter. "Theſe words (ſays the anonymous writer) are not her majeſty's; a queen, as ſhe is, cannot employ theſe words but with regard to a very few perſons, and M. de Terlon is not of that number." Mr. Bayle wrote a vindication of himſelf as to theſe particulars, with which the author of the anonymous letter declared himſelf ſatisfied, excepting what related to the 'remainder of Proteſtantiſm.' He would not admit of the defence with regard to that expreſſion; and, in another letter, adviſed him to retract that expreſſion. He adds in a poſtſcript, "You mention, in your Journal of Auguſt, a ſecond letter of the queen, which you ſcruple to publiſh. Her majeſty would be glad to ſee that letter; and you will do a thing agreeable to her if you would ſend it to her. You might take this opportunity of writing to her majeſty. This counſel may be of ſome uſe to you; do not neglect it." Mr. Bayle took the hint, and wrote a letter to her majeſty, dated the 14th of November 1686; to which the queen, on the 14th of December, wrote the following anſwer: "Mr. Bayle, I have received your excuſes; and am willing you ſhould know by this letter, that I am ſatisfied with them. I am obliged to the zeal of the perſon who gave you occaſion of writing to me: for I am very glad to know you. You expreſs ſo much reſpect and affection for me that I pardon you ſincerely; and I would have you know that nothing gave me offence but that 'remainder of Proteſtaniſm,' of which you accuſed me. I am very delicate on that head, becauſe nobody can ſuſpect me of it, without leſſening my glory, and injuring me in the moſt ſenſible manner. You would do well if you ſhould even acquaint the public with the miſtake you have made, and with your regret for it. This is all that remains to be done by you, in order to deſerve my being entirely ſatisfied with you. As to the letter which you have ſent me, it is mine without doubt; and, ſince you tell me that it is printed, you will do me a pleaſure if you ſend me ſome copies of it. As I fear nothing in France, ſo neither do I fear any thing at Rome. My fortune, my blood, and even my life, are entirely devoted to the ſervice of the church; but I flatter nobody, and will never ſpeak any thing but the truth. I am obliged to thoſe who have been pleaſed to publiſh my letter, for I do not at all diſguiſe my ſentiments. I thank God, they are too noble and too honourable to be diſowned. However it is not true that this letter was written to one of my miniſters. As I have every where enemies and perſons who envy me, ſo in all places I have friends and ſervants: and I have poſſibly as many in France, notwithſtanding of the court, as any where in the world. This is purely the truth, and you may regulate yourſelf accordingly. But you ſhall not get off ſo cheap as you imagine. I will enjoin you a penance; which is, that you will henceforth take the trouble of ſending me all curious books that ſhall be publiſhed in Latin, French, Spaniſh, or Italian, on whatever ſubject or ſcience, provided they are worthy of being looked into; I do not even except romances or ſatires; and above all, if there are any books of chemiſtry, I deſire you may ſend them to me as ſoon as poſſible. Do not forget likewiſe to ſend me your journal. I ſhall order that you be paid for whatever you lay out, do but ſend me an account of it. This will be the moſt agreeable and moſt important ſervice that can be done me. May God proſper you.

Christina Alexandra."

It now only remained that Mr. Bayle ſhould acquaint the public with the miſtake he had made, in order to merit that princeſs's entire ſatisfaction; and this he did in the beginning of his Journal of the month of January, 1687.

Mr. Bayle was a moſt laborious and indefatigable writer. In one of his letters to Mazieux, he ſays, that ſince his 20th year he hardly remembers to have had any leiſure. His intenſe application contributed perhaps to impair his conſtitution, for it ſoon began to decline. He had a decay of the lungs, which weakened him conſiderably; and, as this was a diſtemper which had cut off ſeveral of his family, he judged it to be mortal, and would take no remedies. He died the 28th of December 1706, after he had been writing the greateſt part of the day. Voltaire ranks him among the moſt celebrated authors of the age of Louis XIV. and the late Mr. Gibbon, in his Miſcellaneous Works, has drawn his character in the following words: Bayle was the ſon of a Calviniſt miniſter in a remote province, at the foot of Pyrenées. For the benefit of education, the Proteſtants were tempted to riſk their children in the Catholic univerſities; and in the twenty-ſecond year of his age young Bayle was ſeduced by the arts and arguments of the Jeſuits of Toulouſe. He remained about ſeventeen months in their hands, a voluntary captive. But nature had deſigned him to think as he pleaſed, and to ſpeak as he thought; his piety was offended by the exceſſive worſhip of creatures; and the ſtudy of phyſics convinced him of the impoſſibility of tranſubſtantiation, which is abundantly refuted by the teſtimony of our ſenſes. His return to the communion of a falling ſect was a bold and diſintereſted ſtep, that expoſed him to the rigour of the laws; and a ſpeedy flight to Geneva protected him from the reſentment of his ſpiritual tyrants, unconſcious as they were of the full value of the prize which they had loſt. Had Bayle adhered to the Catholic church, had he embraced the eccleſiaſtical profeſſion, the genius and favour of ſuch a proſelyte might have aſpired to wealth and honours in his native country: but the hypocrite would have found leſs happineſs in the comforts of a benefice or the dignity of a mitre, than he enjoyed at Rotterdam in a private ſtate of exile, indigence, and freedom. Without a country, or a patron, or a prejudice, he claimed the liberty, and ſubſiſted by the labours, of his pen. The inequality of his voluminous works is explained and excuſed by his alternately writing for himſelf, for the bookſellers, and for poſterity; and, if a ſevere critic would reduce him to a ſingle folio, that relict, like the books of the Sibyl, would become ſtill more valuable. A calm and lofty ſpectator of the religious tempeſt, the philoſopher of Rotterdam condemned with equal firmneſs the perſecution of Louis XIV. and the republican maxims of the Calviniſts; their vain prophecies and the intolerant bigotry which ſometimes vexed his ſolitary retreat. In reviewing the controverſies of the times, he turned againſt each other the arguments of the diſputants; ſucceſſively wielding the arms of the Catholics and Proteſtants, he proves, that neither the way of authority nor the way of examination can afford the multitude any teſt of religious truth, and dexterouſly concludes that cuſtom and education muſt be the ſole grounds of popular belief. The ancient paradox of Plutarch, that atheiſm is leſs pernicious than ſuperſtition, acquires a tenfold vigour when it is adorned with the colours of his wit, and pointed with the acuteneſs of his logic. His Critical Dictionary is a vaſt repoſitory of facts and opinions, and he balances the *falſe* religions in his ſceptical ſcales, till the oppoſite quantities (if I may uſe the language of Algebra) annihilate each other. The wonderful power which he ſo boldly exerciſed of aſſembling doubts and objections had tempted him jocoſely to aſſume the title of the νεφεληγερετα Ζευς, *the cloud-compelling Jove*; and, in a converſation with the ingenious abbé (afterwards cardinal) de Polignac, he freely diſcloſed his univerſal pyrrhoniſm: 'I am moſt truly (ſaid Bayle) a Proteſtant; for I *proteſt* indifferently againſt all ſyſtems and all ſects."

BAYLUR', a ſeaport town of Africa, in the kingdom of Abyſſinia, and province of Dancale, on the Red Sea. Lat. 13. 30. N. lon. 59. 27. E. Ferro.

BAY'LY (Lewis), an eminent Engliſh divine, born at Caermarthen in Wales, and educated at Oxford. He was preſented to the living of Eveſham in Worceſterſhire in 1611, was afterwards appointed chaplain to king James, and promoted to the ſee of Bangor in 1616. He was author of that popular work, "The Practice of Piety," which he dedicated to Charles prince of Wales. He died in 1632.

BAYNES, a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Bayeux: three leagues and a quarter weſt-ſouth-weſt of Bayeux.

BAYON', a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Luneville, ſituated on the Moſelle; fourteen miles ſouth of Nancy, and nineteen ſouth weſt of Luneville.

BAYO'NA, a ſeaport town of Spain, in Galicia, ſituated in a ſmall gulf, near the mouth of the Minho, with a convenient harbour; the ſea near the coaſt is furniſhed with excellent fiſh, and the land about is fertile, and watered by a great number of ſprings; the place is ſmall, but ſtrong: three leagues ſouth-weſt of Vigo, and four north-weſt of Tuy. Lat. 42. 15. N. lon. 7. 55. E. Teneriff.

Bayona Islands, two ſmall iſlands and ſome rocks ſo called, ſituated at the entrance of the Gulf of Bayona; they were anciently caled *Inſulæ Deorum*, or 'The Iſles of the Gods:' two leagues north-north-weſt of Bayona.

BAY'ONET, *ſ.* [*bayonette*, Fr.] A ſhort broad dagger, formerly with a round handle fitted for the bore of a firelock, to be fixed there after the ſoldier had fired; but they are now made with iron handles and rings, that go over the muzzle of the firelock, and are ſcrewed faſt, ſo that the ſoldier fires with his bayonet on the muzzle of his piece, and is ready to act againſt the horſe. This uſe of the bayonet faſtened on the muzzle of the firelock was a great improvement, firſt introduced by the French, A. D. 1693; and to which, according to M. Folard, they owed a great part of their victories in the laſt century; and to the neglect of this in the next ſucceeding war, and truſting to their fire, the ſame author attributes moſt of the loſſes they ſuſtained. At the ſiege of Malta, a weapon called *pila ignea* was contrived to oppoſe the bayonets, being in ſome meaſure the converſe thereof; as the latter conſiſts of a dagger added to a fire-arm, the former conſiſted of a fire-arm added to a pilum or pike. Of late the bayonet has come into very general uſe; and battles have been won by it without firing a ſhot. This way of fighting was chiefly reſtored by the late king of Pruſſia, who made his troops ruſh forward at once with bayonets on the enemy.

BAYON'NE, a ſeaport town, on the W. coaſt of France. It is the ſeat of a tribunal, in the diſtrict of Uſtaritz, and department of the Lower Pyrenées; ſituated at the conflux of the rivers Adour and Nive, about a league from the ſea, with a good harbour, but difficult to enter. It is ſtrongly fortified, the work of the celebrated Vauban. The town is large and of conſiderable importance: maſts are brought from the Pyrenees, by means of the Nive, the Gave of Oleron, and the Adour, to Bayonne, and thence ſhipped to Breſt and other ports; a company was eſtabliſhed here for the northern whale fiſhery in 1605. Before the revolution, it was the ſee of a biſhop, ſuffragan of Auch. In the year 1784, it was declared a free port: five poſts and a half from Yron, on the frontiers of Spain, and 105 S. S. W. Paris. Lat. 43. 28. N. lon. 16. 11. E.

BAY'REUTH, or BAREUTH, BAREITH, a city of Germany, in the circle of Franconia, and principality of Culmbach, the reſidence of the margraves, and capital of the whole principality, whence it is often called the *principality of Bayreuth*; it is ſurrounded by the Main, Miſtlebach, and Sendlebach. It contains a palace, which, being burnt down in the year 1753, was again rebuilt in a beautiful ſtyle; one Calviniſt and two Lutheran churches; a Roman Catholic chapel, a public ſchool, a foundling hoſpital, an academy, founded in the year 1722, by the margrave Frederick; and a college. In the year 1430 this town was burned down by the Huſſites. In the principality are ſix remarkable grottos or caves, leading into one another, which are lofty and ſpacious; and were probably uſed in turbulent times, as places of refuge. In the four interior caves, and in ſmall chambers communicating by different openings, there has been found a very large quantity of bones, and other animal remains. The mould that covers the bottom, and which forms the ſoil of theſe grottos, is evidently of animal origin, and intermixed with fragments of bones of various ſizes, and in various degrees of preſervation. The late Mr. John Hunter, who examined many of theſe bones which were preſented to the Royal Society of London by the margrave of Antwerp, conſidered them as incruſtations rather than extraneous foſſils, 'ſince their external ſurface had only acquired a covering of cryſtallized earth, and little or no change had taken place in their internal ſtructure.' He ſuppoſed that as they are bones of carnivorous animals, ſome of which reſemble thoſe of the white bear, and others thoſe of the lion, the animals reſorted to theſe caves, at different periods, as places of retreat, and periſhed in them. This city and principality formerly belonged to a prince of the houſe of Brandenburg, the laſt of whom dying in 1782, it deſcended to the king of Pruſſia: 104 miles weſt of Prague, ſixty-four north of Ratiſbon, and forty-eight north-north-eaſt of Augſburg. Lat. 49. 54. N. lon. 29. 24. E. Ferro.

BAYS, *ſ.* A woollen ſtuff. See BAIZE.

BAYS, a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Mayenne: two leagues north of Evron, and three and a half eaſt-ſouth-eaſt of Mayenne.

BA'ZA, a town of Germany, in the duchy of Carniola: ſeven miles ſouth-ſouth-weſt of Feldes.

BAZA, or BAÇA, a town of Spain, in the province of Granada, on the ſouth ſide of the Guadalentin, between Guadix and Hueſcar; ſuppoſed to be the ancient Baſti, from whence the *Baſtitani* took their name: ſeven leagues north-eaſt from Guadix. Lat. 37. 31. N. lon. 13. 58. E. Peak of Teneriffe.

BAZADOIS', before the revolution a province of France, ſituated between Agenois, Condomois, and Guienne; the land is ſandy and unproductive. Bazas was the capital.

BA'ZAR, or BASAR, *ſ.* [the word *bazar* ſeems of Arabic origin, where it denotes ſale, or exchange of goods.] A denomination among the Turks, and Perſians, given to a kind of exchanges, or market-places where their fineſt ſtuffs and other wares are ſold. Theſe are alſo called *bezeſtins*. Some of the eaſtern bazars are open, like the market-places in Europe, and ſerve for the ſame uſes, more particularly for the ſale of the bulky and leſs valuable commodities. Others are covered with lofty ceilings, or even domes, pierced to give light; and it is in theſe the jewellers, goldſmiths, and other dealers in the richer wares, have their ſhops. The bazar or maiden of Iſpahan is one of the fineſt places in Perſia, and even ſurpaſſes all the exchanges in Europe; yet, notwithſtanding its magnificence, it is excelled by the bazar of Tauris, which is the largeſt that is known, having ſeveral times held 30,000 men ranged in order of battle. At Conſtantinople, there are the old and the new bazar, which are large ſquare buildings, covered with domes, and ſuſtained by arches and pilaſters: the former chiefly for arms, harneſſes, and the like; the latter for goldſmiths, jewellers, furriers, and all ſorts of manufacturers.

BA'ZAS, a city of France, and principal place of a diſtrict, in the department of the Gironde: before the revolution the capital of Bazadois, and ſee of a biſhop. The dioceſe, which is ſaid to have been one of the moſt ancient in France, comprehends 250 pariſhes, and was once of great extent. The number of inhabitants is computed at 2000: ten leagues ſouth-eaſt of Bourdeaux, thirteen weſt-north-weſt of Agen. Lat. 44. 26. N. lon. 17. 27. E. Ferro.

BA'ZAT, or BAZA, *ſ.* A long fine ſpun cotton, which comes from Jeruſalem, whence it is called *Jeruſalem cotton*.

BAZGEND'GES, *ſ.* A ſubſtance uſed by the Turks and other eaſtern nations in their ſcarlet dying. They mix it for this purpoſe with cochineal and tartar; two ounces of the bazgendges to one ounce of cochineal. Theſe are generally eſteemed a ſort of fruit, and are produced on certain trees in Syria and other places; and it is uſually ſuppoſed, that the ſcarcity and dearneſs of them is the only reaſon that they are not uſed in Europe. But the bazgendges ſeem to be no other than the horns of the turpentine tree in the eaſtern parts of the world; and it is not only in Syria that they are found, but in China alſo. Many things of this kind were ſent over to Mr. Geoffry at Paris from China as the ſubſtances uſed in the ſcarlet-dying of that country, and they all proved wholly the ſame with the Syrian and Turkiſh bazgendges, and with the common turpentine horns. The lentiſk, or maſtic-tree, is alſo frequently found producing many horns of a like kind with theſe, and of the ſame origin, all ariſing from the pucerons, which make their way into the leaves to breed.

BAZIE'GE, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of Villefranche: four leagues S. E. of Toulouſe.

BAZIR'GION, a town of Perſia, in the province of Lariſtan: fifty-ſeven miles eaſt of Lar.

BAZO'CHE (La), a town of France, in the department of the Eure and Loire, and chief place of a canton, in the diſtrict of Nogent le Rotrou: five miles ſouth-eaſt of Authon.

BAZOCHE, or BASOCHE, *ſ.* A juriſdiction formerly exerciſed among the clerks of the palais, or courts of juſtice at Paris. It was adminiſtered in the name of the king of Bazoche, by virtue of an ancient grant of the kings of France. The eldeſt among the clerks were the officers; and he who preſided was the chancellor. This court only took cognizance of cauſes among the clerks, or between clerks and artificers, for goods bought, or work done. However, the freedom they took with private characters in their inquiſition and remonſtrances, occaſioned ſeveral *arrêts* to reſtrain their power, and prohibit their holding pleas without leave. A collection of ſtatutes, ordonnances, regulations, monuments, and prerogatives, of the kingdom of Bazoche, were publiſhed at Paris in 1654.

BAZO'CHES, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Argentan: nine miles north-weſt of Argentan.

Bazoches, a town of France, in the department of the Loiret, and chief place of a canton, in the diſtrict of Neuville-aux-Bois: ſix miles north of Neuville.

Bazoches, a town of France, in the department of the Aiſne, and chief place of a canton, in the diſtrict of Soiſſons: four leagues eaſt of Soiſſons.

BAZO'GE (La), a town of France, in the department of the Sarte, and chief place of a canton, in the diſtrict of le Mans: ſix miles north of le Mans.

BAZOU'GERS, a town of France, in the department of the Mayene, and chief place of a canton, in the diſtrict of Laval: two leagues and a half ſouth-eaſt of Laval.

BAZOU'GES LA PEROUSE, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diſtrict of Dol: three leagues and a quarter ſouth-ſouth-eaſt of Dol, and one and a quarter ſouth-weſt of Antrain.

BDEL'LIUM, *ſ.* [βδελλιον, from בדלה Arab.] A gum reſin, ſuppoſed to be of African origin. The beſt bdellium is of a yellowiſh brown or dark brown colour, according to its age; unctuous to the touch, brittle, but ſoon ſoftening, and growing tough betwixt the fingers; in ſome degree tranſparent, not unlike myrrh; of a bitteriſh taſte, and a moderately ſtrong ſmell. It does not eaſily take flame, and when ſet on fire ſoon goes out. In turning it crackles, owing to its aqueous humidity; but cannot be ſaid to explode, much leſs to explode like gunpowder, as Herman Valentini reports. Near half of its ſubſtance diſſolves either in water or in ſpirit of wine; but the tincture made with ſpirit is ſomewhat ſtronger, and by much more agreeable. Vinegar, or verjuice, diſſolves it wholly. The ſimple gum is a better medicine than any preparation from it. Though one of the weakeſt of the deobſtruent gums, it is ſometimes uſed as a pectoral and an emmenagogue with advantage. The college, however, have rejected it.

BDEL'LUS, *ſ.* [from ϐδεω, to break wind.] A diſcharge of wind by the anus.

BDELYG'MIA, *ſ.* [from ϐδεω, to break wind.] Any filthy and nauſeous odour.

To BE, *v. n.* To have ſome certain ſtate, condition, quality, or accident; as, the man *is* wiſe.

Be what thou hop'ſt *to be*, or what thou *art*,
Reſign to death, it *is* not worth enjoying. *Shakeſpeare.*

—To ſay a man has a clear idea of quantity, without knowing how great it *is*, *is* to ſay, he has the clear idea of the number of the ſands, who knows not how many they *be*. *Locke*—It is the auxiliary verb by which the verb paſſive is formed:

The wine of life *is* drawn, and the meer lees
Is left this vault to brag of. *Shakeſpeare.*

To exiſt; to have exiſtence:

To *be*, contents his natural deſire;
He aſks no angel's wing, nor ſeraph's fire. *Pope.*

To have ſomething by appointment or rule.—If all political power *be* derived only from Adam, and *be* to deſcend only to his ſucceſſive heirs, by the ordinance of God, and divine inſtitution, this is a right antecedent and paramount to all government. *Locke.*

Let Be. Do not meddle with; leave untouched:

Let be, ſaid he, my prey. *Dryden.*

BE'ACH, *ſ.* The ſhore, particularly that part that is daſhed by the waves; the ſtrand.—They find the waſhed amber further out upon the *beaches* and ſhores, where it has been longer expoſed. *Woodward.*

BEACH'ED, *adj.* Expoſed to the waves.

BEA'CHY, *adj.* Having beaches.

Beachy-Head, a promontory of England, and higheſt land on the ſouth coaſt of Suſſex, which riſes perpendicular over the cliffs: nine leagues weſt-ſouth-weſt of Dungeneſs.

BEA'CON, *ſ.* [*beacon*, Sax. from *becn*, a ſignal, and *becnan*, whence *beckon*, to make a ſignal.] Something raiſed on an eminence, to be fired on the approach of an enemy, to alarm the country:

No flaming *beacons* caſt their blaze afar,
The dreadful ſignal of invaſive war. *Gay.*

Marks erected, or lights made in the night, to direct navigators in their courſes, and warn them from rocks, ſhallows, and ſandbanks. The erection of beacons, lighthouſes, and ſea-marks, is a branch of the royal prerogative. The king hath the excluſive power, by commiſſion under his great ſeal, to cauſe them to be erected in fit and convenient places, as well upon the lands of the ſubject as upon the demeſnes of the crown; which dower is uſually veſted by letters patent in the office of lord high admiral, or the admiralty board. And by ſtat. 8 Eliz. c. 13, the corporation of the Trinity-houſe are impowered to ſet up any beacons or ſea-marks wherever they ſhall think them neceſſary; and if the owner of the land or any other perſon ſhall deſtroy them, or ſhall take down any ſteeple, tree, or other known ſea-mark, he ſhall forfeit 100l. or, in caſe of inability to pay it, ſhall be *ipſo facto* outlawed.

BEA'CONAGE, *ſ.* Money paid towards the maintenance of a beacon.

BEA'CONSFIELD, a market-town of Buckinghamſhire, ſeated on a hill in the road between London and Oxford. It has ſeveral good inns, though not above 100 houſes. Market on Thurſdays; and two fairs chiefly for cattle, viz. on Candlemas-day, and on Aſcenſion-day. It is thirty-one miles ſouth-eaſt from Oxford, and twenty-three from London.

BEAD, *ſ.* [*beade*, prayer, Sax.] Small globes or balls of glaſs or pearl, or other ſubſtance, ſtrung upon a thread, and uſed by the Romaniſts to count their prayers; from whence the phraſes to *tell beads*, or to be at one's *beads*, is to be at prayer:

Thy voice I ſeem in every hymn to hear,
With ev'ry *bead* I drop too ſoft a tear. *Pope.*

Little balls worn about the neck for ornament. Any globular bodies:

Thy ſpirit within thee hath been ſo at war,
That *beads* of ſweat have ſtood upon thy brow. *Shakeſp.*

Bead, *ſ.* in architecture, is a round moulding, carved in ſhort emboſſments, like beads in necklaces: and ſometimes an aſtragal is thus carved. There is alſo a ſort of plain bead often ſet on the edge of each facia of an architrave; as alſo ſometimes on the lining board of a door-caſe, the upper edge of ſkirting boards, &c.

Bead, *ſ.* in aſſaying, the ſmall ball or maſs of pure metal ſeparated from the *ſcoria*, and ſeen diſtinct and pure in the middle of the coppel while in the fire.

Bead-Makers, called by the French *paternoſtriers*, are thoſe employed in the making, ſtringing, and ſelling, of beads. At Paris there were three companies of paternoſtriers, or bead-makers; one who made them of glaſs or cryſtal; another in wood and horn; and the third in amber, coral, jet, &c. Theſe beads were moſt in uſe before printing, when poor perſons could not go to the charge of a manuſcript book: though they are ſtill uſed in many parts of the world, where the Roman Catholic religion prevails. They are not allowed to be brought into England, or any ſuperſtitious things, to be uſed here, under the penalty of a *præmunire*, by ſtat. 13 Eliz. c. 2.

Bead-Proof, *ſ.* A term uſed by diſtillers to expreſs that ſort of proof of the ſtandard ſtrength of ſpirituous liquors, which conſiſts in their having, when ſhaken in a phial, or poured from on high into a glaſs, a crown of bubbles,

bles, which ſtand on the ſurface ſome time after. This is eſteemed a proof that the ſpirit conſiſts of equal parts of rectified ſpirits and phlegm; but it is a fallacious rule as to the degree of ſtrength in the goods; becauſe any thing that will increaſe the tenacity of the ſpirit will give it this proof, though it be under the due ſtrength. Our malt-diſtillers ſpoil the greater part of their goods, by leaving too much of the ſtinking oil of the malt in their ſpirit, in order to give it this proof when ſomewhat under the ſtandard ſtrength. This is a great deceit on the purchaſers of malt ſpirits, as they have them by this means not only weaker than they ought to be, but ſtinking with an oil that they are not eaſily cleared of afterwards. On the other hand, the dealers in brandy, who uſually have the art of ſophiſticating it to a great nicety, are in the right when they buy it by the ſtrongeſt bead-proof, as the grand mark of the beſt; for, being a proof of the brandy containing a large quantity of oil, it is, at the ſame time, a token of its high flavour, and of its being capable of bearing a very large addition of the common ſpirits of our own produce, without betraying their flavour, or loſing its own. We value the French brandy for the quantity of this eſſential oil of the grape which it contains; but the French themſelves, when they want it for any curious purpoſes, are as careful in the rectifications of it, and take as much pains to clear it from this oil, as we do to free our malt ſpirit from that nauſeous and fetid oil which it originally contains.

Bead-Roll, *ſ.* among Roman catholics, a liſt of ſuch perſons, for the reſt of whoſe ſouls they are obliged to repeat a certain number of prayers, which they count by means of their beads.

Bead-Tree, *ſ.* in botany. See Melia.

BEA'DLE, *ſ.* [*bydel*, Sax. a meſſenger; *bedeau*, Fr. *bedel*, Span. *bedelle*, Dutch.] A meſſenger or ſervitor belonging to a court. A petty officer in pariſhes, whoſe buſineſs it is to puniſh petty offenders.

BEA'GLE, *ſ.* [*bigle*, Fr.] A ſmall hound with which hares are hunted:

To plains with well-bred *beagles* we repair,
And trace the mazes of the circling hare. *Pope.*

BEAK, *ſ.* [*bec*, Fr. *pig*, Welſh.] The bill or horny mouth of a bird:

The magpye, lighting on the ſtock,
Stood chatt'ring with inceſſant din,
And with her *beak* gave many a knock. *Swift.*

A piece of braſs like a beak, fixed at the end of the ancient gallies, with which they pierced their enemies. It was called by the Greeks εμβολον, by the Latins *roſtrum*, and was an important part in the ancient ſhips of war, which were hence denominated *naves roſtratæ*. Its invention is attributed to Piſæus an Italian. The firſt beaks were made long and high; but afterwards a Corinthian, named *Ariſto*, contributed to make them ſhort and ſtrong, and placed ſo low, as to pierce the enemies veſſels under water. By the help of theſe, great havock was made by the Syracuſians in the Athenian fleet. See Attica.

BEAK'ED, *adj.* Having a beak; having the form of a beak.

BEAK'ER, *ſ.* A cup with a ſpout in the form of a bird's beak:

With dulcet bev'rage this the *beaker* crown'd,
Fair in the midſt, with gilded cups around. *Pope.*

BEAL, *ſ.* [*bolla*, Ital.] A whelk or pimple.

To Beal, *v. a.* To ripen; to gather matter, or come to a head, as a ſore does.

Beal, a river of Ireland, which runs into the Shannon, near Aſketon, in the county of Limerick.

BEALE (Mary), diſtinguiſhed by her ſkill in painting, was the daughter of Mr. Craddock, miniſter of Waltham upon Thames, and learned the rudiments of her art from Sir Peter Lely. She painted in oil, water-colours, and crayons; her portraits were in the Italian ſtyle, which ſhe acquired by copying pictures and drawings from Sir Peter Lely's and the royal collections. Her maſter, ſays Mr. Walpole, was ſuppoſed to have had a tender attachment to her; but, as he was reſerved in communicating to her all the reſources of his pencil, it probably was a gallant rather than a ſucceſsful one. Dr. Woodfall wrote ſeveral pieces to her honour, under the name of *Beleſia*. Mrs. Beale died in Pall-mall in 1697, aged ſixty-five. Her paintings have much nature, but the colouring is heavy.

BEAL'NABRACH, a river of Ireland which runs into Lough Korrib, in the county of Galway.

BEALT, Bealth, or Builth, a town of South Wales, in the county of Brecknock, ſituated on the river Wye. It is a place of great antiquity, though the learned are not agreed whether it was the *Ballæum Sylurum* of the Romans, or not; however, that it was one of their ſtations is evident, from there being ſtill ſome remains of a camp; and pavements, with other pieces of antiquity, have been diſcovered at different periods. The Britons, when they fled into theſe parts from the ſuperior power of the Saxons, built a ſtrong caſtle here, to prevent the incurſions of their mercileſs enemies. But, the Engliſh having taken poſſeſſion of it ſoon after the Norman conqueſt, one of the Welſh princes ſeized upon it, and laid the whole in aſhes. It was however afterwards rebuilt by the Mortimers earls of March; but, a fire having accidently broke out in that part of the town next the river in the year 1690, the remains of the caſtle and many houſes were totally demoliſhed. The pleaſant ſituation of this town has induced many people to ſettle in it, and of late years a manufactory of ſtockings has been eſtabliſhed in it, by which many hands are employed. The houſes in general are neat, and the ſtreets regular and well paved. It has two markets weekly, on Mondays and Saturdays, and three fairs annually on the 27th of June, 2d of October, and 6th of December: twenty-one miles ſouth-weſt of Preſteign, and 171 weſt-north-weſt of London.

BEAM, *ſ.* [*beam*, Sax. a tree.] The main piece of timber that ſupports the houſe.—A *beam* is the largeſt piece of wood in a building, which always lies acroſs the building or the walls, ſerving to ſupport the principal rafters of the roof, and into which the feet of the principal rafters are framed. *Builder's Dict.*—Any large and long piece of timber: a *beam* muſt have more length than thickneſs, by which it is diſtinguiſhed from a block. That part of a balance, at the end of which the ſcales are ſuſpended:

Poiſe the cauſe in juſtice' equal ſcales,
Whoſe *beam* ſtands ſure, whoſe rightful cauſe prevails. *Shakeſpeare.*

The horn of a ſtag:

And taught the woods to echo to the ſtream
His dreadful challenge, and his claſhing *beam*. *Denham.*

The pole of a chariot; that piece of wood which runs between the horſes. Among weavers, a cylindrical piece of wood belonging to the loom, on which the web is gradually rolled as it is wove.—The ſtaff of his ſpear was like a weaver's *beam*. 1 *Chron.*

Beam, *ſ.* [*ſunnebeam*, Sax. a ray of the ſun.] The ray of light emitted from ſome luminous body, or received by the eye:

Pleaſing, yet cold, like Cynthia's ſilver *beam*. *Dryden.*

Beam of an Anchor, *ſ.* The ſtraight part or ſhank of an anchor, to which the hooks are faſtened.

Beam-Bird, or Petty Chaps. See Motacilla.

Beam Compasses, *ſ.* A wooden or braſs inſtrument, with ſliding ſockets, to carry ſeveral ſhifting points, in order to draw circles with very long radii; and uſeful in large projections, for drawing the furniture on wall dials.

Beams of a Ship are the main croſs-timbers which hold the ſides of the ſhip from falling together, and which alſo ſupport the decks and orlops: the main beam is next the main-maſt, and from it they are reckoned by firſt, ſecond, third, beam, &c. the greateſt beam of all is called the *midſhip beam.*

Beam of a Plough, that in which all the parts of the plough-tail are fixed.

Beam-Tree, *ſ.* in botany. See Cratægus Aria.

To Beam, *v. n.* To emit rays of beams:

> Each emanation of his fires
> That *beams* on earth, each virtue he inſpires. *Pope.*

BEA'MINSTER, a market-town in Dorſetſhire, ſituated on the borders of the county, in a deep fertile vale, ſurrounded by gardens and orchards. Its diſtance from London is 136 miles, from the ſea eight, from the borders of Somerſet four, Dorcheſter fifteen, and Everſhot nine. The town was nearly deſtroyed by fire in 1645, and again in 1686. A little river called the *Bert*, iſſues from ſeveral ſprings on the north, and, after flowing through the town, and the valley which lies between it and Bridport, falls into the ſea at Bridport harbour. The clothing-trade was eſtabliſhed here at an early period, and is ſtill in a thriving ſtate. Here is a large ſail-cloth manufactory, and alſo of locks and other iron, tin, and copper, goods, for home conſumption and exportation. In the middle of the town ſtands the market-houſe, which is a modern building. The church, which is dedicated to the Virgin Mary, ſtands on an eminence on the ſouth ſide of the town; it conſiſts of a body, two ſide-aiſles, a chancel, and a ſmall aiſle on the north, anciently uſed for a chantry. The tower is near 100 feet high, ornamented with the image of the Virgin Mary. Here is an alms-houſe, founded in 1634, by Sir John Strode, of Parnham; and alſo a free-ſchool, for teaching twenty poor boys, founded by Mrs. Frances Tucker, in the reign of William III. The work-houſe was anciently an alms-houſe, founded by Gilbert Adams, mercer, in 1626, who gave, by his will, a ſum of money for its maintenance, with which was purchaſed an eſtate, about four miles from the town, of the annual value of eighteen pounds. Another eſtate, called *Emley-wood*, ſituated in the pariſh of Corſcombe, was given to the poor of Beaminſter, by the Rev. William Hillary, of Binſteed, in the county of Hants, in 1712. This benefaction was directed to take place after the expiration of ninety-nine years from his deceaſe. The hills which ſurround Beaminſter afford very extenſive and pleaſing proſpects, particularly Lewſdown, the ſubject of a fine poem, by the Rev. William Crowe, public orator of the univerſity of Oxford. The market-day is on Thurſday; and a fair is annually holden on the 19th of September, which has exiſted ever ſince the 12th year of Edw. I. Of late years there have been two other fairs, for cattle, cheeſe, &c. on the 4th of April and 9th of October.

BEA'MY, *adj.* Radiant; ſhining; emitting beams:

> All ſeeing ſun!
> Hide, hide in ſhameful night, thy *beamy* head. *Smith.*

Having the weight or maſſineſs of a beam:

> His double-biting axe, and *beamy* ſpear;
> Each aſking a gigantic force to rear. *Dryden.*

Having horns or antlers:

> Rouze from their deſert dens the briſtled rage
> Of boars, and *beamy* ſtags in toils engage. *Dryden.*

BEAN, *ſ.* in botany, ſee Vicia Faba. The ancients made uſe of beans in gathering the votes of the people, and for the election of magiſtrates. A white bean ſignified *abſolution*, and a black one *condemnation*. Beans had a myſterious uſe in the *lemuralia* and *parentalia*; where the maſter of the family, after waſhing, was to throw a ſort of black beans over his head, ſtill repeating the words, "I redeem myſelf and family by theſe beans." Ovid gives a lively deſcription of the whole ceremony in verſe. Abſtinence from beans was enjoined by Pythagoras, one of whoſe ſymbols is, κυαμων απεσχισθαι, *abſtine a fabis*. The Egyptian prieſts held it a crime to look at beans, judging the very ſight unclean. The *flamen dialis* was not permitted even to mention the name. The precept of Pythagoras has been variouſly interpreted: ſome underſtand it of forbearing to meddle in trials and verdicts, which were then by throwing beans into an urn: others, building on the equivoque of the word κυαμος, which equally ſignifies a *bean* and a human *teſticle*, explain it by abſtaining from venery. Clemens Alexandrinus grounds the abſtinence from beans on this, that they render women barren; which is confirmed by Theophraſtus, who extends the effect even to plants. Cicero ſuggeſts another reaſon for this abſtinence, viz. that beans are great enemies to tranquillity of mind. For a reaſon of this kind it is, that Amphiarans is ſaid to have abſtained from beans, even before Pythagoras, that he might enjoy a clearer divination by dreams.

"Every Bean has its black." This proverb is an emblem of human frailty and imperfection; and intimates, that it is as natural for every man to have his failings, as it is for a bean to have its black eye; experience has in all ages but too ſufficiently evinced the truth of it in the wiſeſt and beſt of men. The Latins ſay: *nemo ſine crimine vivit.* With which agrees the French: *il n'y a perſonne ſans défaut.* But Horace goes farther, and comes nearer to our proverb: *vitiis nemo ſine naſcitur*, 'no one is born without vice.' Gr. πασησι κορυδαλοισι χρη λοφον εγγυεσθαι. The Germans ſay: *es iſt kein menſch ohne ein aber*, 'no man is without a but, or an exception,' or, *auch die ſonne hat ihre flecken*, 'even the ſun is not without ſpots.'

Bean-Cod, *ſ.* A ſmall fiſhing veſſel or pilot-boat, common on the ſea-coaſt and in the rivers of Portugal. It is extremely ſharp forward, having its ſtem bent inward above into a great curve: the ſtem is alſo plated on the fore-ſide with iron, into which a number of bolts are driven, to fortify it, and reſiſt the ſtroke of another veſſel, which may fall athwart-hauſe. It is commonly navigated with a large lateen ſail, which extends over the whole length of the deck, and is accordingly well fitted to ply to windward.

Bean-Flour, called by the Romans *lomentum*, was of repute among the ancient ladies as a coſmetic, wherewith to ſmooth the ſkin, and take away wrinkles.

Bean-Fly, *ſ.* in natural hiſtory, the name given by authors to a very beautiful fly, of a pale purple colour, frequently found on bean-flowers. It is produced from the worm or maggot called by authors *mida*.

Bean-Goose, *ſ.* in ornithology. See Anas.

Bean, Malacca. See Anacardium.

Bean, Kidney, or French, ſee Phaseolus. Bean-Caper, ſee Zygophyllum. Bean-Trefoil, ſee Anagyris and Cytisus.

BEANE, a river of England, which runs into the Lea near Hoddeſdon, in the county of Hertford.

To BEAR, *v. a.* pret. *I bore*, or *bare*; part. paſſ. *bore*, or *born*. [*beoran*, *beran*, Sax. *bairan*, Gothic. It is founded as *bare*, as the *are* in *care* and *dare*.] This is a word uſed with ſuch latitude, that it is not eaſily explained.—We ſay, to *bear* a burden, to *bear* ſorrow or reproach, to *bear* a name, to *bear* a grudge, to *bear* fruit, or to *bear* children. The word *bear* is uſed in very different ſenſes. *Watts.*—To carry as a burden.—And Solomon had threeſcore and ten thouſand that *bare* burdens. 1 *Kings.*—As an eagle ſtirreth up her neſt, fluttereth over her young, ſpreadeth abroad her wings, taketh them, *beareth* them on her wings. *Deuteronomy.*—To convey or carry:

> A gueſt like him, a Trojan gueſt before,
> In ſhew of friendſhip, ſought the Spartan ſhore,
> And raviſh'd Helen from her huſband *bore.* *Garth.*

To carry as a mark of authority. To carry as a mark of diſtinction.—His ſupreme ſpirit of mind will *bear* its beſt reſemblance, when it repreſents the ſupreme infinite. *Cheyne.*—So we ſay to *bear* arms in a coat. To carry, as in a ſhow:

> Look like the time; *bear* welcome in your eye,
> Your hand, your tongue; look like the innocent flower,
> Be but the ſerpent under 't. *Shakeſpeare.*

To carry, as in truſt.—He was a thief, and had the bag, and *bare* what was put therein. *John.*—To ſupport; to keep from falling: frequently with *up.*—A religious hope does not only *bear up* the mind under her ſufferings, but makes her rejoice in them. *Addiſon.*—To keep afloat; to keep from ſinking: ſometimes with *up.*—The waters increaſed, and *bare up* the ark, and it was lifted up above the earth. *Geneſis.*—To ſupport with proportionate ſtrength.—Animals that uſe a great deal of labour and exerciſe, have their ſolid parts more elaſtic and ſtrong; they can *bear*, and ought to have, ſtronger food. *Arbuthnot.*—To carry in the mind, as love, hate.—The coward *bore* the man immortal ſpite. *Dryden.*—That inviolable love I *bear* to the land of my nativity, prevailed upon me to engage in ſo bold an attempt. *Swift.*—To endure, as pain, without ſinking.—It was not an enemy that reproached me, then I could have *borne* it. *Pſalms.*—To ſuffer; to undergo, as puniſhment or misfortune.—I have *borne* chaſtiſements, I will not offend any more. *Job.*—To permit; to ſuffer without reſentment:

Not the gods, nor angry Jove, will *bear*
Thy lawleſs wand'ring walks in upper air. *Dryden.*

To be capable of; to admit.—In all criminal caſes, the moſt favourable interpretation ſhould be put upon the words that they poſſibly can *bear*. *Swift.*—To produce, as fruit.—There be ſome plants that *bear* no flower, and yet *bear* fruit: there be ſome that *bear* flowers, and no fruit: there be ſome that *bear* neither flowers nor fruit. *Bacon.*—To bring forth, as a child.—Ye know that my wife *bare* two ſons. *Geneſis.*—To give birth to; to be the native place of:

Here dwelt the man divine whom Samos *bore*,
But now ſelf-baniſh'd from his native ſhore. *Dryden.*

To poſſeſs, as power or honour:

When vice prevails, and impious men *bear* ſway,
The poſt of honour is a private ſtation. *Addiſon.*

To gain; to win: commonly with *away.*—Becauſe the Greek and Latin have ever *borne away* the prerogative from all other tongues, they ſhall ſerve as touchſtones to make our trials by. *Camden.*—To maintain; to keep up. To ſupport any thing good or bad.—I was carried on to obſerve, how they did *bear* their fortunes, and how they did employ their times. *Bacon.*—To exhibit. To be anſwerable for.—If I bring him not unto thee, let me *bear* the blame. *Geneſis.*

O more than madmen! you yourſelves ſhall *bear*
The guilt of blood and ſacrilegious war. *Dryden.*

To ſupply.—What have you under your arm? Somewhat that will *bear* your charges in your pilgrimage? *Dryden.*—To be the object of. This is unuſual:

I'll be your father and your brother too;
Let me but *bear* your love, I'll *bear* your cares. *Shakeſp.*

To behave; to act in any character.—Hath he *borne* himſelf penitent in priſon? *Shakeſpeare.*—To hold, to reſtrain, with *off.*—Do you ſuppoſe the ſtate of this realm to be now ſo feeble, that it cannot *bear off* a greater blow than this? *Hayward.*—To impel, to urge, to puſh, with ſome particle denoting the direction of the impulſe, as *down*, *on*, *back*, *forward*:

Contention, like a horſe
Full of high feeding, madly hath broke looſe,
And *bears down* all before him. *Shakeſpeare.*

To conduct, to manage; to preſs.—Theſe men *bear* hard upon the ſuſpected party, and purſue her cloſe through all her windings. *Addiſon.*—To incite, to animate:

But confidence then *bore* thee on; ſecure
Either to meet no danger, or to find
Matter of glorious trial. *Milton.*

To BEAR a BODY. A colour is ſaid to *bear a body* in painting, when it is capable of being ground ſo fine, and mixing with the oil ſo entirely, as to ſeem only a very thick oil of the ſame colour.

To BEAR DATE. To carry the mark of the time when any thing was written.

To BEAR a PRICE. To have a certain value.

To BEAR in HAND. To amuſe with falſe pretences; to deceive:

Your daughter, whom ſhe *bore in hand* to love
With ſuch integrity, ſhe did confeſs,
Was as a ſcorpion to her ſight. *Shakeſpeare.*

To BEAR OFF. To carry away:

Give but the word, we'll ſnatch this damſel up,
And *bear* her *off*. *Addiſon.*

To BEAR OUT. To ſupport; to maintain; to defend.—Company only can *bear* a man *out* in an ill thing. *South.*

To BEAR, *v. n.* To ſuffer pain:

Stranger, ceaſe thy care;
Wiſe is the ſoul; but man is born to *bear*:
Jove weighs affairs of earth in dubious ſcales,
And the good ſuffers while the bad prevails. *Pope.*

To be patient:

I cannot, cannot *bear*; 'tis paſt, 'tis done;
Periſh this impious, this deteſted, ſon! *Dryden.*

To be fruitful or prolific.—A fruit-tree hath been blown up almoſt by the roots, and ſet up again, and the next year *bear* exceedingly. *Bacon.*—To take effect; to ſucceed. To act in any character. To tend; to be directed to any point: with a particle to determine the meaning; as, *up*, *away*, *onward.*—The oily drops, ſwimming on the ſpirit of wine, moved reſtleſsly to and fro, ſometimes *bearing up* to one another, as if all were to unite into one body; and then falling off, and continuing to ſhift places. *Boyle.*

Never did men more joyfully obey,
With ſuch alacrity they *bore away*. *Dryden.*

To act as an impellent, opponent, or as a reciprocal power: generally with the particles *upon* or *againſt.*—Becauſe the operations to be performed by the teeth require a conſiderable ſtrength in the inſtruments which move the lower jaw, nature hath provided this with ſtrong muſcles, to make it *bear* forcibly *againſt* the upper jaw. *Ray.*—The weight of the body doth *bear* moſt *upon* the knee joints, in raiſing itſelf up; and moſt *upon* the muſcles of the thighs, in coming down. *Wilkins.*—To act upon.—Spinola, with his ſhot, did *bear upon* thoſe within, who appeared upon the walls. *Hayward.*—To be ſituated with reſpect to other places: as, this mountain *bears* weſt of the promontory.

To BEAR UP. To ſtand firm without falling; not to ſink; not to faint or fail.—Perſons in diſtreſs may ſpeak of themſelves with dignity; it ſhews a greatneſs of ſoul, that they *bear up* againſt the ſtorms of fortune. *Broome.*—The conſciouſneſs of integrity, the ſenſe of a life ſpent in doing good, will enable a man to *bear up* under any change of circumſtances. *Atterbury.*

To BEAR WITH. To endure an unpleaſing thing.

BEAR, *ſ.* [*bera*, Sax. *urſus*, Lat.] A rough ſavage animal. See URSUS.—Some have falſely reported, that *bears* bring their young into the world ſhapeleſs, and that their dams lick them into form. The dams go no longer than thirty days, and generally produce five young ones. In the winter, they lie hid and aſleep, the male forty days, and the female four months; and ſo ſoundly for the firſt fourteen days, that blows will not wake them. In the ſleepy ſeaſon, they are ſaid to have no nouriſhment but from licking their feet. This animal has naturally an hideous look, but when enraged it is terrible; and, as rough and ſtupid as it ſeems to be, it is capable of diſcipline; it leaps, dances, and plays a thouſand little tricks, at the ſound of a trumpet. *Calmet.*

Call hither to the ſtake my two brave *bears*,
Bid Saliſbury and Warwick come to me.——
—Are theſe thy *bears*? we'll bait thy *bears* to death,
And manacle the bearward in their chains. *Shakeſpeare.*

The name of two conſtellations, called the *greater* and *leſſer bear*; in the tail of the *leſſer bear*, is the pole-ſtar:

E'en then when Troy was by the Greeks o'erthrown,
The *bear* oppos'd to bright Orion ſhone. *Creech.*

"To ſell the BEAR'S ſkin before he is caught." Ital. *vender la pelle del orſo inanzi che ſia preſi.* H. Ger. *die bæren-haut verkauffen ehe der hær geſloechen.* The Lat. ſay: *ante lentem auges ollam.* We ſay likewiſe: "to reckon the chickens before they are hatcht." The French ſay: *vendre le peau de l'ours avant qu'il ſoit pris*; or, *conter ſans l'hôte*, 'to reckon without the hoſt.' Theſe proverbs are all deſigned to expoſe the folly of building upon, or bragging of, uncertain things to come, than which nothing is more deceiving.

BEAR-GARDEN, *ſ.* [from *bear* and *garden.*] A place in which bears are kept for ſport.—Hurrying me from the play-houſe, and the ſcenes there to the *bear-garden*, to the apes, and aſſes, and tygers. *Stillingfleet.*—Any place of tumult or miſrule.—I could not forbear going to a place of renown for the gallantry of Britons, namely to the *bear-garden. Spectator.*

BEAR-GARDEN, *adj.* A word uſed in familiar or low phraſe for *rude* or *turbulent*; as, a *bear-garden fellow*; that is, a man rude enough to be a proper frequenter of the *bear-garden*. *Bear-garden ſport*, is uſed for groſs inelegant entertainment.

BEAR BAY, on the ſouth coaſt of the iſland of Newfoundland: ſeventy miles eaſt of Cape Ray.

BEAR ISLAND, an iſland near the ſouth-weſt coaſt of Ireland, in Bantry bay, about five miles long, and one and a half wide. Lat. 51. 35. N. lon. 9. 45. W. Greenwich.

BEAR (North), a ſmall iſland in St. James's Bay, Hudſon's Bay. Lat. 54. 35. N. lon. 81. 20. W. Greenwich.

BEAR (South), a ſmall iſland in St. James's Bay. Lat. 54. 30. N. lon. 81. 20. W. Greenwich.

BEAR SOUND, on the weſt coaſt of Weſt Greenland. Lat. 63. 20. N. lon. 49. W. Greenwich.

Order of the BEAR was a military order in Switzerland, erected by the emperor Frederic II. in 1213, by way of acknowledgement for the ſervice the Swiſs had done him, and in favour of the abbey of St. Gaul. To the collar of the order hung a medal, on which was repreſented a bear raiſed on an eminence of earth.

Sea-BEAR. See PHOCA.

BEAR-BERRY, *ſ.* in botany, ſee ARBUTUS. BEAR'S-BREECH, ſee ACANTHUS. BEAR'S-EAR, ſee PRIMULA AURICULA. BEAR'S-EAR SANICLE, ſee VERBASCUM. BEAR'S-FOOT, ſee HELLEBORUS.

BEARD, *ſ.* [*beard*, Sax.] The hair that grows on the lips and chin:

Ere on thy chin the ſpringing *beard* began
To ſpread a doubtful down, and promiſe man. *Prior.*

Beard is uſed for the face; as, to do any thing to a man's *beard*, is to do it in defiance, or to his face. *Beard* is uſed to mark age or virility; as, he has a long *beard*, means he is old. Sharp prickles growing upon the ears of corn:

The ploughman loſt his ſweat, and the green corn
Hath rotted ere its youth attain'd a *beard*. *Shakeſpeare.*

Various have been the cuſtoms and ceremonies of different nations in reſpect of the beard. The Tartars, from a religious principle, waged a long and bloody war with the Perſians, declaring them infidels, merely becauſe they would not cut their whiſkers after the rite of Tartary: and we find, that a conſiderable branch of the religion of the ancients conſiſted in the management of their beard. The Greeks wore their beards till the time of Alexander the Great; when that prince ordered the Macedonians to be ſhaved, for fear it ſhould give a handle to their enemies. According to Pliny, the Romans did not begin to ſhave till the year of Rome 454, when P. Ticinius brought over a ſtock of barbers from Sicily. Perſons of quality had their children ſhaved the firſt time by others of the ſame or greater quality, who, by this means, became god-father or adoptive father of the children. Anciently, indeed, a perſon became god-father of the child by barely touching his beard: thus hiſtorians relate, that one of the articles of the treaty between Alaric and Clovis was, that Alaric ſhould touch the beard of Clovis to become his god-father.

As to eccleſiaſtics, the diſcipline has been very different on the article of beards: ſometimes they have been enjoined to wear them, from a notion of too much effeminacy in ſhaving, and that a long beard was more ſuitable to the eccleſiaſtical gravity; and ſometimes again they were forbid it, as imagining pride to lurk beneath a venerable beard. The Greek and Roman churches have been long together by the ears about their beards: ſince the time of their ſeparation, the Romaniſts ſeem to have given more into the practice of ſhaving, by way of oppoſition to the Greeks; and have even made ſome expreſs conſtitutions *de radendis barbis.* The Greeks, on the contrary, eſpouſe very zealouſly the cauſe of long beards, and are extremely ſcandalized at the beardleſs images of ſaints in the Roman churches. By the ſtatutes of ſome monaſteries it appears, that the lay-monks were to let their beards grow, and the prieſts among them to ſhave; and that the beards of all that were received into the monaſteries, were bleſſed with a great deal of ceremony. There are ſtill extant the prayers uſed in the ſolemnity of conſecrating the beard to God, when an eccleſiaſtic was ſhaven.

Le Comte obſerves, that the Chineſe affect long beards extravagantly; but nature has baulked them, and only given them very little ones, which, however, they cultivate with infinite care: the Europeans are ſtrangely envied by them on this account, and eſteemed the greateſt men in the world. Chryſoſtom obſerves, that the kings of Perſia had their beads wove or matted together with gold-thread; and ſome of the firſt kings of France had their bears knotted and buttoned with gold. Among the Turks, it is more infamous for any one to have his beard cut off, than among us to be publicly whipt or branded with a hot iron. There are abundance in that country, who would prefer death to this puniſhment. The Arabs make the preſervation of their beards a capital point of religion, becauſe Mahomet never cut his. Hence the razor is never drawn over the grand ſignior's face. The Perſians, who clip them, and ſhave above the jaw, are reputed heretics. It is likewiſe a mark of authority and liberty among them, as well as among the Turks. They who ſerve in the ſeraglio, have their beards ſhaven, as a ſign of their ſervitude. They do not ſuffer it to grow till the ſultan has ſet them at liberty, which is beſtowed as a reward upon them, and is always accompanied with ſome employment.

The moſt celebrated ancient writers, and ſeveral modern ones, have ſpoken honourably of the fine beards of antiquity. Homer ſpeaks highly of the white beard of Neſtor and that of old king Priam. Virgil deſcribes Mezentius's, which was ſo thick and long as to cover all his breaſt; Chryſippus praiſes the noble beard of Timothy, a famous player on the flute. Pliny the younger tells us of the white beard of Euphrates, a Syrian philoſopher; and he takes pleaſure in relating the reſpect mixed with fear with which it inſpired the people. Plutarch ſpeaks of the long white beard of an old Laconian, who, being aſked why he let it grow ſo, replied, "'Tis that, ſeeing continually my white beard, I may do nothing unworthy of its whiteneſs." Strabo relates, that the Indian philoſophers, the Gymnoſophiſts, were particularly attentive to make the length of their beards contribute to captivate the veneration of the people. Diodorus, after him, gives a very particular and circumſtantial hiſtory of the beards of the Indians. Juvenal does not forget that of Antilochus the ſon of Neſtor. Fenelon, in deſcribing a prieſt of Apollo in all his magnificence, tells us, that he had a white beard down to his girdle. But Perſius ſeems to outdo all theſe authors: this poet was ſo convinced that the beard was a ſymbol of wiſdom, that he thought he could not beſtow a greater encomium on the divine Socrates, than by calling him the bearded maſter, *Magiſtrum barbatum.* While the Gauls were under their ſovereignty, none but the nobles and Chriſtian prieſts were permitted to wear long beards. The Franks, having made themſelves maſters of Gaul, aſſumed the ſame authority as the Romans: the bondſmen were expreſsly ordered to ſhave their chins; and this law continued in force until the entire aboliſhment of ſervitude in France. So likewiſe, in the time of the firſt race of kings, a long beard was a ſign of nobility and freedom. The kings, as being the higheſt nobles in their kingdom, were likewiſe emulous to have the largeſt beards: Eginard, ſecretary to Charlemain, ſpeaking of the laſt kings of the firſt race, ſays, they came to the aſſemblies in the Field of Mars in a carriage drawn by oxen, and ſat on the throne with their hair diſhevelled, and a very long beard, *crine profuſo, barba ſubmiſſa, ſoli reſiderent, et ſpecimen dominantis eſſingerent.*

To touch any one's beard, or cut off a bit of it, was, among the firſt French, the moſt ſacred pledge of protection and confidence. For a long time all letters that came from the ſovereign had, for greater ſanction, three hairs of his beard in the ſeal. There is ſtill in being a charter of 1121, which concludes with the following words: *Quod ut ratum et ſtabile perſeveret in poſterum, præſentis ſcripto ſigilli mei robur appoſui eum tribus pilis barbæ meæ.*

Several great men have honoured themſelves with the ſurname of *Bearded.* The emperor Conſtantine is diſtinguiſhed by the epithet of *Pogonate*, which ſignifies *the Bearded.* In the time of the Cruſades, we find there was a *Geffery the Bearded:* Baldwin IV. earl of Flanders, was ſurnamed *Handſome-beard*; and, in the illuſtrious houſe of Montmorenci, there was a famous *Bouchard*, who took a pride in the ſurname of *Bearded:* he was always the declared enemy of the monks, without doubt becauſe of their being ſhaved. In the tenth century, we find, that king Robert (of France), the rival of Charles the Simple, was not more famous for his exploits than for his long white beard. In order that it might be more conſpicuous to the ſoldiers when he was in the field, he uſed to let it hang down outſide his cuiraſs: this venerable ſight encouraged the troops in battle, and ſerved to rally them when they were defeated.

A celebrated painter in Germany, called *John Mayo*, had ſuch a large beard that he was nicknamed *John the Bearded:* it was ſo long that he wore it faſtened to his girdle; and, though he was a very tall man, it would hang upon the ground when he ſtood upright. He took the greateſt care of this extraordinary beard; ſometimes he would untie it before the emperor Charles V. who took great pleaſure to ſee the wind make it fly againſt the faces of the lords of his court.

In England, the famous chancellor Thomas More, one of the greateſt men of his time, being on the point of falling a victim to court intrigues, was able, when on the fatal ſcaffold, to procure reſpect to his beard in preſence of all the people, and ſaved it, as one may ſay, from the ſtroke which he could not eſcape himſelf. When he had laid his head on the block, he perceived that his beard was likely to be hurt by the axe of the executioner; on which he took it away, ſaying, "My beard has not been guilty of treaſon; it would be an injuſtice to puniſh it."

But let us turn our eyes to a more flattering object, and admire the ever-precious beard of the great Henry IV. of France, which diffuſed over the countenance of that prince a majeſtic ſweetneſs and amiable openneſs, a beard ever dear to poſterity, and which ſhould ſerve as a model for that of every great king, as the beard of his illuſtrious miniſter ſhould for that of every miniſter. But what dependence is there to be put on the ſtability of the things of this world? By an event, as fatal as unforeſeen, the beard, which was arrived at its higheſt degree of glory, all of a ſudden loſt its favour, and was at length entirely proſcribed. The unexpected death of Henry the Great, and the youth of his ſucceſſor, were the ſole cauſe of it. Louis XIII. mounted the throne of his glorious anceſtors without a beard. Every one concluded immediately, that the courtiers, ſeeing their young king with a ſmooth chin, would look upon their own as too rough. The conjecture proved right; for they preſently reduced their beards to whiſkers, and a ſmall tuft of hair under the nether lip. The people at firſt would not follow this dangerous example. The duke of Sully would never adopt this effeminate cuſtom. This man, great both as a general and a miniſter, was likewiſe ſo in his retirement: he had the courage to keep his long beard, and to appear with it at the court of Louis XIII. where he was called to give his advice in an affair of importance. The young crop-bearded courtiers laughed at the ſight of his grave look and old-faſhioned phiz. The duke, nettled at the affront put on his fine beard, ſaid to the king, "Sir, when your father of glorious memory did me the honour to conſult me on his great and important affairs, the firſt thing he did was to ſend away all the buffoons and ſtage-dancers of his court."

The czar Peter, who had ſo many claims to the ſurname of *Great*, ſeems to have been but little worthy of it on this occaſion. He had the boldneſs to lay a tax on the beards of his ſubjects. He ordered that the noblemen and gentlemen, tradeſmen and artiſans (the prieſts and peaſants excepted), ſhould pay 100 rubles to be able to retain their beards; that the lower claſs of people ſhould pay a copeck for the ſame liberty; and he eſtabliſhed clerks at the gates of the different towns to collect theſe duties. Such a new and ſingular impoſt troubled the vaſt empire of Ruſſia. Both religion and manners were thought in danger. Complaints were heard from all parts; they even went ſo far as to write libels againſt the ſovereign; but he was inflexible, and at that time powerful. Even the fatal ſcenes of St. Bartholomew were renewed againſt theſe unfortunate beards, and the moſt unlawful violences were publicly exerciſed. The razor and ſciſſars were every where made uſe of. A great number, to avoid theſe cruel extremities, obeyed with reluctant ſighs. Some of them carefully preſerved the ſad trimmings of their chins: and, in order to be never ſeparated from theſe dear locks, ordered that they ſhould be placed with them in their coffins.

Example, more powerful than authority, produced in Spain what it had not been able to bring about in Ruſſia without great difficulty. Philip V. aſcended the throne with a ſhaved chin. The courtiers imitated the prince, and the people, in turn, the courtiers. However, though this revolution was brought about without violence and by degrees, it cauſed much lamentation and murmuring; the gravity of the Spaniards loſt by the change. The favourite cuſtom of a nation can never be altered without incurring diſpleaſure; and they have this old ſaying in Spain, *Deſde que no hay barba, no hay mas alma*; "Since we have loſt our beards, we have loſt our ſouls." This grave romantic nation has always regarded the beard as ornament very highly to be prized; and the Spaniards have often made the loſs of honour conſiſt in that of their whiſkers. The Portugueſe, whoſe national character is much the ſame, are not the leaſt behind them in that reſpect. In the reign of Catherine queen of Portugal, the brave John de Caſtro had juſt taken in India the caſtle of Diu: victorious, but in want of every thing, he found himſelf obliged to aſk the inhabitants of Goa to lend him a thouſand piſtoles for the maintenance of his fleet; and, as a ſecurity for that ſum, he ſent them one of his whiſkers, telling them, "All the gold in the world cannot equal the value of this natural ornament of my valour; and I depoſit it in your hands as a ſecurity for the money." The whole town was penetrated with this heroiſm, and every one intereſted himſelf about this invaluable whiſker: even the women were deſirous to give marks of their zeal for ſo brave a man: ſeveral ſold their bracelets to increaſe the ſum aſked for; and the inhabitants of Goa ſent him immediately both the money and his whiſker. A number of other examples of this kind might be produced, which do as much honour to whiſkers as to the good faith of thoſe days.

In Louis XIII's reign, whiſkers attained the higheſt degree of favour, at the expence of the expiring beards. In thoſe days of gallantry, not empoiſoned by wit, they became the favourite occupation of lovers. A fine black whiſker, elegantly turned up, was a very powerful mark of dignity with the fair ſex. Whiſkers were ſtill in faſhion in the beginning of Louis XIV's reign. The king, and all the great men of his court, took a pride in wearing them. They were the ornament of Turenne, Condé, Colbert, Corneille, Moliere, &c. It was then no uncommon thing for a favourite lover to have his whiſkers turned up, combed, and pomatumed, by his miſtreſs; and, for that purpoſe, a man of faſhion took care to be always provided with every little neceſſary article, eſpecially whiſker-wax. It was highly flattering to a lady to have it in her power to praiſe the beauty of her lover's whiſkers; which, far from being diſguſting, gave his perſon an air of vivacity: ſeveral even thought them an incitement to love. It ſeems the levity of the French made them undergo ſeveral changes both in form and name: there were *Spaniſh*, *Turkiſh*, *guard-dagger*, *&c.* whiſkers, in ſhort, *royal* ones, which were the laſt worn: their ſmallneſs proclaimed their approaching fall.

The Conſecration of the BEARD was a ceremony among the Roman youth, who, when they were ſhaved the firſt time, kept a day of rejoicing, and were particularly careful to put the hair of their beard into a ſilver or gold box, and make an offering of it to ſome god, particularly to Jupiter Capitolinus, as was done by Nero, according to Suetonius. The Turkiſh wives kiſs their huſbands beards, and children their fathers, as often as they come to ſalute them. The men kiſs one another's beards reciprocally on both ſides, when they ſalute in the ſtreets, or come off from any journey.

The Faſhion of the BEARD has varied in different ages and countries; ſome cultivating and entertaining one part of it, ſome another. Thus the Hebrews wear a beard on their chin; but not on the upper lip or cheeks. Moſes forbids them to cut off entirely the angle or extremity of their beard; that is, to manage it after the Egyptian faſhion, who left only a little tuft of beard at the extremity of their chin; whereas the Jews to this day ſuffer a little fillet of hair to grow from the lower end of their ears to their chins, where, as well as on their lower lips, their beards are in a pretty long bunch. The Jews, in time of mourning, neglected to trim their beards, that is, to cut off what grew ſuperfluous on the upper lips and cheeks. In time of grief and great affliction they alſo plucked off the hair of their beards.

Anointing the BEARD with unguents is an ancient practice both among the Jews and Romans, and ſtill continues in uſe among the Turks; where one of the principal ceremonies obſerved in ſerious viſits is to throw ſweet-ſcented water on the beard of the viſitant, and to perfume it afterwards with aloes-wood, which ſticks to this moiſture, and gives it an agreeable ſmell. In middle-age writers we meet with *adlentare barbem*, uſed for ſtroking and combing it, to render it ſoft and flexible. The Turks, when they comb their beards, hold a handkerchief on their knees, and gather very carefully the hairs that fall; and, when they have got together a certain quantity, they fold them up in paper, and carry them to the place where they bury the dead.

BEARD of a COMET. See ASTRONOMY, vol. ii. p. 402.

BEARD of a HORSE, that part underneath the lower mandible on the outſide and above the chin, which bears the curb. It is alſo called the *chuck*. It ſhould have but little fleſh, without any chops, hardneſs, or ſwelling; and be neither too high raiſed nor too flat, but ſuch as the curb may reſt in its right place.

BEARD of a MUSCLE, oyſter, or the like, denotes an aſſemblage of threads or hairs, by which thoſe animals faſten themſelves to ſtones. The hairs of this beard terminate in a flat ſpongy ſubſtance, which being applied to the ſurface of a ſtone, ſticks thereto, like the wet leather uſed by boys.

BEARDS, *ſ.* in the hiſtory of inſects, are two ſmall oblong fleſhy bodies, placed juſt above the trunk, as in the gnats, and in the moths and butterflies.

BEARD, a town of France, in the department of the Nievre, and chief place of a canton, in the diſtrict of Decize, on the Loire: ten miles ſouth-eaſt of Nevers.

To BEARD, *v. a.* To take or pluck by the beard, in contempt or anger:

No man ſo potent breathes upon the ground,
But I will *beard* him. *Shakeſpeare.*

To oppoſe to the face; to ſet at open defiance.—The deſign of utterly extirpating monarchy and epiſcopacy, the preſbyterians alone begun, continued, and would have ended, if they had not been *bearded* by that new party, with whom they could not agree about dividing the ſpoil. *Swift.*

BEARD'ED, *adj.* Having a beard:

Old prophecies foretel our fall at hand,
When *bearded* men in floating caſtles land. *Dryden.*

Having ſharp prickles, as corn:

As when a field
Of Ceres, ripe for harveſt, waving bends
Her *bearded* grove of ears, which way the wind
Inclines them. *Milton.*

Barbed or jagged:

Thou ſhould'ſt have pull'd the ſecret from my breaſt,
Torn out the *bearded* ſteel to give me reſt. *Dryden.*

BEARDED WOMEN have been all obſerved to want the menſtrual diſcharge; and ſeveral inſtances are given by Hippocrates, and other phyſicians, of grown women, eſpecially widows, in whom, the menſes coming to ſtop, beards appeared. Euſebius Nierembergius mentions a woman who had a beard reaching to her navel. Of women remarkably bearded we have ſeveral inſtances. In the cabinet of curioſities of Stutgard in Germany, there is the portrait of a woman called *Bartel Graetje*, whoſe chin is covered with a very large beard. She was drawn in 1587, at which time ſhe was but twenty-five years of age. There is likewiſe in the ſame cabinent another portrait of her when ſhe was more advanced in life, but likewiſe with a beard. It is ſaid, that the duke of Saxony had the portrait of a poor Swiſs woman taken, remarkable for her long buſhy beard; and thoſe who were at the carnival at Venice in 1726, ſaw a female dancer aſtoniſh the ſpectators not more by her talents than by her chin covered with a black buſhy beard. Charles XII. had in his army a female grenadier: it was neither courage nor a beard that ſhe wanted to be a man. She was taken at the battle of Pultowa, and carried to Peterſburgh, where ſhe was preſented to the czar in 1724: her beard meaſured a yard and a half. We read in the Trévoux Dictionary, that there was a woman ſeen at Paris, who had not only a buſhy beard on her face, but her body likewiſe covered all over with hair. Among a number of other examples of this nature, that of Margaret, the governeſs of the Netherlands, is very remarkable. She had a very long ſtiff beard, which ſhe prided herſelf on; and, being perſuaded that it contributed to give her an air of majeſty, ſhe took care not to loſe a hair of it. This Margaret was a very great woman. It is ſaid, that the Lombard women, when they were at war, made themſelves beards with the hairs of their heads, which they ingeniouſly arranged on their cheeks, in order that the enemy, deceived by the likeneſs, might take them for men.

BEARD'LESS, *adj.* Without a beard.

BEAR'ER, *ſ.* [from *to bear.*] A carrier who conveys any thing from one place or perſon to another:

He ſhould the *bearers* put to ſudden death,
Not ſhriving time allow'd. *Shakeſpeare.*

Forgive the *bearer* of unhappy news;
Your alter'd father openly purſues
Your ruin. *Dryden.*

—No gentleman ſends a ſervant with a meſſage, without endeavouring to put it into terms brought down to the capacity of the *bearer*. *Swift.*—One employed in carrying burthens.—And he ſet threeſcore and ten thouſand of them to be *bearers* of burdens. 2 *Chronicles.*—One who carries the body to the grave. A tree that yields its produce. —This way of procuring autumnal roſes in ſome that are good *bearers* will ſucceed. *Boyle.*

Bearer, *ſ.* in architecture, a poſt or brick wall raiſed up between the ends of a piece of timber, to ſhorten its bearing; or to prevent its bearing with the whole weight at the ends only.

Bearer, *ſ.* in heraldry, a ſupporter.

BEARHA'VEN, a bay on the ſouth-weſt coaſt of Ireland, in the county of Cork: between Bear Iſland and the county of Cork.

BEAR'ING, *ſ.* The ſite or place of any thing with reſpect to ſomething elſe:

But of this frame, the *bearing* and the ties,
The ſtrong connections, nice dependencies,
Gradations juſt, has thy pervading ſoul
Look'd through? or can a part contain the whole? *Pope.*

Geſture; mein; behaviour.—That is Claudio; I know him by his *bearing*. *Shakeſpeare.*

Bearing, *ſ.* in architecture, is the ſpace either between the two fixt extremities thereof, or between one extreme and a poſt or wall, trimmed up between the ends, to ſhorten its bearing.

Bearing, *ſ.* in geography and navigation, the ſituation of one place from another, with regard to the points of the compaſs; or an arch of the horizon between the meridian of a place and a line drawn through this and another place, or the angle formed by a line drawn through the two places and their meridians. The bearings of places on the ground are uſually determined by the magnetic needle.

Bearing, *ſ.* in the ſea-language. When a ſhip ſails towards the ſhore, before the wind, ſhe is ſaid to *bear in* with the land or harbour. To let the ſhip ſail more before the wind, is to *bear up*. To put her right before the wind, is to *bear round*. A ſhip that keeps off from the land, is ſaid to *bear off*. When a ſhip that was to windward comes under a ſhip's ſtern, and ſo gives her the wind, ſhe is ſaid to *bear under her lee*, &c. There is another ſenſe of this word, in reference to the burden of a ſhip; for they ſay a ſhip *bears*, when, having too ſlender or lean a quarter, ſhe will ſink too deep into the water with an overlight freight, and thereby can carry but a ſmall quantity of goods.

Bearings, *ſ.* in heradry, a term uſed to expreſs a coat of arms, or the figures of armories by which the nobility and gentry are diſtinguiſhed from the vulgar, and from one another. See Heraldry.

Bearing-Claws, *ſ.* among cock-fighters, denote the foremoſt toes, on which the bird goes; and, if they be hurt or gravelled, he cannot fight.

BEARNE, before the revolution, a province of France, at the foot of the Pyrenées: about ſixteen leagues long, and twelve broad; bounded on the eaſt by Bigorre, on the north by Armagnac, Turſan, and Chaloſſe, on the weſt by Dax, a part of Soule, and lower Navarre, and on the ſouth by the Pyrenées; the plain country is very fertile, and the mountains are covered with fir-trees, while within are mines of copper, lead, and iron; and the little hills are planted with vines, which yield good wine: the principal rivers which bear the name of *Gaves*, are the Gave-Bearnais, and the Gave d'Oleron. Pau is the capital town.

BEAR'WARD, *ſ.* [from *bear* and *ward.*] A keeper of bears.—The bear is led after one manner, the multitude after another; the *bearward* leads but one brute, and the mountebank leads a thouſand. *L'Eſtrange.*

BEAST, *ſ.* [*beſte*, Fr. *beſtia*, Lat.] An animal, diſtinguiſhed from birds, inſects, fiſhes, and man.—*Beaſts* of chaſe are the buck, the doe, the fox, the martern, and the roe. *Beaſts* of the foreſt are the hart, the hind, the hare, the boar, and the wolf. *Beaſts* of warren are the hare and coney. *Cowell.*—An irrational animal, oppoſed to man; as, man and *beaſt*:

Medea's charms were there, Circean feaſts,
With bowls that turn'd enamour'd youths to *beaſts*. *Dryd.*

A brutal ſavage man; a man acting in any manner unworthy of a reaſonable creature.

The word *beaſt*, or rather *wild beaſt* (θηρίον), in the prophetic ſtyle, ſignifies ſome *political* ſtate, or empire; *Daniel* vii. 23. and *Rev.* xiii. 1. and the beaſt, in the 11th verſe of that chapter, is ſuppoſed by Sir Iſaac Newton, to ſignify a certain *eccleſiaſtic* body, of a very corrupt and antichriſtian kind; a beaſt which had 'two horns, like a lamb; but ſpoke like the dragon.'

Beast, *ſ.* A game at cards, played in the following manner: The beſt cards are the king, queen, &c. whereof they make three heaps, the king, the play, and troilet. Three, four, or five, may play; and to every one is dealt five cards. However, before the play begins, every one ſtakes to the three heaps. He that wins moſt tricks, takes up the heap called the *play*; he that hath the king takes up the heap ſo called; and he that hath three of any ſort, that is, three fours, three fives, three ſixes, &c. takes up the troilet heap.

BEAS'TAN, a town of Perſia, in the province of Segeſtan: eighty miles ſouth-weſt of Kin.

BEAST'INGS. See Beestings.

BEAST'LINESS, *ſ.* Brutality; practice of any kind contrary to the rules of humanity.

BEAST'LY, *adj.* Brutal; contrary to the nature and dignity of man. It is uſed commonly as a term of reproach. —It is charged upon the gentlemen of the army, that the *beaſtly* vice of drinking to exceſs hath been lately, from their example, reſtored among us. *Swift.*—Having the nature or form of beaſts.—*Beaſtly* divinities, and droves of gods.

To BEAT, *v. a.* preter. *beat*; part. paſſ. *beat*, or more properly *beaten*; [*battre*, Fr.] To ſtrike, to knock, to lay blows upon:

He rav'd with all the madneſs of deſpair;
He roar'd, he *beat* his breaſt, he tore his hair. *Dryden.*

To puniſh with ſtripes or blows.—There is but one fault for which children ſhould be *beaten*; and that is obſtinacy or rebellion. *Locke.*—To ſtrike an inſtrument of muſic:

Bid them come forth and hear,
Or at their chamber door I'll *beat* the drum,
Till it cry, Sleep to death. *Shakeſpeare.*

To break; to bruiſe; to ſpread; to communicate by blows.—The people gathered manna, and ground it in mills, or *beat* it in a mortar, and baked it. *Numbers.*—They did *beat* the gold into thin plates, and cut it into wires, to work it. *Exodus.*—To ſtrike buſhes or ground, or make a motion to rouſe game:

When from the cave thou riſeſt with the day
To *beat* the woods, and rouſe the bounding prey. *Prior.*

To threſh; to drive the corn out of the huſk.—She gleaned the field, and *beat* out that ſhe had gleaned. *Ruth*, ii. 17. —To mix things by long and frequent agitation.—By long *beating* the white of an egg with a lump of alum, you may bring it into white curds. *Boyle.*—To batter with engines of war.—And he *beat* down the tower of Penuel, and ſlew the men of the city. *Judges*, viii. 17.—To daſh as water; or bruſh as wind:

Beyond this flood a frozen continent
Lies dark and wild; *beat* with perpetual ſtorms
Of whirlwind and dire hail. *Milton.*

To tread a path. To make a path by marking it with tracks.—He that will know the truth of things, muſt leave the common and *beaten* track. *Locke.*—To conquer; to ſubdue; to vanquiſh:

If Hercules and Lichas play at dice,
Which is the better man? The greater throw
May turn by fortune from the weaker hand:
So is Alcides *beaten* by his page. *Shakeſpeare.*

To harraſs; to over-labour.—It is no point of wiſdom for a man to *beat* his brains, and ſpend his ſpirits, about things impoſſible. *Hakewill.*—To lay, or preſs, as ſtanding corn by hard weather:

Her own ſhall bleſs her;
Her foes ſhake like a field of *beaten* corn,
And hang their heads with ſorrow. *Shakeſpeare.*

To depreſs; to cruſh by repeated oppoſition: uſually with the particle *down*:

Such an unlook'd for ſtorm of ills falls on me,
It *beats down* all my ſtrength. *Addiſon.*

To drive by violence: with a particle.—The younger part of mankind might be *beat off* from the belief of the moſt important points even of natural religion, by the impudent jeſts of a profane wit. *Watts.*—To move with fluttering agitation:

Thrice have I *beat* the wing, and rid with night
About the world. *Dryden.*

To BEAT DOWN. To endeavour by treaty to leſſen the price demanded. To ſink or leſſen the value.—Uſury *beats down* the price of land; for the employment of money is chiefly either merchandizing or purchaſing; and uſury waylays both. *Bacon.*

To BEAT UP. To attack ſuddenly; to alarm.—They lay in that quiet poſture, without making the leaſt impreſſion upon the enemy by *beating up* his quarters, which might eaſily have been done. *Clarendon.*

To BEAT the HOOF. To walk; to go on foot.

To BEAT, *v. n.* To move in a pulſatory manner.—I would gladly underſtand the formation of a ſoul, and ſee it *beat* the firſt conſcious pulſe. *Collier.*—To daſh as a flood or ſtorm:

Your brow, which does no fear of thunder know,
Sees rowlings tempeſts vainly *beat* below. *Dryden.*

To knock at a door.—The men of the city beſet the houſe round about, and *beat* at the door, and ſpake to the maſter of the houſe. *Judges.*—To move with frequent repetitions of the ſame act or ſtroke.—A man's heart *beats*, and the blood circulates, which it is not in his power, by any thought or volition, to ſtop. *Locke.*—To throb; to be in agitation, as a ſore ſwelling. To fluctuate; to be in agitation:

The tempeſt in my mind
Doth from my ſenſes take all feeling elſe,
Save what *beats* there. *Shakeſpeare.*

To try different ways; to ſearch: with *about.*

To find an honeſt man, I *beat about*
And love him, court him, praiſe him, in or out. *Pope.*

To act upon with violence.—The ſun *beat* upon the head of Jonah, that he fainted, and wiſhed in himſelf to die. *Jonah.*—To ſpeak frequently; to repeat; to enforce by repetition: with *upon.*—How frequently and fervently doth the ſcripture *beat upon* this cauſe! *Hakewill.*

To BEAT UP; as, to *beat up* for ſoldiers. The word *up* ſeems redundant, but enforces the ſenſe; the technical term being, to *raiſe* ſoldiers.

BEAT, *participle paſſive.*

Like a rich veſſel *beat* by ſtorms to ſhore,
'Twere madneſs ſhould I venture out once more. *Dryden.*

BEAT, *ſ.* Stroke. Manner of ſtriking.—Albeit the baſe and treble ſtrings of a viol be tuned to an uniſon, yet the former will ſtill make a bigger ſound than the latter, as making a broader *beat* upon the air. *Grew.*—Manner of being ſtruck; as, the *beat* of the pulſe, or a drum.

BEAT, *ſ.* in fencing, denotes a blow or ſtroke given with the ſword.

BEAT, *ſ.* in the manege. A horſe is ſaid to *beat the duſt*, when at each ſtroke or motion he does not take in ground or way enough with his fore-legs. He is more particularly ſaid to beat the duſt at *terra à terra*, when he does not take in ground enough with his ſhoulders, making his ſtrokes or motions too ſhort, as if he made them all in one place. He *beats the duſt at curvets*, when he does them too precipitately and too low. He *beats upon a walk*, when he walks too ſhort, and thus rids but little ground, whether it be ſtraight lines, rounds, or paſſings.

BEAT of a DRUM, *ſ.* in the military art, is to give notice by beat of drum of a ſudden danger; or, that ſcattered ſoldiers may repair to their arms and quarters, is to beat an alarm, or to arms. Alſo to ſignify, by different manners of ſounding a drum, that the ſoldiers are to fall on the enemy; to retreat before, in, or after, an attack; to move or march from one place to another; to permit the ſoldiers to come out of their quarters at break of day; to order to repair to their colours, &c. is to beat a charge, a retreat, a march, &c.

BEAT'EN, *participle adjective.*

What makes you, ſir, ſo late abroad
Without a guide, in this no *beaten* road? *Dryden.*

BEAT'ER, *ſ.* An inſtrument with which any thing is comminuted or mingled.—Beat all your mortar with a *beater* three or four times over, before you uſe it; for thereby you incorporate the ſand and lime well together. *Moxon.*—A perſon much given to blows.—The beſt ſchoolmaſter of our time was the greateſt *beater*. *Aſcham.*

BEATI'FIC, or BEATIFICAL, *adj.* [*beatificus*, low Lat. from *beatus*, happy.] That which has the power of making happy, or completing fruition; bliſsful. It is uſed only of heavenly fruition after death.—We may contemplate upon the greatneſs and ſtrangeneſs of the *beatific* viſion; how a created eye ſhould be ſo fortified, as to bear all thoſe glories that ſtream from the fountain of uncreated light. *South.*

BEATI'FICALLY, *adv.* In ſuch a manner as to complete happineſs.—*Beatifically* to behold the face of God, in the fulneſs of wiſdom, righteouſneſs, and peace, is bleſſedneſs no way incident unto the creatures beneath man. *Hakewill.*

BEATIFICA'TION, *ſ.* A term uſed in the Romiſh church, diſtinguiſhed from canonization. *Beatification* is an acknowledgement made by the pope, that the perſon beatified is in heaven, and therefore may be reverenced as bleſſed; but is not a conceſſion of the honours due to ſaints, which are conferred by canonization.

To BEA'TIFY, *v. a.* To make happy; to bleſs with the completion of celeſtial enjoyment.—The uſe of ſpiritual conference is unimaginable and unſpeakable, eſpecially if free and unreſtrained, bearing an image of that converſation which is among angels and *beatified* ſaints. *Hammond.*—To ſettle the character of any perſon, by a public acknowledgement that he is received into heaven, though he is not inveſted with the dignity of a ſaint.

BEATIL'LES, *ſ.* in cookery, tid-bits, as cock's combs, livers, gizzards, &c.

BEAT'ING, *ſ.* Correction; puniſhment by blows.—*Beating* hemp is a puniſhment inflicted on looſe or diſorderly perſons.

BEATING, or PULSATION, *ſ.* in medicine, the reciprocal agitation or palpitation of the heart or pulſe.

BEATING, *ſ.* in book-binding, denotes the hammering a book in quires on a marble block, with a heavy broad-faced hammer, after folding, and before ſtitching it. On the beating it properly, the elegance and excellence of the binding, and the eaſy opening of the book, depend.

BEATING the WIND, was a practice in uſe in the ancient method of trial by combat. If either of the combatants did not appear in the field at the time appointed, the other was to beat the wind, or make ſo many flouriſhes with his weapon; by which he was intitled to all the advantages of a conqueror.

Beating Time, in muſic, a method of meaſuring and marking the time for performers in concert, by a motion of the hand and foot up or down ſucceſſively and in equal times. Knowing the true time of a crotchet, and ſuppoſing the meaſure actually ſubdivided into four crotchets, and the half-meaſure into two, the hand or foot being up, if we put it down with the very beginning of the firſt note or crotchet, and then raiſe it with the third, and then down with the beginning of the next meaſure, this is called *beating the time*; and, by practice, a habit is acquired of making this motion very equal. Each down and up is ſometimes called a *time* or *meaſure*. The general rule is, to contrive the diviſion of the meaſure ſo, that every down and up of the beating ſhall end with a particular note, on which very much depends the diſtinctneſs, and, as it were, the ſenſe, of the melody.

Beating, with hunters, a term uſed of a ſtag, which runs firſt one way and then another. He is then ſaid to *beat up and down*. The noiſe made by conies in rutting-time is alſo called *beating* or *tapping*.

Beating, in navigation, the operation of making a progreſs at ſea againſt the direction of the wind, in a zig-zag line, or traverſe, like that in which we aſcend a ſteep hill.

BEA'TITUDE, *ſ.* [*beatitudo*, Lat.] Bleſſedneſs; felicity; happineſs: *commonly uſed of the joys of heaven.*—He ſet out the felicity of his heaven, by the delights of ſenſe; ſlightly paſſing over the accompliſhment of the ſoul, and the *beatitude* of that part which earth and viſibilities too weakly affect. *Brown.*—A declaration of bleſſedneſs made by our Saviour to particular virtues.

BEAT'ON (David), a cardinal of Rome in the ſixteenth century, was born in 1494. Pope Paul III. raiſed him to the degree of a cardinal in December 1538; and, being employed by James V. of Scotland, in negociating his marriages with the court of France, he was there conſecrated biſhop of Mirepoix. Soon after his inſtalment as archbiſhop of St. Andrew's, he promoted a furious perſecution of the reformers in Scotland, and raiſed ſo ſtrong a party, that, upon the coronation of the young queen Mary, he was admitted of the council, made chancellor, and procured a commiſſion as legate *a latere* from the court of Rome. He now began to renew his perſecution of heretics; and, among the reſt, of the famous Proteſtant preacher Mr. George Wiſhart, whoſe ſufferings at the ſtake the cardinal viewed from his window with apparent exultation. It is pretended, that Wiſhart at his death foretold the murder of Beaton; which indeed happened ſhortly after, he being aſſaſſinated in his chamber, May 29, 1547.

BEATO'RUM INSULA, a diſtrict of the Nomos Oaſites; called an iſland becauſe ſurrounded with ſand, like an iſland in the ſea, yet abounding in all the neceſſaries of life, though encompaſſed with vaſt ſandy deſerts *(Strabo)*; which ſome ſuppoſe to be a third Oaſis, in the Regio Ammoniaca; and the ſcite of the temple of Ammon anſwers to the above deſcription, as appears from the writers on Alexander's expedition thither. It was a place of relegation or baniſhment for real or pretended criminals, from which there was no eſcape. *Ulpian.*

BE'ATRIX, [i. e. one that makes happy.] A proper name of women.

BEATS, *ſ.* in a watch or clock, are the ſtrokes made by the fangs or pallets of the ſpindle of the balance, or of the pads in a royal pendulum. See Clock and Watch.

BEAT'TA LOUGH, a lake of Ireland, in the county of Mayo, ſeven miles north-north-weſt of Caſtlebar.

BEAU, *ſ.* [*beau*, Fr. It is ſounded like *bo*, and has often the French plural *beaux*, ſounded as *boes*.] A man of dreſs; a man whoſe great care is to deck his perſon:

What will not *beaux* attempt to pleaſe the fair? *Dryden.*

Beau Monde, the fair-ſex; alſo the gay part of the world; the beaux.

BEAUCAIR'E, a town of France, and principal place of a diſtrict, in the department of the Gard, on the right bank of the Rhone, oppoſite to Taraſcon, with which it has a communication by a bridge of boats. A great deal of commerce is carried on here in wool, ſilk, ſtuffs, ſpices, drugs, leather, cotton, &c. which is aſſiſted by an annual fair that continues ſix days, the returns of which are ſaid to be eight millions of livres in ſpecie, and ſix or ſeven in exchange of merchandiſe, on an average of one year with another. Beaucaire is four leagues eaſt of Niſmes. Lat. 43. 48. N. lon. 22. 17. E. Ferro.

BEAUCE, before the revolution, a country of France, part of Orleannois, ſo fertile in corn that it was called the granary of France. Chartres was the capital. It had neither mountain or river.

BEAU'CHAMP (John de), baron of Kidderminſter, in the reign of Richard II. and the firſt baron created by patent in this kingdom. He was the ſon of Sir Richard Beauchamp of Holt, who was grandſon of William de Beauchamp of Elmeley, and brother to William de Beauchamp, the firſt earl of Warwick of that family. He was born in 1320, and by the death of his father inherited the lands of Holt in Worceſterſhire, 1 Edward III. He was early in the ſervice of his prince; for, in 12 Edward III. when he was not more than twenty, he was in the expedition to Flanders, and in 20 Edward III. in France, and acquired reputation in both. In 1353, he was in Gaſcoigne, with Thomas earl of Warwick, and continued there all the next year. In the thirty-third of the ſame reign he ſerved again in France with much honour. In the 46 Edward III. he attended the king's ſon, John duke of Lancaſter, in his expedition into Spain. By theſe long and faithful ſervices he ſo raiſed his credit with Richard II. that he had a conſiderable grant made him in Caermarthenſhire, and was alſo appointed chief-juſtice of North Wales, and ſteward of the king's houſehold. He alſo obtained a grant of the manors and lands belonging to the priory of Deerhurſt in the county of Glouceſter, with the title of baron Kidderminſter by patent, limiting that honour to his heirs male; which became the precedent for future creations. It was thought that the king intended him farther honours, had not a ſudden reverſe of fortune put a ſtop to his maſter's power, and to his proſperity. This happened in 1388, when the duke of Glouceſter, having firſt defeated the army raiſed by the king's favourite, whom he had created duke of Ireland, marched to London, and forced him to call a parliament. Amongſt other noble perſons then called to account, lord Beauchamp was one, who was firſt removed from his office of treaſurer of the king's houſehold, then ſent priſoner to Dover-caſtle, and laſtly condemned and executed for high treaſon upon Tower-hill.

BEAUCHAS'TEL, a town of France, in the department of the Ardeche, two leagues and a half ſouth-ſouth-weſt of Valence, and three and a half north-eaſt of Privas.

BEAUDUN', a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Barjols, twelve miles north-eaſt of Barjols.

BEA'VER, *ſ.* [*bievre*, Fr. *fiber*.] An animal, otherwiſe named the *caſtor*, amphibious, and remarkable for his art in building his habitation; of which many wonderful accounts are delivered by travellers. See Castor.—The *beaver*, being hunted, biteth off his ſtones, knowing that for them only his life is ſought. *Hakewill.*—A hat of the beſt kind. The part of a helmet that covers the face. [*baviere*, Fr.]—He was ſlain upon a courſe at tilt, the ſplinters of the ſtaff going in at his *beaver*. *Bacon.*

Beaver, a river of North America, which runs into Lale-Croſs lake. Lat. 55. 25. N. lon. 118. 0. W.

Beaver-Indians, natives of North America, ſituated about lat. 62. 20. N. lon. 118. 0. W. Greenwich.

Beaver Island, an iſland in lake Michigan. Lat. 45. 26. N. lon. 85. 20. W. Greenwich.

Beaver Lake, a lake of North America. Lat. 54. 30. N. lon. 102. 20. W. Greenwich.

Beaver Skins, in commerce. Of theſe, merchants diſtinguiſh three ſorts; the new, the dry, and the fat. The new beaver, which is alſo called the *white beaver*, or *Muſcovy beaver*, becauſe it is commonly kept to be ſent into Muſcovy, is that which the ſavages catch in their winter hunting. It is the beſt, and the moſt proper, for making fine furs, becauſe it has loſt none of its hair by ſhedding. The dry beaver, which is ſometimes called *lean beaver*, comes from the ſummer hunting, which is the time when theſe animals loſe part of their hair. Though this ſort of beaver be much inferior to the former, yet it may alſo be employed in furs; but it is chiefly uſed in the manufacture of hats. The French call it *ſummer caſtor* or *beaver*. The fat beaver is that which has contracted a certain groſs and oily humour, from the ſweat which exhales from the bodies of the ſavages, who wear it for ſome time. Tho' this ſort be better than the dry beaver, yet it is uſed only in the making of hats.

When the hair has been cut off from the beavers ſkins, to be uſed in the manufacturing of hats, thoſe ſkins are ſtill employed by ſeveral workmen; namely, by the trunkmakers, to cover trunks and boxes; by the ſhoemakers, to put into ſlippers; and by turners, to make ſieves for ſifting grain and ſeeds.

BEA'VERED, *adj.* Covered with a beaver; wearing a beaver:

His *beaver'd* brow a birchen garland bears,
Dropping with infants blood and mothers tears. *Pope.*

BEAU'FORT (Henry), biſhop of Wincheſter, was the ſon of John of Gaunt, duke of Lancaſter, by his third wife, Catharine Swinford. He ſtudied for ſome years at Oxford, but had his education chiefly at Aix-la-Chapelle, where he applied himſelf to the civil and common law. Being of royal extraction, he was advanced very young to the prelacy, and was elected biſhop of Lincoln in 1397. In 1399, he was chancellor of the univerſity of Oxford, and dean of Wells. He was lord high chancellor of England in 1404, the fifth of his brother Henry IV. The next year he ſucceeded William of Wickham in the ſee of Wincheſter, and received the ſpiritualities from the archbiſhop of Canterbury, in the biſhop of London's palace. He was again lord chancellor in 1414, the ſecond of his nephew Henry V. This prelate was one of the guardians of Henry VI. during his minority; and, in 1424, the third of the young king's reign, he was a fourth time lord chancellor of England. There were perpetual jealouſies and quarrels between the biſhop of Wincheſter and Humphry duke of Glouceſter, the protector, which ended in the ruin and death of the latter. About two years after biſhop Beaufort received with great ſolemnity, at Calais, a cardinal's hat, with the title of St. Euſebius, ſent him by pope Martin V. In September 1428, the new cardinal returned into England, in the character of the pope's legate; and, in his way to London, he was met by the lord mayor, aldermen, and the principal citizens, on horſeback, who conducted him with great honour to his lodgings in Southwark. He died June 11, 1447, and was buried in the cathedral of Wincheſter, where an elegant monument is erected to his memory.

Beaufort (Margaret), was the only daughter of John Beaufort, duke of Somerſet. She was born at Bletſhore in Bedfordſhire, in 1441. About the fifteenth year of her age ſhe was married to Edmund of Haddam, earl of Richmond, by whom ſhe had a ſon named Henry, afterwards Henry VII. Her ſecond huſband was Sir Henry Stafford, ſecond ſon of Henry duke of Buckingham, by whom ſhe had no children. He dying about the year 1481, ſhe had for her third huſband Thomas lord Stanley, afterwards earl of Derby, who had no iſſue by her; he died in 1504. This pious lady employed her whole time in performing noble acts of charity. She kept conſtantly in her houſe twelve poor people, whom ſhe provided with lodging, victuals, and clothes. She was alſo a mother to the ſtudents in both univerſities, and a patroneſs to all the learned men of England. In 1502, ſhe inſtituted two perpetual public lectures in divinity, one at Oxford, and the other at Cambridge, each of which ſhe endowed with 20 marks per ann. In 1504, ſhe founded a perpetual public preacher at Cambridge, with a ſalary of 10l. a year. She alſo founded a perpetual chantry in the church of Wimborne in Dorſetſhire. She founded the college of Chriſt, in 1505, for one maſter, twelve fellows, and forty-ſeven ſcholars; and in the ſame year, that of St. John, both in Cambridge, for a maſter, and fifty fellows and ſcholars; but this being but juſt begun before her deceaſe, was completed and finiſhed by her executors. The charter of foundation bears date April 9, 1511; and the college was opened July 29, 1516. She died at Weſtminſter, July 29, 1509, aged ſixty-eight, and was buried in the ſouth aiſle of the beautiful chapel built by her ſon Henry VII. Her monument of black marble is yet extant, whereon lies her effigies, of gilt copper, in robes doubled with ermine, and the head encircled with a coronet.

Beaufort, a town of France, in the department of the Mayne and Loire, and chief place of a canton, in the diſtrict of Baugé, two leagues and a half ſouth-ſouth-weſt of Baugé, and four and a half eaſt of Angers. This town gives title of duke in England to the noble family of Somerſet, who are lineally deſcended from John of Gaunt duke of Lancaſter, whoſe ducheſs reſided in this town.

Beaufort, a town of France, in the department of the Drome, two leagues north-eaſt of Creſt.

Beaufort, a ſea-port town of the United States of America, in North Carolina, ſituated in Core Sound, thirty-nine miles ſouth-ſouth-eaſt of Newbern. Lat. 35. 41. N. lon. 77. 0. W. Greenwich.

Beaufort, a town of the United States of America, in South Carolina, and county of Carteret. It is a ſeat of juſtice, ſituated on the iſland of Port Royal, with a good harbour. Lat. 32. 31. N. lon. 80. 43. W. Greenwich.

Beaufort, or **Port Royal**, an iſland on the Atlantic Ocean, near the eaſt coaſt of North America, belonging to the ſtate of South Carolina, near the mouth of the river Savanna. Lat. 32. 30. N. lon. 80. 50. W. Greenwich.

Beaufort, a town of Savoy, thirty miles eaſt-north-eaſt of Chambery.

BEAUGENCY', or **Baugency**, a town of France, and principal place of a diſtrict, in the department of the Loiret, ſituated on the Loire, over which is a bridge of twenty-two arches. Its chief trade is in wine and brandy, and it is four leagues and a half ſouth-weſt of Orleans. Lat. 47. 47. N. lon. 19. 18. E. Ferro.

BEAUJEU', a town of France, in the department of the Rhone and Loire, and chief place of a canton, in the diſtrict of Villefranche, ſituated at the foot of a mountain, on the Ardiere, formerly the capital of the Beaujolois. It is four leagues north-north-weſt of Villefranche, and ſeven eaſt-north-eaſt of Roanne. Lat. 46. 10. N. lon. 22. 16. E. Ferro.

BEAUJOLOIS', before the revolution, a ſmall but fertile province of France, ten leagues long and eight wide, ſituated between the Lyonnois, Burgundy, the Saone and Loire.

BEAU'ISH, *adj.* Befitting a beau; foppiſh.

BEAU'LEY, or **Bewley**, a town of Scotland, in the county of Roſs, ſituated on the north ſide of a river of the ſame name, at its conflux with the frith of Murray: eight miles weſt of Inverneſs, and eight ſouth of Dingwall.

BEAULIEU' (Sebaſtian de Pontault de), a celebrated French engineer, and field-marſhal under Louis XIV. He publiſhed plans of all the military expeditions of his maſter, with military lectures annexed. He died in 1674.

Beaulieu, a town of France, in the department of the Correze, and chief place of a canton, in the diſtrict of Brive, on the Dordogne, ſeventeen miles ſouth of Tulle, and ſeventeen ſouth-eaſt of Brive.

Beaulieu sous la Roche, a town of France, in the department of Vendée, and chief place of a canton, in the diſtrict of Sables d'Olonne: two leagues and a half weſt of Roche-ſur-Yonne, and four and a quarter north-north-eaſt of Sables d'Olonne.

Beaulieu, a town of France, in the department of the Indre and Loire, ſituated on the Indre, oppoſite Loches. It contains about 1500 inhabitants.

BEAULON', a town of France, in the department of the Ill and Vilaine, and chief place of a canton, in the diſtrict of Redon, four leagues ſouth-weſt of Rennes.

BEAUMARCHE'Z, a town of France, in the department of the Gers, ſeven leagues weſt of Auch, and 4½ weſt of Mirande. Lat. 43. 35. N. lon. 17. 45. E. Ferro.

BEAUMA'RIS, or Beaumarsh, the county-town of Angleſea, in North Wales, a moſt beautiful and healthy ſituation, very near the ſea, with a ſafe and extenſive harbour, and good anchorage. There is a fine green lawn before the town, whence there is a charming proſpect of the Caernarvonſhire mountains, with a haven of the ſea, which renders this place delightful. Before Liverpool became ſo great a mart, this place carried on conſiderable trade, which it has now nearly loſt. It is 242 miles north-weſt of London, five from the great road from London to Holyhead, twenty-ſeven from Holyhead, ſix from Bangor, twelve from Conway, twelve from Caernarvon, and fifteen from Amlwch, the place where the great copper-works are carried on. Beaumaris is a town-corporate, and ſends one member to parliament; it is governed by a mayor, recorder, two bailiffs, twenty-four capital burgeſſes; the number of common burgeſſes is indefinite; two ſerjeants-at-mace, town-clerk, four conſtables, &c. and a water-bailiff. This is the only place in Wales where the right of election is confined to the corporation only, which conſiſts of twenty-four members, the common burgeſſes having no vote. Here is a weekly market on Saturdays, and four fairs in a year, viz. on February 13, Aſcenſion-day, September 19, and December 19.

This town was built by Edward I. in order to ſecure his conqueſts here, for which purpoſe he erected a ſtrong caſtle. The town, in its preſent ſtate, is both handſome and populous. The lands all around are level, and very pleaſant, from whence it received its name; the term *Beaumarſh* denoting a fine plain. Here is a good free grammar ſchool, well endowed, where a maſter, uſher, and writing-maſter, have each conſiderable ſalaries; the number of boys is indefinite. And near the town are ſome alms-houſes, where eight old men are handſomely ſupported; both founded by Mr. David Hughes, in the year 1613. Theſe are governed by twelve gentlemen feoffees, an agent, and clerk. The principal feoffee is always the biſhop of Bangor for the time being. It is a port of ſome conſequence, having five creeks under its management, viz. Conway, Caernarvon, Pwllhely, Barmouth, and Holyhead; and the number of veſſels which trade to and from the great copper-works at Amlwch, and a very conſiderable ſlate-quarry, belonging to lord Penrhyn, brought down from a mountain near Bangor, make the coaſting buſineſs very conſiderable.

Near this town is Baron-hill, the ſeat of lord Bulkeley, ſituated on an elevation that gives great dignity to its appearance; the proſpects and views from this place are ſuppoſed to be the fineſt in the kingdom Here is an extenſive lawn, running down to the ſea-ſhore, from whence you have a view of the caſtle, part of the town, the ſea, the ſands, and a fine range of hills; the greater part of which is the property of his lordſhip.

BEAUMENIL', a town of France, in the department of the Eure, and chief place of a canton, in the diſtrict of Bernay, two leagues ſouth-ſouth-eaſt of Bernay.

BEAUMETZ-LES-LO'GES, a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of Arras, two leagues S.W. of Arras.

BEAU'MONT (Sir John), the elder brother of Mr. Francis Beaumont the famous dramatic poet, was born in the year 1582, and in 1626 had the dignity of a baronet conferred upon him by Charles I. In his youth he applied himſelf to the Muſes with good ſucceſs; and wrote, The Crown of Thorns, a poem, in eight books; a miſcellany, intitled, Boſworth Field; Tranſlations from the Latin Poets; and ſeveral poems on religious and political ſubjects; as, On the Feſtivals; On the Bleſſed Trinity; A Dialogue between the World, a Pilgrim, and Virtue, &c. He died in 1628.

Beaumont and Fletcher, two celebrated Engliſh dramatic writers, who flouriſhed in the reign of James I. and ſo cloſely connected both as authors and as friends, that it has been uſual with biographers to give them under one article.

Mr. Francis Beaumont was deſcended from an ancient family at Grace-dieu in Leiceſterſhire, where he was born about the year 1586, in the reign of queen Elizabeth. His grandfather, John Beaumont, was maſter of the rolls, and his father, Francis Beaumont, one of the judges of the Common Pleas. He was educated at Cambridge, and afterwards admitted of the Inner Temple. It is not, however, apparent that he made any great proficiency in the law, that being a ſtudy probably too dry for his fertile and ſprightly genius. And indeed we ſhould ſcarcely be ſurpriſed to find that he had given no application to any ſtudy but poetry, nor attended on any court but that of the Muſes: but, on the contrary, our admiration might fix itſelf in the oppoſite extreme, and fill us with aſtoniſhment at the extreme aſſiduity of his genius and rapidity of his pen, when we look back on the voluminouſneſs of his works, and then inquire into the time allowed him for them; works that might well have taken up a long life to have executed. For although, out of fifty-three plays which are collected together as the labours of theſe united authors, Mr. Beaumont was concerned in much the greateſt part of them, yet he did not live to complete his thirtieth year. He died in the beginning of March 1615, on the ninth day of which he was interred in the entrance of St. Benedict's chapel in Weſtminſter-abbey. He left a daughter, Frances Beaumont, who died in Leiceſterſhire ſince the year 1700. She had in her poſſeſſion ſeveral poems of her father's writing; but they were loſt at ſea in her voyage from Ireland, where ſhe had lived for ſome time in the duke of Ormond's family.

Mr. John Fletcher was not more meanly deſcended than his poetical colleague; his father, the Rev. Dr. Fletcher, having been firſt made biſhop of Briſtol by queen Elizabeth, and afterwards tranſlated to the ſee of London. Our poet was born in 1576; and was, as well as his friend, educated at Cambridge, where he made a great proficiency in his ſtudies. His natural vivacity of wit, for which he was remarkable, ſoon rendered him a devotee to the Muſes; and his cloſe attention ſoon raiſed him to one of the higheſt places in the temple of poetical fame. As he was born near ten years before Mr. Beaumont, ſo did he alſo ſurvive him by an equal number of years; the general calamity of a plague, which happened in 1625, involving him in its deſtruction, he died of it at forty-nine years of age.

During the joint lives of theſe two great poets, it appears that they wrote nothing ſeparately, excepting one little piece by each, which ſeemed of too trivial a nature for either to require aſſiſtance in, viz. The Faithful Shepherd, a paſtoral, by Fletcher; and The Maſque of Gray's-Inn Gentlemen, by Beaumont. Yet what ſhare each had in the writing or deſigning of the pieces thus compoſed by them jointly, there is no poſſibility of determining. It is however generally allowed, that Fletcher's peculiar talent was wit, and Beaumont's, though much the younger man, judgment. It is probable, therefore, that the forming the plots and contriving the conduct of the fable, the writing of the more ſerious and pathetic parts, and lopping the redundant branches of Fletcher's wit, whoſe luxuriance, we are told, frequently ſtood in need of caſtigation, might be in general Beaumont's portion in the work; while Fletcher, whoſe converſation with the *beau monde* (which indeed both of them from their births and ſtations in life had been ever accuſtomed to), added to the volatile and lively turn he poſſeſſed, rendered him perfectly maſter of dialogue and polite language, might execute the deſigns formed by the other, and raiſe the ſuperſtructure of thoſe lively and ſpirited ſcenes which Beaumont had only laid the foundation of; and in this he was ſo ſucceſsful, that, though his wit and raillery were extremely keen and poignant, yet they were at the ſame time ſo humorous, that they uſed rather to pleaſe than diſguſt the very perſons on whom they ſeemed to reflect. Yet that Fletcher was not entirely excluded from a ſhare in the conduct of the drama, may be gathered from a ſtory related by Winſtanley, viz. that, our two bards having concerted the rough draught of a tragedy over a bottle of wine at a tavern, Fletcher ſaid, he would "undertake to kill the king;" which words being overheard by the waiter, who had not been witneſs to the context of their converſation, he lodged an information of treaſon againſt them. But, on their explaining it only to mean the deſtruction of a theatrical monarch, (their loyalty being unqueſtioned,) the affair ended in a jeſt.

On the whole, the works of theſe authors have undoubtedly great merit, and ſome of their pieces deſervedly ſtand on the liſt of the preſent ornaments of the theatre. The plots are ingenious, intereſting, and well managed; the characters ſtrongly marked; and the dialogue ſprightly and natural: yet there is in the latter a coarſeneſs which is not ſuitable to the politeneſs of the preſent age; and a fondneſs of repartee, which frequently runs into obſcenity; and which we may ſuppoſe was the faſhion of that time, ſince even the delicate Shakeſpeare is not entirely free from it. Some of their plays were printed in quarto during the lives of the authors; and in the year 1645 there was publiſhed in folio a collection of ſuch plays as had not been printed before, amounting to between thirty and forty. This collection was publiſhed by Mr. Shirley, after the ſhutting up of the theatres; and dedicated to the earl of Pembroke by ten of the moſt famous actors. In 1679 there was an edition of all their plays publiſhed in folio; another edition in 1711 by Mr. Tonſon in 7 vols. 8vo. and the laſt in 1751.

Beaumont, a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Pont l'Evêque, one league weſt of Pont l'Evêque, and ſix north-eaſt of Caen.

Beaumont, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the diſtrict of Is-ſur-Tille, ſixteen miles north-eaſt of Dijon.

Beaumont, a town of France, in the department of the Channel, and chief place of a canton, in the diſtrict of Cherburg, eight miles weſt of Cherburg.

Beaumont, a town of France, in the department of the Puy de Dôme, and chief place of a canton, in the diſtrict of Clermont Ferrand, two miles ſouth of Clermont.

Beaumont, a town of France, in the department of the Seine and Oiſe, and chief place of a canton, in the diſtrict of Pontoiſe, on the Oiſe: thirty-three miles north of Paris, and nine north-eaſt of Pontoiſe.

Beaumont, a town of France, in the department of the Dordogne, and chief place of a canton, in the diſtrict of Belvez, three leagues and a half weſt of Belvez, and nine ſouth of Perigueux.

Beaumont, a town of France, in the department of the Sarte, and chief place of a canton, in the diſtrict of Frenay-le-Vicomte, five leagues north-eaſt Le Mans.

Beaumont en Argonne, a town of France, in the department of the Ardennes, and chief place of a canton, in the diſtrict of Sedan, three leagues and a half ſouth-ſouth-eaſt of Sedan, and nine eaſt of Rethel.

Beaumont les Forges, a town of France, in the department of the Nyevre, and chief place of a canton, in the diſtrict of La Charité, on the Nyevre: thirteen miles north of Nevers.

Beaumont en Gatinois, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the diſtrict of Nemours, four leagues ſouth-weſt of Nemours, and eight ſouth-ſouth-weſt of Fontainebleau.

Beaumont de Lomagne, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of Grenade, five leagues north-weſt of Grenade, and three and a half ſouth-ſouth-weſt of Caſtel Sarraſin.

Beaumont le Roger, a town of France, in the department of the Eure, and chief place of a canton, in the diſtrict of Bernay, five leagues weſt of Evreux, and two and a half eaſt of Bernay. Lat. 49. 5. N. lon. 18. 27. E. Ferro.

Beaumont sur Vesle, a town of France, in the department of the Marne, and chief place of a canton, in the diſtrict of Rheims, ſituated on the Veſle: eight miles ſouth-eaſt of Rheims.

BEAUNE, a town of France, in the department of the Mayne and Loire, and chief place of a canton, in the diſtrict of Baugé, three leagues eaſt of Angers, and three weſt of Baugé.

Beaune, a town of France, and principal place of a diſtrict, in the department of the Côte d'Or, ſeven leagues ſouth of Dijon, and eight and a half ſouth-eaſt of Auxonne. Lat. 47. 0. N. lon. 22. 31. E. Ferro.

Beaune, a town of France, in the department of the Loiret, and chief place of a canton, in the diſtrict of Bois-Commun, one league north of Bois-Commun, and four and a half weſt-north-weſt of Montargis.

BEAUPLEAD'ER, *ſ.* [*pulchre placitando*, Lat. *beauplaider*, Fr. to plead fairly.] Is a writ upon the ſtatute of Marlbrige, 52 Hen. III. c. 11, whereby it is enacted, That neither in the circuit of juſtices, nor in counties, hundreds, or courts-baron, any fines ſhall be taken for *fair-pleading*, viz. for not pleading fairly or aptly to the purpoſe; upon which ſtatute this writ was ordained, directed to the ſheriff, bailiff, or him who ſhall demand ſuch fine, and it is a prohibition not to do it; whereupon an *alias* and *pluries*, and *attachment*, may be had, &c. *New Nat. Br.* 596. And beaupleader is as well in reſpect of vicious pleadings, as of the fair pleading, by way of amendment. 2 *Inſt.* 122.

BEAUPREAU', a town of France, in the department of the Mayne and Loire, and chief place of a canton, in the diſtrict of St. Florent, three leagues ſouth of St. Florent, and three north-north-weſt of Chollet.

BEAUQUE'SNE, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Doulens, two leagues ſouth-eaſt of Doulens.

BEAUREGARD', a town of France, in the department of the Dordogne, four leagues ſouth of Perigueux.

Beauregard, a town of France, in the department of Puy de Dôme, three leagues eaſt of Clermont-Ferrand.

Beauregard, a town of France, in the department of Lot, five leagues eaſt-ſouth-eaſt of Cahors.

BEAUREPAIR', a town of France, in the department of the Saone and Loire, and chief place of a canton, in the diſtrict of Louhans, two leagues and a half eaſt of Louhans, and three north of Cuzeau.

BEAUREPAIR'E, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Vienne, nine leagues ſouth-ſouth-eaſt of Lyons, and three ſouth-eaſt of Vienne.

BEAURIEU'X, a town of France, in the department of the Aiſne, and chief place of a canton, in the diſtrict of Laon, three leagues and a half north-weſt of Rheims.

BEAUSO'BRE (Iſaac de), a very learned Proteſtant writer, was born at Niort in France, in 1659. He was forced into Holland to avoid the execution of a ſentence which condemned him to make *amende honorable*; and this for having broken the royal ſignet, which was put upon the door of a church of the reformed, to prevent the public profeſſion of their religion. He went to Berlin in 1694; was made chaplain to the king of Pruſſia, and counſellor of the royal conſiſtory. He died in 1738, aged ſeventy-nine, after having publiſhed ſeveral works: as, 1. Defenſe de la Doctrine des Reformés. 2. A Tranſlation of the New Teſtament,

ment, with notes. 3. Diſſertation ſur les Adamites de Bohême; a curious work. 4. Hiſtoire Critique de Manichée et du Manicheiſme, 2 tom. 4to. 5. Several diſſertations in the Bibliotheque Britannique.

BEAUSSE'T (Le), a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Toulon, ſeven miles north-weſt of Toulon.

BEAU'TEOUS, *adj.* Fair; elegant in form; pleaſing to the ſight; beautiful. This word is chiefly poetical:

I can, Petruchio, help thee to a wife,
With wealth enough, and young, and *beauteous*. *Shakeſ.*

BEAU'TEOUSLY, *adv.* In a beauteous manner; in a manner pleaſing to the ſight; beautifully.—Look upon pleaſures not upon that ſide that is next the ſun, or where they look *beauteouſly*; that is, as they come towards you to be enjoyed. *Taylor.*

BEAU'TEOUSNESS, *ſ.* The ſtate or quality of being beauteous; beauty:

From leſs virtue, and leſs *beauteouſneſs*,
The gentiles fram'd them gods and goddeſſes. *Donne.*

BEAU'TIFUL, *adj.* [from *beauty* and *full.*] Fair; having the qualities that conſtitute beauty.—The moſt important part of painting, is to know what is moſt *beautiful* in nature, and moſt proper for that art; that which is the moſt *beautiful*, is the moſt noble, ſubject: ſo, in poetry, tragedy is more *beautiful* than comedy, becauſe the perſons are greater whom the poet inſtructs, and conſequently the inſtructions of more benefit to mankind. *Dryden.*

BEAU'TIFULLY, *adv.* In a beautiful manner.

BEAU'TIFULNESS, *ſ.* The quality of being beautiful; beauty; excellence of form.

To BEAU'TIFY, *v.a.* To adorn; to embelliſh; to deck; to grace; to add beauty to.—Never was ſorrow more ſweetly ſet forth; their faces ſeeming rather to *beautify* their ſorrow, than their ſorrow to cloud the beauty of their faces. *Hayward.*

To BEAUTIFY, *v. n.* To grow beautiful; to advance in beauty.—It muſt be a proſpect pleaſing to God himſelf, to ſee his creation for ever *beautifying* in his eyes, and drawing nearer to him by greater degrees of reſemblance. *Addiſon.*

BEAU'TY, *ſ.* [*beauté*, Fr.] That aſſemblage of graces, or proportion of parts, which pleaſes the eye.—*Beauty* conſiſts of a certain compoſition of colour and figure, cauſing delight in the beholder. *Locke.*—Of the *beauty* of the eye I ſhall ſay little, leaving that to poets and orators: that it is a very pleaſant and lovely object to behold, if we conſider the figure, colours, ſplendour of it, is the leaſt I can ſay. *Ray.*—A particular grace, feature, or ornament.—The ancient pieces are beautiful, becauſe they reſemble the *beauties* of nature; and nature will ever be beautiful, which reſembles thoſe beauties of antiquity. *Dryden.*—Any thing more eminently excellent than the reſt of that to which it is united.—With incredible pains have I endeavoured to copy the ſeveral *beauties* of the ancient and modern hiſtorians. *Arbuthnot.*—A beautiful perſon:

What can thy ends, malicious *beauty*, be?
Can he, who kill'd thy brother, live for thee? *Dryden.*

If we contemplate the beauty of viſible objects, two kinds are diſcovered. The firſt may be termed *intrinſic* beauty, becauſe it is diſcovered in a ſingle object, without relation to any other: the other may be termed *relative*, being founded on the relation of objects. Intrinſic beauty is a perception of ſenſe merely; for to perceive the beauty of a ſpreading oak, or of a flowing river, no more is required but ſingly an act of viſion. Relative beauty is accompanied with an act of underſtanding and reflection; for we perceive not the relative beauty of a fine inſtrument or engine until we learn its uſe and deſtination. In a word, intrinſic beauty is ultimate; and relative beauty is that of means relating to ſome good end or purpoſe. Theſe different beauties agree in one principal circumſtance, that both are equally perceived as belonging to the object; which will be readily admitted with reſpect to intrinſic beauty, but is not ſo obvious with reſpect to the other. The utility of the plough, for example, may make it an object of admiration or of deſire; but why ſhould utility make it beautiful? A natural propenſity of the human mind will explain this difficulty. By an eaſy tranſition of ideas, the beauty of the effect is transferred to the cauſe, and is perceived as one of the qualities of the cauſe. Thus a ſubject void of intrinſic beauty appears beautiful by its utility; a dwelling-houſe void of all regularity is however beautiful in the view of convenience; and the want of ſymmetry in a tree will not prevent its appearing beautiful, if it be known to produce good fruit. When theſe two beauties concur in any object, it appears delightful. Every member of the human body poſſeſſes both in a high degree.

With regard to the final cauſe of beauty, one thing is evident, that our reliſh of regularity, uniformity, proportion, order, and ſimplicity, contributes greatly to enhance the beauty of the objects that ſurround us, and of courſe tends to our happineſs. We may be confirmed in this thought, upon reflecting, that our taſte for theſe particulars is not accidental, but uniform and univerſal, making a branch of our nature. At the ſame time, regularity, uniformity, order, and ſimplicity, contribute each of them to readineſs of apprehenſion, and enable us to form more diſtinct ideas of objects than can be done where theſe particulars are wanting. In ſome inſtances, as in animals, proportion is evidently connected with utility, and is the more agreeable on that account.

Beauty, in many inſtances, promotes induſtry; and, as it is frequently connected with utility, it proves an additional incitement to enrich our fields and improve our manufactures. Theſe, however, are but ſlight effects, compared with the connections that are formed among individuals in ſociety by means of beauty. The qualifications of the head and heart are undoubtedly the moſt ſolid and moſt permanent foundations of ſuch connections: but, as external beauty lies more in view, and is more obvious to the bulk of mankind, than the qualities now mentioned, the ſenſe of beauty has a more extenſive influence in forming theſe connections. At any rate, it concurs in an eminent degree with mental qualifications, in producing ſocial intercourſe, mutual good will, and conſequently mutual aid and ſupport, which are the life of ſociety: it muſt not however be overlooked, that the ſenſe of beauty does not tend to advance the intereſts of ſociety, but when in a due mean with reſpect to ſtrength. Love, in particular, ariſing from a ſenſe of beauty, loſes, when exceſſive, its ſocial character: the appetite for gratification, prevailing over affection for the beloved object, is ungovernable, and tends violently to its end, regardleſs of the miſery that muſt follow. Love, in this ſtate, is no longer an agreeable paſſion: it becomes painful, like hunger or thirſt; and produceth no happineſs but in the inſtant of fruition. This ſuggeſts an important leſſon, that moderation in our deſires and appetites, which fits us for doing our duty, contributes at the ſame time the moſt to happineſs; even ſocial paſſions, when moderate, are more pleaſant than when they ſwell beyond proper bounds.

Human or Perſonal BEAUTY, may be conſidered under four heads, viz. Colour, Form, Expreſſion, and Grace; the two former being, as it were, the body, the two latter the ſoul, of beauty.

1. *Colour.* Although this be the loweſt of all the conſtituent parts of beauty, yet it is vulgarly the moſt ſtriking, and the moſt obſerved; for which there is a very obvious reaſon to be given; that "every body can ſee, and very few can judge;" the beauties of colour requiring much leſs of judgment than either of the other three. As to the colour of the body in general, the moſt beautiful perhaps that ever was imagined, was that which Apelles expreſſed in his famous Venus; and which, though the picture itſelf be loſt, Cicero has in ſome degree preſerved

to us, in his excellent deſcription of it. It was (as we learn from him) a fine red, beautifully intermixed and incorporated with white; and diffuſed, in its due proportions, through each part of the body. Such are the deſcriptions of a moſt beautiful ſkin, in ſeveral of the Roman poets; and ſuch often is the colouring of Titian, and particularly in his ſleeping Venus, or whatever other beauty that charming piece was meant to repreſent. The reaſon why theſe colours pleaſe ſo much, is not only their natural livelineſs, nor the much greater charms they obtain from their being properly blended together, but is alſo owing in ſome degree to the idea they carry with them of good health; without which all beauty grows languid and leſs engaging; and with which it always recovers an additional life and luſtre.

As to the colour of the face in particular, a great deal of beauty is owing to variety; that being deſigned by nature for the greateſt concourſe of different colours, of any part in the human body. Colours pleaſe by oppoſition; and it is in the face that they are moſt diverſified, and the moſt oppoſed. It is an obſervation apparently whimſical, but perhaps not unjuſt, that the ſame thing which makes a fine evening, makes a fine face; that is, as to the particular part of beauty now under conſideration. The beauty of an evening ſky, about the ſetting of the ſun, is owing to the variety of colours that are ſcattered over the face of the heavens. It is the fine red clouds, intermixed with white, and ſometimes darker ones, with the azure bottom appearing between them, which makes all that beautiful compoſition that delights the eye, and gives pleaſure to the heart. In the ſame manner, if we conſider ſome beautiful faces, we may obſerve it is much the ſame variety of colours which gives them their pleaſing look; which is ſo apt to attract the eye, and engage the heart. For all this ſort of beauty is reſolvable into a proper variation of fleſh-colour and red, with the clear blueneſs of the veins pleaſingly intermixed about the temples and cheeks, ſet off by the ſhades of full eye-brows, and of the hair, when it falls in a proper manner round the face. It is for this reaſon that the beſt landſcape-painters have been generally obſerved to chooſe the autumnal part of the year for their pieces, rather than the ſpring. They prefer the variety of ſhades and colours, though in their decline, to all their freſhneſs and verdure in their infancy; and think all the charms and livelineſs even of the ſpring more than compenſated by the choice, oppoſition, and richneſs, of colours, that appear almoſt on every tree in the autumn.

Though one's judgment is apt to be guided by particular attachments (and that more perhaps in this part of beauty than any other), yet the general perſuaſion ſeems well founded, that a complete brown beauty is really preferable to a perfect fair one; the bright brown giving a luſtre to all the other colours, a vivacity to the eyes, and a richneſs to the whole look, which one ſeeks in vain in the whiteſt and moſt tranſparent ſkins. Raphael's moſt charming Madonna is a brunette beauty; and his earlier Madonnas (or thoſe of his middle ſtyle) are generally of a lighter and leſs pleaſing complexion. All the beſt artiſts in the nobleſt age of painting, about Leo X.'s time, uſed this deeper and richer kind of colouring; and perhaps one might add, that the glaring lights introduced by Guido went a great way towards the declenſion of that art; as the enfeebling of the colours by Carlo Marat, or his followers, hath ſince almoſt completed the fall of it in Italy.

Under the idea of colour, it ſeems doubtful whether ſome things ought not to be comprehended which are not perhaps commonly meant by that name. As that apparent ſoftneſs or ſilkineſs of ſome ſkins; that Magdalen-look in ſome fine faces, after weeping; that brightneſs, as well as tint, of the hair; that luſtre of health that ſhines forth upon the features; that luminous appearance in ſome eyes, and that fluid fire or gliſtening in others: ſome of which are of a nature ſo much ſuperior to the common beauties of colour, that they make it doubtful whether they ſhould not have been ranked under a higher claſs, and reſerved for the expreſſion of the paſſions.

2. *Form.* The general cauſe of beauty in the form or ſhape in both ſexes is a proportion, or an union or harmony, in all parts of the body. The diſtinguiſhing character of beauty, in the female form, is delicacy and ſoftneſs; and, in the male, either apparent ſtrength or agility. The fineſt exemplars that can be ſeen for the former, is the Venus of Medicis; and, for the two latter, the Hercules Farneſe and the Apollo Belvidere. One of the old Roman poets, in ſpeaking of a very handſome man, who was candidate for the prize in ſome of the public games, ſays, that he was much expected and much admired by all the ſpectators at his firſt appearance; but that, when he flung off his robes, and diſcovered the whole beauty of his ſhape altogether, it was ſo ſuperior, that it quite extinguiſhed the beauties they had before ſo much admired in his face. Much the ſame effect may be felt in viewing the Venus of Medicis. If we obſerve the face only, it appears extremely beautiful; but, if we conſider all the other elegancies of her form, the beauty of her face becomes leſs ſtriking, and is almoſt loſt in her multiplicity of charms.

Whoever would learn what conſtitutes the beauty of each part of the human body, may find it laid down pretty much at large, by Felibien, in his *Entretiens*, vol. ii. p. 14-45, who deſcribes the beauty of the different parts of the female form as follows: The head ſhould be well rounded, and look rather inclining to ſmall than large. The forehead white, ſmooth, and open (not with the hair growing down too deep upon it); neither flat nor prominent, but, like the head, well rounded; and rather ſmall in proportion than large. The hair, either bright black or brown; not thin, but full and waving; and if it falls in moderate curls the better. The black is particularly uſeful for ſetting off the whiteneſs of the neck and ſkin. The eyes black, cheſnut, or blue; clear, bright, and lively; and rather large in proportion than ſmall. The eye-brows, well divided, rather full than thin; ſemicircular, and broader in the middle than at the ends; of a neat turn, but not formal. The cheeks ſhould not be wide; ſhould have a degree of plumpneſs, with the red and white finely blended together; and ſhould look firm and ſoft. The ear ſhould be rather ſmall than large; well folded, and with an agreeable tinge of red. The noſe ſhould be placed ſo as to divide the face into two equal parts; ſhould be of a moderate ſize, ſtrait, and well-ſquared; though ſometimes a little riſing in the noſe, which is but juſt perceivable, may give it a very graceful look. The mouth ſhould be ſmall; and the lips not of equal thickneſs: they ſhould be well turned, ſmall rather than groſs; ſoft, even to the eye; and with a living red in them. A truly pretty mouth is like a roſe-bud that is beginning to blow. The teeth ſhould be middle-ſized, white, well-ranged, and even. The chin of a moderate ſize; white, ſoft, and agreeably rounded. The neck ſhould be white, ſtraight, and of a ſoft, eaſy, and flexible, make, rather long than ſhort; leſs above, and increaſing gently towards the ſhoulders: the whiteneſs and delicacy of its ſkin ſhould be continued, or rather go on improving, to the boſom. The ſkin in general ſhould be white, properly tinged with red; with an apparent ſoftneſs, and a look of thriving health in it. The ſhoulders ſhould be white, gently ſpread, and with a much ſofter appearance of ſtrength than in thoſe of men. The arm ſhould be white, round, firm, and ſoft; and more particularly ſo from the elbow to the hand. The hand ſhould unite inſenſibly with the arm; juſt as it does in the ſtatue of the Venus of Medicis. They ſhould be long and delicate, and even the joints and nervous parts of them ſhould be without either any hardneſs or dryneſs. The fingers ſhould be fine, long, round, and ſoft; ſmall, and leſſening towards the tips; the nails long, rounded at the ends, and pellucid. The boſom ſhould be white and charming; and the breaſts equal in roundneſs, whiteneſs, and firmneſs; neither too much elevated nor too much depreſſed; riſing gently, and very diſtinctly ſeparated; in one word, juſt like thoſe of Venus of Medicis. The ſides ſhould be long, and the hips wider than the ſhoulders; and ſhould turn off as they do in the ſame Venus; and go down rounding and leſſening gradually to the knee. The knee ſhould be even, and well rounded; the legs ſtraight, but varied by a proper rounding of the more fleſhy part, and the feet finely turned, white, and little. Theſe conſtituent parts of beauty may be ſtudied in the fineſt pictures and ſtatues; for in life we commonly ſee but a ſmall part of the human body, moſt of it being either diſguiſed or altered by what we call dreſs.

3. *Expreſſion.* By this is meant the expreſſion of the paſſions; the turns and changes of the mind, ſo far as they are viſible to the eye by our looks or geſtures. Though the mind appears principally in the face and attitudes of the head; yet almoſt every part of the human body, on ſome occaſion or other, may become expreſſive. Thus, the languiſhing hanging of the arm, or the vehement exertion of it; the pain expreſſed by the fingers of one of the ſons in the famous group of Laocoon, and in the toes of the dying gladiator. But this again is often loſt among us by our dreſs; and indeed is of the leſs concern, becauſe the expreſſion of the paſſions paſſes chiefly in the face, which we (by good luck) have not as yet concealed.

The parts of the face in which the paſſions are moſt ſtrongly expreſſed, are the eyes and mouth; but from the eyes they diffuſe themſelves very forcibly about the eye-brows; as, in the other caſe, they appear often in the parts all round the mouth. Philoſophers may diſpute as much as they pleaſe about the ſeat of the ſoul; but, wherever it reſides, we are ſure that it ſpeaks in the eyes. Perhaps it is injuring the eye-brows, to make them only dependents on the eye; for they, eſpecially in lively faces, have, as it were, a language of their own; and are extremely varied, according to the different ſentiments and paſſions of the mind. Homer makes the eye-brows the ſeat of majeſty, Virgil of dejection, Horace of modeſty, and Juvenal of pride; and it is not certain whether every one of the paſſions be not aſſigned, by one or other of the poets, to the ſame part.

We may ſay, in general, that all the tender and kind paſſions add to beauty; and all the cruel and unkind ones add to deformity: and it is on this account that good nature may very juſtly be ſaid to be "the beſt feature even in the fineſt face." Pope has included the principal paſſion of each ſort in two very pretty lines:

Love, hope, and joy, fair pleaſure's ſmiling train;
Hate, fear, and grief, the family of pain.

The former of which naturally give an additional luſtre and enlivening to beauty; as the latter are too apt to fling a gloom and cloud over it. Yet in theſe, and all the other paſſions, moderation ought perhaps to be conſidered in a great meaſure the rule of their beauty, almoſt as far as moderation in actions is the rule of virtue. Thus an exceſſive joy may be too boiſterous in the face to be pleaſing; and a degree of grief in ſome faces, and on ſome occaſions, may be extremely beautiful. Some degrees of anger, ſhame, ſurpriſe, fear, and concern, are beautiful; but all exceſs is deformity. Dulneſs, auſterity, impudence, pride, affectation, malice, and envy, are always diſguſting.

The fineſt union of paſſions that can perhaps be obſerved in any face, conſiſts of a juſt mixture of modeſty, ſenſibility, and ſweetneſs; each of which when taken ſingly is very pleaſing: but when they are all blended together, in ſuch a manner as either to enliven or correct each other, they give almoſt as much attraction as the paſſions are capable of adding to a very pretty face. The prevailing paſſion in the Venus of Medicis is modeſty: it is expreſſed by each of her hands, in her looks, and in the turn of her head. And it may be queſtioned, whether one of the chief reaſons why ſide-faces pleaſe more than full ones, be not from the former having more of the air of modeſty than the latter. This at leaſt is certain, that the beſt artiſts uſually chooſe to give a ſide-face rather than a full one; in which attitude, the turn of the neck too has more beauty, and the paſſions more activity and force. Thus, as to hatred and affection in particular, the look that was formerly ſuppoſed to carry an infection with it from malignant eyes, was a ſlanting regard; like that which Milton gives to Satan, when he is viewing the happineſs of our firſt parents in Paradiſe; and the faſcination, or ſtroke of love, is moſt uſually conveyed, at firſt, in a ſide-glance. It is owing to the great force of equanimity which attends all the kinder paſſions, "that lovers do not only ſeem, but are really, more beautiful to each other than they are to the reſt of the world;" becauſe, when they are together, the moſt pleaſing paſſions are more frequently exerted in each of their faces than they are in either before the reſt of the world. There is then, as a certain French writer well expreſſes it, "a ſoul upon their countenances," which does not appear when they are abſent from each other; or even when they are together converſing with other perſons, that are indifferent to them, or lay a reſtraint upon their minds. Upon the whole, it may be laid down as an axiom, that the chief rule of the beauty of the paſſions is moderation; and that the part in which they appear moſt ſtrongly is the eyes. It is there that love holds all his tendereſt language: it is there that virtue commands, modeſty charms, joy enlivens, ſorrow engages, and inclination fires the hearts of the beholders: it is there that even fear, and anger, and confuſion, can be charming. But all theſe, to be charming, muſt be kept within their due bounds and limits; for, too ſullen an appearance of virtue, a violent ſwell of paſſion, a ruſtic and overwhelming modeſty, a deep ſadneſs, or too wild and impetuous a joy, become all either oppreſſive or diſagreeable.

4. *Grace*, the finiſhing and nobleſt part of beauty, which every body is accuſtomed to ſpeak of as a thing inexplicable; and in a great meaſure perhaps it is ſo. We know that the ſoul is, but we ſcarcely know what it is: every judge of beauty can point out grace; but no one ſeems even yet to have fixed upon its definition. Grace often depends on ſome very little incidents in a fine face; and in actions it conſiſts more in the manner of doing things than in the things themſelves. It is perpetually varying its appearance, and is therefore much more difficult to be conſidered than in any thing fixed and ſteady. While we look upon the object, it ſteals from under the eye of the obſerver; and is ſucceeded perhaps by another that flits away as ſoon, and as imperceptibly. It is on this account that grace is better to be ſtudied in Corregio's, Guido's, and Raphael's, pictures, than in real life. But, though we cannot preciſely ſay what grace is, we may nevertheleſs point out the parts and things in which it is moſt apt to appear. The chief dwelling-place of grace is about the mouth; though at times it may viſit every limb or part of the body. But the mouth is the chief ſeat of grace, as much as the chief ſeat for the beauty of the paſſions is in the eyes. Thus, when the French uſe the expreſſion of *une bouche fort gracieuſe*, they mean it properly of grace: but, when they ſay *des yeux tres gracieux*, it then falls to the ſhare of the paſſions; and it means kind or favourable. In a very graceful countenance, by which we do not ſo much mean a majeſtic as a ſoft and pleaſing one, there is now and then a certain deliciouſneſs that almoſt always lives about the mouth, in ſomething not enough to be called a ſmile, though an approach towards one, which varies gently about the different lines, and perhaps ſometimes diſcovers a little dimple, that, after juſt forming, diſappears and appears again by fits.

The grace of attitudes may belong to the poſition of each part, as well as to the carriage or diſpoſition of the whole body: but how much more it belongs to the head than to any other part may be ſeen in the pieces of the moſt celebrated painters; and particularly in thoſe of Guido, who has been rather too laviſh in beſtowing this beauty on almoſt all his fine women; whereas nature has given it in ſo high a degree but to very few. The turns of the neck are extremely capable of grace, and are very eaſy to be obſerved, though very difficult to be accounted for. How much of this grace may belong to the arms and feet, as well as to the neck, and head, may be ſeen in dancing. But it is not only in genteel motions that a very pretty woman will be graceful; and Ovid (who was ſo great a maſter in all the parts of beauty) had very good reaſon for ſaying, That when Venus, to pleaſe her gallant, imitated the hobbling gait of her huſband, her very lameneſs had a great deal of prettineſs and grace in it. "Every motion of a graceful woman (ſays another writer of the ſame age) is full of grace." She deſigns nothing by it perhaps, and may even not be ſenſible of it herſelf: and indeed ſhe ſhould not be ſo too much; for the moment that any geſture or action appears to be affected, it ceaſes to be graceful. Horace and Virgil ſeem to extend grace ſo far as to the flowing of the hair, and Tibullus even to the dreſs of his miſtreſs; but then he aſſigns it more to her manner of putting on and appearing in whatever ſhe wears than to the dreſs itſelf. It is true, there is another wicked poet, who has ſaid (with much leſs decency) "that dreſs is the better half of the woman:"

——Pars minima eſt ipſa puella ſui. *Ovid.*

There are two very diſtinct (and, as it were, oppoſite) ſorts of grace; the majeſtic and the familiar. The former belongs chiefly to the very *fine* women, and the latter to the very *pretty* ones: *that* is more commanding, and *this* the more delightful and engaging. The Grecian painters and ſculptors uſed to expreſs the former moſt ſtrongly in the looks and attitudes of their Minervas, and the latter in thoſe of Venus. Xenophon, in his Choice of Hercules (or at leaſt the excellent tranſlator of that piece), has made juſt the ſame diſtinction in the perſonages of Wiſdom and Pleaſure; the former of which he deſcribes as moving on to that young hero with the majeſtic ſort of grace; and the latter with the familiar:

Graceful, yet each with different grace they move;
This ſtriking ſacred awe, that ſofter winning love.

No poet ſeems to have underſtood this part of beauty better than Milton. He ſpeaks of theſe two ſorts of grace very diſtinctly; and gives the majeſtic to Adam, and the familiar to Eve:

For contemplation he, and valour, form'd;
For ſoftneſs ſhe, and ſweet attractive grace. B. iv. 298.

Though grace is ſo difficult to be accounted for in general, yet there are two particular things which ſeem to hold univerſally in relation to it. The firſt is, "That there is no grace without motion;" that is, without ſome eaſy or pleaſing movement, either of the whole body or of ſome limb, or at leaſt of ſome feature. And it may be hence that lord Bacon calls grace by the name of decent motion; juſt as if they were equivalent terms: "In beauty, that of favour is more than that of colour; and that of gracious and decent motion, more than that of favour." The ſecond obſervation is, "That there can be no grace with impropriety;" or, in other words, that nothing can be graceful that is not adapted to the character of the perſon. The graces of a little lively beauty would become ungraceful in a character of majeſty; as the majeſtic airs of an empreſs would quite deſtroy the prettineſs of the former. The vivacity that adds a grace to beauty in youth would give an additional deformity to old age; and the very ſame airs which would be charming on ſome occaſions may be quite ſhocking when extremely miſplaced. Whatever are the cauſes of it, this is certain, that grace is the chief of all the conſtituent parts of beauty; and ſo much ſo, that it ſeems to be the only one which is abſolutely and univerſally admired: all the reſt being only relative. One may love a little woman, and another a large one, beſt; a perſon of a mild temper will be fond of the gentler paſſions in the face, and one of a bolder caſt may chooſe to have more vivacity and more vigorous paſſions expreſſed there: but grace is found in few, and is pleaſing to all. Grace, like poetry, muſt be born with a perſon, and is never wholly to be acquired by art. The moſt celebrated of all the ancient painters was Apelles; and the moſt celebrated of all the modern Raphael: and it is remarkable, that the diſtinguiſhing character of each of them was grace. Indeed, that alone gave them ſo high a pre-eminence over all their competitors.

Although people in general are more capable of judging right of beauty, than they are of moſt other things; yet there are a great many cauſes apt to miſlead the generality in their judgments of it. Thus, if the affection is entirely engaged by any one object, a man is apt to allow all perfections to that perſon, and very little in compariſon to any body elſe; or, if they ever commend others highly, it is for ſome circumſtance in which they bear ſome reſemblance to their favourite object. Again, people are very often miſled in their judgments, by a ſimilitude either of their own temper or perſonage in others. It is hence that a perſon of a mild temper is more apt to be pleaſed with the gentler paſſions in the face of his miſtreſs; and one of a very lively turn would chooſe more of ſpirit and vivacity in his; that little people are inclined to prefer pretty women, and larger people majeſtic ones; and ſo on in a great variety of inſtances. This may be called falling in love with ourſelves at ſecond hand; and ſelf-love (whatever other love may be) is ſometimes ſo falſe-ſighted, that it may make the moſt plain and even the moſt diſagreeable things ſeem beautiful and pleaſing. Sometimes an idea of uſefulneſs may give a turn to our ideas of beauty; as the very ſame things are reckoned beauties in a coach-horſe which would be ſo many blemiſhes in a race-horſe. But the greateſt and moſt general miſleader of our judgments, in relation to beauty, is cuſtom, or the different national taſtes for beauty, which turn chiefly on the two lower parts of it, colour and form. It was from the moſt common ſhape of his country-women, that Rubens, in his pictures, delights ſo much in plumpneſs; not to give it a worſe name. Whenever he was to repreſent the moſt beautiful women, he was ſure to give them a good ſhare of corpulence. His very graces are all fat. But this may go much farther than mere bulk; it will reach even to very great deformities; which ſometimes grow into beauties, where they are habitual and general. One of our own countrymen (who was a particular handſome man) in his travelling over the Alps, was detained by a fever, in one of thoſe villages where every grown perſon has that ſort of ſwelling in the neck which they call *goitres*; and of which ſome are very near as big as their heads. The firſt Sunday that he was able, he went to their church to return thanks to heaven for his recovery. Every body's eyes were fixed upon him: and, as they went out, they exclaimed, loud enough for him to hear them, "O how completely handſome would that man be, if he had but a *goitre!*"

In ſome of the military nations of Africa, no man is reckoned handſome that has not five or ſix ſcars in his face. This cuſtom might poſſibly at firſt be introduced to make them leſs afraid of wounds in that part in battle: but it grew at laſt to have ſo great a ſhare in their idea of beauty, that they now cut and ſlaſh the faces of their little infants, in order to give them thoſe graces, when they are grown up, which are ſo neceſſary to win the hearts of their miſtreſſes; and which, with the aſſiſtance of ſome jewels or ingots of gold in their noſes, ears, and lips, muſt certainly be irreſiſtible to the ladies of that country. It may however be remarked, that the covering each cheek all over with a burning ſort of red colour, has long been looked upon in *this* country, to be neceſſary to render a fine lady's face completely beautiful, as theſe ſcars are for the beaux in Africa. The prince of Anamaboo, who had been ſo long and ſo much uſed to the European complexion, yet ſaid of a certain lady, a little before he left London, that "ſhe would be the moſt charming woman in the world, if ſhe were but black." And, in an account of ſome of the fartheſt travels that any of our people have made up the river Gambia, we are informed, that, when they came to ſome villages where probably no Europeans had ever been before, the women ran frightened and ſcreaming away from them, as taking them to be devils, merely on account of the *whiteneſs* of their complexion! We cannot but obſerve, however, that heaven is very good and merciful to mankind, even in making us capable of all this variety of miſtakes. If every perſon judged exactly right of beauty, every man that was in love in ſuch a diſtrict would be in love with the ſame woman; the ſuperior beauty of each hamlet would be the object of the hate and malice of all the reſt of her own ſex in it, and the cauſe of diſſenſion and murders among all of the other. If this would hold in one town, it would hold for the ſame reaſon in every other town or diſtrict; and of courſe there would be nothing more wanting than this univerſal right judgment of beauty, to render the whole world one continued ſcene of blood and miſery. But, ſince fancy has more to do with beauty than judgment, there is an infinity of taſtes, and conſequently an infinity of beauties; for to the mind of the lover, ſuppoſed beauty is full as good as real. Every body may thus chooſe out what happens to hit his own turn and taſte. This increaſes the extent of beauty vaſtly, and makes it in a manner univerſal: for there are but few people in compariſon that are truly beautiful; but every body may be beautiful in the imagination of ſome one or other. Some may delight in a black ſkin, and others in a white; ſome in a gentle natural roſineſs of complexion, others in a high exalted artificial red; ſome nations in waiſts diſproportionably large, and other in waiſts as diſproportionably ſmall. In ſhort, the moſt oppoſite things may each be looked upon as beautiful in different countries, or by different people in the ſame country; and hence univerſal gratification and content may ariſe in the affairs of love.

"*Beauty* is no inheritance." H. Ger. *ſchoenheit iſt kein erb-guth.* Or, *Schoenheit verliehrt ſich bald.* 'Beauty is but a bloſſom, and ſoon fades.' The inſtability of beauty ought to be a leſſon to the fair ſex, not to fix all their hopes and views on the power or ſucceſs of that alone, as but too many do, but conſtantly to endeavour at ſuch other qualities as are more durable, and will ſtand them in ſtead, when their beauty is no more.

Heavenly BEAUTY has been repreſented by an exceeding fine woman naked, ſtanding upright, with her hand reaching the clouds, and encompaſſed with rays, holding in one hand a lily, and in the other a cœleſtial globe.

To BEAUTY, *v. a.* To adorn; to beautify; to embelliſh: *not in uſe.*

BEAUTY-SPOT, *ſ.* [from *beauty* and *ſpot.*] A ſpot placed to direct the eye to ſomething elſe, or to heighten ſome beauty; a foil; a patch.—The filthineſs of ſwine makes them the *beauty-ſpot* of the animal creation. *Grew.*

BEAUVAIS', a city of France, and capital of the department of the Oiſe, ſituated on the Therin. Before the revolution, it was the capital of the Beauvaiſis, and the ſee of a biſhop. It was beſieged by the Engliſh without ſucceſs in the year 1443; and by the duke of Burgundy, in 1472, to as little purpoſe, though at the head of 80,000 men. In the latter ſiege, the women of Beauvais gave great proofs of their courage under the conduct of Jane de Hachett, whoſe portrait is preſerved in the Town-houſe; and in the memory of their brave defence, the women walk firſt in a proceſſion, kept annually on the 10th of July. The cathedral is much admired; beſides this this there are ſix collegiate, and three pariſh, churches: ſeven poſts ſouth of Amiens, and nine north of Paris. Lat. 49. 25. N. lon. 19. 45. E. Ferro.

BEAUVAI'SIS, before the revolution, a ſmall province of France, bordered on the north by Picardy, on the weſt by Vexin-Normand, on the ſouth by Vexin François, and on the eaſt by Senlis; the country is fertile, and was one of the firſt conquered by the French. Beauvais the capital.

BEAUVAL', a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Doulens: one league ſouth of Doulens.

BEAUVIL'LE, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Valence: three leagues and a half north of Valence, and four eaſt-north-eaſt of Agen. Lat. 44. 17. N. lon. 18. 33. E. Ferro.

BEAUVOIR', a town of France, in the department of Vendée, and chief place of a canton, in the diſtrict of Challans: two leagues and a half north-weſt of Challans.

BEAUVOIR, a town of France, in the department of the Iſere, and diſtrict of St. Marcelin: five leagues ſouth-weſt of Grenoble, and two eaſt-ſouth-eaſt of St Marcelin.

BEAUVOIR SUR NIORT, a town of France, in the department of the two Sevres, and chief place of a conton, in the diſtrict of Niort: two leagues and a half S. of Niort.

BEAUZAT', a town of France, in the department of the Rhone and Loire: one league and a half ſouth-weſt of Moniſtrol.

BEAUZE'E, a town of France, in the department of the Meuſe, and chief place of a canton, in the diſtrict of Verdun: three leagues ſouth-ſouth-eaſt of Clermont en Argonne, and four and a half ſouth-ſouth-weſt of Verdun.

BEBE, a town of Egypt: eight miles S. of Beniſeuf.

BEBENOW'A, a town of Poland, in the Palatinate of Braclaw: fourteen miles ſouth-eaſt of Braclaw.

BE'BRE, a river of France, which runs into the Loire, oppoſite Bourbon Lancy.

BEBRY'CIA, the ancient name of Bithynia, ſo called from the Bebryces its inhabitants. The Bebryces were afterwards driven out by the Thracians, viz. the Bithyni and Thyni; from whom, in proceſs of time, the country took the name of BITHYNIA.

BEBRY'CIANS, a people who left Thrace to ſettle in Bithynia; under pretence of giving ſports and diverſions to the public, they drew the people into a foreſt, and maſſacred them in a horrible manner. Amycus, their king, was ſlain by Pollux and the Argonauts, whom they endeavoured to draw into a ſnare. *Strabo.*

BEC (Le), a town of France, in the department of the Eure: nine leagues weſt-ſouth-weſt of Rouen.

BEC CRESPIN, a town of France, in the department of the Lower Seine: three leagues eaſt from Havre.

BECABUN'GA, *ſ.* in botany. See VERONICA.

BECAFI'CO, *ſ.* [*becafigo*, Span.] A bird like a nightingale, feeding on figs and grapes; a fig-pecker:

The robin red-breaſt, till of late, had reſt,
And children ſacred held a martin's neſt;
Till *becaficos* ſold ſo dev'liſh dear,
To one that was, or would have been, a peer. *Pope.*

BE'CAH, or BEKAH, *ſ.* A Jewiſh coin, being half a ſhekel. In Dr. Arbuthnot's table of reductions, the bekah amounts to $13\frac{11}{16}$d. in Dr. Prideaux's computation to 1s. 6d. Every Iſraelite paid an hundred bekahs a head annually for the ſupport of the temple.

To BECAL'M, *v. a.* [from *calm.*] To ſtill the elements. To keep a ſhip from motion.—A man *becalmed* at ſea, out of ſight of land, in a fair day, may look on the ſun, or ſea, or ſhip, a whole hour, and perceive no motion. *Locke.*—To quiet the mind:

Soft whiſp'ring airs, and the lark's mattin ſong,
Then woo to muſing, and *becalm* the mind
Perplex'd with irkſome thoughts. *Philips.*

To BECALM and *to calm* differ in this, that *to calm* is to ſtop motion, and *to becalm* is to with-hold from motion.

BECA'ME. The preterite of BECOME; which ſee.

BECAU'SE, *conjunct.* [from *by* and *cauſe.*] For this reaſon that; on this account that; for this cauſe that. It makes the firſt part of an illative propoſition, either expreſsly or by implication, and is anſwered by *therefore*; as, *I fled* becauſe *I was afraid*; which is the ſame with, *becauſe* I was afraid, *therefore* I fled. It has, in ſome ſort, the force of a *prepoſition*; but, becauſe it is compounded of a noun, has *of* after it.—Infancy demands aliment, ſuch as lengthens fibres without breaking, *becauſe of* the ſtate of accretion. *Arbuthnot.*

BEC'CA, *ſ.* in the materia medica of the ancients, a name given to a fine kind of reſin collected from the turpentine and maſtich-trees of Greece and Syria, and mixed together for uſe. It was much eſteemed formerly, and not only uſed in the country where it was produced, but carried in great quantities to Mecca, and other parts of the Turkiſh dominions, where it was valued at a very great rate.

BEC'CLES, a market-town in Suffolk, fifteen miles from Yarmouth, ſix from Bungay, ten from Loweſtoffe, and 108 from London. This town, which is the third in the county, has an elegant large church, and is remarkable for a noble tower unconnected with it, in which is a fine ring of ten bells. Here are alſo two diſſenting meeting-houſes. The ruins of another church, called *Ingate church*, are to be ſeen here, which was formerly the pariſh-church to the town. This town conſiſts of ſeveral ſtreets, which centre in a ſpacious area, were the market is kept. The church-yard affords one of the fineſt proſpects in Europe, ſituate on the banks of the river Waveney, commanding the moſt pictureſque and expanſive views: the meanderings of the water have a charming effect. It is a town corporate, (but ſends no member to parliament,) conſiſting of a portreeve and thirty-ſix others, who are diſtinguiſhed by the name of the *twelves* and the *twenty-fours*. The office of portreeve is holden in rotation by the twelves. This town received 20,000l. damage by fire on the 29th of November 1586, more than eighty houſes being deſtroyed. Here is a good grammar-ſchool, (nominally a free one,) founded in 1712, by Dr. Fauconberg, who by his will left certain lands, lying in Corton and the towns adjoining, near Loweſtoffe, for a clergyman nominated by the truſtees to qualify youth for the univerſity. Alſo a free Engliſh ſchool, founded in 1631, by Sir John Leman, Knt. and alderman of the city of London: the number of boys forty-eight; the maſter and uſher are elected by a part of the corporation who are the truſtees. The market-day is Saturday, and is well ſupplied with every neceſſary. Here are three fairs annually, viz. on Holy Thurſday, May 2, and October 2.

BECE'DE (La), a town of France, on the Aude, and chief place of a canton, in the diſtrict of Caſtelnaudary: one league and a half north of Caſtelnaudary, and one and a quarter north-north-weſt St. Papoul.

BECHAN', a river of North Wales, which runs into the Severn: three miles weſt-ſouth-weſt Montgomery.

To BECHAN'CE, *v. n.* [from *be* and *chance.*] To befal; to happen to: a word proper, *but now in little uſe.*—My ſons, God knows what has *bechanced* them. *Shakeſpeare.*

BE'CHER (John Joachim), a celebrated chemiſt, was born at Spires, in 1645. He was connected with the moſt learned men in Europe; and the emperor, the electors of Mentz and Bavaria, and other perſons of high rank, furniſhed him with the means of making experiments in mathematics, natural philoſophy, medicine, and chemiſtry. He was invited to Vienna, where he contributed greatly to the eſtabliſhment of ſeveral manufactures, a chamber of commerce, and an India company; but the jealouſy of ſome of the miniſters occaſioned his diſgrace and ruin. He was not leſs unhappy at Mentz, Munich, and Wurtzburg; which determined him to go to Haerlem, where he invented a machine for working a great quantity of ſilk in a little time, and with few hands: but new misfortunes made him come o England, and he died at London in 1685. He wrote, 1. Phyſica Subterranea, which was reprinted at Leipſic in 1703, and in 1739, in 8vo. with a ſmall treatiſe, by E. Stahl, intitled Specimen Becherianum. 2. Experimentum chymicum novum, 8vo. 3. Character pro Notitia Linguarum univerſali. 4. Inſtitutiones Chymicæ, ſeu Manuductia ad Philoſophiam Hermeticam, 4to. 5. Inſtitutiones Chymica prodromæ, 12mo. 6. Experimentum novum ac curioſum de Minera arenaria perpetua, &c.

BECHE'RE GOL, a lake of Aſiatic Turkey, in the province of Caramania: forty miles weſt of Cogni.

BE'CHEREL, a town of France, in the department of the Ille and Villaine, and chief place of a canton, in the diſtrict of Montfort: three leagues north of Montfort, and four and three quarters north-weſt of Rennes.

BE'CHIN, a city of Bohemia, and capital of a circle to which it gives name. It was taken and burned by general Buquoi, in 1619. In this circle there are ſeveral medicinal ſprings, and mines of ſalt, and ſome gold is found in the river Luſchnitz; it was dreadfully ravaged in the thirty years' war. Bechin, the capital, is ſituated on the Luſchnitz: fifty miles ſouth of Prague, and forty-eight ſouth-eaſt of Pilſen. Lat. 49. 11. N. lon. 32. 10. E. Ferro.

BE'CHICS, *ſ.* [βεχικα, of βηξ, a cough.] Medicines proper for relieving coughs.

To BECK, *v. n.* [*beacn*, Sax. *bec*, Fr. head.] To make a ſign with the head.

To BECK, *v. a.* To call or guide, as by a motion of the head:

Bell, book, and candle, ſhall not drive me back,
When gold and ſilver *beck* me to come on. *Shakeſpeare.*

BECK, *ſ.* A ſign with the head; a nod of command:

The menial fair, that round her wait,
At Helen's *beck* prepare the room of ſtate. *Pope.*

BECK, or BEKE, is a word which imports a ſmall ſtream of water iſſuing from ſome burn or ſpring. Hence *Hell-becks*, little brooks in the rough and wild mountains about Richmond near Lancaſhire, ſo called on account of their ghaſtlineſs and depth. *Beck* is alſo uſed among us in the compoſition of names originally ſituated on rivulets: hence Walbeck, Bournbeck, &c. The Germans uſe *beck* in the ſame ſenſe.

BECK (David), an eminent portrait-painter, was born at Arnheim in Guelderland in 1621, and became a diſciple of Vandyck; from whom he acquired a fine manner of penciling, and that ſweet ſtyle of colouring which was peculiar to that great maſter. He was portrait-painter and chamberlain to Chriſtina queen of Sweden; and, by her recommendation, moſt of the illuſtrious perſons in Europe ſat to him for their pictures. He was agreeable, handſome, and polite, and lived in the higheſt favour with his royal miſtreſs: but, having an earneſt deſire to viſit his friends in Holland, and leaving the court of Sweden much againſt the queen's inclination, ſhe apprehended that he intended never to return; and, as he died ſoon after at the Hague, it was ſuſpected that he was poiſoned. This happened in 1656, when he was only thirty-five years of age.

BEC'KEM, or BECKUM, a town of Germany, in the circle of Weſtphalia, and biſhopric of Munſter, ſituated on the Werſe: ſeventeen miles S. S. E. of Munſter.

BEC'KET (Thomas), lord chancellor of England, and archbiſhop of Canterbury, in the 12th century. The ſtory of his birth is as extraordinary as that of his life. It is related, that his father Gilbert Becket, ſome time ſheriff of London, went on a pilgrimage to Jeruſalem, where being taken and made a ſlave, by the Saracens, his maſter's daughter fell in love with him; and, when he made his eſcape, ſhe followed him to London. So ſingular an inſtance of heroic affection ſtruck him; and after conſulting with ſome biſhops, he baptized her by the name of *Matilda*, and married her; from which marriage proceeded the haughty Thomas Becket. Being raiſed to the archbiſhopric, he began the great diſpute between the crown and the mitre, and ſided with the pope: at which Henry II. was greatly offended; and, calling an aſſembly of the biſhops at Weſtminſter, offered ſix articles againſt papal encroachments, which he urged Becket to aſſent to. Becket, at the importunities of ſeveral lords, ſigned them; but relapſing, he was ordered to be tried as a traitor; upon which he fled into Flanders. The king baniſhed all his relations, and Becket, in return, excommunicated all his oppoſers. At laſt, after ſeven years, by the interceſſion of the French king and the pope, he returned; but refuſed to abſolve thoſe he had excommunicated: whereupon the king grew enraged; and is reported to have dropped theſe expreſſions: "That he was an unhappy prince, who maintained a great number of lazy inſignificant perſons about him, none of whom had gratitude or ſpirit enough to revenge him on a ſingle inſolent prelate, who gave him ſo much diſturbance." Theſe words of the king put four gentlemen of his court on forming a deſign againſt the archbiſhop's life, which they executed in the cathedral of Canterbury, on the 29th of December, 1171. They endeavoured to drag him out of the church; but, finding they could not do this without difficulty, they killed him there. The aſſaſſins, being afraid they had gone too far, durſt not return to the king's court at Normandy, but retired to Knareſborough in Yorkſhire, where every body avoided their company. They then went to Rome, and being admitted to penance by pope Alexander III. they travelled to Jeruſalem; where, according to the pope's order, they ſpent their lives in penitential auſterities, and died in the Black Mountain. They were buried at Jeruſalem, without the church door belonging to the Templars. King Henry affected to be much diſturbed at the news of Becket's death, and diſpatched an embaſſy to Rome to clear himſelf from the imputation of being the cauſe of it. Immediately all divine offices ceaſed in the church of Canterbury, for a whole year, excepting nine days; at the end of which, by order of the pope, it was re-conſecrated. Two years after, Becket was canonized; and the following year, Henry returned to England, went to Canterbury, where he did penance as a teſtimony of his regret for the murder of Becket. When he came within ſight of the church where the archbiſhop was buried, he alighted off his horſe, and walked barefoot, in the habit of a pilgrim, till he came to Becket's tomb; where, after he had proſtrated himſelf and prayed for a conſiderable time, he ſubmitted to be ſcourged by the monks. In 1221 Becket's body was taken up, fifty years after his murder, in the preſence of Henry III. and a great concourſe of the nobility and others, and depoſited in a rich ſhrine, erected at the expence of Stephen Langton archbiſhop of Canterbury, which was ſoon viſited from all parts, and enriched with the moſt coſtly gifts and offerings; and the miracles ſaid to be wrought at his tomb were ſo numerous, that Gervaſe of Canterbury tells us, there were two large volumes of them kept in that church. The monks uſed to raiſe his body every year; and the day on which this ceremony was performed, which was called the *day of his tranſlation*, was a general holiday: every fiftieth year a jubilee was celebrated to his honour, which laſted fifteen days: plenary indulgences were granted to all that viſited his tomb; and 100,000 pilgrims have been regiſtered at a time in Canterbury. The devotion towards him had quite effaced in that town the adoration of the Deity; nay, even that of the Virgin. At God's altar, for inſtance, there were offered in one year 3l. 2s. 6d. at the Virgin's, 63l. 5s. 6d. at St. Thomas's, 832l. 12s. 3d. But next year the diſproportion was ſtill greater: there was not a penny offered at God's altar; the Virgin's gained only 4l. 1s. 8d. but St. Thomas's had got for his ſhare 954l. 6s. 3d. Louis VII. of France had made a pilgrimage to this miraculous tomb, and beſtowed on the ſhrine a jewel which was eſteemed the richeſt in Chriſtendom. Henry VIII. to whom it may eaſily be imagined how obnoxious a ſaint of this character behoved to appear, not only pillaged the rich ſhrine dedicated to St. Thomas, but made the ſaint himſelf be cited to appear in court, and be tried and condemned as a traitor: he ordered his name to be ſtruck out of the calendar; the office for his feſtival to be expunged from all breviaries; and his bones to be burnt, and the aſhes thrown into the air. From the late profeſſor Warton we learn, that Becket was the ſubject of poetical legends. The Lives of the Saints in verſe, in Bennet's library, No. 165, contain his martyrdom and tranſlation. This manuſcript is ſuppoſed to be of the 14th century. The ſame ingenious writer informs us, from Peter de Blois, that the palace of Becket was perpetually filled with biſhops highly accompliſhed in literature, who paſſed their time in reading, diſputing, and deciding important queſtions of the ſtate.

BECK'FORD (William), the greateſt proprietor in the Weſt Indies; who, for his high political abilities, was twice elected into the important office of lord mayor of London, viz. in 1763 and 1770. He was alſo one of the repreſentatives in parliament for the city; in which truſt he acquitted himſelf with great integrity and independence in thoſe times when the famous adminiſtration of lord North was formed; an adminiſtration which exerciſed the powers of government for twelve years, and which, not deriving a ſingle ray of foreſight from the errors of their predeceſſors, by their raſh and impolitic meaſures ſevered America from the parent country, and ſhook the mighty and majeſtic fabric of the Britiſh empire to its very foundation. It was at this period, that alderman Beckford ſtood forward, in his public capacity, and in private life, the firm and invincible champion of the liberties of his country. Upon every queſtion in parliament, which involved the three conſtitutional eſtates of king, lords, and commons, Mr. Beckford was not only ſtrenuous in ſupport of them, but endeavoured to conciliate the views of all parties to the ſame laudable end. It was on the cloſe of a debate of this nature, that he invited both houſes of parliament to a public dinner at the Manſion-houſe; an inſtance of liberality which, from its magnitude and novelty, attracted the admiration of the world. This ſumptuous entertainment was given on the 22d of March 1770; on which occaſion the Manſion-houſe was decorated with a ſplendour which ſurpaſſes all deſcription. The company went in proceſſion through the city from both houſes of parliament. Among the noble perſons preſent were the dukes of Richmond, Bolton, Devonſhire, Portland, Mancheſter, Northumberland; marquiſſes Rockingham and Granby; earls Percy, Huntingdon, Suffolk, Berkely, Abingdon, Plymouth, Scarborough, Albemarle, Coventry, Tankerville, Effingham, Fitzwilliam, Temple, Beſborough, Shelburne, Cork, Donnegal, Verney, Ludlow, Fife; lords Robert Sutton, George Cavendiſh, Frederic Cavendiſh, John Cavendiſh, Abergavenny, Craven, King, Monſon, Forteſcue, Hyde, Lyttleton, Camden, Archer, Germaine; viſcounts Hereford, Torrington, Wenman, and Downe; beſides a great number of other noble and independent members of both houſes of parliament. The prominent political feature of this meeting may be gathered from the following toaſts given by Mr. Beckford on the occaſion. "May true religion and virtue ever flouriſh and abound.—Health and long life to our ſovereign lord, the king.—Health and long life to our gracious queen, and all the royal family.—May happineſs and glory be the portion of his majeſty, of his family, and people.—May juſtice and wiſdom govern the public counſels.—May the fundamental liberties of England be ever revered.—May the noble aſſertors and protectors of Engliſh liberty be had in perpetual honour.—May the violators of the right of election, and of petition againſt grievances, be for ever confounded.—May the wicked be taken from before the king, that his throne may be eſtabliſhed in righteouſneſs.—May the ſpirit of the conſtitution prevail over ſecret and undue influence.—May perpetual union, ſocial liberty, and univerſal juſtice, prevail, and render happy the whole Britiſh empire." We have been thus minute, on purpoſe to record the ſingularity as well as dignity of this magnificent banquet. We underſtand that it was farther the intention of the liberal founder of the feaſt, to prevail on every one of his gueſts to ſign an engagement, whereby they ſhould bind themſelves during life to ſpeak and act in parliament from the pure dictates of conſcience, and inviolably maintain the indefeaſible rights of the three branches of the conſtitution, without views of ambition or aggrandizement, and uninfluenced by place, penſion, promotion, or any perſonal or pecuniary advantage whatever; from which if they apoſtatized, they would thus ſign their own infamy, and for ever loſe the reſpect of the public. When this propoſition was brought forward, it was oppoſed by the late marquis

J. Chapman sculp.

WILLIAM BECKFORD ESQ^{R}.

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marquis of Rockingham, and in conſequence fell to the ground.

During the ſecond period, in which Mr. Beckford filled the chair of the chief magiſtracy, it fell to his lot, at three ſeveral times, to approach the throne, in order to deliver a petition, remonſtrance, and addreſs, from the citizens and livery of London; praying for a redreſs of grievances, for a diſſolution of the then parliament, and for the removal of evil-minded perſons from the cabinet and counſels of his majeſty. The third addreſs lamented in very ſtrong terms the diſpleaſure his majeſty had expreſſed at the ſubſtance and prayer of their former remonſtrances and petitions; to which however they ſtill reſolved to adhere, and again renewed their prayer for a diſſolution of parliament, and for a change of men and meaſures. To this laſt petition, which was delivered on the 23d of May 1770, his majeſty, being ſeated on the throne, gave the following anſwer:

"I ſhould have been wanting to the public as well as to myſelf, if I had not expreſſed my diſſatisfaction at the late addreſs: my ſentiments on that ſubject continue the ſame; and I ſhould ill deſerve to be conſidered as the father of my people, if I could ſuffer myſelf to be prevailed upon, to make ſuch an uſe of my prerogative, as I cannot but think inconſiſtent with the intereſt, and dangerous to the conſtitution, of the kingdom."

Mr. Beckford, in his official capacity, with great preſence of mind and fluency of language, then replied to the king in theſe words:

"Moſt gracious ſovereign! Will your majeſty be pleaſed ſo far to condeſcend, as to permit the mayor of your loyal city of London, to declare in your royal preſence, on behalf of his fellow-citizens, how much the bare apprehenſion of your majeſty's diſpleaſure would at all times affect their minds? The declaration of that diſpleaſure has filled them with inexpreſſible anxiety, and with the deepeſt affliction. Permit me, ſire, to aſſure your majeſty, that your majeſty has not in all your dominions any ſubjects more faithful, more dutiful, or more affectionate, to your majeſty's perſon and family, or more ready to ſacrifice their lives and fortunes in the maintenance of the true honour and dignity of your crown. We do therefore, with the greateſt humility and ſubmiſſion moſt earneſtly ſupplicate your majeſty, that you will not diſmiſs us from your preſence without expreſſing a more favourable opinion of your faithful citizens, and without ſome comfort, without ſome proſpect at leaſt of redreſs.

"Permit me, ſire, further to obſerve, that whoever has already dared, or ſhall hereafter endeavour, by falſe inſinuations and ſuggeſtions, to alienate your majeſty's affections from your loyal ſubjects in general, from the city of London in particular, and to withdraw your confidence in, and regard for, your people, is an enemy to your majeſty's perſon and family, a violator of the public peace, and a betrayer of our happy conſtitution, as it was eſtabliſhed at the glorious and neceſſary revolution."

The dutiful, but dignified, demeanour, and the ſerious firmneſs, with which the chief magiſtrate uttered theſe words, filled the court with admiration. They beheld countenances among the citizens very different from thoſe deſcribed by lord Pomfret, who had declared in the houſe of lords, that, "however ſwaggering and impudent the behaviour of the citizens might be on their own dunghill, when they came into the royal preſence, their heads hung down like bullruſhes, and they blinked with their eyes like owls in the ſunſhine."

Mr. Beckford did not ſurvive this memorable interview quite a month, for he expired in London on the 21ſt of June 1770, aged ſixty-three; and, if any thing could add to the luſtre of his character, it was the manner of his death; for, notwithſtanding he was extremely indiſpoſed at Fonthill, he was ſo attentive to diſcharge the important duties committed to his truſt, that he travelled a hundred miles in one day to attend the public buſineſs. This violent exertion increaſed his indiſpoſition, and occaſioned a fever, which terminated the life of a man, whoſe name will ever be held in veneration. As a citizen, he was eminently diſtinguiſhed by his popular and affable manners; as a ſenator, by his conſtant aſſertion of the rights of the people; and as a magiſtrate, by his unremitted vigilance to prevent the violation of them. That his memory might be preſerved to poſterity, the corporation of London erected his ſtatue in their Guild-hall, and recorded, in the inſcription, the magnanimous ſpeech, which he addreſſed to the king in vindication of the people's right to remonſtrate to the throne. Moſt public perſonages have had ſome ſhade in their characters, which the finger of envy or malice had occaſionally marked; but in whatever point of view, whether of citizen, magiſtrate, or ſenator, alderman Beckford is regarded, it may be affirmed, that, though all the honours of the ſtate were within his graſp, nothing ever ſhook his independence, and that he preſerved the conſiſtency and greatneſs of his character to the hour of his death. The bulk of his immenſe fortune, with the ſuperb manſion and valuable eſtate of Fonthill, Wilts, deſcended to his only legitimate ſon, William Beckford, Eſq. the preſent poſſeſſor.

BEC'KINGHAM (Charles), an Engliſh dramatic writer, was the ſon of a linen-draper in London, and born in 1699. He was educated at Merchant-Taylor's ſchool, under the learned Dr. Smith, where he made a very great proficiency in his ſtudies. In poetry more particularly he very early diſcovered an uncommon genius, two dramatic pieces of his writing being repreſented on the ſtage before he had completed his twentieth year: and thoſe not ſuch as required the leaſt indulgence or allowance on account of his years; but ſuch as bore evidence to a boldneſs of ſentiment, an accuracy of diction, an ingenuity of conduct, and a maturity of judgment, which would have done honour to a more ripened age. The titles of his plays, both of which are tragedies, are, 1. Henry IV. of France. 2. Scipio Africanus. Beſides theſe dramatic pieces, he wrote ſeveral other poems: but his genius exiſted not any very long period, for he died on the 18th of February 1730, in the thirty-ſecond year of his age.

To BEC'KON, *v. n.* To make a ſign without words:

Sudden you mount, you *beckon* from the ſkies;
Clouds interpoſe, waves roar, and winds ariſe. *Pope.*

To BECKON, *v. a.* [from *beck*, or *beacn*, Sax. a ſign.] To make a ſign:

With this his diſtant friends he *beckons* near,
Provokes their duty, and prevents their fear. *Dryden.*

To BECLIP', *v. a.* [of *be clippan*, Sax.] To embrace.

To BECO'ME, *v. n.* pret. *I became*; comp. pret. *I have become.* [from *by* and *come.*] To enter into ſome ſtate or condition, by a change from ſome other:

So the leaſt faults, if mix'd with faireſt deed,
Of future ill *become* the fatal ſeed. *Prior.*

To BECOME OF. To be the fate of; to be the end of; to be the ſubſequent or final condition of. It is obſervable, that this word is never, or very ſeldom, uſed but with *what*, either indefinite or interrogative.—The firſt hints of the circulation of the blood were taken from a common perſon's wondering *what became of* all the blood that iſſued out of the heart. *Graunt.*—In the following paſſage, the phraſe, *where is he become?* is uſed for, *what is become of him?*

I cannot joy, until I be reſolv'd
Where our right valiant father *is become.* *Shakeſpeare.*

To BECOME, *v. a.* [from *be* or *by*, and *cremen*, Sax. to pleaſe.] Applied to perſons, to appear in a manner ſuitable to ſomething:

Why would I be a queen? becauſe my face
Would wear the title with a better grace;
If I *became* it not, yet it would be
Part of your duty then to flatter me. *Dryden.*

Applied to things, to be ſuitable to the perſon; to benefit;

to be congruous to the appearance, or character, or circumſtances, in ſuch a manner as to add grace ; to be graceful.—Wicherly was of my opinion, or rather I of his; for it *becomes* me ſo to ſpeak of ſo excellent a poet. *Dryden.*

BECO'MING, *part. adj.* That which pleaſes by an elegant propriety ; graceful. It is ſometimes uſed with the particle *of*; but generally without any government of the following words.—Their diſcourſes are ſuch as belong to their age, their calling, and their breeding ; ſuch as are *becoming of* them, and *of* them only. *Dryden.*

BECOMING, *ſ.* Ornament. *A word not now in uſe.*

BECO'MINGLY, *adv.* After a becoming or proper manner.

BECO'MINGNESS, *ſ.* Decency ; elegant congruity ; propriety.—Nor is the majeſty of the divine government greater in its extent, than the *becomingneſs* hereof is in its manner and form. *Grew.*

BECSANGIL', anciently Bithynia, a province of Natolia in Aſia; bounded on the north by the Black Sea; on the weſt, by the Sea of Marmora ; on the ſouth, by Natolia Proper: and on the eaſt, by the province of Bolli. The principal town is Burſa.

BECTAS'SE, an order or ſect of religious among the Turks, denominated from their founder *Bectaſh*, preacher to ſultan Amurath. All the Janizaries belonging to the Porte are of the religion of Bectaſſe, being even ſaid to have derived their origin from the founder of this ſect. The habit of the Bectaſſe is white : on their heads they wear white caps of ſeveral pieces, with turbans of wool twiſted rope-faſhion. They obſerve conſtantly the hour of prayer, which they perform in their own aſſemblies, and make frequent declarations of the unity of God.

BED, *ſ.* [*bed*, Sax.] Something made to ſleep on.—Lying not erect, but hollow, which is in the making of the *bed*; or with the legs gathered up, which is in the poſture of the body, is the more wholeſome. *Bacon.*—Lodging; the convenience of a place to ſleep in :

On my knees I beg,
That you'll vouchſafe me raiment, *bed*, and food. *Shakeſp.*

Marriage.—George, the eldeſt ſon of this ſecond *bed*, was, after the death of his father, by the ſingular care and affection of his mother, well brought up. *Clarendon.*—Bank of earth raiſed in a garden.—Herbs will be tenderer and fairer, if you take them out of *beds*, when they are newly come up, and remove them into pots with better earth. *Bacon.*—The channel of a river, or any hollow :

So high as heav'd the tumid hills, ſo low
Down ſunk a hollow bottom, broad, and deep,
Capacious *bed* of waters. *Milton.*

The place where any thing is generated, or repoſited :

See hoary Albula's infected tide
O'er the warm *bed* of ſmoaking ſulphur glide. *Addiſon.*

A layer ; a ſtratum ; a body ſpread over another.—I ſee no reaſon, but the ſurface of the land ſhould be as regular as that of the water, in the firſt production of it ; and the ſtrata, or *beds* within, lie as even. *Burnet.*

To bring to BED. To deliver of a child. It is often uſed with the particle *of*; as, *ſhe was* brought *to* bed of *a daughter.*

To make the BED. To put the bed in order after it has been uſed.—I keep his houſe, and I waſh, wring, brew, bake, ſcour, dreſs meat, and *make the beds*, and do all myſelf. *Shakeſpeare.*

There are varieties of beds, as a ſtanding-bed, a ſettee-bed, a tent bed, a truckle bed, &c. but theſe are all of modern invention ; for it was univerſally the practice, in the firſt ages, for mankind to ſleep upon ſkins of beaſts. It was originally the cuſtom of the Greeks and Romans. It was particularly the cuſtom of the ancient Britons before the Roman invaſion ; and theſe ſkins were ſpread on the floor of their apartments. Afterwards they were changed for looſe ruſhes and heather, as the Welſh a few years ago lay on the former, and the Highlanders of Scotland ſleep on the latter to this preſent moment. In proceſs of time, the Romans ſuggeſted to the interior Britons the uſe, and the introduction of agriculture ſupplied them with the means, of the neater conveniency of ſtraw beds. The beds of the Roman gentry at this period were generally filled with feathers, and thoſe of the inns with the ſoft down of reeds. But for many ages the beds of the Italians had been conſtantly compoſed of ſtraw ; it ſtill formed thoſe of the ſoldiers and officers at the conqueſt of Lancaſhire ; and from both, our countrymen learnt their uſe. But it appears to have been taken up only by the gentlemen, as the common Welſh had their beds thinly ſtuffed with ruſhes as late as the concluſion of the 12th century ; and with the gentlemen it continued many ages afterwards. Straw was uſed even in the royal chambers of England as late as the cloſe of the 13th century. Moſt of the common people in Scotland lie on chaff : in the Highlands heath is alſo very generally uſed as bedding even by the gentry ; and the repoſe on a heath bed has been celebrated by travellers as a peculiar luxury, ſuperior to that yielded by down : in France and Italy, ſtraw beds remain general to this day. But after the above period, beds were no longer ſuffered to reſt upon the ground. The better mode that had anciently prevailed in the eaſt, and long before been introduced into Italy, was adopted in Britain ; and they were now mounted on pedeſtals. This, however, was equally confined to the gentlemen. The bed ſtill continued on the floor among the common people. And the groſs cuſtom, that had prevailed from the beginning, was retained by the lower Britons to the laſt ; and theſe ground-beds were laid along the walls of their houſes, and formed one common dormitory for all the members of the family. The faſhion continued univerſally among the inferior ranks of the Welch within theſe four or five ages, and with the more unciviliſed part of the Highlanders down to our own times.

Dining-BED, *lectus tricliniaris*, or *diſcubitorius*, that whereon the ancients lay at meals. The dining or diſcubitory beds were four or five feet high. Three of theſe beds were ordinarily ranged by a ſquare table (whence both the table and the room where they ate were called *triclinium*) in ſuch a manner, that one of the ſides of the table remained open and acceſſible to the waiters. Each bed would hold three or four, rarely five, perſons. Theſe beds were unknown before the ſecond Punic war : the Romans, till then, ſat down to eat on plain wooden benches, in imitation of the heroes of Homer, or, as Varro expreſſes it, after the manner of the Lacedemonians and Cretans. Scipio Africanus firſt made an innovation : he had brought from Carthage ſome of thoſe little beds called *punicani*, or *archaici*; being of a wood common enough, very low, ſtuffed only with ſtraw or hay, and covered with goats or ſheeps ſkins, *hædinis pellibus ſtrati.* In reality, there was no great difference, as to delicacy, between theſe new beds and the ancient benches ; but the cuſtom of frequent bathing, which began then to obtain, by ſoftening and relaxing the body, put men on trying to reſt themſelves more commodiouſly by lying along than by ſitting down. For the ladies, it did not ſeem at firſt conſiſtent with their modeſty to adopt the mode of lying ; accordingly they kept to the old cuſtom all the time of the commonwealth ; but, from the firſt Cæſars, they ate on their beds. For the youth who had not yet put on the *toga virilis*, they were long kept to the ancient diſcipline. When they were admitted to table, they only ſat on the edge of the beds of their neareſt relations. Never, ſays Suetonius, did the young Cæſars, Caius and Lucius, eat at the table of Auguſtus ; but they were ſet *in imo loco*, or, as Tacitus expreſſes it, *ad lecti fulcra.* From the greateſt ſimplicity, the Romans by degrees carried their dining-beds to the moſt ſurpriſing magnificence. Pliny aſſures us, it was no new thing to ſee them covered over with plates of ſilver, adorned with the ſofteſt mats, and the richeſt counterpanes. Lampridius, ſpeaking of Heliogabalus, ſays, he had beds of ſolid ſilver, *ſolido argento habuit lectos et tricliniares, et cubiculares.*

cubiculares. We may add, that Pompey, in his third triumph, brought in beds of gold. The Romans had alſo beds whereon they ſtudied, and beds whereon the dead were carried to the funeral pile.

Bed-Moulding, *ſ.* in architecture, a term uſed for thoſe members of a cornice which are placed below the coronet.

Bed of Justice, *ſ.* in the former French cuſtoms, was a throne upon which the king was ſeated when he went to the parliament.

Bed of a Great Gun, *ſ.* A plank laid between the cheeks of the carriage, on the middle tranſum, for the breech of the gun to reſt upon.

Bed or Stool of a Mortar, *ſ.* A thick and ſtrong planking on which a mortar is placed, hollowed a little to receive the breech and trunions.

Bed, *ſ.* in maſonry, a courſe or range of ſtones; and the joint of the bed is the mortar between two ſtones, placed over each other.

Lords of the Bed-Chamber, in the Britiſh court, are twelve noblemen who attend in their turns, each a month; during which time they lie in the king's bed-chamber, and wait on him when he dines in private. Their ſalary is 1000l. per annum each.

To Bed, *v. a.* To go to bed with. To place in bed.—She was publicly contracted, ſtated as a bride, and ſolemnly *bedded*; and, after ſhe was laid, Maximilian's ambaſſador put his leg, ſtript naked to the knee, between the eſpouſal ſheets. *Bacon.*—To make partaker of the bed.—There was a doubt ripped up, whether Arthur was *bedded* with his lady. *Bacon.*—To ſow, or plant in earth.—Lay the turf with the graſs-ſide downwards, upon which lay ſome of your beſt mould to *bed* your quick in, and lay your quick upon it. *Mortimer.*—To lay in a place of reſt, or ſecurity. To lay in order; to ſtratify.

To Bed, *v. n.* To cohabit.—If he be married, and *bed* with his wife, and afterwards relapſe, he may poſſibly fancy that ſhe infected him. *Wiſeman.*

BEDA, commonly called *Venerable Bede*, one of our moſt ancient hiſtorians, was born in the year 672, in the neighbourhood of Weremouth, in the biſhopric of Durham. He was educated by the abbot Benedict in the monaſtery of St. Peter, near the mouth of the river Wyre. At the age of nineteen he was ordained deacon, and prieſt in the year 702. About this time he was invited to Rome by pope Sergius; but there is no ſufficient reaſon to believe that he accepted the invitation. In the year 731 he publiſhed his Eccleſiaſtical Hiſtory; a work of ſo much merit, notwithſtanding the legendary tales it contains, that it was alone ſufficient to immortalize the author. He died in 735, of a lingering conſumption. He was buried in the church of his convent at Jarrow, but his bones were afterwards removed to Durham, and there depoſited in the ſame coffin with thoſe of St. Cuthbert. Bede was undoubtedly a ſingular phenomenon in an ignorant and illiterate age. His learning, for the times, was extenſive, his application incredible, his piety exemplary, and his modeſty exceſſive. He was univerſally admired, conſulted, and eſteemed, during his life: and his writings are deſervedly conſidered as the foundation of our eccleſiaſtical hiſtory. All his works are in Latin. The firſt general collection of them appeared at Paris in 1544, in 3 vols. folio. They were alſo publiſhed at Baſil in 1563, reprinted at Cologne in 1612, and at the ſame place in 1688. Beſides this general collection, there are ſeveral manuſcripts aſcribed to him, which are preſerved in the different libraries in Oxford and Cambridge.

To BEDAB'BLE, *v. a.* [from *dabble.*] To wet; to beſprinkle. It is generally applied to perſons, in a ſenſe including inconvenience:

Never ſo weary, never ſo in woe,
Bedabbled with the dew, and torn with briars,
I can no further crawl, no further go. *Shakeſpeare.*

To BEDAG'GLE, *v. a.* [from *daggle.*] To bemire; to ſoil clothes, by letting them reach the dirt in walking.

BEDA'LE, a market-town in the North Riding of Yorkſhire, ſix miles from Northallerton, eight from Richmond, and 220 from London; it ſtands upon a rivulet that runs into the Swale, near Gatenby; but is of note for being the thoroughfare of the Roman cauſeway, leading from Richmond to Barnard Caſtle, which, for twenty miles together, is called *Leeming-lane.* There is a good charity-ſchool. Market on Tueſdays. Fairs, Eaſter-Tueſday, Whit-Tueſday, Old Midſummer-day, Old Michaelmas-day, and the laſt Monday but one before Chriſtmas. All the adjacent country abounds in horſe-dealers, here being the beſt hunting and road horſes in the world; and the breed, in this and the next county, is ſo well known, that, though the pedigree of them is not preſerved for a ſucceſſion of ages, as it is ſaid they do in Arabia, yet are their ſtallions denominated by certain names, that never fail to advance the price of a horſe according the reputation of the ſire he comes of.

BEDARRIEUX', a town of France, in the department of the Herault, and chief place of a canton, in the diſtrict of Beziers, ſituated on the Orbe; the inhabitants carry on a manufacture of druggets, and other woollen ſtuffs: five leagues and a half north of Beziers. Lat. 43. 27. N. lon. 20. 50. E. Ferro.

To BEDASH', *v. a.* [from *daſh.*] To bemire by throwing dirt; to beſpatter; to wet with throwing water.

BEDAT' (Le), a river of France, which runs into the Allier, near Montferand.

To BEDAWB, *v. a.* [from *dawb.*] To dawb over; to beſmear; to ſoil, with ſpreading any viſcous body over it.

To BEDAZ'ZLE, *v. a.* [from *dazzle.*] To make the ſight dim by too much luſtre:

My miſtaken eyes,
That have been ſo *bedazzled* by the ſun,
That every thing I look on ſeemeth green. *Shakeſpeare.*

BED'BURG, a town of Germany, in the circle of the Lower Rhine, and electorate of Cologne, on the Erfft: fourteen miles weſt of Cologne, and twenty north-eaſt of Aix-la-Chapelle. Lat. 51. N. lon. 24. 6. E. Ferro.

BED'CHAMBER, *ſ.* [from *bed* and *chamber.*] The chamber appropriated to reſt.—He was now one of the *bedchamber* to the prince. *Clarendon.*

BED'CLOTHES, *ſ.* [from *bed* and *clothes.* It has no *ſingular.*] Coverlets ſpread over a bed.

BED'DER, or Bedetter, *ſ.* [from *bed.*] The nether ſtone of an oil-mill.

BED'DING, *ſ.* [from *bed.*] The materials of a bed; a bed:

Firſt, with aſſiduous care from winter keep,
Well fother'd in the ſtalls, thy tender ſheep;
Then ſpread with ſtraw the *bedding* of thy fold,
With fern beneath, to fend the bitter cold. *Dryden.*

To BEDECK', *v. a.* [from *deck.*] To deck; to adorn; to grace:

Thou ſham'ſt thy ſhape, thy love, thy wit,
And uſeſt none in that true uſe indeed,
Which ſhould *bedeck* they ſhape, thy love, thy wit.
Shakeſpeare.

BEDE'E, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diſtrict of Montfort: three leagues and a half weſt-north-weſt of Rennes, and one north of Montfort.

BE'DEHOUSE, *ſ.* [from *bede*, Sax. a prayer, and *houſe.*] An hoſpital or alms-houſe, where the poor people prayed for their founders and benefactors.

BE'DELARY, the precinct or juriſdiction of a beadle.

BE'DELL (William), a learned prelate, born in Eſſex, in 1570. In 1629, he obtained the biſhopric of Kilmore in Ireland. He publiſhed a controverſial book againſt the Roman-catholics, and aſſiſted the archbiſhop of Spalatro in finiſhing his famous work *De Republica Eccleſiaſtica.* When the rebellion broke out in Ireland in 1641, the biſhop at firſt did not feel the violence of its effects; the rebels conceiving a great veneration for him, and declaring he ſhould be the laſt Engliſhman they would drive out of Ireland. His was the only houſe in the county of Cavan that was unviolated, and it was filled with people who fled to him for ſhelter. The rebels, however, required him to diſmiſs the people that were with him; which he refuſed to do, declaring he would ſhare the ſame fate with the reſt. Upon this they ſeized him, his two ſons, and family, and carried them priſoners to the caſtle of Cloughboughter, ſurrounded by a deep water, where they put them all, except the biſhop, in irons. After being confined for about three weeks, the biſhop and his family were exchanged for ſome of the principal rebels: but the biſhop died ſoon after, in February 1642. The Iriſh did him great honour at his burial; for the chief of the rebels gathered their forces, and accompanied his body to the grave.

This excellent prelate, to whom the Iriſh are indebted for the tranſlation of the Bible into their language, would never be tranſlated from one ſee to another, thinking that his church was his wife, and his dioceſe his children, from whom he ſhould never be divorced. He lived with his clergy, as if they had been his brethren. When he went his viſitations, he would not accept of the invitations that were made to him by the great men of the country, but would eat with his brethren, in ſuch poor inns, and of ſuch coarſe fare, as the places afforded. He went about always on foot when he was at Dublin, except upon public occaſions, that obliged him to ride in proceſſion. He never kept a coach in his life, his ſtrength always enabling him to ride on horſeback. Many poor Iriſh families were maintained out of his kitchen; and in the Chriſtmas time he had the poor always eating with him at his own table, and he brought himſelf to endure both the ſight of their rags and their rudeneſs. He by his will ordered that his body ſhould be buried in a church-yard with this inſcription: "Depoſitum Gulielmi quondam Epiſcopi Kilmorenſis." He did not like the burying in a church; for, as he obſerved, there was much both of ſuperſtition and pride in it, ſo he believed it was a great annoyance to the living, where there was ſo much of the ſteam of dead bodies riſing about them. He was likewiſe much offended at the rudeneſs which the crowding the dead bodies in a ſmall parcel of ground occaſioned; for the bodies already laid there, and not yet quite rotten, were often raiſed and mangled; ſo that he made a canon in his ſynod againſt burying in churches, and recommended that burying-places ſhould be removed out of towns. In this he was imitated by the cardinal de Lomenie, archbiſhop of Sens, who publiſhed, ſome years ago, a very eloquent *mandement* on the ſubject.

BE'DER, a town of Hindoſtan, and country of Dowlatabad, in the Deccan; large, well-built, and ſtrongly fortified; celebrated for the number and magnificence of its pagodas. It is ſeventy miles weſt of Warangola, and ſixty north-weſt of Hydrabad. Lat. 17. 48. N. lon. 78. 2. E. Greenwich

BEDERE'PE, *ſ.* [*biderepe*, Sax.] A ſervice which certain tenants were anciently bound to perform, viz. to *reap* their landlord's corn at harveſt; as ſome yet are tied to give them one, two, or three, days work, when commanded. This cuſtomary ſervice of inferior tenants was called *præcaria bederepium*, &c.

BEDET'TER. See BEDDER.

To BEDEW', *v. a.* [from *dew*.] To moiſten gently, as with the fall of the dew:

What ſlender youth, *bedew'd* with liquid odours,
Courts thee on roſes, in ſome pleaſant cave? *Milton.*

BED'FELLOW, *ſ.* [from *bed* and *fellow*.] One that lies in the ſame bed.—Miſery acquaints a man with ſtrange *bedfellows. Shakeſpeare.*

BED'FORD, [*bedanford*, Sax. that is, beds and public inns by a ford.] The county-town of Bedfordſhire, to which it gives name, ſituated on the Ouſe. It contains five churches, three on the north, and two on the ſouth, ſide of the river: it is a place of conſiderable trade, which is much aſſiſted by the river, navigable to Lynn, and is the only market-town of the county on the north ſide of the Ouſe; the ſoil about it is fertile, particularly in excellent wheat. The corporation conſiſts of a mayor, recorder, two bailiffs, twelve aldermen, &c. The aſſizes were always held here, except in the year 1684, when they were removed to Ampthill, by the intereſt of the earl of Ayleſbury, its recorder. This place was famous for a victory, gained in the year 572, by Cuthwulf, the Saxon king, over the Britons; and for the interment of the great king Offa, who choſe to have his bones laid in a ſmall chapel, near the river Ouſe, which, happening to overflow, carried them quite away. The Danes once deſtroyed this town; but Edward the Elder repaired it, and united the town on the ſouth ſide of the river, called *Mikeſgate*, to Bedford, on the north ſide of it; ſince which they have both gone by this name. After the conqueſt, Pagan de Beauchamp, the third baron of Bedford, built a caſtle here, encompaſſed with a mighty rampart of earth, and a high wall, the whole ſo ſtrong that king Stephen, who beſieged and took it in his war with the empreſs Maud, was glad to grant the garriſon honourable terms. In the barons' wars, it was again beſieged, and, for want of relief, taken by king John's forces, under Fulco de Brent, to whom the king gave it for a reward; but, for his ſubſequent behaviour, he took it from him, and cauſed it to be demoliſhed, though it was not quite level till the reign of Henry III. The place firſt gave title of duke to the victorious prince John Plantagenet, regent of France, during the minority of his nephew, Henry VI. as it did in the reign of Edward IV. firſt to John Nevil, marquis of Montacute, and then to the king's third ſon, George Plantagenet; but he, dying an infant, the title lay vacant till Henry VII. created his uncle, Jaſper Tudor, duke of Bedford, who alſo died without iſſue; and thus far it is very remarkable, that the title was enjoyed by the firſt poſſeſſor only of each family. But king Edward VI. making John lord Ruſſel earl of Bedford, the dignity has ever ſince been in that illuſtrious houſe, with an advancement of it to the title of duke, by king William III. As the corporation is very ancient, it has ſent repreſentatives to parliament from the earlieſt times to the preſent. It has two markets weekly, viz. one on Monday, chiefly for cattle, held in the ſouth part of the town; the other on Saturday, for corn and proviſions, held in the north part of the town. Its fairs are, the firſt Tueſday in Lent, April 21, July 5, Auguſt 21, October 11, and December 19. Bedford is twenty-two miles ſouth-eaſt of Northampton, fifty-two north-eaſt of Oxford, ſixteen weſt of Cambridge, and fifty north of London.

BEDFORD, a town of North America, in the ſtate of Maſſachuſets, on the river Concord, ſeven miles north of Concord.

BEDFORD (John duke of), a renowned Engliſh general. He was regent of France for Henry VI. during his minority; conquered the French by ſea and at land, and entered Paris at the head of his victorious army, where he cauſed Henry to be crowned king of France in 1431. He died in 1435.

BEDFORD (Houſe of), ſee RUSSELL.

BEDFORD LEVEL, a large tract of land, in the county of Cambridge, formerly full of fens and marſhes, and in rainy ſeaſons for the moſt part under water, but drained at the expence of 400,000l. by the noble family of Ruſſel, earls and dukes of Bedford, and others, by which 100,000 acres of good land have been recovered and brought into uſe.

BED'FORDSHIRE, a ſmall inland county of England, bounded on the north by the counties of Huntingdon and Northampton, on the eaſt by Cambridgeſhire, on the ſouth by Hertfordſhire, and on the weſt by Buckinghamſhire. When the Romans landed in Britain, fifty-five years before Chriſt, it was included in the diſtrict inhabited by the Catieuchlani, whoſe chief or governor Caſſibelinus headed the forces of the whole iſland againſt Cæſar, and the year following was totally defeated. In 310 the emperor Conſtantine divided Britain into five Roman provinces, when this county was included in the third diviſion, called *Flavia Cæſarienſis*; in which ſtate it continued 426 years, when the Romans quitted Britain. At the eſtabliſhment of the kingdom of Mercia (one of the diviſions of the Saxon heptarchy) it was conſidered as part of that kingdom; and ſo continued from 582 to 827, when with the other petty kingdoms of the iſland it became ſubject to the Weſt Saxons under Egbert, and the whole was named *England.* In 889, Alfred held the ſovereignty, when England was divided into counties, hundreds, and tythings, and Bedfordſhire firſt received its preſent name. It is in the Norfolk circuit, the province of Canterbury, and biſhopric of Lincoln. Its form is oval, being about thirty-five miles long, twenty-two broad, and nearly ſeventy-three in circumference; containing an area of about 323 ſquare miles, or 260,000 ſquare acres. It contains 116 pariſhes, fifty-eight vicarages, and ten market-towns, viz. Bedford, Ampthill, Biggleſwade, Dunſtable, Leighton-Buzzard, Luton, Potton, Shefford, Tuddington, and Woburn, and fifty-five villages. The inhabitants by computation are 67,350. It is divided into nine hundreds, and ſends two members to parliament. Its principal river, the Ouſe, is navigable to Bedford; and divides the county into two parts, of which that to the ſouth is the moſt conſiderable. In its courſe, which is very meandering, it receives ſeveral ſmall ſtreams: the principal one is the Ivel, which takes its riſe in the ſouthern part of the county. The air is healthy, and the ſoil productive. The chief manufactures are thread, hats, lace, and ſtraw-ware. In this county there are many remains of Roman, Saxon, and Norman, antiquities; but few Roman ſtations, viz. Sandy near Potton, and the Magiovinum of Antoninus, by others ſuppoſed to be the ancient Salenæ, containing thirty acres, where many urns, coins, &c. have been dug up. Another at Madiningbowre, or Maiden-bower, one mile from Dunſtable, containing about nine acres, which Camden ſuppoſes to have been a Roman ſtation, from the coins of the emperors having been frequently dug up there, and calls it *Magintum.* Leighton-Buzzard is ſuppoſed to have been a Roman camp, and another is at Arlcſey near Shefford, and a Roman amphitheatre may be traced near Bradford Magna. The Roman road, Icknield-ſtreet, croſſes this country, entering at Leighton-Buzzard, from whence it paſſes Dunſtable, where it inclines northward over Wardon-hills to Baldock in Hertfordſhire. The Watling-ſtreet enters this county near Luton from St. Alban's, paſſes a little north of Dunſtable, where it croſſes the Icknield-ſtreet, and from thence to Stoney-Stratford in Buckinghamſhire. A Roman road alſo enters near Potton, paſſes on to Sandy, and from thence to Bedford, where it croſſes the Ouſe, and proceeds to Newport-Pagnell in Buckinghamſhire. The following antiquities in this county are worthy of notice: Bedford Bridge and Priory; Chickſand Abbey, near Shefford; Dunſtable Priory, near Luton; Eaton-Park Houſe, or Eaton-Bray; Five Knolls, near Dunſtable; Newnham Priory, near Bedford; Northill Church, three miles from Biggleſwade; Summeris Tower, near Luton; Wardon Abbey, near Shefford; Woburn Abbey; and Woodhill Caſtle, or Oldhill Caſtle, near Harewood.

Bedfordſhire is one of the ſeven counties which, they ſay, lie together, and have not one city among them; namely, Huntingdon, Bedford, Bucks, Berks, Hertford, Eſſex, and Suffolk. This county is remarkable for ſeveral curious and ſcarce plants; eſpecially the woad, which, if it be good, is commonly worth 18l. per ton. The ancient Britons, by painting themſelves with this plant, uſed to ſtrike terror into their enemies; who, though not afraid of meeting men caſed in complete armour, could not at firſt ſtand the ſhock of theſe naked barbarians; as was the caſe in the firſt invaſion of this land by Cæſar.

To BEDIGHT', *v. a.* [from *dight.*] To adorn; to dreſs; to ſet off: *an old word, now only uſed in humorous writings:*

A maiden fine *bedight* he hapt to love;
The maiden fine *bedight* his love retains,
And for the village he forſakes the plains. *Gay.*

To BEDIM', *v. a.* [from *dim.*] To make dim; to obſcure; to cloud; to darken.

To BEDI'ZEN, *v. a.* [from *dizen.*] To dreſs out: *a low word.*

BED'LAM, *ſ.* [corrupted from *Bethlehem*, the name of a religious houſe in London, converted afterwards into an hoſpital for the mad and lunatic.] A madhouſe; a place appointed for the cure of lunacy. A madman; a lunatic, and inhabitant of Bedlam:

Let's follow the old earl, and get the *bedlam*
To lead him where he would: his roguiſh madneſs
Allows itſelf to any thing. *Shakeſpeare.*

BEDLAM, *adj.* Belonging to a madhouſe; fit for a madhouſe.

BED'LAMITE, *ſ.* An inhabitant of Bedlam; a madman:

If wild ambition in thy boſom reign,
Alas! thou boaſt'ſt thy ſober ſenſe in vain;
In theſe poor *bedlamites* thyſelf ſurvey,
Thyſelf leſs innocently mad than they. *Fitzgerald.*

BED'LOE (William), aſſumed the title of *Captain*, but was an infamous adventurer of low birth, who travelled over a great part of Europe under different names and diſguiſes, and paſſed among ignorant perſons for a man of rank and fortune. Encouraged by the ſucceſs of Oates, he turned evidence in the affair of the popiſh plot, gave an account of Godfrey's murder, and added many circumſtances to the narrative of the former. Theſe villains had the boldneſs to accuſe the queen of entering into a conſpiracy againſt the king's life. A reward of 500l. was voted to Bedloe by the commons. He is ſaid to have aſſerted the reality of the plot on his death-bed: but it abounds with abſurdity, contradiction, and perjury; and ſtill remains one of the greateſt problems in the Britiſh annals. He died at Briſtol Auguſt 20, 1680. He was ſaid to be author of a play called The Excommunicated Prince; or, the Falſe Relict, 1679.

BED'MAKER, *ſ.* [from *bed* and *make.*] A perſon in the univerſities, whoſe office it is to make the beds, and clean the chambers.

BED'MATE, *ſ.* [from *bed* and *mate.*] A bedfellow; one that partakes of the ſame bed.

BED'MOULDING, *ſ.* [from *bed* and *mould.*] A term uſed by workmen, to ſignify thoſe members in the cornice, which are placed below the coronet.

BED'NAL, or BETHNAL GREEN, one of the hamlets of the pariſh of Stepney, now covered with houſes, and joined to London. In it is the noble hoſpital of the Trinity-houſe, for decayed maſters of ſhips, or pilots.

BEDNO'RE, or BID'DANORE, a country of Hindoſtan, lying north-weſt of the Myſore country, which takes its name from the capital, Bednore.

BEDNORE, a city of Hindoſtan, and capital of a diſtrict north-weſt of the Myſore country, to which it is united. It was taken by the Engliſh in the year 1783, but reſtored ſoon after. It is 140 miles north-weſt of Seringapatam, 224 ſouth of Viſiapour, and 330 ſouth-ſouth-eaſt of Bombay. Lat. 13. 47. N. lon. 74. 48. E. Greenwich.

BE'DOED LAKE, a lake of North America. Lat. 60. 20. N. lon. 109. 0. W. Greenwich.

BEDOU'INS, or BEDOUIS, a modern name of the wild Arabs, whether in Aſia or Africa. When ſpeaking of the Arabs, we ſhould diſtinguiſh whether they are cultivators or paſtors; for this difference in their mode of life occaſions ſo great a one in their manners and genius, that they become almoſt foreign nations with reſpect to each other. In the former caſe, leading a ſedentary life, attached to the ſame ſoil, and ſubject to regular governments, the ſocial ſtate in which they live very nearly reſembles that of our own peaſantry. Such are the inhabitants of Yemen; and ſuch alſo are the deſcendants of thoſe ancient conquerors, who have either entirely, or in part, given inhabitants to Syria, Egypt, and the Barbary ſtates. In the ſecond inſtance, having only a tranſient intereſt in the ſoil, perpetually removing their tents from one place to another, and under ſubjection to no laws, their mode of exiſtence is neither that of poliſhed nations nor of ſavages; and therefore more particularly merits our attention. Such are the Bedouins, or inhabitants of the vaſt deſerts which extend from the confines of Perſia to Morocco. Though divided into independent communities or tribes, not unfrequently hoſtile to each other, they may ſtill be conſidered as forming one nation. The reſemblance of their language is a manifeſt token of this relationſhip. The only difference that exiſts between them is, that the African tribes are of a leſs ancient origin, being poſterior to the conqueſt of theſe countries by the khaliffs or ſucceſſors of Mahomet; while the tribes of the deſert of Arabia, properly ſo called, have deſcended by an uninterrupted ſucceſſion from the remoteſt ages. To theſe the orientals are accuſtomed to appropriate the name of *Arabs*, as being the moſt ancient and pureſt race. The term *Bedaoui* is added as a ſynonymous expreſſion, ſignifying, 'inhabitant of the deſert.'

It is not without reaſon that the inhabitants of the deſert boaſt of being the pureſt and the beſt preſerved race of all the Arab tribes: for never have they been conquered, nor have they mixed with any other people by making conqueſts; for thoſe by which the general name of Arabs has been rendered famous really belong only to the tribes of the Hedjas and the Yemen. Thoſe who dwelt in the interior of the country, never emigrated at the time of the revolution effected by Mahomet; or, if they did take any part in it, it was confined to a few individuals, detached by motives of ambition. Thus we find the prophet in his Koran continually ſtyling the Arabs of the deſert *rebels* and *infidels*; nor has ſo great a length of time produced any very conſiderable change. We may aſſert they have in every reſpect retained their primitive independence and ſimplicity.

The wandering life of theſe people ariſes from the very nature of their deſerts. To paint to himſelf theſe dreary abodes, the reader muſt imagine a ſky almoſt perpetually inflamed, and without clouds; immenſe and boundleſs plains, without houſes, trees, rivulets, or hills, where the eye frequently meets nothing but an extenſive and uniform horizon like the ſea, though in ſome places the ground is uneven and ſtony. Almoſt invariably naked on every ſide, the earth preſents nothing but a few wild plants thinly ſcattered, and thickets, whoſe ſolitude is rarely diſturbed but by antelopes, hares, locuſts, and rats. Such is the nature of nearly the whole country, which extends ſix hundred leagues in length, and three hundred in breadth, and ſtretches from Aleppo to the Arabian ſea, and from Egypt to the Perſian gulph. It muſt not, however, be imagined that the ſoil in ſo great an extent is every where the ſame; it varies conſiderably in different places. On the frontiers of Syria, for example, the earth is in general fat and cultivable, nay even fruitful. It is the ſame alſo on the banks of the Euphrates: but in the internal parts of the country, and towards the ſouth, it becomes white and chalky, as in the parallel of Damaſcus; rocky, as in the Tih and the Hedjaz; and a pure ſand, as to the eaſtward of the Yemen. This variety in the qualities of the ſoil is productive of ſome minute differences in the condition of the Bedouins. For inſtance, in the more ſterile countries, that is, thoſe which produce but few plants, the tribes are feeble and very diſtant; which is the caſe in the deſert of Suez, that of the Red Sea, and the interior of the great deſert called the *Najd*. When the ſoil is more fruitful, as between Damaſcus and the Euphrates, the tribes are more numerous and leſs remote from each other; and, laſtly, in the cultivable diſtricts, ſuch as the pachalics of Aleppo, the Hauran, and the neighbourhood of Gaza, the camps are frequent and contiguous. In the former inſtances, the Bedouins are purely paſtors, and ſubſiſt only on the produce of their herds, and on a few dates and fleſh meat, which they eat either freſh or dried in the ſun and reduced to a powder. In the latter they ſow ſome land, and add cheeſe, barley, and even rice, to their fleſh and milk meats.

In thoſe diſtricts where the ſoil is ſtony and ſandy, as in the Tih, the Hedjaz, and the Najd, the rains make the ſeeds of the wild plants ſhoot, and revive the thickets, ranunculi, wormwood, and kali. They cauſe marſhes in the lower grounds, which produce reeds and graſs; and the plain aſſumes a tolerable degree of verdure. This is the ſeaſon of abundance both for the herds and their maſters; but, on the return of the heats, every thing is parched up, and the earth, converted into a grey and fine duſt, preſents nothing but dry ſtems as hard as wood, on which neither horſes, oxen, nor even goats, can feed. In this ſtate the deſert would become uninhabitable, and muſt be totally abandoned, had not nature formed an animal no leſs hardy and frugal than the ſoil is ſterile and ungrateful. No creature ſeems ſo peculiarly fitted to the climate in which it exiſts. Deſigning the camel to dwell in a country where he can find little nouriſhment, nature has been ſparing of her materials in the whole of his formation. She has not beſtowed on him the plump fleſhineſs of the ox, horſe, or elephant; but, limiting herſelf to what is ſtrictly neceſſary, ſhe has given him a ſmall head without ears at the end of a long neck without fleſh. She has taken from his legs and thighs every muſcle not immediately requiſite for motion; and, in ſhort, has beſtowed on his withered body only the veſſels and tendons neceſſary to connect its frame together. She has furniſhed him with a ſtrong jaw, that he may grind the hardeſt aliments; but, leſt he ſhould conſume too much, ſhe has ſtraitened his ſtomach, and obliged him to chew the cud. She has lined his foot with a lump of fleſh, which ſliding in the mud, and being no way adapted to climbing, fits him only for a dry, level, and ſandy, ſoil, like that of Arabia: ſhe has evidently deſtined him likewiſe to ſlavery, by refuſing him every ſort of defence againſt his enemies. Deſtitute of the horns of the bull, the hoof of the horſe, the tooth of the elephant, and the ſwiftneſs of the ſtag, how can the camel reſiſt or avoid the attacks of the lion, the tiger, or even the wolf? To preſerve the ſpecies, therefore, nature has concealed him in the depth of the vaſt deſerts, where the want of vegetables can attract no game, and whence the want of game repels every voracious animal. Tyranny muſt have expelled man from the habitable parts of the earth before the camel could have loſt his liberty. Become domeſtic, he has rendered habitable the moſt barren ſoil the world contains. He alone ſupplies all his maſter's wants. The milk of the camel nouriſhes the family of the Arab under the various forms of curd, cheeſe, and butter; and they often feed upon his fleſh. Slippers and harneſs are made of his ſkin, tents and clothing of his hair. Heavy burdens are tranſported by his means: and, when the earth denies forage to the horſe, ſo valuable to the Bedouin, the ſhe-camel ſupplies that deficiency by her milk, at no other coſt, for ſo many advantages, than a few ſtalks of brambles or wormwood, and pounded date-kernels. So great is the importance of the camel to the deſert, that, were it deprived of that uſeful animal, it muſt infallibly loſe every inhabitant.

Such is the ſituation in which nature has placed the Bedouins, to make them of a race of men equally ſingular in their phyſical and moral character. This ſingularity is ſo ſtriking, that even their neighbours the Syrians regard them as extraordinary beings: eſpecially thoſe tribes which dwell in the depths of the deſerts, ſuch as the Anaza, Kaibar, Tai, and others, which never approach the towns. When in the time of ſhaik Daher, ſome of their horſemen came as far as Acre, they excited the ſame curioſity there as a viſit from the ſavages of America would among us. Every body viewed with ſurpriſe theſe men, who were more diminutive, meagre, and ſwarthy, than any of the known Bedouins. Their withered legs were only compoſed of tendons, and had no calves. Their bellies ſeemed to cling to their backs, and their hair was frizzled almoſt as much as that of the negroes. They on the other hand were no leſs aſtoniſhed at every thing they ſaw; they could neither conceive how the houſes and minarets could ſtand erect, nor how men ventured to dwell beneath them, and always in the ſame ſpot; but, above all, they were in an ecſtacy on beholding the ſea, nor could they comprehend what that deſert of water could be. We may imagine that the Arabs of the frontiers are not ſuch novices; there are even ſeveral ſmall tribes of them, who, living in the midſt of the country, as in the valley of Bekaa, that of the Jordan, and in Paleſtine, approach nearer to the condition of the peaſants; but theſe are deſpiſed by the others, who look upon them as baſtard Arabs and Rayas, or ſlaves of the Turks.

In general, the Bedouins are ſmall, meagre, and tawny; more ſo, however, in the heart of the deſert than on the frontiers of the cultivated country: but they are always of a darker hue than the neighbouring peaſants. They alſo differ among themſelves in the ſame camp; and M. Volney remarked, that the ſhaiks, that is the rich, and their attendants, were always taller and more corpulent than the common claſs. He has ſeen ſome of them above five feet five and ſix inches high; though in general they do not, he ſays, exceed five feet two inches. This difference can only be attributed to their food, with which the former are ſupplied more abundantly than the latter. And the effects of this are equally evident in the Arabian and Turkmen camels; for theſe latter, dwelling in countries rich in forage, are become a ſpecies more robuſt and fleſhy than the former. It may likewiſe be affirmed, that the lower claſs of Bedouins live in a ſtate of habitual wretchedneſs and famine. It will appear almoſt incredible to us, but it is an undoubted fact, that the quantity of food uſually conſumed by the greateſt part of them does not exceed ſix ounces a day. This abſtinence is moſt remarkable among the tribes of the Najd and the Hedjaz. Six or ſeven dates ſoaked in melted butter, a little ſweet milk, or curds, ſerve a man a whole day; and he eſteems himſelf happy when he can add a ſmall quantity of coarſe flour or a little ball of rice. Meat is reſerved for the greateſt feſtivals; and they never kill a kid but for a marriage or a funeral. A few wealthy and generous ſhaiks alone can kill young camels, and eat baked rice with their victuals. In times of dearth, the vulgar, always half famiſhed, do not diſdain the moſt wretched kinds of food; and eat locuſts, rats, lizards, and ſerpents, broiled on briars. Hence are they ſuch plunderers of the cultivated lands, and robbers on the high roads: hence alſo their delicate conſtitution and their diminutive and meagre bodies, which are rather active than vigorous.

From theſe facts we are by no means juſtified in concluding that the frugality of the Bedouins is a virtue purely of choice, or even of climate. The extreme heat in which they live unqueſtionably facilitates their abſtinence, by deſtroying that activity which cold gives to the ſtomach. Their being habituated alſo to ſo ſparing a diet, by hindering the dilatation of the ſtomach, becomes doubtleſs a means of their ſupporting ſuch abſtemiouſneſs; but the chief and primary motive of this habit is with them, as with the reſt of mankind, the neceſſity of the circumſtances in which they are placed, whether from the nature of the ſoil, or that ſtate of ſociety in which they live.

It has been already remarked, that the Bedouin Arabs are divided into tribes, which conſtitute ſo many diſtinct nations. Each of theſe tribes appropriates to itſelf a tract of land forming its domain; in this they do not differ from cultivating nations, except that their territory requires a greater extent, in order to furniſh ſubſiſtence for their herds throughout the year. Each tribe is collected in one or more camps, which are diſperſed through the country, and which make a ſucceſſive progreſs over the whole, in proportion as it is exhauſted by the cattle; hence it is, that within a great extent a few ſpots only are inhabited, which vary from one day to another; but, as the entire ſpace is neceſſary for the annual ſubſiſtence of the tribe, whoever encroaches on it is deemed a violator of property; this is with them the law of nations. If, therefore, a tribe, or any of its ſubjects, enter upon a foreign territory, they are treated as enemies and robbers, and a war enſues. Now, as all the tribes have affinities with each other by alliances of blood or conventions, leagues are formed, which render theſe wars more or leſs general. The manner of proceeding on ſuch occaſions is very ſimple. The offence made known, they mount their horſes and ſeek the enemy; when they meet, they enter into a parley, and the matter is frequently made up; if not, they attack either in ſmall bodies, or man to man. They encounter each other at full ſpeed with fixed lances, which they ſometimes dart, notwithſtanding their length, at the flying enemy: the victory is rarely conteſted; it is decided by the firſt ſhock, and the vanquiſhed take to flight full gallop over the naked plain of the deſert. Night generally favours their eſcape from the conqueror. The tribe which has loſt the battle ſtrikes its tents, removes to a diſtance by forced marches, and ſeeks an aſylum among its allies. The enemy, ſatisfied with their ſucceſs, drive their herds farther on, and the fugitives ſoon after return to their former ſituation. But the ſlaughter made in theſe engagements frequently ſows the ſeeds of perpetual diſſenſion. The intereſt of the common ſafety has for ages eſtabliſhed a law among them, which decrees that the blood of every man who is ſlain muſt be avenged on his murderer. This vengeance is called *tar*, or retaliation; and the right of exacting it devolves on the neareſt of kin to the deceaſed. So nice are the Arabs on this point of honour, that, if any one neglects to ſeek his retaliation, he is diſgraced for ever. He therefore watches every opportunity of revenge: if his enemy periſhes from any other cauſe, ſtill he is not ſatisfied, and his vengeance is directed againſt the neareſt relation. Theſe animoſities are tranſmitted as an inheritance from father to children, and never ceaſe but by the extinction of one of the families, unleſs they agree to ſacrifice the criminal, or *purchaſe the blood* for a ſtated price, in money or in flocks. Without this ſatisfaction, there is neither peace, nor truce, nor alliances, between them, nor ſometimes even between whole tribes: *There is blood between us*, ſay they on every occaſion; and this expreſſion is an inſurmountable barrier. Such accidents being neceſſarily numerous in a long courſe of time, the greater part of the tribes have ancient quarrels, and live in an habitual ſtate of hoſtility; which, added to their way of life, renders the Bedouins a military people, tho' they have made no great progreſs in the art of war.

Their camps are formed in a kind of irregular circle, compoſed of a ſingle row of tents, with greater or leſs intervals. Theſe tents, made of goat's or camel's hair, are black or brown, in which they differ from thoſe of the Turkmen, which are white. They are ſtretched on three or four pickets, only five or ſix feet high, which gives them a very flat appearance; at a diſtance one of theſe camps ſeems only like a number of black ſpots; but the piercing eye of the Bedouin is not to be deceived. Each tent inhabited by a family is divided by a curtain into two apartments, one of which is appropriated to the women. The empty ſpace within the large circle ſerves to hold their cattle every evening. They never have any intrenchments; their only advanced guards and patroles are dogs; their horſes remain ſaddled and ready to mount on the firſt alarm; but, as there is neither order nor regularity, theſe camps, always eaſy to ſurpriſe, afford no defence in caſe of an attack: accidents, therefore, very frequently happen, and cattle are carried off every day; a ſpecies of marauding war in which the Arabs are very experienced.

The tribes which live in the vicinity of the Turks are ſtill more accuſtomed to attacks and alarms; for theſe ſtrangers, arrogating to themſelves, in right of conqueſt, the property of the whole country, treat the Arabs as rebel vaſſals, or as turbulent and dangerous enemies. On this principle, they never ceaſe to wage ſecret or open war againſt them. The pachas ſtudy every occaſion to harraſs them. Sometimes they conteſt with them a territory which they had let them, and at others demand a tribute which they never agreed to pay. Should a family of ſhaiks be divided by intereſt or ambition, they alternately ſuccour each party, and conclude by the deſtruction of both. Frequently too they poiſon or aſſaſſinate thoſe chiefs whoſe courage or abilities they dread, though they ſhould even be their allies. The Arabs, on their ſide, regarding the Turks as uſurpers and treacherous enemies, watch every opportunity to do them injury. Unfortunately, their vengeance falls oftener on the innocent than on the guilty. The harmleſs peaſant generally ſuffers for the offences of the ſoldier. On the ſlighteſt alarm, the Arabs cut their harveſts, carry off their flocks, and intercept their communication and commerce. The peaſant calls them thieves, and with reaſon; but the Bedouins claim the right of war, and perhaps they alſo are not in the wrong. However this may be, theſe depredations occaſion a miſunderſtanding between the Bedouins and the inhabitants of the cultivated country, which renders them mutual enemies.

Such is the ſituation of the wandering Arabs. They are ſubject to great viciſſitudes, according to the good or bad conduct of their chiefs. Sometimes a feeble tribe raiſes and aggrandizes itſelf, whilſt another, which was powerful, falls into decay, or perhaps is entirely annihilated; not that all its members periſh, but they incorporate themſelves with ſome other; and this is the conſequence of the internal conſtitution of the tribes. Each tribe is compoſed of one or more principal families, the members of which bear the title of *ſhaiks*, i. e. 'chiefs or lords.' Theſe families have a great reſemblance to the patricians of Rome, and the nobles of modern Europe. One of the ſhaiks has the ſupreme command over the others. He is the general of their little army; and ſometimes aſſumes the title of *emir*, which ſignifies commander or prince. The more relations, children, and allies, he has, the greater are his ſtrength and power. To theſe he adds particular adherents, whom he ſtudiouſly attaches to him, by ſupplying all their wants. But, beſides this, a number of ſmall families, who, not being ſtrong enough to live independent, ſtand in need of protection and alliances, range themſelves under the banners of this chief. Such an union is called *kabila*, or 'tribe.' Theſe tribes are diſtinguiſhed from each other by the name of their reſpective chiefs, or by that of the ruling family; and, when they ſpeak of any of the individnals who compoſe them, they call them the children of ſuch a chief, though they may not be all really of his blood, and he himſelf may have been long ſince dead. Thus they ſay, *Beni Temin*, *Oulad Tai*, 'the children of Temin and of Tai.' This mode of expreſſion is even applied, by metaphor, to the names of countries: the uſual phraſe for denoting its inhabitants being to call them the *children* of ſuch a place. Thus the Arabs ſay, *Oulad Maſr*, the Egyptians; *Oulad Sham*, the Syrians; they would alſo ſay, *Oulad Franſa*, the French; *Oulad Moſkou*, the Ruſſians; a remark which is not unimportant to ancient hiſtory.

The government of this ſociety is at once republican, ariſtocratical, and even deſpotic, without exactly correſponding with any of theſe forms. It is republican, inaſmuch as the people have a great influence in all affairs, and as nothing can be tranſacted without the conſent of a majority. It is ariſtocratical, becauſe the families of the ſhaiks poſſeſs ſome of the prerogatives which every where accompany power; and, laſtly, it is deſpotic, becauſe the principal ſhaik has an indefinite and almoſt abſolute authority, which, when he happens to be a man of credit and influence, he may even abuſe; but the ſtate of theſe tribes confines even this abuſe to very narrow limits: for if a chief ſhould commit an act of injuſtice; if, for example, he ſhould kill an Arab, it would be almoſt impoſſible for him to eſcape puniſhment; the reſentment of the offended party would pay no reſpect to his dignity; the law of retaliation would be put in force; and, ſhould he not pay the blood, he would be infallibly aſſaſſinated; which, from the ſimple and private life the ſhaiks lead in their camps, would be no difficult thing to effect. If he haraſſes his ſubjects by ſeverity, they abandon him and go over to another tribe. His own relations take advantage of his miſconduct to depoſe him and advance themſelves to his ſtation. He can have no reſource in foreign troops; his ſubjects communicate too eaſily with each other to render it poſſible for him to divide their intereſts, and form a faction in his favour. Beſides, how is he to pay them, ſince he receives no kind of taxes from the tribe; the wealth of the greater part of his ſubjects being limited to abſolute neceſſaries, and his own confined to very moderate poſſeſſions, and thoſe too loaded with great expence?

The principal ſhaik in every tribe, in fact, defrays the charges of all who arrive at or leave the camp. He receives the viſits of the allies, and of every perſon who has buſineſs with them. Adjoining to his tent is a large pavilion for the reception of all ſtrangers and paſſengers. There are held frequent aſſemblies of the ſhaiks and principal men, to determine on encampments and removals; on peace and war; on the differences with the Turkiſh governors and the villages; and the litigations and quarrels of individuals. To this crowd, which enters ſucceſſively, he muſt give coffee, bread baked on the aſhes, rice, and ſometimes roaſted kid or camel; in a word, he muſt keep open table; and it is the more important to him to be generous, as this generoſity is cloſely connected with matters of the greateſt conſequence. On the exerciſe of this depend his credit and his power. The famiſhed Arab ranks the liberality which feeds him before every virtue: nor is this prejudice without foundation; for experience has proved that covetous chiefs never were men of enlarged views: hence the proverb, as juſt as it is brief, *A cloſe fiſt, a narrow heart.* To provide for theſe expences, the ſhaik has nothing but his herds, a few ſpots of cultivated ground, the profits of his plunder, and the tribute he levies on the high roads; the total of which is very inconſiderable. We muſt not, therefore, when we ſpeak of the Bedonins, affix to the words *prince* and *lord* the ideas they uſually convey; we ſhould come nearer the truth by comparing them to ſubſtantial farmers in mountainous countries, whoſe ſimplicity they reſemble in their dreſs as well as in their domeſtic life and manners. A ſhaik who has the command of 500 horſe does not diſdain to ſaddle and bridle his own, nor to give him barley and chopped ſtraw. In his tent, his wife makes the coffee, kneads the dough, and ſuperintends the dreſſing of the victuals. His daughters and kinſwomen waſh the linen, and go with pitchers on their heads and veils over their faces to draw water from the fountain. Theſe manners agree preciſely with the deſcriptions in Homer, and the hiſtory of Abraham in Geneſis.

The ſimplicity, or perhaps more properly the poverty, of the lower claſs of the Bedouins, is proportionate to that of their chiefs. All the wealth of a family conſiſts of moveables, of which the following is a pretty exact inventory: A few male and female camels; ſome goats and poultry; a mare and her bridle and ſaddle; a tent; a lance ſixteen feet long; a crooked ſabre; a ruſty muſket with a flint or matchlock; a pipe; a portable mill; a pot for cooking; a leathern bucket; a coffee roaſter; a mat; ſome clothes; a mantle of black wool; and a few glaſs or ſilver rings, which the women wear upon their legs and arms. If none of theſe are wanting, their furniture is complete. But what the poor man ſtands moſt in need of, and what he takes moſt pleaſure in, is his mare; for this animal is his principal ſupport. With his mare the Bedouin makes his excurſions againſt hoſtile tribes, or ſeeks plunder in the country and on the highways. The mare is preferred to the horſe, becauſe ſhe is more docile, and yields milk, which on occaſion ſatisfies the thirſt and even the hunger of her maſter.

Thus confined to the moſt abſolute neceſſities of life, the wandering Arabs have as little induſtry as their wants are few; all their arts conſiſt in weaving their clumſy tents and in making mats and butter. Their whole commerce only extends to the exchanging camels, kids, ſtallions, and milk, for arms, clothing, a little rice or corn, and money, which they bury. They are totally ignorant of all ſcience; and have not even any idea of aſtronomy, geometry, or medicine. They have not a ſingle book; and nothing is ſo uncommon among the ſhaiks as to know how to read. All their literature conſiſts in reciting tales and hiſtories in the manner of the Arabian Nights Entertainments. They have a peculiar paſſion for ſuch ſtories, and employ in them almoſt all their leiſure, of which they have a great deal. In the evening they ſeat themſelves on the ground, at the threſhold of their tents, or under cover if it be cold; and there, ranged in a circle round a little fire of dung, their pipes in their mouths, and their legs croſſed, they ſit awhile in ſilent meditation, till on a ſudden one of them breaks forth with, *Once upon a time*,—and continues to recite the adventures of ſome young ſhaik and female Bedouin: he relates in what manner the youth firſt got a ſecret glimpſe of his miſtreſs; and how he became deſperately enamoured of her: he minutely deſcribes the lovely fair; boaſts her black eyes, as large and ſoft as thoſe of the gazelle; her languid and empaſſioned looks, her arched eye-brows, reſembling two bows of ebony; her waiſt ſtraight and ſupple as a lance: he forgets not her ſteps, light as thoſe of the young filley; nor her eye-laſhes, blackened with kohl; nor her lips, painted blue; nor her nails, tinged with the golden-coloured henna; nor her breaſts, reſembling two pomegranates; nor her words ſweet as honey. He recounts the ſufferings of the young lover, ſo waſted with deſire and paſſion, that his body no longer yields any ſhadow. At length, after detailing his various attempts to ſee his miſtreſs, the obſtacles of the parents, the invaſions of the enemy, the captivity of the two lovers, &c. he terminates, to the ſatisfaction of the audience, by reſtoring them, united and happy, to the paternal tent, and by receiving the tribute paid to his eloquence, in the *Ma cha allah* (an exclamation equivalent to 'admirably well!') he has merited. The Bedouins have likewiſe their love-ſongs, which have more ſentiment and nature in them than thoſe of the Turks and inhabitants of the towns; doubtleſs becauſe the former, whoſe manners are chaſte, know what love is: while the latter, abandoned to debauchery, are acquainted only with enjoyment.

When we conſider how much the condition of the Bedouins, eſpecially in the depths of the deſert, reſembles in many reſpects that of the ſavages of America, we ſhall be inclined to wonder why they have not the ſame ferocity; and why their manners are ſo much more ſociable and mild. The following reaſons are propoſed by M. Volney as the true ſolution of this difficulty. It ſeems at firſt view that America, being rich in paſturage, lakes, and foreſts, is more adapted to the paſtoral mode of life than to any other. But, if we conſider that theſe foreſts, by affording an eaſy refuge to animals, protect them more ſurely from the power of man, we may conclude, that the ſavage has been induced to become a hunter inſtead of a ſhepherd, by the nature of the country. In this ſtate, all his habits have concurred to give him a ferocity of character. The great fatigues of the chace have hardened his body; frequent and extreme hunger, followed by a ſudden abundance of game, has rendered him voracious. The habit of ſhedding blood, and tearing his prey, has familiariſed him to the ſight of death and ſufferings. Tormented by hunger, he becomes a cannibal, ſanguinary, and atrocious; and his mind acquires all the inſenſibility of his body.

But the ſituation of the Arab is very different. Amid his vaſt naked plains, without water and without foreſts, he has not been able, for want of game or fiſh, to become either a hunter or a fiſherman. The camel has determined him to a paſtoral life, the manners of which have influenced his whole character. Finding at hand a light, but conſtant and ſufficient, nouriſhment, he has acquired the habit of frugality. Content with his milk and his dates, he has not deſired fleſh: he has ſhed no blood: his hands are not accuſtomed to ſlaughter, nor his ears to the cries of ſuffering creatures; he has preſerved a humane and ſenſible heart. No ſooner did the ſavage ſhepherd become acquainted with the uſe of the horſe, than his manner of life muſt conſiderably change. The facility of paſſing rapidly over extenſive tracts of country, rendered him a wanderer. He was greedy from want, and became a robber from greedineſs; and ſuch is in fact his preſent character. A plunderer, rather than a warrior, the Arab poſſeſſes no ſanguinary courage; he attacks only to deſpoil; and, if he meets with reſiſtance, never thinks a ſmall booty is to be put in competition with his life. To irritate him you muſt ſhed his blood; in which caſe he is found to be as obſtinate in his vengeance as he was cautious in avoiding danger. The Bedouins have often been reproached with this ſpirit of rapine; but, without wiſhing to defend it, we may obſerve that one circumſtance has not been ſufficiently attended to, which is, that it only takes place towards reputed enemies, and is conſequently founded on the acknowledged laws of almoſt all nations. Among themſelves they are remarkable for a good faith, a diſintereſtedneſs, a generoſity, which would do honour to the moſt civilized people. What is there more noble than that right of aſylum ſo reſpected among all the tribes? A ſtranger, nay even an enemy, touches the tent of the Bedouin, and from that inſtant his perſon becomes inviolable. It would be reckoned a diſgraceful meanneſs, an indelible ſhame, to ſatisfy even a juſt vengeance at the expence of hoſpitality. Has the Bedouin conſented to eat bread and ſalt with his gueſt, nothing in the world can induce him to betray him. The power of the ſultan himſelf would not be able to force a refugee from the protection of a tribe, but by its total extermination. The Bedouin, ſo rapacious without his camp, has no ſooner ſet his foot within it, than he becomes liberal and generous. What little he poſſeſſes he is ever ready to divide. He has even the delicacy not to wait till it is aſked: when he takes his repaſt, he affects to ſeat himſelf at the door of his tent, in order to invite the paſſengers; his generoſity is ſo ſincere, that he does not look upon it as a merit, but merely as a duty; and he therefore readily takes the ſame liberty with others. To obſerve the manner in which theſe Arabs conduct themſelves towards each other, one would imagine that they poſſeſſed all their goods in common. Nevertheleſs they are no ſtrangers to property; but it has none of that ſelfiſhneſs which the increaſe of the imaginary wants of luxury has given it among poliſhed nations. Deprived of a multitude of enjoyments which nature has laviſhed upon other countries, they are leſs expoſed to temptations which might corrupt and debaſe them. It is more difficult for their ſhaiks to form a faction to enſlave and impoveriſh the body of the nation. Each individual, capable of ſupplying all his wants, is better able to preſerve his character and independence; and private poverty becomes at once the foundation and bulwark of public liberty.

This liberty extends even to matters of religion. We obſerve a remarkable difference between the Arabs of the towns and thoſe of the deſert; ſince, while the former crouch under the double yoke of political and religious deſpotiſm, the latter live in a ſtate of perfect freedom from both: it is true, that, on the frontiers of the Turks, the Bedouins, from policy, preſerve the appearance of Mahometaniſm; but ſo relaxed is their obſervance of its ceremonies, and ſo little fervour has their devotion, that they are generally conſidered as infidels, who have neither law nor prophets. They even make no difficulty in ſaying that the religion of Mahomet was not made for them: "For (add they) how ſhall we make ablutions who have no water? How can we beſtow alms who are not rich? Why ſhould we faſt in the Ramadan, ſince the whole year with us is one continual faſt? and what neceſſity is there for us to make the pilgrimage to Mecca, if God be preſent every where?" In ſhort, every man acts and thinks as he pleaſes, and the moſt perfect toleration is eſtabliſhed among them. See Arabia.

BED'POST, *ſ.* [from *bed* and *poſt.*] The poſt at the corner of the bed, which ſupports the canopy.

BED'PRESSER, *ſ.* [from *bed* and *preſs.*] A heavy lazy fellow.—This ſanguine coward, this *bedpreſſer*, this horſeback breaker, this huge hill of fleſh. *Shakeſpeare.*

To BEDRAG'GLE, *v. a.* [from *be* and *draggle.*] To ſoil the clothes, by ſuffering them, in walking, to reach the dirt:

Poor Patty Blount, no more be ſeen
Bedraggled in my walks ſo green. *Swift.*

To BEDRENCH', *v. a.* [from *be* and *drench.*] To drench; to ſoak; to ſaturate with moiſture:

Far off from the mind of Bolingbroke
It is, ſuch crimſon tempeſt ſhould *bedrench*
The freſh green lap of fair king Richard's land. *Shakeſ.*

BEDR, a town of Arabia, fifty-ſix miles ſouth-ſouth-weſt of Medina.

BEDRI'ACUM, anciently a village of Italy, ſituated, according to Tacitus, between Verona and Cremona. Cluverius conjectures that the ancient Bedriacum ſtood in the place where the city of Caneto now ſtands. This village was remarkable for the defeat of the emperor Galba by Otho, and afterwards of Otho by Vitellius.

BED'RID, *adj.* [from *bed* and *ride.*] Confined to the bed by age or ſickneſs.—Infirm perſons, when they come to be ſo weak as to be fixed to their beds, hold out many years; ſome have lain *bedrid* twenty years. *Ray.*

BED'RITE, *ſ.* [from *bed* and *rite.*] The privilege of the marriage-bed:

Whoſe vows are, that no *bedrite* ſhall be paid
'Till Hymen's torch be lighted. *Shakeſpeare.*

BEDRO'LA, a town of Spain, in the country of Arragon, eight leagues from Sangueſa.

To BEDROP', *v. a.* [from *be* and *drop.*] To beſprinkle; to mark with ſpots or drops; to ſpeckle:

Our plenteous ſtreams a various race ſupply:
The ſilver eel, in ſhining volumes roll'd;
The yellow carp, in ſcales *bedrop'd* with gold. *Pope.*

BED'STAFF, *ſ.* [from *bed* and *ſtaff.*] A wooden pin ſtuck anciently on the ſides of the bedſtead, to hold the clothes from ſlipping on either ſide.

BED'STEAD, *ſ.* [from *bed* and *ſtead.*] The frame on which the bed is placed.

BED'STRAW, *ſ.* [from *bed* and *ſtraw.*] The ſtraw laid under a bed to make it ſoft.—Fleas breed principally of ſtraw or mats, where there hath been a little moiſture; or the chamber or *bedſtraw* kept cloſe and not aired. *Bacon.*

BEDSWERV'ER, *ſ.* [from *bed* and *ſwerve.*] One that is falſe to the bed; one that ranges or ſwerves from one bed to another:

She's a *bedſwerver*, even as bad as thoſe
That vulgars give the boldeſt titles to. *Shakeſpeare.*

BED'TIME, *ſ.* [from *bed* and *time.*] The hour of reſt; ſleeping time.—After evening repaſts, till *bedtime*, their thoughts will be beſt taken up on the eaſy grounds of religion. *Milton.*

To BEDUNG', *v. a.* [from *be* and *dung.*] To cover or manure with dung.

To BEDUST', *v. a.* [from *be* and *duſt.*] To ſprinkle with duſt.

BED'WARD, *adv.* [from *bed* and *ward.*] Toward bed:

As merry as when our nuptial day was done,
And tapers burnt to *bedward*. *Shakeſpeare.*

To BEDWARF', *v. a.* [from *be* and *dwarf.*] To make little; to hinder in growth; to ſtunt:

'Tis ſhrinking, not cloſe weaving, that hath thus
In mind and body both *bedwarfed* us. *Donne.*

BED'WIN, or Great Bedwin, an ancient town in Wiltſhire, ſituate in the eaſtern part of the county, on the borders of Berkſhire, ſixty-nine miles from London. It is an ancient borough by preſcription; and in the Saxon times was a city, with a caſtle, the moats whereof are ſtill viſible. The church is a ſpacious fabric, in the form of a croſs, built of flints ſtrongly cemented, with a high tower; and among other remarkable monuments in the church, is that of Sir John Seymour, father of the protector. Dr. Stukely ſuppoſes this town to have been the Leucomagus of Ravennas. The town is governed by a portreeve, choſen by a jury at a court-leet, held yearly by the ſteward of the lord of the borough; and the portreeve chuſes a bailiff and other officers. Its market-day was Tueſday, but it has been diſcontinued for many years. There are two fairs annually, on the 23d of April, and the 26th of July. About two miles from the town is the ſeat of the earl of Ayleſbury, who has the royalty of the borough.

BED'WORK, *ſ.* [from *bed* and *work.*] Work done in bed; work performed without toil of the hands:

Why, this hath not a finger's dignity,
They call this *bedwork*, mapp'ry, cloſet war. *Shakeſpeare.*

BEE, *ſ.* in natural hiſtory. See Apis. Bees hieroglyphically repreſent a kingdom or ſubjects in obedience to their lawful ſovereign. For they have amongſt them a moſt ingenious commonwealth, and a good government; for they are all obedient to their queen, and never revolt from her authority. They ſubmit to her ſentence, obey her commands, and follow her motions and conduct.

"Where *bees* are, there will be honey;" that is, where there are induſtrious people, there will be riches: for the hand of the diligent makes a nation wealthy. The truth of this ſaying is very viſible in all trading nations, who live in affluence and plenty, while their indolent lazy neighbours are ready to periſh for want.

Bee-Bread. See Apis, vol. i. p. 795.

Bee-Eater, in zoology. See Merops.

Bee-Flower, or Orchis, *ſ.* in botany. Ophrys.

Bee-Garden, *ſ.* A place to ſet hives of bees in.—A convenient and neceſſary place ought to be made choice of for your apiary, or *bee-garden*. *Mortimer.*

Bee-Glue, called by the ancients *propolis*, is a ſoft, unctuous, glutinous, matter, employed by bees to cement the combs to the hives, and to cloſe up the cells.

Bee-Hive, the caſe, or box, in which bees are kept.

Bee-Master, one that keeps bees.—They that are *bee-maſters*, and have not care enough of them, muſt not expect to reap any conſiderable advantage by them. *Mortimer.*

BEECH-TREE, *ſ.* in botany. See Fagus.

Beech-Mast, the fruit of the beech-tree, ſaid to be good for fattening hogs, deer, &c. It has ſometimes, even to men, proved an uſeful ſubſtitute for bread. Chios is ſaid to have endured a memorable ſiege by means of it.

Beech-Oil, an oil drawn by expreſſion from the maſt of the beech tree, after it has been ſhelled and pounded. This oil is very common in Picardy, and uſed there and in other parts of France inſtead of butter; but moſt of thoſe who take a great deal of it complain of pains and a heavineſs in the ſtomach.

BEECH'EN, *adj.* [*bucene*, Sax.] Conſiſting of the wood of the beech; belonging to the beech:

With diligence he'll ſerve us when we dine,
And in plain *beechen* veſſels fill our wine. *Dryden.*

BEEF, *ſ.* [*bœuf*, Fr.] The fleſh of black cattle prepared for food. An ox, bull, or cow, conſidered as fit for food. In this ſenſe it has the plural *beeves*; the ſingular is ſeldom found:

On hides of *beeves*, before the palace gate,
Sad ſpoils of luxury! the ſuitors fate. *Pope.*

According to Dr. Cullen, beef, though of a more firm texture and leſs ſoluble than mutton, is equally alkaleſcent, perſpirable, and nutritious: and, if in the ſouthern countries it is not eſteemed ſo, it is on account of its imperfection there.

Beef, *adj.* Conſiſting of the fleſh of black cattle.—If you are employed in marketing, do not accept of a treat of a *beef* ſteak from the butcher. *Swift.*

Beef Alamode, in cookery, beef well beaten, larded, and ſtewed with lemon, pepper, muſhrooms, white wine, &c.

Beef-Eater, *ſ.* [from *beef* and *eat*, becauſe the commons is *beef* when on waiting. Mr. Steevens derives it thus: *beef-eater* may come from *beaufetier*, one who attends at the ſide-board, which was anciently placed in a *beaufet*. The buſineſs of the beef-eaters was, and perhaps is ſtill, to attend the king at meals.] A yeomen of the guard.

Beef Island, a ſmall iſland near the coaſt of America, in the bay of Campeachy. Lat. 18. 20. N. lon. 75. 15. W. Ferro.

Beef-witted, *adj.* [from *beef* and *wit.*] Dull; ſtupid; heavy-headed.—*Beef-witted* lord. *Shakeſpeare.*

BEELE, *ſ.* a kind of pick-axe, uſed by the miners for ſeparating the ores from the rocks in which they lie: this inſtrument is called a *tubber* by the miners of Cornwall.

BEE'LIKE, a town of Germany, in the circle of the Lower Rhine, and duchy of Weſtphalia, four miles weſt of Rhuden, and ten eaſt-north-eaſt of Arenſberg.

BEE'MOL, *ſ.* [of *mollis*, Lat. ſoft.] In muſic, a flat note, a half note.—There be intervenient in the riſe of eight, in tones, two *beemols*, or half notes; ſo as, if you divide the tones equally, the eight is but ſeven whole and equal notes. *Bacon.*

BEEM'STER, a great drained marſh or lake of North Holland. It was formerly a large lake, covering a great extent of country, which by the induſtry of the Hollanders, who have drained the water, is converted into excellent paſture.

BEEN, [*beon*, Sax.] The *participle preterite* of *To* Be:

Enough that virtue fill'd the ſpace between,
Prov'd by the ends of being to have *been*. *Pope.*

BEER, *ſ.* [*bir*, Welſh; of *bibo*, Lat. to drink.] Liquor made of malt and hops. It is diſtinguiſhed from ale, either by being older or ſmaller:

Flow, Welſted! flow, like thine inſpirer, *beer*;
Though ſtale, not ripe; though thin, yet never clear;
So ſweetly mawkiſh, and ſo ſmoothly dull;
Heady, not ſtrong; and foaming, though not full. *Pope.*

Beer may be made from any farinaceous grain, though it is produced moſt generally from barley. It is, properly ſpeaking, the wine of barley. The meals of any of theſe grains being extracted by a ſufficient quantity of water, and remaining at reſt in a degree of heat requiſite for the ſpirituous fermentation, naturally undergo this fermentation, and are changed into a vinous liquor. But, as all theſe matters render the water mucilaginous, fermentation proceeds ſlowly and imperfectly in ſuch liquors. On the other ſide, if the quantity of farinaceous matter be ſo diminiſhed that its extract or decoction may have a convenient degree of fluidity, this liquor will be impregnated with ſo ſmall a quantity of fermentable matter, that the beer or wine of the grain will be too weak, and have too little taſte. Theſe inconveniences are therefore remedied by preliminary operations, which the grain is made to undergo. See the articles Brewing and Malt.

Foreigners have framed divers abſurd conjectures to account for the excellency of the Britiſh beer, and its ſuperiority to that of other countries, even of Bremen, Mons, and Roſtock. We may juſtly attribute the excellency of our beer to the quality of our malt and water, and the ſkill of our brewers in preparing it.

When beer, by any accident, becomes ſour, it may be reſtored divers ways; as by ſalt made of the aſhes of barley-ſtraw put into the veſſel, and ſtirred; or by three or four handfuls of beech-aſhes thrown into the veſſel, and ſtirred; or, where the liquor is not very ſour, by a little put in a bag, without ſtirring: chalk calcined, oyſter-ſhells, egg-ſhells, burnt ſea-ſhells, crab's eyes, alkalized coral, &c. do the ſame, as they imbibe the acidity, and unite with it into a ſweetneſs. Beer, it is ſaid, may be kept from turning ſour in ſummer by hanging into the veſſel a bag containing a new-laid egg pricked full of pin-holes; ſome laurel-berries, and barley-grains; or by a new-laid egg and walnut-tree leaves. Glauber commends his ſal mirabile and fixed nitre, put into a linen bag, and hung on the top of the caſk ſo as to reach the liquor, not only for recovering ſour beer, but preſerving and ſtrengthening it. Laurel-berries, their ſkin being peeled off, will keep beer from deadneſs; and beer already dead may be reſtored by impregnating it with fixed air. Beer taſting of the caſk may be freed from it by putting a handful of wheat in a bag, and hanging it in the veſſel.

Beer, among weavers, is nineteen ends of yarn, running all together out of the trough, the length of the cloth.

BEER'ALSTON, a ſmall borough-town in the county of Devon, and within a mile of the navigable river Tamer. It is governed by a portreeve, who is always the returning-officer for members to ſerve in parliament; it ſends two members. In Beeralſton is a large tree, under which the court is held for chooſing the portreeve, town-officers, and members of parliament. Although an ancient borough by preſcription, the right of ſending members was not reſtored to them until 27 Eliz. The right of election is in thoſe who have land in the borough, and pay threepence acknowledgement to the lord. The church is about two miles and a half diſtant from the town, by the ſide of the river Tavy. In the pariſh of Beeralſton are four ſilver-mines, belonging to Chriſtopher Gullet, Eſq. which produce a large quantity of ſilver: he has alſo a commodious ſmelting-houſe. Beeralſton is ſix miles from Taviſtock, fourteen from Plymouth, and 212 from London. It has a market weekly on Saturday.

BEER'ING's BAY, a bay on the weſt coaſt of North America, in the North Pacific Ocean. Lat. 59. 18. N. lon. 221. 0. E. Greenwich.

Beering's Island, an iſland in the North Pacific Ocean, about ninety miles long, and from twenty-five to thirty wide. It is thirty leagues weſt of Kamtſchatka. Lat. 54. 45. to 56. 10. N. lon. 181. to 182. E. Ferro.

Beering's Straits, the narrow ſea between the weſt coaſt of North America and the eaſt coaſt of Aſia, thirteen leagues wide.

BEER'OTH, a village of Judea, ſituated at the foot of Mount Gabaon, ſeven miles from Ælia or Jeruſalem, on the road to Nicopolis. *Jerome.*

BEERSHE'BA, [בארשבע Heb. of באר a well, and שבע he ſware, or שבועת an oath; the well of an oath.] The name of a place in Canaan.

BEES'ENSTADT a town of Germany, in the circle of Upper Saxony, and county of Mansfeld, ſix miles eaſt of Eiſzleben.

BEES'KOW, a town of Germany, in the circle of Upper Saxony, and uckermark of Brandenburgh, and capital of a lordſhip to which it gives name, ſituated on the Spree. A cloth manufacture is carried on in the town, which is ſixteen miles ſouth-weſt of Frankfort-on-the Oder, and thirty-four eaſt-ſouth-eaſt of Berlin.

BEES'LEN, a town of Germany, in the circle of Weſtphalia, and county of Lingen, ſeven miles ſouth-ſouth-eaſt of Lingen.

BEEST'INGS, or **Breastings**, *ſ.* a term uſed by the country people for the firſt milk taken from a cow after calving. The beeſtings are of a thick conſiſtence, and yellow colour, ſeemingly impregnated with ſulphur. Dr. Morgan imagines them peculiarly fitted and intended by nature to cleanſe the young animal from the recrements gathered in its ſtomach and inteſtines during its long habitation *in utero*. The like quality and virtue he ſuppoſes in women's firſt milk after delivery; and hence infers the neceſſity of the mother's ſuckling her own child, rather than committing it to a nurſe whoſe firſt milk is gone.

BEET, *ſ.* in botany. See BETA.

BEE'TLE, *ſ.* [*bytel*, Sax.] An inſect diſtinguiſhed by having hard caſes or ſheaths, under which he folds his wings. See SCARABÆUS.

The poor *beetle*, that we tread upon,
In corporal ſuff'rance finds a pang as great
As when a giant dies. *Shakeſpeare.*

A heavy mallet, or wooden hammer, with which wedges are driven, and pavements rammed.

“ As blind as a *beetle* (or mole).” *Cæcior talpa*, Lat. *Avoir les yeux à talon*, Fr. ‘To have one's eyes in one's heels;’ to be very blind, or ſee but very little.

To BEETLE, *v. n.* To jut out; to hang over:

What if it tempt thee tow'rd the flood, my lord?
Or to the dreadful ſummit of the cliff,
That *beetles* o'er his baſe into the ſea. *Shakeſpeare.*

BEE'TLEBROWED, *adj.* [from *beetle* and *browed.*] Having prominent brows.—Enquire for the *beetlebrowed* critic. *Shakeſpeare.*

BEE'TLEHEADED, *adj.* [from *beetle* and *head.*] Loggerheaded; wooden-headed; having a head ſtupid, like the head of a wooden beetle.—A whoreſon, *beetleheaded*, flap-eared, knave. *Shakeſpeare.*

BEEVES, *ſ.* [the plural of *beef.*] Black cattle; oxen:

Beeves, at his touch, at once to jelly turn,
And the huge boar is ſhrunk into an urn. *Pope.*

To BEFALL', *v. n.* [from *fall.* It *befell*, it *hath befallen.*] To happen to: uſed generally of ill.—This venerable perſon, who probably heard our Saviour's prophecy of the deſtruction of Jeruſalem, drew his congregation out of theſe unparalleled calamities, which *befell* his countrymen. *Addiſon.*—To happen to, as good or neutral.—No man can certainly conclude God's love or hatred to any perſon, from what *befalls* him in this world. *Tillotſon.*—To happen; to come to paſs. It is uſed ſometimes with *to* before the perſon to whom any thing happens: *this is rare:*

Some great miſchief hath *befall'n*
To that meek man. *Shakeſpeare.*

To befall of. To become of; to be the ſtate or condition of: *a phraſe little uſed:*

Do me the favour to dilate at full
What hath *befall'n of* them, and thee, till now. *Shakeſ.*

BEFA'RIA, *ſ.* in botany. See BEJARIA.

To BEFIT', *v. a.* [from *be* and *fit.*] To ſuit; to be ſuitable to; to become:

Out of my ſight, thou ſerpent!—that name beſt
Befits thee, with him leagu'd; thyſelf as falſe. *Milton.*

To BEFOOL', *v. a.* [from *be* and *fool.*] To infatuate; to fool; to deprive of underſtanding; to lead into error.—Men *befool* themſelves infinitely, when, by venting a few ſighs, they will needs perſuade themſelves that they have repented. *South.*

BEFO'RE, *prep.* [*biforan*, Sax.] Farther onward in place.—Their common practice was to look no farther *before* them than the next line; whence it will follow that they can drive to no certain point. *Dryden.*—In the front of; not behind:

Who ſhall go
Before them, in a cloud and pillar of fire,
By day a cloud, by night a pillar of fire,
To guide them in their journey, and remove
Behind them, while the obdurate king purſues. *Milton.*

In the preſence of: noting authority or conqueſt.—The Alps and Pyrenean ſink *before* him. *Addiſon.*—In the preſence of: noting reſpect.—They repreſent our poet betwixt a farmer and a courtier, when he dreſt himſelf in his beſt habit, to appear *before* his patron. *Dryden.*—In ſight of; under the cognizance of: noting juriſdiction.—If a ſuit be begun *before* an archdeacon, the ordinary may licenſe the ſuit to an higher court. *Ayliffe.*—In the power of: noting the right of choice.—He hath put us in the hands of our own counſel. Life and death, proſperity and deſtruction, are *before* us. *Tillotſon.*—By the impulſe of ſomething behind:

Hurried by fate, he cries, and borne *before*
A furious wind we leave the faithful ſhore. *Dryden.*

Preceding in time.—Particular advantages it has *before* all the books which have appeared *before* it in this kind. *Dryden.*—In preference to.—We think poverty to be infinitely deſirable *before* the torments of covetouſneſs. *Taylor.*—Prior to; nearer to any thing; as, the elder ſon is *before* the younger in ſucceſſion. Superior to; as, he is *before* his competitors both in right and power.

BEFORE, *adv.* Sooner than; earlier in time:

Before the hills appear'd, or fountain flow'd,
Thou with eternal wiſdom didſt converſe. *Milton.*

In time paſt.—I ſhall reſume ſomewhat which hath been *before* ſaid, touching the queſtion beforegoing. *Hale.*—Previouſly to; in order to.—*Before* this elaborate treatiſe can become of uſe to my country, two points are neceſſary. *Swift.*—To this time; hitherto:

The peaceful cities of th' Auſonian ſhore,
Lull'd in her eaſe, and undiſturb'd *before*,
Are all on fire. *Dryden.*

Already. Farther onward in place:

Thou 'rt ſo far *before*,
The ſwifteſt wing of recompence is ſlow
To overtake thee. *Shakeſpeare.*

“ He that looks not BEFORE finds himſelf behind.” The man who has not forecaſt in the management of his concerns, nor conſiders the event of things till they befal him, will in the end find himſelf (as the proverb ſays) behind; that is, behind-hand in the world. It is commendable, and no more than our duty, to truſt to, and depend upon, Providence; but we are nevertheleſs bound to be vigilant, and to ſtudy, foreſeeing the conſequences of things for our guidance.

BEFORE'HAND, *adv.* [from *before* and *hand.*] In a ſtate of anticipation, or pre-occupation: ſometimes with the particle *with.*

Your ſoul has been *beforehand with* your body,
And drunk ſo deep a draught of promis'd bliſs,
She ſlumbers o'er the cup. *Dryden.*

Previouſly; by way of preparation, or preliminary.—When the lawyers brought extravagant bills, Sir Roger uſed to bargain *beforehand*, to cut off a quarter of a yard in any part of the bill. *Arbuthnot.*—Antecedently; aforetimes.—It would be reſiſted by ſuch as *beforehand* reſiſted the general proofs of the goſpel. *Atterbury.*—In a ſtate of accumulation, or ſo as that more has been received than expended.—Stranger's houſe is at this time rich, and much *beforehand*; for it hath laid up revenue theſe thirty-ſeven years. *Bacon.*—At firſt; before any thing is done.—What is a man's contending with inſuperable difficulties, but the rolling of Siſyphus's ſtone up the hill, which is ſoon *beforehand* to return upon him again. *L'Eſtrange.*

BEFORE'TIME, *adv.* [from *before* and *time.*] Formerly; of old time.—*Beforetime* in Iſrael, when a man went to enquire of God, thus he ſpake. 1 *Samuel.*

BEFORT', a town of France, and principal place of a diſtrict, in the department of the Upper Rhine, ceded to France by the houſe of Auſtria, in the year 1648, at the treaty of Weſtphalia. It was fortified by Vauban. There are ſeveral forges in the town, in which they manufacture many tons of excellent iron: three poſts and a half north, north-weſt of Porentrui, fifteen and a half ſouth-ſouth-weſt of Straſburg, and fifty and three quarters eaſt of Paris. Lat. 47. 9. N. lon. 24. 32. E. Ferro.

To BEFOR'TUNE, *v. n.* [from *be* and *fortune.*] To happen to; to betide; generally of good:

I give conſent to go along with you;
Recking as little what betideth me,
As much I wiſh all good *befortune* you. *Shakeſpeare.*

BEFOU'L, *v. a.* [from *be* and *foul.*] To make foul; to ſoil; to dirt.

To BEFRIEND', *v. a.* [from *be* and *friend.*] To favour; to be kind to; to countenance; to ſhew friendſhip to; to benefit:

Be thou the firſt true merit to *befriend*;
His phraſe is loſt, who ſtays till all commend. *Pope.*

To BEFRIN'GE, *v. a.* [from *be* and *fringe.*] To decorate with fringes:

When I flatter, let my dirty leaves
Clothe ſpice, line trunks, or, flutt'ring in a row,
Befringe the rails of Bedlam and Soho. *Pope.*

To BEG, *v. n.* [*beggeren*, Germ.] To live upon alms; to live by aſking relief of others.

To BEG, *v. a.* To aſk; to ſeek by petition.—He went to Pilate, and *begged* the body. *Matthew.*—To take any thing for granted, without evidence or proof.—We have not *begged* any principles or ſuppoſitions, for the proof of this; but taken that common ground, which both Moſes and all antiquity preſent. *Burnet.*

BEG, or BEY, *ſ.* in the Turkiſh government. See BEY.

BEGH, or BEGHS, of Egypt, denote twelve generals, who have the command of the militia or ſtanding forces of the kingdom; and are to ſecure the country from the inſults of Arabs, as well as to protect the pilgrims in their annual expeditions to Mecca. The begs, ſeveral of whom are deſcended from the ancient race of the Mamalukes, are very rich and powerful, maintaining each 500 fighting men for their own guard, and the ſervice of their court. On diſcontents, they have frequently riſen in rebellion. They are often at variance with the baſhaw, whom they have more than once plundered and impriſoned.

BEG LOUGH, a lake of Ireland, in the county of Antrim: two miles north of Lough Neagh.

BE'GA (Cornelius), painter of landſcape, cattle, and converſation, was born at Haerlem in 1620, and was the diſciple of Adrian Oſtade. Falling into a diſſipated way of life, he was diſinherited by his father: for which reaſon he caſt off his father's name, which was *Begeyn*, and aſſumed that of *Bega*; his early pictures being marked with the former, and his latter works with the other. He had a fine and delicate manner of handling his colours; and his performances are ſo much eſteemed in the Low Countries, as to be placed among the works of the beſt artiſts. He took the plague from a woman to whom he ſhewed ſo much ſincerity of affection, that, notwithſtanding the expoſtulations of his friends and phyſicians, he would attend her to the laſt moments of her life, and died a few days after, aged forty-four.

BEGA, or VEGA, a river of Germany, which runs into the Werra: four miles north-weſt of Lemgo, in the circle of Weſtphalia.

BEGAR'RA, a town of Spain, in New Caſtile: four leagues from Alcarez.

BE'GER, a town of Spain, in the country of Seville: fourteen leagues from Medina Sidonia.

To BEGET', *v. a.* *begot*, or *begat*; I have *begotten*, or *begot*: [*begezzan*, Sax. to obtain.] To generate; to procreate; to become the father of, as children.—Who hath *begotten* me theſe, ſeeing I have loſt my children, and am deſolate? *Iſaiah.*

Love is *begot* by fancy, bred
By ignorance, by expectation fed. *Granville.*

To produce, as effects.—My whole intention was to *beget*, in the minds of men, magnificent ſentiments of God and his works. *Cheyne.*—To produce, as accidents:

Is it a time for ſtory, when each minute
Begets a thouſand dangers? *Denham.*

BEGET'TER, *ſ.* He that procreates, or begets; the father.—Men continue the race of mankind, commonly without the intention, and often againſt the conſent and will, of the *begetter*. *Locke.*

BEG'GAR, *ſ.* [from *beg.* It is more properly written *begger*; but the common orthography is retained, becauſe the derivatives all preſerve the *a.*] One who lives upon alms; one who has nothing but what is given him.—He raiſeth up the poor out of the duſt, and lifteth up the *beggar* from the dunghill, to ſet them among princes. *Samuel.*—One who ſupplicates for any thing; a petitioner; for which, *beggar* is a harſh and contemptuous term:

What ſubjects will precarious kings regard?
A *beggar* ſpeaks too ſoftly to be heard. *Dryden.*

One who aſſumes what he does not prove.—Theſe ſhameful *beggars* of principles, who give this precarious account of the original of things, aſſume to themſelves to be men of reaſon. *Tillotſon.*

"Set a BEGGAR on horſeback, and he'll ride to the devil." *Aſperius nihil eſt humili cùm ſurgit in altum.* Lat. *Il n'eſt orgueil que de pauvre enrichi.* Fr. There is no pride comes up to that of a beggar who is grown rich. *Il vilan nobilitado non connoſce il parentado.* Ital. A beggar enobled forgets his own kindred. *Kein meſſer ſcherſſer ſchiert, als wann ein baur, ein edelmann wird.* H. Ger. No razor can ſhave cloſer (be more impoſing) than a peaſant turned gentleman. *Quando el villano eſtá en el mulo, non conoze a diós, ni al mundo.* Span. When a poor man is got upon a mule, he knows neither heaven nor earth. Theſe proverbs explain one another.

"It is one BEGGAR's woe, to ſee another by the door go." Και πτωχος πτωχω φθονει. Heſ. *Etiam mendicus mendico invidit.* Lat. The Lat. ſay likewiſe: *Figulus figulo invidet, faber fibro.* The potter envies the potter, the ſmith the ſmith. Or, as we ſay, "Two of a trade can never agree." Which ſufficiently explains the foregoing.

"BEGGARS muſt not be chooſers." *A qui en dan no eſcóge.* Sp. A reproach to thoſe who find fault with what is given them. We ſay likewiſe in the ſame ſenſe: "We muſt not look a gift horſe in the mouth;" that is, enquire his age.

"BEGGARS breed, and rich men feed. *Les gueux font les enfans, & les riches les entretiennent.* Beggars get children, and rich men maintain them. But it may as well be underſtood, that poor men being by neceſſity confined to a temperate courſe of living, are the beſt qualified to procreate; whereas the rich, by intemperance or overfeeding deſtroy, or at leaſt debilitate, the procreative faculty.

A *haughty* BEGGAR is repreſented by a damſel with a lofty countenance, in a pompous red mantle, adorned with ſeveral jewels, under which is a poor ragged petticoat; having a peacock in her hand, ſtanding with one foot upon a bowl, and with the other ſeeming, on her left, to precipitate herſelf. The red garment denotes the heat of blood, cauſing ambition; the pitiful ragged petticoat, that the haughty at bottom are nothing worthy of eſteem. Her poſture ſhews the ticklish place ſhe ſtands on, being ready to fall into miſery.

To BEGGAR, *v. a.* To reduce to beggary; to impoveriſh.—They ſhall ſpoil the clothiers wool, and *beggar* the preſent ſpinners. *Graunt.*—To deprive. To exhauſt:

For her perſon,
It *beggar'd* all deſcription; ſhe did lie
In her pavilion, cloth of gold, of tiſſue,
O'er-picturing Venus. *Shakeſpeare.*

BEG'GARLINESS, *ſ.* The ſtate of being beggarly; meanneſs; poverty.

BEG'GARLY, *adj.* Mean; poor; indigent; in the condition of a beggar; uſed both of perſons and things.—Who, that beheld ſuch a bankrupt *beggarly* fellow as Cromwell entering the parliament houſe, with a threadbare torn cloak, and greaſy hat, could have ſuſpected that he ſhould, by the murder of one king and the baniſhment of another, aſcend the throne. *South.*—Coruſodes, by extreme parſimony, ſaved thirty-four pounds out of a *beggarly* fellowſhip. *Swift.*

BEGGARLY, *adv.* Meanly; deſpicably; indigently.

BEG'GARY, *ſ.* Indigence; poverty in the utmoſt degree.—On he brought me into ſo bare a houſe, that it was the picture of miſerable happineſs and rich *beggary*. *Sidney.*

While I am a beggar, I will rail,
And ſay there is no ſin but to be rich:
And, being rich, my virtue then ſhall be
To ſay there is no vice but *beggary*. *Shakeſpeare.*

BEGH'NI, a town of Africa, in the kingdom of Tunis.

To BEGIN', *v. n.* I *began*, or *begun*; I have *begun*. [*beginnan*, Sax. from *be* or *by to*, and *gangan*, *gaan*, or *gan*, to go.] To enter upon ſomething new: applied to perſons.—*Begin* every day to repent; not that thou ſhouldeſt at all defer it; but all that is paſt ought to ſeem little to thee, ſeeing it is ſo in itſelf. *Begin* the next day with the ſame zeal, fear, and humility, as if thou hadſt never *begun* before. *Taylor.*—To commence any action or ſtate; to do the firſt act, or firſt part of an act; to make the firſt ſtep from not doing to doing.—They *began* at the ancient men which were before the houſe. *Ezekiel.*

Rapt into future times, the bard *begun*,
A virgin ſhall conceive. *Pope.*

To enter upon exiſtence; as, the world *began*; the practice *began*:

I am as free as nature firſt made man,
Ere the baſe laws of ſervitude *began*,
When wild in woods the noble ſavage ran. *Dryden.*

To have its original:

And thus the hard and ſtubborn race of man
From animated rock and flint *began*. *Blackmore.*

To take riſe; to commence. To come into act.—Judgment muſt *begin* at the houſe of God. 1 *Peter.*

To BEGIN, *v. a.* To do the firſt act of any thing; to paſs from not doing to doing, by the firſt act.—They have been awaked, by theſe awful ſcenes, to *begin* religion; and, afterwards, their virtue has improved itſelf into more refined principles by divine grace. *Watts.*—To trace from any thing, as the firſt ground.—The apoſtle *begins* our knowledge in the creatures, which leads us to the knowledge of God. *Locke.*

To BEGIN WITH. To enter upon; to fall to work upon.—A leſſon which requires ſo much time to learn, had need be early *begun with*.

BEGIN'NER, *ſ.* He that gives the firſt cauſe, or original, to any thing.—Socrates maketh Ignatius, the biſhop of Antioch, the firſt *beginner* thereof, even under the apoſtles themſelves. *Hooker.*—An unexperienced attempter; one in his rudiments; a young practitioner.—I have taken a liſt of ſeveral hundred words in the ſermon of a new *beginner*, which not one hearer could poſſibly underſtand. *Swift.*

BEGIN'NING, *ſ.* The firſt original or cauſe. The entrance into act, or being.—In the *beginning* God created the heavens and the earth. *Geneſis.*—The ſtate in which any thing firſt is:

Youth, what man's age is like to be, doth ſhow;
We may our end by our *beginning* know. *Denham.*

The rudiments, or firſt grounds or materials:

By viewing nature, nature's handmaid, art,
Makes mighty things from ſmall *beginnings* grow:
Thus fiſhes firſt to ſhipping did impart,
Their tail the rudder, and their head the prow. *Dryden.*

The firſt part of any thing.—The cauſes and deſigns of an action, are the *beginning*; the effects of theſe cauſes, and the difficulties that are met with in the execution of theſe deſigns, are the middle; and the unravelling and reſolution of theſe difficulties, are the end. *Broome.*

To BEGIRD', *v. a.* I *begirt*, or *begirded*.; I have *begirt*: [from *be* and *gird*.] To bind with a girdle. To ſurround; to encircle; to encompaſs:

At home ſurrounded by a ſervile crowd,
Prompt to abuſe, and in detraction loud:
Abroad *begirt* with men, and ſwords, and ſpears;
His very ſtate acknowledging his fears. *Prior.*

To ſhut in with a ſiege; to beleaguer; to block up.—It was ſo cloſely *begirt* before the king's march into the weſt, that the council humbly deſired his majeſty, that he would relieve it. *Clarendon.*

To BEGIRT', *v. a.* [this is only a corruption of *begird*.] To begird:

And, Lentulus, *begirt* you Pompey's houſe,
To ſeize his ſon's alive; for they are they
Muſt make our peace with him. *Ben Johnſon.*

BEGKAW'E, a town of Bohemia, in the circle of Boleſlaw: three miles weſt of Melnik.

BEGLAISEH', a town of Aſiatic Turkey, in the province of Caramania: eight miles north of Kir-ſhehr.

BEG'LERBEG, *ſ.* A chief governor in the Turkiſh empire, and next in dignity to the grand vizier. To every beglerbeg the grand ſignior gives three enſigns or ſtaves, trimmed with a horſe-tail; to diſtinguiſh them from the baſhaws, who have but two; and from ſimple begs, or ſangiac begs, who have but one. The province or government of beglerbeg is called *beglerbeglik*. Theſe are of two ſorts; the firſt called *baſilo beglerbeglik*, which have a certain rent aſſigned out of the cities, countries, and ſignories, allotted to the principality; the ſecond called *ſalianæ beglerbeglik*, for the maintenance of which is annexed a ſalary or rent, collected by the grand ſignior's officers with the treaſure of the empire. The beglerbegs of the firſt ſort are in number twenty-two, viz. thoſe of Anatolia, Caramania, Diarbekir, Damaſcus, Aleppo, Tripoli, Trebizond, Buda, Temiſwar, &c. The beglerbegs of the ſecond ſort are in number ſix, viz. thoſe of Cairo, Babylon, &c. Five of the beglerbegs have the title of *viziers*, viz. thoſe of Anatolia, Babylon, Cairo, Romania, and Buda. The beglerbegs appear with great ſtate, and a large retinue, eſpecially in the camp, being obliged to bring a ſoldier for every 5000 aſpers of rent which they enjoy. Thoſe of Romania brought 10,000 effective men into the field. The beglerbegs have under their juriſdiction ſeveral ſangiacs or particular governments, and begs, agas, and other officers, who obey them.

To BEGNAW', *v. a.* [from *be* and *gnaw*.] To bite; to eat away; to corrode; to nibble.—The worm of conſcience ſtill *begnaw* thy ſoul. *Shakeſpeare.*

BEGO'NE, *interject.* [only a coalition of the words *be gone*.] Go away; hence; haſte away:

Begone! the goddeſs cries with ſtern diſdain;
Begone! nor dare the hallow'd ſtream to ſtain.
She fled, for ever baniſh'd from the train. *Addiſon.*

BEGO'NIA, *ſ.* [ſo named by Plumier, from M. Begon.] In botany, a genus of the claſs monoecia, order polyandria, natural order holoraceæ. The generic characters are—I. Male flowers. Calyx: none. Corolla: petals four (in begonia octopetala ſix to nine), of which two oppoſite ones are larger, commonly roundiſh, (in begonia ferruginia all nearly equal, oblong.) Stamina: filaments numerous (fifteen to one hundred), inſerted into the receptacle, very ſhort, ſometimes united at the baſe; antheræ oblong, erect. II. Female flowers, uſually on the ſame common peduncle with the males. Calyx: none. Corolla: petals in moſt ſpecies five, in ſome ſix, in others perhaps four, commonly unequal. Piſtillum: germ inferior, three-ſided, in very many winged; ſtyles in moſt three, bifid; ſtigmas ſix. Pericarpium: capſule in moſt three-cornered, winged, three-celled, opening at the baſe by the wings; ſome are two-celled, and others perhaps one-celled.—*Eſſential Character.* Male. Calyx none; corolla many-petalled; ſtamina numerous. Female. Calyx none; corolla many-petalled, ſuperior; capſules winged, many-ſeeded.

Species. 1. Begonia nitida: ſhrubby erect, leaves very ſmooth, unequally cordate, obſcurely toothed, largeſt wing of the capſule roundiſh. Stems almoſt upright, branched, round, ſmooth, as is the whole plant, with alternate cylindric branches. Leaves acute or acuminate, almoſt entire or obſcurely toothed, ſeven-nerved; one lobe of the baſe is double the ſize of the other; the younger ones are roſe-coloured about the edge; they are all very ſmooth and ſhining, bright green, paler beneath, permanent, ſpreading, four or five inches long, and two or three inches broad: the petioles are cylindric, thick, ſpreading, one-third only of the length of the leaf. This elegant ſhrub, which is now a common ornament to our hot-houſes, was introduced here in the year 1777, by W. Brown, M. D. It is a native of Jamaica, and flowers here from May to December.

2. Begonia iſoptera: cauleſcent, leaves ſmooth, ſemicordate, obſcurely toothed, wings of the capſule almoſt equal, parallel. Stem upright, obſcurely ſtreaked, ſmooth. Leaves bright green, and very ſmooth on the upper ſurface, pale ferruginous on the under, moſt minutely dotted. Native of Java, where it was obſerved by Thouin.

3. Begonia reniformis: cauleſcent, leaves kidney-ſhaped, angular, toothed, the largeſt wing of the capſule acute-angled, the others parallel, very ſmall. Stems ſhort, the thickneſs of a finger. Native of Braſil, near Rio de Janeiro, in ſhady clefts of rocks. Obſerved there by Sir Joſeph Banks.

4. Begonia erminia: cauleſcent, leaves cordate, acuminate, ſerrate, the largeſt wing of the capſule ſickle-ſhaped, the reſt obliterated. Stems few, ſimple, upright, ſcarcely a ſpan in height; flowers whitiſh. Native of Madagaſcar, on the ſtones and rocks by brooks; collected there by Jo. Gul. Brugiere, M. D. who looks upon the appendices to the leaves, reſembling the galls on lime-tree leaves, or the tails in ermine, as belonging to the leaves themſelves, and not occaſioned by punctures of inſects.

5. Begonia crenata: cauleſcent, leaves unequally cordate, roundiſh, obtuſe, crenate-toothed, capſules two-celled. Flowers pale red. Native of the Eaſt Indies, in the iſland Salſette, and near Fort Victory, on walls and rocks. Found there by Ant. Pataleon Hove.

6. Begonia tenuifolia: cauleſcent, leaves unequally cordate, ovate, acute, angular, obſcurely toothed, capſules two-celled. Native of Pulo Pontangh, or Prince's iſland, near Java. Found there by Sir Joſeph Banks.

7. Begonia ferruginea: cauleſcent, leaves unequally cordate, toothed, petals of the male flower oblong, nearly equal. Stem ſuffruticoſe, round, rather ſolid, ſmooth and even. Mutis gathered it in New Granada.

8. Begonia grandis: cauleſcent, leaves unequally cordate, angular, ſerrate, wings of the capſule a little unequal. Stem round, ſimple, the ſize of a quill, ſmooth, green except at the joints where it is red, dotted, two feet high, lax, upright; ſometimes there is a ſmall branch from the axils. This ſpecies and the next have by far the largeſt leaves of any in the genus. Native of Japan.

9. Begonia macrophylla: this is two feet high, and entirely ſmooth. Native of the iſlands in the Weſt Indies.

10. Begonia acutifolia: cauleſcent, leaves ſemicordate, angular, toothed, the largeſt wing of the capſule obtuſe-angled, the others acute-angled. This ſpecies comes very near to the following, but differs in having few or no hairs on the leaves, which are on longer footſtalks one-third or one-fourth of the length of the leaf itſelf. Native of Jamaica, where it was obſerved Sir Hans Sloane, and ſince by Maſſon. Sloane's deſcription does not accord either with his figure or ſpecimens.

11. Begonia acuminata: cauleſcent, leaves hiſpid, ſemicordate, acuminate, unequally toothed, the largeſt wing of the capſule obtuſe-angled, the others acute-angled. Native of Jamaica, on the blue mountains. Introduced into the royal garden at Kew in 1790.

12. Begonia humilis: cauleſcent upright, leaves hiſpid, ſemicordate, doubly-ſerrate, wings of the capſule rounded, a little unequal. The whole plant is pellucid. Stem round, ſwelling at the joints, a ſpan high the firſt year, and two the ſecond. It is a native of the iſland of Trinidad in the Eaſt Indies, and was found there by Alexander Anderſon. When this plant flowered in Mr. Lee's garden at Hammerſmith in October 1788, it was ſuppoſed to be annual, having produced flowers and fruit in a few months from its being ſown. It was then very low, whence it got the trivial name of *humilis*; but it has ſince ſtood over the winter, and grown much taller.

13. Begonia hirſuta: cauleſcent, leaves hiſpid, ſemicordate, doubly ſerrate, the largeſt wing of the capſule obtuſe-angled, the others parallel and very ſmall. Obſerved by M. Fuſée Aublet, on the rocks of Guiana.

14. Begonia urticæ: cauleſcent radicant, leaves hiſpid on both ſides, unequally ovate, doubly ſerrate, capſules three-horned at the baſe. Stems many, a foot high, aſcending, jointed, throwing out roots at the joints, branched, leafy, roundiſh, rough with hairs at top. Leaves ſpreading, ſharp, the ſerratures tipt with hair, pale beneath, when they grow old entirely red. Jacquin ſays, that it is annual, but it is probably a perennial plant. Mutis gathered it in New Granada.

15. Begonia ſcandens: ſcandent radicant, leaves ovate-roundiſh, obſcurely toothed, the largeſt wing of the capſule obtuſe-angled, the others parallel and very ſmall. This differs from the thirteenth in having the ſtems decumbent, knotty, and puſhing out roots at the knots; it climbs trees when they are within its reach. Leaves leſs deeply toothed. Flowers ſmaller, greeniſh. Aublet affirms, that this ſpecies is dioecous. He alſo ſays, that the leaves are ſmooth, but they are not quite without hairs. This is perennial, and a native of Guiana, the iſle of France, and Jamaica.

16. Begonia tuberoſa: creeping, leaves unequally cordate, angular, toothed, wings of the capſule parallel. Stems round, creeping. Leaves pale red, white or pale green, ſmooth and ſomewhat ſhining. Native of Amboyna, the Molucca iſlands, and the Celebes.

17. Begonia rotundifolia: creeping, leaves reniform-roundiſh, crenate. Stems thick, naked, with ſmall permanent ſtipules, between which they are marked with ſcars from the fallen leaves: towards the top are ſeveral leaves, ſlightly crenate, green and ſhining above, white beneath, on pretty long petioles. Native of South America, on rocks and trees. This is one of the ſpecies which was found by Plumier.

18. Begonia nana: ſtemleſs, leaves lanceolate, ſcape with about two flowers. Root perennial, fleſhy, in a manner tuberous, roundiſh, fibrous at the baſe, red within, brittle. Leaves few, bright green on both ſides, from fifteen to eighteen lines in length, and ſix lines in breadth. Native of Madagaſcar, on rocks and trunks of trees. Found by Bruguiere.

19. Begonia tenera: ſtemleſs, leaves unequally cordate, flowers umbelled. Native of Ceylon; found there by Koenig.

20. Begonia diptera: ſtemleſs, leaves unequally cordate, peduncles dichotomous, one wing of the capſule very large, another narrow, and the third obſcure. Roots tuberous, thick. Native of the iſland of Joanna, in ſhady places, by the ſides of mountains: found there by Koenig.

21. Begonia octopetala: ſtemleſs, leaves cordate, five-lobed, peduncles dichotomous. Root tuberous, viſcid, purple within. Found on the mountains of Lima, by Dombey; who ſent the ſeeds to the Paris garden, where it has grown ſome years (1785), but has not flowered.

22. Begonia malabarica: ſtems herbaceous, peduncles axillary, ſhort, ſubtriflorous, fruits berried. No other ſpecies of begonia being hitherto known, whoſe female flowers have only three petals, it requires the confirmation of modern botaniſts before we can truſt to the authority of the Hortus Malabricus for ſo ſingular a circumſtance.

The male flower of begonia humilis have ſometimes only two petals: and why may not a ſimilar monſtroſity happen in the female flowers? Native of Malabar.

23. Begonia repens: ſtems creeping, rooting at the joints, leaves one-eared, peduncles axillary, long, many-flowered. Chevalier Lamarck deſcribes this with white flowers, which according to Plumier's name ſhould be pink. Native of St. Domingo.

The two laſt are juſtly denominated *obſcure ſpecies* by Mr. Dryander, who adds alſo the following.

1. Acetoſa Nigritarum ſeu Indorum Lingat. This comes very near to begonia malabarica, ſo far as can be judged from the rude figure of father Kamel.

2. In a volume of drawings in Sir Joſeph Banks's library, made at Canton by a Chineſe, who had been inſtructed by the late Mr. Blake in the art of making botanical drawings, is a figure of a begonia, under the name *tſou hoy tong*, which is related to *grandis*, but differs in the leaves not being angulated, and the margin being equally ſerrate. As only male flowers are repreſented in the drawiag, it is impoſſible to determine it.

3. Begonia roſeo-flore, folio aurito minor et glabra. This is referred to begonia nitida by Jacquin and Swartz: but Plumier was not in Jamaica, whence alone that ſpecies has come to us: beſides the epithet of *minor* is ill applicable to ſo tall a ſhrub as that, which has as large leaves as any in the genus, except *macrophylla* and *grandis*.

4. Begonia roſeo flore, foliis acutioribus, auritis et late crenatis.

5. Rumex ſylveſtris ſcandens, foliis cordato-angulatis ab altera parte majoribus.

6. Totoncaxoxo coyollin. 7. Begonia obliqua.

Propagation and Culture. Theſe plants increaſe readily by cuttings: and if kept in the bark-ſtove prove highly ornamental, being much eſteemed both for the beauty of the flowers and the ſingularity of the leaves. Where there is no bark-ſtove, they will be found to do very well over the flue of the dry ſtove.

BEGOT', or BEGOTTEN. The *part. paſſ.* of the verb *beget*.—Remember that thou waſt *begot* of them. *Ecclus.*

The firſt he met, Antiphates the brave,
But baſe *begotten* on a Theban ſlave. *Dryden.*

To BEGREA'SE, *v. a.* [from *be* and *greaſe*.] To ſoil or dawb with unctuous or fat matter.

To BEGRI'ME, *v. a.* [from *be* and *grime*.] To ſoil with dirt deep impreſſed; to ſoil in ſuch a manner that the natural hue cannot eaſily be recovered:

Her name that was as freſh
As Dian's viſage, is now *begrim'd*, and black
As my own face. *Shakeſpeare.*

BEGUAR'DS, or BEGHARDS, religious of the third order of St. Francis in Flanders. They were eſtabliſhed at Antwerp in 1228, and took St. Begghe for their patroneſs, whence they had their name. From their firſt inſtitution they employed themſelves in making linen cloth, each ſupporting himſelf by his own labour, and united only by the bonds of charity, without having any particular rule. But, when pope Nicholas IV. had confirmed that of the third order of St. Francis in 1289, they embraced it the year following. They were greatly favoured by the dukes of Brabant, particularly John II. and III. who exempted them from all contributions and taxes.

To BEGUI'LE, *v. a.* [from *be* and *guile*.] To impoſe upon; to delude; to cheat.—This I ſay, leſt any man ſhould *beguile* you with enticing words. *Coloſſians.*—The ſerpent me *beguil'd* and I did eat! *Milton.*—To deceive; to evade; to amuſe:

Sweet, leave me here awhile;
My ſpirits grow dull, and fain I would *beguile*
The tedious day with ſleep. *Shakeſpeare.*

BEGUI'NES, a congregation of religious or nuns founded either by St. Begghe, founder of the Beguards, or by Lambert le Begue; of whom the former died about the end of the 7th century, the latter about the end of the 12th. They were eſtabliſhed firſt at Liege, and afterwards at Neville, in 1207; and from this laſt ſettlement ſprang the great number of Beguinages, which are ſpread over all Flanders, and which have paſſed from Flanders into Germany. In the latter country, ſome of theſe religious fell into extravagant errors, perſuading themſelves that it was poſſible, in the preſent life, to arrive at the higheſt perfection, even to impeccability, and that there was no neceſſity, after this, either to obſerve the faſts of the church, or ſubmit to the direction and laws of mortal men. There is ſcarcely a town in the Low Countries, in which there is not a ſociety of Beguines. Theſe ſocieties conſiſt of ſeveral houſes placed together in one incloſure, with one or more churches, according to the number of Beguines. There is in every houſe a prioreſs, or miſtreſs, without whoſe leave they dare not ſtir out. They make a ſort of vow, which is conceived in the following terms: "I, N. promiſe to be obedient and chaſte as long as I continue in this Beguinage." They obſerve a three years noviciate before they take the habit. The rector of the pariſh is ſuperior of the Beguinage; and he does nothing without the advice of eight Beguines. They were formerly habited in different ways; ſome in grey, others in blue; but at preſent they all wear black. When they go abroad, they put on a black veil.

BEHAL'F, *ſ.* [this word Skinner derives from *half*, and interprets it, *for my half*; as, *for my part*. It ſeems rather to be corrupted from *behoof*, profit; the pronunciation degenerating eaſily to *behafe*; which, in imitation of other words ſo founded, was written, by thoſe who knew not the etymology, *behalf*.] Favour; cauſe favoured: we ſay *in* behalf, but *for* the ſake.

Were but my heart as naked to thy view,
Marcus would ſee it bleed in his *behalf*. *Addiſon.*

Vindication; ſupport.—He might, in his preſence, defy all Arcadian knights, in the *behalf* of his miſtreſs's beauty. *Sidney.*

BEHAM'BERG, a town Germany, in the archduchy of Auſtria: three miles eaſt of Steyr.

BEHAMKIR'CHEN, a town of Germany, in the archduchy of Auſtria: ſix miles ſouth-eaſt of St. Polten.

BE'HAT, or CHELUM, a river of Aſia, in the country of the Seiks, which runs into the Chunaub, fourteen miles ſouth of Kooſhaub.

To BEHA'VE, *v. a.* [from *be* and *have*.] To carry; to conduct: uſed almoſt always with the reciprocal pronoun.—Manifeſt ſigns came from heaven unto thoſe that *behaved themſelves* manfully. 2 *Maccabees.*—We ſo live, and ſo act, as if we were ſecure of the final iſſue and event of things, however we may *behave ourſelves*. *Atterbury.*—It ſeems formerly to have had the ſenſe of, to govern; to ſubdue; to diſcipline; *but this is not now uſed*:

With ſuch ſober and unnoted paſſion
He did *behave* his anger ere 'twas ſpent,
As if he had but prov'd an argument. *Shakeſpeare.*

To BEHAVE, *v. n.* To act; to conduct one's ſelf. It is taken either in a good or a bad ſenſe; as, he *behaved* well or ill.

BEHA'VIOUR, *ſ.* Manner of behaving one's ſelf, whether good or bad; manners; carriage, with reſpect to propriety. External appearance, with reſpect to grace. Geſture; manner of action, adapted to particular occaſions.—When we make profeſſion of our faith, we ſtand; when we acknowledge our ſins, or ſeek unto God for favour, we fall down; becauſe the geſture of conſtancy becometh us beſt in the one, in the other the *behaviour* of humility. *Hooker.*—Elegance of manners; gracefulneſs.—The beautiful prove accompliſhed, but not of great ſpirit; and ſtudy, for the moſt part, rather *behaviour* than virtue. *Bacon.*—Conduct; general practice; courſe of life.—To him, who hath a proſpect of the ſtate that attends men after this life, depending on their *behaviour* here, the meaſures of good and evil are changed. *Locke.*

To be upon one's BEHAVIOUR. A familiar phraſe, noting ſuch a ſtate as requires great caution; a ſtate in which a failure in *behaviour* will have bad conſequences.—Tyrants themſelves are *upon their behaviour* to a ſuperior power. *L'Eſtrange.*

To BEHEAD', *v. a.* [from *be* and *head.*] To deprive of the head; to kill by cutting off the head:

On each ſide they fly,
By chains connext, and, with deſtructive ſweep,
Behead whole troops at once. *Philips.*

Beheading was a puniſhment among the Romans, known by the name of *decollatio.* The head was laid on a *cippus* or block, placed in a pit dug for the purpoſe; in the army, without the *vallum*; in the city, without the walls, at a place near the *porta decumana.* Preparatory to the ſtroke, the criminal was tied to a ſtake, and whipped with rods. In the early ages the blow was given with an axe; but in after-times with a ſword, which was conſidered the more reputable manner of dying. The execution was but clumſily performed in early times; but afterwards they grew more expert, and took the head off clean, with one circular ſtroke. Beheading was introduced into England by William the Conqueror, as an honourable mode of putting ſtate criminals to death. Waltheof earl of Northumberland was the firſt who had the honour of being ſo executed in this country. The *guillotine*, adopted for this purpoſe by the revolutionary government in France, is ſaid to have been copied from an inſtrument anciently uſed in Scotland for the ſame purpoſe, called a *maiden.* See GUILLOTINE.

BEHEL'D, *participle paſſive* from *behold*:

All hail! ye virgin daughters of the main!
Ye ſtreams, beyond my hopes *beheld* again! *Pope.*

BEHE'MOTH, *ſ. Behemoth,* in Hebrew, ſignifies beaſts in general, particularly the larger kind, fit for ſervice. But Job ſpeaks of an animal *behemoth,* and deſcribes its properties. Sanctius thinks it an ox; and Calmet ſuppoſes it is the elephant; but Bochart has taken much pains to ſhew that it is the hippopotamus, or ſea-horſe. See HIPPOPOTAMUS.—Behold now *behemoth,* which I made with thee; he eateth graſs as an ox. *Job.*

Behold! in plaited mail
Behemoth rears his head. *Thomſon.*

BE'HEN, or BEN, *ſ.* Valerian roots. Alſo a fruit reſembling the tamariſk, from which perfumers extract an oil.

BEHEN. See CENTAURA and CUCUBALUS.

BEHE'RUS, a town of Aſia, in the Arabian Irak: twenty miles north-north-eaſt of Bagdat.

BEHEST', *ſ.* [from *be* and *heſt, hæs,* Sax.] Command; precept; mandate.—Her tender youth had obediently lived under her parents *beheſts,* without framing, out of her own will, the forechooſing of any thing. *Sidney.*

In heav'n God ever bleſt, and his divine
Beheſts obey, worthieſt to be obey'd! *Milton.*

To BEHI'GHT, *v. a.* pret. *behot,* part. *behight.* [from *hatan,* to promiſe, Saxon.] To promiſe; to entruſt; to commit:

That moſt glorious houſe that gliſt'reth bright,
Whereof the keys are to thy hand *behight*
By wiſe Fidelia. *Fairy Queen.*

Perhaps to call: to name: *hight* being often put, in old authors, for *named,* or *was named. The word is now obſolete.*

BEHIND', *prep.* [*hindan,* Sax.] At the back of another.—Acomates haſted with harquebuſiers, which he had cauſed his horſemen to take *behind* them upon their horſes. *Knolles.*—On the back part; not before.—She came in the preſs *behind,* and touched him. *Mark.*—Towards the back.—The Benjamites looked *behind* them. *Judges.*—Following another.—Her huſband went with her, weeping *behind* her. *Samuel.*—Remaining after the departure of ſomething elſe.—Piety and virtue are not only delightful for the preſent, but they leave peace and contentment *behind* them. *Tillotſon.*—Remaining after the death of thoſe to whom it belonged.—What he gave me to publiſh, was but a ſmall part of what he left *behind* him. *Pope.*—At a diſtance from ſomething going before:

Such is the ſwiftneſs of your mind,
That, like the earth's, it leaves our ſenſe *behind. Dryden.*

Inferior to another; having the poſterior place with regard to excellence.—After the overthrow of this firſt houſe of God, a ſecond was erected; but with ſo great odds, that they wept, which beheld how much this latter came *behind* it. *Hooker.*—On the other ſide of ſomething:

From light retir'd *behind* his daughter's bed,
He, for approaching ſleep, compos'd his head. *Dryden.*

BEHIND, *adv.* Out of ſight; not yet produced to view; remaining.—We cannot be ſure that we have all the particulars before us; and that there is no evidence *behind,* and yet unſeen, which may caſt the probability on the other ſide. *Locke.*—Moſt of the former ſenſes may become *adverbial,* by ſuppreſſing the *accuſative caſe*; as, I left my money *behind,* or *behind me.*

BEHIND'HAND, *adv.* [from *behind* and *hand.*] In a ſtate in which rent or profit, or any advantage, is anticipated, ſo that leſs is to be received, or more performed, than the natural or juſt proportion.—Your trade would ſuffer, if your being *behindhand* has made the natural uſe ſo high, that your tradeſman cannot live upon his labour. *Locke.*—Not upon equal terms, with regard to forwardneſs. In this ſenſe, it is followed by *with.*—Conſider, whether it is not better to be half a year *behindhand with* the faſhionable part of the world, than to ſtrain beyond his circumſtances. *Spectator.*—Shakeſpeare uſes it as an *adjective,* but licentiouſly, for backward; tardy:

And theſe thy offices,
So rarely kind, are as interpreters
Of my *behindhand* ſlackneſs. *Shakeſpeare.*

BEHI'U, a town of Egypt: ſeventeen miles ſouth of Abu Girge.

BEH'KIR, a diſtrict of India, in the ſouthern part of the country of Moultan, ſituated on the eaſt ſide of the Indus.

BEHKIR, or BHAKIR, a town of India, and capital of a country to which it gives name, ſituated on an iſland in the river Indus: 145 miles ſouth of Moultan, 304 weſt of Agimere. Lat. 27. 30. N. lon. 70. 1. E. Greenwich.

BEHLU'LIA, a town of Syria: forty miles ſouth-weſt of Aleppo.

BEH'MEN. See BOEHMEN.

BEHN (Aphara), a celebrated authoreſs, born in the city of Canterbury, in the reign of Charles I. Her father's name was *Johnſon,* who through the intereſt of lord Willoughby, to whom he was related, being appointed lieutenant-general of Surinam, undertook a journey to the Weſt-Indies, taking with him his whole family. Mr. Johnſon died in the voyage; but his family, reaching Surinam, ſettled there for ſome years. Here it was that his daughter learned the hiſtory of, and acquired a perſonal intimacy with, the American prince Oronooko, and his beloved Imoinda, whoſe adventures ſhe hath ſo pathetically related in her celebrated novel of that name, and which Southerne afterwards made an admirable uſe of, in adopting it as the ground-work of one of the beſt tragedies in the Engliſh language. On her return to London, ſhe became the wife of Mr. Behn, a merchant reſiding in that city, but of Dutch extraction. How long he lived is uncertain; probably not very long; for, her wit and abilities having brought her into high eſtimation at court, Charles II. fixed on her as a proper perſon to tranſact ſome affairs of importance abroad during the courſe of the Dutch war. To this purpoſe ſhe went over to Antwerp, where, by her intrigues and gallantries, and by means of the influence ſhe had over Vander Albert, a Dutchman of eminence, whoſe heart was warmly attached to her, ſhe very ſoon diſcovered the deſign formed by de Ruyter and de Witt, of ſailing up the Thames, and burning the Engliſh ſhips in the harbours, which they afterwards put in execution at Chatham. This ſhe immediately communicated to the Engliſh court: but, though the event proved her intelligence to be well founded, yet it was only laughed at; which probably determined her to drop all farther thoughts of political affairs, and during the remainder of her ſtay at Antwerp to give herſelf up to the gaiety and gallantries of the place. Vander Albert continued his addreſſes, and, after having made ſome unſucceſsful attempts to obtain the poſſeſſion of her perſon on eaſier terms than matrimony, at length conſented to make her his wife; but, while he was preparing for a journey to England with that intent, a fever carried him off. In her voyage back to England, ſhe was very near being loſt, the veſſel being driven on the coaſt by a ſtorm; but, happening to founder within ſight of land, the paſſengers, by the timely aſſiſtance of boats from the ſhore, were all fortunately preſerved. From this period ſhe devoted her life to pleaſure, and the muſes. Her works are extremely numerous, and all of them have a lively and amorous turn. She publiſhed three volumes of Miſcellany Poems; two volumes of Hiſtories and Novels; tranſlated Fontenelle's Plurality of Worlds, and annexed a Criticiſm on it; and her plays make four volumes. After a life intermingled with numerous diſappointments, ſhe departed from this world on the 16th of April 1689, and lies interred in the cloyſters of Weſtminſter Abbey.

BEH'NESS, a town of Egypt: ten miles north-weſt of Abu Girge.

To BEHO'LD, *v. a.* pret. *I beheld*, *I have beheld*, or *beholden*; [*behealdan*, Sax.] To view; to ſee; to look upon: to *behold* is to *ſee*, in an emphatical or intenſive ſenſe.—Son of man, *behold* with thine eyes, and hear with thine ears. *Ezekiel.*

The Saviour comes, by ancient bards foretold,
Hear him ye deaf, and all ye blind *behold!* *Pope.*

Behold, *interject.* See; lo: a word by which attention is excited, or admiration noted.—*Behold!* I am with thee, and will keep thee. *Geneſis.*

When out of hope, *behold* her! not far off,
Such as I ſaw her in my dream, adorn'd
With what all earth or heaven could beſtow
To make her amiable. *Milton.*

BEHOL'DEN, *part. adj.* [*gehouden*, Dut. that is, held in obligation. It is very corruptly written *beholding.*] Obliged; bound in gratitude: with the particle *to.*—We, who ſee men under the awe of juſtice, cannot conceive what ſavage creatures they would be without it; and how much *beholden* we are *to* that wiſe contrivance. *Atterbury.*

BEHOL'DER, *ſ.* Spectator; he that looks upon any thing.—The charitable foundations, in the church of Rome, exceed all the demands of charity; and raiſe envy, rather than compaſſion, in the breaſts of *beholders. Atterbury.*

BEHOL'DING, *ſ.* Obligation.—Love to virtue, and not to any particular *beholdings,* hath expreſſed this my teſtimony. *Carew.*

BEHOLD'INGNESS, *ſ.* [from *beholding*, miſtaken for *beholden.*] The ſtate of being obliged.—The king invited us to his court, ſo as I muſt acknowledge a *beholdingneſs* unto him. *Sidney.*

BEHOOF', *ſ.* [from *behoove.*] That which behooves; that which is advantageous; profit; advantage.—Becauſe it was for the *behoof* of the animal, that, upon any ſudden accident, it might be awakened, there were no ſhuts or ſtopples made for the ears. *Ray.*

Wert thou ſome ſtar, which from the ruin'd roof
Of ſhak'd Olympus by miſchance didſt fall;
Which careful Jove, in nature's true *behoof*,
Took up, and in fit place did reinſtate. *Milton.*

To BEHOOVE', *v. n.* [*behovan*, Sax. it is a duty.] To be fit; to be meet: either with reſpect to duty, neceſſity, or convenience. It is uſed only imperſonally with *it.*—He did ſo prudently temper his paſſions, as that none of them made him wanting in the offices of life, which it *behoved* or became him to perform. *Atterbury.*

BEHOOVE'FUL, *adj.* [from *behoof.*] Uſeful; profitable; advantageous. *This word is ſomewhat antiquated.*—Laws are many times full of imperfections; and that which is ſuppoſed *behooveful* unto men, proveth oftentimes moſt pernicious. *Hooker.*

BEHOOVE'FULLY, *adv.* Profitably; uſefully.—Tell us of more weighty diſlikes than theſe, and that may more *behoovefully* import the reformation. *Spenſer.*

BEHOT', [*preterite*, as it ſeems, of *behight*, to promiſe.]

With ſharp intended ſting ſo rude him ſmote,
That to the earth him drove as ſtricken dead,
Ne living wight would have him life *behot.* *Fairy Queen.*

BEHUT', a town of Hindoſtan, in the Malwa country: 128 miles ſouth of Agra, and twenty-one north-north-eaſt of Chadaree.

BE'JA, or Bexa, a city of Portugal, in the province of Alentejo, the ſee of a biſhop, ſuffragan to Compoſtello, near a lake of the ſame name. It is ſeated in a very agreeable and fruitful plain, remarkable for excellent wine. There are three gates remaining, which are of Roman architecture, and a great many Roman antiquities are dug out of the earth. The town has a ſtrong caſtle for its defence, and is ſeventy-two miles ſouth-ſouth-eaſt of Liſbon. Lat. 38. N. lon. 10. 46. E. Ferro.

BEI'AD, a town of Egypt: two miles eaſt-north-eaſt of Beniſeuf.

BEI'ADIE, a town of Egypt: three miles ſouth-eaſt of Aſhmunein.

BE'JAR DE MELE'NA, a town of Spain, in Andaluſia, near the Straits of Gibraltar, famous for its baths: eight leagues ſouth of Cadiz.

BEJA'RIA, *ſ.* [This name was given by Mutis, in honour of Bejar, a Spaniſh botaniſt.] In botany, a genus of the claſs dodecandria, order monogynia, natural order bicornes. The generic characters are—Calyx: perianthium one leafed, gibbous downwards, ſubventricoſe, ſeven-cleft; diviſions ſubequal, ovate, acute, converging, ſmall; the outer ones broader; permanent. Corolla: petals ſeven, oblong, broader above, obtuſe, patulous, inſerted into the receptacle. Stamina: filaments fourteen, ſubulate, rather ſhorter than the corolla; alternately leſs; antheræ oblong, incumbent. Piſtillum: germ ſuperior; ſtyle columnar, middle-ſized, permanent; ſtigma thickiſh, ſeven-ſtriated. Perianthium: berry juiceleſs, ſeven-cornered, depreſſed, umbilicate, ſeven-celled. Seeds: numerous, columnar-oblong, imbricate.—*Eſſential Character.* Calyx ſeven-cleft; petals ſeven; ſtamina fourteen; berry ſeven-celled, many-ſeeded.

Species. 1. Bejaria æſtuans: leaves lanceolate, flowers in racemes. This is a ſhrub twelve feet in height, with roundiſh ſpreading branches; found in New Granada, by Mutis.

2. Bejaria reſinoſa: leaves ovate, flowers heaped. This is a tree, with proliferous branches, and an irregular tender ſubpubeſcent bark. Leaves evergreen, quite entire, an inch in length. Found in New Granada, by Mutis.

BEICHLIN'GEN, a town of Germany, in the circle of Upper Saxony, and country of Thuringia: ſix miles ſouth-weſt of Wiehe.

BEILN'GRIES, a town of Germany, in the circle of Franconia, and biſhopric of Aichſtadt, at the conflux of the Altmuhl and the Soluz: ſixteen miles north of Ingoldſtadt, and ſixteen north-eaſt of Aichſtadt.

BEIL'STEIN, a town of Germany, in the circle of Weſtphalia, and capital of a lordſhip, to which it gives name, in the principality of Naſſau-Dillenburg: five miles ſouth of Dillenburg.

Beilsten, a town of Germany, in the circle of the Lower Rhine, and capital of a lordſhip, belonging to the prince of Naſſau-Orange-Dietz; which pays 128 florins for a Roman month: twelve miles N. W. Wetzlar, thirty-ſix E. N. E. Coblentz. Lat. 50. 31. N. lon. 25. 57. E. Ferro.

BEINAC', a town of France, in the department of Correze, and chief place of the diſtrict of Brive: eight miles ſouth of Tulle.

BEINAS'CHI (Giovanni Battiſta), called *cavalier Beinaſchi*, hiſtory painter, was a Piedmonteſe, born in 1634. He ſtudied in Rome, under Pietro del Pò; and ſome authors affirm, that he was afterwards the diſciple of Lanfranc. It was certain that he was peculiarly fond of the works of Lanfranc, and became ſo thoroughly acquainted with the ſtyle, manner, and touch, of that excellent maſter, that many of the pictures of Beinaſchi are at this day accounted the works of Lanfranc's own hand. He was an admirable deſigner; his lively invention furniſhed him with a ſurpriſing variety: his thought was noble; he was not only expeditious, but correct; and, as a public acknowledgment of his merit, the honour of knighthood was conferred upon him.

BEINAS'CO, a town of Piedmont: four miles and a half ſouth-ſouth-weſt of Turin.

BE'ING, *ſ.* [from *be*.] Exiſtence: oppoſed to nonentity.—Of him all things have both received their firſt *being* and their continuance to be that which they are. *Hooker.*

Thee, Father, firſt they ſung, omnipotent,
 Immutable, immortal, infinite,
Eternal King! Thee, Author of all *being*,
 Fountain of light! *Milton.*

A particular ſtate or condition:

As now your own, our *beings* were of old,
And once incloſ'd in woman's beauteous mould. *Pope.*

The perſon exiſting.—It is folly to ſeek the approbation of any *being* beſide the ſupreme; becauſe no other *being* can make a right judgment of us, and becauſe we can procure no conſiderable advantage from the approbation of any other *being*. *Spectator.*

BEING, *part.* Going on, continuing.—Thoſe, who have their hope in another life, look upon themſelves as *being* on their paſſage through this. *Atterbury.*

BEING, *conjunct.* Since.

BEIN'HEIM, a town of Germany, in the circle of Swabia, ſituated on the weſt ſide of the Rhine, belonging to the marquiſate of Baden: ſix leagues north-north-eaſt of Straſburg.

BEINHEIM, a town of France, in the department of the Lower Rhine: ſeven leagues north-north-eaſt of Straſburg, and three and three quarters north-eaſt of Haguenau.

BEINIGKE'MEN, a town of Lithuania: twelve miles north of Pilkallen.

BEI'RA, a province of Portugal, the third in rank, and firſt in ſize, being nearly thirty leagues ſquare. It is divided into ſix juriſdictions, called *Comarcas*; bounded on the north by the provinces of Tra los Montes, and Entre Duero-e-Minho, on the eaſt by Spaniſh Eſtramadura, on the ſouth by Portugueſe Eſtramadura, and on the weſt by the Atlantic. The land is exceedingly fertile in corn and fruit. The principal cities and towns are Coïmbra, Lamego, Guarda, Idanha, Aveiro, Ovar, Buercos, Caſtel-Rodrigo, Couillan, and Troncoſo; the three former are epiſcopal cities. The militia of this province compoſe eight regiments, of a thouſand men each.

BEISHEH'RI, a town of Aſiatic Turkey, in the province of Natolia: 116 miles ſouth-eaſt of Kutaja. Lat. 37. 46. N. lon. 49. 59. E. Ferro.

BEIS'SONS, a town of Africa, in the country of Tunis.

BEIS'SUS, a town Egypt: four miles north of Cairo.

BEIS'TEN, a town of Pruſſia, in the province of Natangen: twenty-ſix miles ſouth of Konigſberg.

BE'IT ABUSAR'RA, a town of Arabia: twenty-four miles north-north-eaſt of Wadeij.

BEIT EL ADHAM, a town of Arabia: forty miles ſouth-weſt of Sana.

BEIT EL FAKEH, a city of Arabia, in the country of Yemen, in a ſituation well adapted for trade, being only half a day's journey from the hills where the coffee is gathered, and the beſt is brought there, which the merchants ſend to Loheia, Hodeida, and the Mocha, for exportation. This trade brings the merchants from Egypt, Syria, Perſia, and India. It is the reſidence of a dola, whoſe juriſdiction extends over a conſiderable diſtrict: ſeventy-two miles north of Mocha, thirty eaſt-ſouth-eaſt of Hodeida, and eighty-ſix ſouth-ſouth-eaſt of Loheia. Lat. 14. 33. N. lon. 43. 12. E. Greenwich.

BEIT EL KADI, a town of Arabia, in the country of Yemen: thirty-four miles north of Chamir.

BEIT EL NAUM, a town of Arabia, in the country of Yemen: twenty-four miles ſouth-eaſt of Sana.

BEIT IBN SAFAN, a town of Arabia, in the country of Yemen: twenty-eight miles ſouth-ſouth-eaſt of Saade.

BEIT IBN MERI, a town of Arabia, in the country of Yemen: thirty-eight miles north of Chamir.

BEIT IBN NASR, a town of Arabia, in the country of Yemen: thirty-four miles north of Chamir.

BEIT RODSJE, a town of Arabia, in the country of Yemen: twenty-four miles ſouth-eaſt of Sana.

BEIT IL TOBA, a town of Arabia, in the country of Yemen: twenty-eight miles ſouth of Saade.

BEIT IBN SHEMSHAR, a town of Arabia, in the country of Yemen: twenty-eight miles eaſt of Abu-Ariſch.

BEIT EL WEIL, a town of Arabia, in the country of Yemen: three miles north of Denn.

BEITH, a town of Scotland, in the county of Air: about the time of the Union, the linen trade was introduced, and flouriſhed here for ſome time. In the year 1730, that buſineſs was ſucceeded by a trade in linen yarn, and the cultivation of flax, which is now conſiderable. The gauze and muſlin manufacture has likewiſe been introduced. There is a weekly market on Fridays; eight miles north of Irvine, ſeven ſouth-weſt of Paiſley.

BE IT SO. A phraſe of anticipation, *ſuppoſe it be ſo*; or of permiſſion, *let it be ſo*:

 My gracious duke,
Be't ſo ſhe will not here, before your grace,
Conſent to marry with Demetrius,
I beg the ancient privilege of Athens. *Shakeſpeare.*

BEIU'CO, *ſ.* in botany. See HIPPOCRATEA.

BEI'ZA, or BEIZATH, in Hebrew antiquity, a word ſignifying an *egg*; alſo a certain meaſure in uſe among the Jews. The *beiza* was likewiſe a gold coin, weighing forty drachms, among the Perſians; who aſſerted that Philip of Macedon owed their king Darius 1000 beizaths or golden eggs, for tribute-money; and that Alexander the Great refuſed to pay them, ſaying, that the bird which laid theſe eggs was flown into the other world.

BEKI, a river of Hungary, which runs into the Temes, near Temeſvar.

BE'KIA, BECOUYA, or BOQUIA, one of the ſmaller Weſt India iſlands among the Grenadilles; called by the French *Little Martinico*. It has a ſafe harbour, but no freſh water; and is principally viſited by the inhabitants of Grenada and St. Vincent's, for the purpoſe of catching turtle. The ſoil produces wild cotton trees, and water melons, in plenty: twenty leagues north-eaſt of Grenada, and ſixty-three weſt-ſouth-weſt of Barbadoes.

BEKING', a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Sar-Louis, on the Sarre: five miles N. N. W. of Sar-Louis.

BEK'KER (Balthaſar), a famous Dutch divine, and author of that celebrated book, The World bewitched; an ingenious piece againſt the vulgar notion of ſpirits. This raiſed a terrible clamour againſt him. He was depoſed from the office of miniſter; but the magiſtrates of Amſterdam continued his penſion. He died in 1698.

BEL (Matthias), was born in Hungary, and became a Lutheran miniſter at Preſburg, and hiſtoriographer to the emperor Charles VI. He wrote, among other works, a Hiſtory of Hungary, which was ſo much admired, that the emperor ſent him letters of nobility; and notwithſtanding his being a Lutheran, the pope, in 1736, ſent him his

his picture, and many large gold medals. He was a member of the Royal Society of London, and of the academies of Berlin and Peterſburgh; and died in 1749, at ſixty-ſix years of age.

Bel, or **Belus**, the ſupreme god of the ancient Chaldeans or Babylonians. He was the founder of the Babylonian empire; and is ſuppoſed to be the Nimrod of Scripture, and the ſame as the Phœnician Baal. This god had a temple erected to him in the city of Babylon, on the very uppermoſt range of the famous tower of Babel, or Babylon, wherein were many ſtatues of this deity, one of which was of maſſy gold, forty feet high. The whole furniture of this magnificent temple was of the ſame metal, and valued at 800 talents of gold. This temple, with its riches, was in being till the time of Xerxes, who, returning from his unfortunate expedition into Greece, demoliſhed it, and carried off the immenſe wealth it contained. It was the ſtatue of this god that Nebuchadnezzar, being returned to Babylon after the end of the Jewiſh war, ſet up and dedicated in the plain of Dura; the ſtory of which is related in the third chapter of Daniel.

Bel and the Dragon is an apocryphal and uncanonical book of Scripture. It was always rejected by the Jewiſh church, and is extant neither in the Hebrew nor Chaldee language, nor is there any proof that it ever was ſo. St. Jerome gives it no better title than the 'Fable of Bel and the Dragon.' It is however permitted to be read, as well as the other apocryphal writings, for the inſtruction and improvement of manners.

To **BELA'BOUR**, *v. a.* [from *be* and *labour.*] To beat; to thump: *a word in low ſpeech:*

He ſees virago Nell *belabour*,
With his own ſtaff, his peaceful neighbour. *Swift.*

BELA'BRE, a town of France, in the department of the Indre, and chief place of a canton, in the diſtrict of le Blanc-en-Berry: two leagues ſouth-eaſt of le Blanc, and eight and a half ſouth-weſt Chateauroux. Lat. 46. 33. N. lon. 18. 49. E. Ferro.

To **BELA'CE**, *v. a.* [a ſea-term.] To faſten; as, To *belace* a rope.

BELALCACAN', or **Belalcaçan**, a town of Spain, in the province of Andaluſia, on the frontiers of Eſtramadura, nine leagues from Cordova.

BELAMI'E, *ſ.* [Fr. It ſhould be ſpelt without the final *e*, unleſs a ſhe-friend be underſtood.] A friend; an intimate:

Wiſe Socrates
Pour'd out his life, and laſt philoſophy,
To the fair Critias, his deareſt *belamie*. *Fairy Queen.*

BELAMOUR', *ſ.* [Fr.] Gallant; conſort; paramour:

Lo, lo, how brave ſhe decks her bounteous bow'r,
With ſilken curtains, and gold coverlets,
Therein to ſhroud her ſumptuous *belamour*. *Fairy Queen.*

BELA'SI, a town of Germany, in the Tyroleſe, eight miles weſt of Bolzano.

BELA'TED, *adj.* [from *be* and *late.*] Benighted; out of doors late at night.

BELATUCA'DRUS, the Mars of the ancient Cambrians.

To **BELAY'**, *v. a.* [from *be* and *lay*; as, to *waylay*, to lie in wait, to lay wait for.] To block up; to ſtop the paſſage; to place in ambuſh:

'Gainſt ſuch ſtrong caſtles needeth greater might,
Than thoſe ſmall forces ye were wont *belay*. *Shakeſpeare.*

To **Belay a Rope**, [a ſea-term.] To ſplice; to mend a rope, by laying one end over another.

BELAY'E, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Lauzerte, one league ſouth-eaſt of Puy l'Evêque.

BEL'BA, a town of Egypt, on the coaſt of the Mediterranean, eighteen miles eaſt of Tinch.

BELBE'IS, a town of Egypt, thirty-five miles north-eaſt of Cairo, and forty-five north-weſt of Suez. Lat. 30. 22. N. lon. 49. 41. E. Ferro.

BEL'BO, a river of Italy, which riſes about two miles eaſt of Ceva, and runs into the Tanaro ſix miles ſouth-weſt of Alexandria.

BELBUCH', a town of Germany, in the circle of Upper Saxony, in Pomerania, one mile north eaſt of New Treptow.

BELCA'IRE, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Quillan, three leagues and a half ſouth-weſt of Quillan.

BELCAS'TRO, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra, ten miles north-eaſt of St. Severina.

To **BELCH**, *v. n.* [*bealcan*, Sax.] To eject the wind from the ſtomach; to eruct.—The ſymptoms are, a ſour ſmell in their fæces, *belchings*, and diſtenſions of the bowels. *Arbuthnot.*—To iſſue out, as by eructation:

The waters boil, and, *belching* from below,
Black ſands as from a forceful engine throw. *Dryden.*

To **Belch**, *v. a.* To throw out from the ſtomach; to eject from any hollow place. It is a word implying coarſeneſs, hatefulneſs, or horror:

The bitterneſs of it I now *belch* from my heart. *Shakeſ.*

When I an am'rous kiſs deſign'd,
I *belch'd* an hurricane of wind. *Swift.*

Belch, *ſ.* The act of eructation. A cant term for malt liquor.—A ſudden reformation would follow, among all ſorts of people; porters would no longer be drunk with *belch*. *Dennis.*

BELCH'ERS, a cluſter of iſlands in Hudſon's Bay. Lat. 56. 10. N. lon. 80. 33. W. Greenwich.

BEL'CHITE, a town of Spain, in the country of Arragon, eight leagues ſouth of Saragoſſa.

BEL'DAM, *ſ.* [*belle dame*, which, in old French, ſignified probably an old woman, as *belle age*, old age.] An old woman: generally a term of contempt, marking the laſt degree of old age, with all its faults and miſeries. A hag:

Why, how now, Hecat? you look angerly.—
—Have I not reaſon, *beldams*, as you are,
Saucy and overbold? *Shakeſpeare.*

BEL'DECK, a town of Hungary, fifteen miles ſouth of Zatmor.

BELDI'RAN, a town of Aſiatic Turkey, in the province of Caramania, twenty-eight miles ſouth of Cogni.

To **BELEA'GUER**, *v. a.* [*beleggeren*, Dutch.] To beſiege; to block up a place; to lie before a town:

Againſt *beleaguer'd* heav'n the giants move:
Hills pil'd on hills, on mountains mountains lie,
To make their mad approaches to the ſky. *Dryden.*

BELEA'GUERER, *ſ.* One that beſieges a place.

BELEBEEV', a town of Ruſſia, in the government of Upha, on the Dema, ſixty miles ſouth-weſt of Upha, and 880 eaſt-ſouth-eaſt of Peterſburgh. Lat. 54. 0. N. lon. 72. 0. E. Ferro.

To **BELEE'**, *v. a.* [a term in navigation.] To place in a direction unſuitable to the wind.

BELEKIS', a town of Sclavonia, ten miles north-weſt of Belgrade.

BE'LEM, a town of Portugal, in the province of Eſtramadura, on the north ſide of the Tagus, with a conſiderable monaſtery, and a royal palace. In the church many kings and princes of the blood have been interred. It is three miles weſt of Liſbon.

Belem, a town of North America, in the country of New Navarre, 180 miles north-weſt of Cinaloa.

Belem, or **Bellem**, a town of Germany, in the circle of Weſtphalia, and biſhopric of Oſnabruck, three miles eaſt of Oſnabruck.

Belem, or **Para**, a ſea-port town of South America, in the country of Braſil, ſituated at the conflux of the rivers Guama and Capim, near the ſouth coaſt of the river Para. Lat. 1. 30. S. lon. 32. 10. W. Ferro.

BELEMNI'TES, *ſ.* [from βελος, a dart or arrow, becauſe of its reſemblance to the point of an arrow.] Arrowhead, or finger-ſtone; of a whitiſh and ſometimes a gold colour, vulgarly called *thunder-bolts* or *thunder-ſtones*. They are compoſed of ſeveral cruſts of ſtone encircling each other, of a conical form, and various ſizes; uſually a little hollow, and ſomewhat tranſparent, formed of ſeveral ſtriæ radiating from the axis to the ſurface of the ſtone; and, when burnt or rubbed againſt one another, or ſcraped with a knife, yield an odour like raſped horn. Their ſize is various, from a quarter of an inch to eight inches; and their colour and ſhape differ. They are ſuppoſed to be originally either a part of ſome ſea-production, or a ſtone formed in the cavity of ſome worm-ſhell, which, being of a tender and brittle nature, has periſhed, after giving its form to the ſtone. They are found in many parts of England; and the common people have a notion, that they are always to be met with after a thunder-ſtorm. They are often incloſed in, or adhere to, other ſtones; and are moſt frequent amongſt gravel, or in clay: they abound in Glouceſterſhire, and are found near Deddington in Oxfordſhire, where they ſometimes contain the ſilver marcaſite.

BELEMNOI'DES, *ſ.* [from βελεμνον, a dart, and ειδος, form.] The proceſſus ſtyloides, and the proceſs at the lower end of the ulna, are ſo named, from their dart-like ſhape..

BELE'RIUM, the promontory of the Dumnonii, or Damnonii, the weſtmoſt Britons. Now called the *Land's End*, in Cornwall.

BELE'SIS, ſurnamed *Nanybrus*, is ſaid to have been the founder of the ancient Babyloniſh empire, and in conjunction with Arbaces the Mede to have put an end to the kingdom of the Aſſyrians by the defeat and death of Sardanapalus. This prince is repreſented to have been crafty and mean-ſpirited, though a hero. It is ſaid, he was baſe enough to circumvent Arbaces, his colleague and friend, in the moſt ſhameful manner, by pretending a vow he had, in the midſt of the war, made to his god Belus, "That, if ſucceſs was the event of it, and the palace of Sardanapalus ſhould be conſumed, which it was, he would be at the charge of removing the aſhes to Babylon; where he would heap them up into a mount near the temple of his god; there to ſtand as a monument to all who ſhould navigate the Euphrates, of the ſubverſion of the Aſſyrian empire." He, it ſeems, had been privately informed of the immenſe treaſure which had been conſumed in the conflagration at Nineveh; and, knowing it to be a ſecret to Arbaces, his avarice ſuggeſted to him this expedient. Arbaces not only granted him his requeſt, but appointed him king of Babylon, with an exemption from all tribute. Beleſis, by this artifice, carried a prodigious treaſure with him to Babylon; but, when the ſecret was diſcovered, he was called to account for it, and tried by the other chiefs who had aſſiſted in the war, and who, upon his confeſſion of the crime, condemned him to loſe his head. But Arbaces, a magnificent and generous prince, not only forgave him, but left him in the poſſeſſion of the treaſure, and in the independent government of Babylon, ſaying, "That the good he had done ought to ſerve as a veil to his crime;" and thus he became at once poſſeſſed of great wealth and dominion. In proceſs of time, and under the ſucceſſor of Arbaces, he became a man of ſhow and effeminacy, unworthy of the kingdom he held. Nanybrus, for ſo he was from this time ſurnamed, underſtanding a certain Mede, called *Parſondas*, held him in the utmoſt contempt, and had ſolicited the emperor of the Medes to diveſt him of his dominions, and to confer them upon himſelf, he offered a great reward to the man who ſhould take Parſondas, and bring him to him. Parſondas hunting ſomewhere near Babylon with the king of the Medes, and ſtraggling from the company, chanced to fall in with ſome of the ſervants of Nanybrus, who were tempted with the promiſed reward. They were purveyors to the king; and Parſondas, being thirſty, aſked them for a draught of wine; which they not only granted, but prevailed upon him to take a meal with them. Drinking freely, and ſuſpecting no treachery, he was eaſily perſuaded to paſs that night in company with ſome beautiful women, brought on purpoſe to inveigle him. But, while he was in a profound ſleep, the ſervants of Nanybrus, ruſhing upon him, bound him, and carried him to their prince; who reproached him for endeavouring to eſtrange his maſter the king of the Medes from him, and by that means to place himſelf in his room on the throne of Babylon. Parſondas did not deny the charge; but with great intrepidity owned, that he thought himſelf more worthy of a crown than ſuch an indolent and effeminate prince as he was. Nanybrus, highly provoked, ſwore by the gods that Parſondas himſelf ſhould in a ſhort time become ſo effeminate as to reproach none with effeminacy. Accordingly, he ordered the eunuch who had the charge of his muſic women, to ſhave, paint, and dreſs, him after the manner of thoſe women, to teach him the art, and in ſhort to transform him by all poſſible means into a woman. His orders were obeyed; and the manly Parſondas ſoon exceeded the faireſt female in ſinging, playing, and the other arts of external allurements. In the mean time the king of the Medes, having in vain ſought after his favourite ſervant, and offered great rewards to ſuch as ſhould give him any information concerning him, concluded he had been deſtroyed by ſome wild beaſt in the chace. At length, after ſeven years, the Mede was informed of his ſtate and condition by an eunuch, who, being cruelly ſcourged by Nanybrus's order, fled, at the inſtigation of Parſondas, into Media; and there diſcloſed the whole to the king, who immediately diſpatched an officer to demand him. Nanybrus pretended to know nothing of any ſuch perſon; upon which another officer was ſent by the Mede, with a peremptory order to ſeize on Nanybrus if he perſiſted in the denial, to bind him with his girdle, and lead him to immediate execution. This had the deſired effect: the Babylonian owned what he had before denied, promiſing to comply with the king's demand; and in the mean time invited the officer to a banquet, at which 150 women, among whom was Parſondas, made their appearance, ſinging and playing upon various inſtruments. But, of all, Parſondas appeared by far the moſt charming; inſomuch that, Nanybrus inquiring of the Mede which he liked beſt, he immediately pointed at him. At this the Babylonian, falling into an immoderate fit of laughter, told him who the perſon was whom he thus preferred to all the women; adding, that he could anſwer what he had done before the king of the Medes. The officer was no leſs ſurpriſed at ſuch an aſtoniſhing change than his maſter was afterwards, when Parſondas appeared before him. The only favour Parſondas begged of the king, for all his paſt ſervices, was, that he would avenge on Nanybrus the baſe and highly injurious treatment he had met with at his hands. The Mede marched at his inſtigation to Babylon; and, notwithſtanding the remonſtrances of Nanybrus, urging, that Parſondas had, without the leaſt provocation, endeavoured to deprive him both of his life and kingdom, declared, that in ten days time he would paſs ſentence on him, for preſuming to act as judge in his own cauſe, inſtead of appealing to him. But Nanybrus having in the mean time bribed Mitaphernes, the Mede's favourite eunuch, the king was by him prevailed upon to ſentence the Babylonian only to a fine; which made Parſondas curſe the man who firſt diſcovered gold, for the ſake of which he was to live unrevenged the ſport and deriſion of an effeminate Babylonian.

BELES'TA, or BELESTAT', a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Quillan, fourteen miles ſouth-weſt of Limoux, and ten weſt of Quillan.

BE'LEZ, a town of South America, in Terra Firma, and province of New Granada.

BELEZ, a river of Spain, which runs into the Mediterranean, between Barcelona and Tarragona.

BELFAST', a town in the country of Antrim, and chief ſea-port in the north of Ireland, on the river Lagon, which opens into a bay or arm of the ſea, called *Belfaſt Lough*, or *Carrickfergus Bay*. In 1791, it contained 3107 houſes, and 18,320 ſouls. It is with regard to ſize the fifth, and with reſpect to commerce the fourth, if not the third, town in the kingdom. There are upwards of 700 looms in it, employed in cotton, cambric, ſail-cloth, and linen; theſe manufactures, with others of glaſs, ſugar, and earthenware, the exports of linen and proviſions, and a conſiderable trade with the Weſt Indies, have rapidly increaſed its importance. It is ſeventy-ſix miles north of Dublin, and fifty eaſt-ſouth-eaſt of Londonderry. Lat. 54. 35. N. lon. 5. 50. W. Greenwich.

BEL'FORD, a market-town in the county of Northumberland, in the road from London to Edinburgh. It has two fairs annually, viz. Tueſday before Whit-Sunday, and Auguſt 23; and the market is on Tueſday. Belford is fifteen miles north of Alnwick, fifteen ſouth of Berwick, and 319 north of London.

BELFOR'TE, a town of Italy, in the duchy of Parma, nineteen miles ſouth-ſouth-weſt of Parma.

BEL'FOUNDER, *ſ.* [from *bell* and *found*.] He whoſe trade it is to found or caſt bells.—Thoſe that make recorders know this, and likewiſe *belfounders* in fitting the tune of their bells. *Bacon.*

BEL'FRY, *ſ.* [*Beffroy*, in French, is a tower; which was perhaps the true word, till thoſe, who knew not its original, corrupted it to *belfry*, becauſe bells were in it.] The place where the bells are rung.

A belfry was originally a high tower, whereon centinels were placed to watch the avenues of a place, and prevent ſurpriſe from parties of the enemies, or to give notice of fires by ringing a bell. In the cities of Flanders, where there is no belfry on purpoſe, the tower of the chief church ſerves for this end.

Belfry is more particularly uſed for the timber-work which ſuſtains the bells in a ſteeple, or that wooden ſtructure to which the bells in church ſteeples are faſtened.

BEL'GÆ, a people of Britain, to the weſt; now Hampſhire, Wiltſhire, and Somerſetſhire. *Camden.*

BELGARD', a town of Germany, in the circle of Upper Saxony, and chief place of a circle to which it gives name, in the duchy of Pomerania, ſituated on the Perſante, and noted for its market for horſes. It is a very ancient town, but we find no certain account of it till the eleventh century. It was heretofore very conſiderable, both for number and valour of its inhabitants, but has been a great ſufferer by wars and conflagrations. In 1506, it was burnt to the ground; the houſes were ſoon re-built, but not with their former grandeur; and no ſooner was the tower of the re-edified church up, than it was thrown down by lightning: the like fate happened in 1562 and 1564. It is thirty-eight miles north-weſt of New Stettin, and forty eaſt of Cammin.

Belgard, *ſ.* [*belle egard*, Fr.] A ſoft glance; a kind regard. *An old word, now wholly diſuſed:*

Upon her eye-lids many graces ſat,
Under the ſhadow of her even brows,
Working *belgards*, and amorous retreats. *Fairy Queen.*

BEL'GERN, a town of Germany, in the circle of Upper Saxony, and margraviate of Meiſſen, ſituated on the Elbe, thirty-ſix miles north-weſt of Dreſden, and twenty-four north-weſt of Meiſſen.

BEL'GERS, a town of Aſiatic Turkey, in the province of Caramania, ſeventy-eight miles weſt of Cogni.

BEL'GICA, anciently a town of the Ubii in Gallia Belgica, midway between the rivers Rhine and Roer: now called *Balchuyſen*, a citadel of Juliers.

Belgica Gallia, one of Cæſar's three diviſions of Gaul, contained between the ocean to the north, the rivers Seine and Marne to the weſt, the Rhine to the eaſt, but on the ſouth at different times within different limits. Auguſtus, inſtituting every where a new partition of provinces, added the Sequani and Helvetii, who till then made a part of Celtic Gaul, to the Belgic. The gentilitious name is *Belgæ*, called by Cæſar the braveſt of the Gauls, becauſe untainted by the importation of luxuries. The epithet is *Belgicus*. *Virgil.*

BELGI'NUM, a town of the Treviri, in Gallia Belgica; now called *Baldenau*, in the electorate of Triers.

BEL'GIUM, manifeſtly diſtinguiſhed from Belgica, as a part from the whole, by Cæſar; who makes Belgium the country of the Bellovaci; Hirtius adding the Atrebates. But, as the Ambiani lay between the Bellovaci and Atrebates, we muſt alſo add theſe; and thus Belgium reached to the ſea, becauſe the Ambiani lay upon it: and theſe three people conſtituted the proper and genuine Belgæ, all the reſt being adventitious, or foreigners; and theſe were the people of Beauvais, Amiens, and Artois.

Belgium, a name given by the French to the Netherlands ſince the revolution, and formally decreed to be a part of France, in the month of September, 1795; and, with the biſhopric of Liege, divided into nine departments, the capitals of which are Antwerp, Bruges, Bruſſels, Ghent, Liege, Luxemburg, Maeſtricht, Mons, and Namur.

BELGOROD', a town of Ruſſia, and capital of a province of the ſame name. It is ſeated on the river Donnets, in lat. 51. 20. N. lon. 18. 5. E.

Belgorod, a ſtrong town of Beſſarabia in European Turkey, ſeated at the mouth of the river Neiſter, on the Black Sea, eighty miles ſouth-eaſt of Bender. Lat. 46. 30. N. lon. 31. 0. E.

BELGRA'DE, the capital of Servia, a province of Turkey in Europe, and the reſidence of a ſangiac, ſituated on the ſide of a hill, at the conflux of the Save and the Danube. This city is large, and has been very beautiful and well fortified, being defended by one of the ſtrongeſt caſtles in Europe. In 1436, the ſultan Amurath, grandſon to the famous Bajazet, took the opportunity of ſome civil diſſentions in Hungary to invade that kingdom, and with a numerous army laid ſiege to Belgrade; but the city was ſecured with a garriſon of near 10,000 men, who made a vigorous defence, and compelled the Turks to retire. In 1521, the ſultan Solyman, ſurnamed the Magnificent, laid ſiege to Belgrade, which made but weak reſiſtance; the garriſon ſurrendering priſoners of war on the 29th of Auguſt. In the year 1688, the Imperial army, commanded by Maximilian Emanuel, elector of Bavaria, laid ſiege to Belgrade on the 11th of Auguſt; in which was a Turkiſh garriſon of 12,000 men, and a baſhaw governor. The elector was wounded in the cheek by an arrow; and the ſame day he ſent a captain, with a Greek interpreter, to ſummon the governor to ſurrender, who was ſo enraged, that he impriſoned the former, and hanged the latter. This exaſperated the elector, ſo that he renewed the attack with redoubled vigour, and having made ſeveral breaches was determined to ſtorm the town; and, with a reſolution that ſeemed inſpired more by frenzy than courage, his ſoldiers mounted the breaches, from whence they were twice beaten; but, being timely ſupported, they made another vigorous effort, when an obſtinate engagement enſued, which at length terminated in favour of the Imperialiſts, who entered the town, and put all they met to the ſword, without even ſparing the women or children. The Imperialiſts in this ſiege and ſtorm loſt 500 men, among whom was the brave general Schaffenburg, and had about 250 wounded. The conſequence of this conqueſt was no more than a temporary poſſeſſion; for, Louis XIV. making war againſt the emperor, the elector was recalled out of Hungary, to command on the Rhine; therefore the inroad he had made into the Turkiſh dominions, which had coſt ſo much blood and treaſure, by a turn in politics effected by Louis, was rendered of no utility, ſince no advantages could be reaped from it. Prince Louis, of Baden, commanded in Hungary during the elector's abſence; but his army was too ſmall to oppoſe the progreſs which the Ottoman troops were now every where making; on the 1ſt of October, 1690, they inveſted Belgrade with a determined reſolution to retake it. The garriſon conſiſted of 6000 German veterans, commanded by count d'Aſpremont, well provided with ammunition and proviſions; though the breaches which the elector had made were not fully repaired, ſo that they were forced to defend them with a double rank of palliſadoes; but an accident happened which blaſted all the hopes of the beſieged: a bomb from the Turks unhappily fell upon the great tower, where the magazine of powder lay, which cauſed the whole to blow up, and with it above 1200 of the garriſon, wounding many of the reſt. The exploſion was felt like an earthquake; the walls of the city were thrown down, and ſeveral hundreds of the houſes laid in ruins; the town was inſtantly in a blaze, and many of the other magazines ſhared the ſame fate as the former. The Turks perceiving the effects their bombs had produced, and encouraged by the accident, were determined not to let ſlip ſo favourable an opportunity for making a general aſſault, therefore on the morning of the 8th of October they advanced. The beſieged prepared to receive them, and a ſharp engagement began, in which the Turks were twice repulſed; but at length their numbers overpowered the beſieged, and obliged them to retire. The Turks, as the Imperialiſts had done, then entered the town, and put all to the ſword without diſtinction. Four thouſand men periſhed in two hours, nobly defending their governor, who, with the duke of Croy, count d'Archinto, and a few more officers, eſcaped through the Fiſher's gate, and got over the Danube in ſaiks; but unfortunately one of the ſaiks which was overloaded ſunk, and all who were in it periſhed. The Turks are ſaid to have loſt in this ſiege near 15,000 men. The houſe of Auſtria could not reflect on the taking of Belgrade with indifference; this acquiſition was too important to neglect all attempts to regain it. The command of the army in Hungary was conferred on the duke of Croy, who had orders to lay ſiege to Belgrade. He appeared before it on the 13th of Auguſt, 1693, and, by the 17th, made ſeveral formidable attacks, when the garriſon, making a well-concerted ſally, did him conſiderable miſchief, and obliged him to alter his diſpoſitions; notwithſtanding which he carried on his operations with great alacrity, and ſeemed wholly bent on taking the town, or periſhing in the attempt; but ſtill he was repulſed in his attacks; and, when he was upon the point of making a general aſſault, he received intelligence that the grand vizier, at the head of 80,000 men, was on his march to relieve the city. Upon which he thought proper to raiſe the ſiege, having loſt near 1000 men. By the treaty of Carlowitz, made in 1699, the Turks were left in poſſeſſion of Belgrade; but, in 1715, pretending that the Venetians had infringed the articles of peace, they declared war, which was followed by the emperor's making a declaration of war againſt the Porte. In May, 1717, prince Eugene marched at the head of a fine army, conſiſting of 100,000 men, to beſiege Belgrade. The Turks foreſaw his deſign, and reinforced the garriſon to 30,000 men, and in other reſpects made it as they thought impregnable. Count Palfi was choſen to direct the ſiege, and his highneſs undertook to cover him againſt any attempts of the Turkiſh army which lay in the neighbourhood, conſiſting of upwards of 150,000 men, commanded by the grand vizier. As prince Eugene and count Palfi were proſecuting this important undertaking, the grand vizier approached the prince's camp with his whole army, and, ſurrounding all the eminences, incloſed the Imperial forces between himſelf and the town. The Turks it was thought would have no occaſion to continue their fire, though it annoyed the prince greatly, and even obliged him to change his quarters, becauſe a contagious diſeaſe was fiercely fighting for them againſt the Imperialiſts. Prince Eugene, though he changed his quarters, kept only upon the defenſive. At length, however, finding his own army diminiſhed daily, and that it was impoſſible for him to receive any reinforcement, prince Eugene reſolved to march out of his intrenchments and attack the enemy. There was another conſideration which determined him thereto, which was this; he ſaw that for two days together the Turks had been making the neceſſary diſpoſitions a general aſſault. His highneſs ſaw there was no time to be loſt, and the only way to prevent their deſigns from taking effect, was immediately to execute his own. And, as the army ſaw there was no way of getting out of their ugly ſituation but by fighting, they were glad to ſee it ſo determined, while they were yet enough to form an army; and they exhorted each other to behave bravely, becauſe the loſs of victory would be attended with conſequences the moſt ſhameful and the moſt fatal, viz. either of being made priſoners by infidels, or being put to the ſword in their camp. The volunteers in the army were ſo numerous, that ſome adviſed prince Eugene to form them into a ſeparate body; but this was found impracticable on account of their different qualities and views, for ſome were princes, ſome noblemen, ſome ſoldiers of fortune; and again many ſerved in particular regiments in hopes of obtaining commands, and ſeveral were experienced officers, and had great commands, but came merely to diſplay their zeal, by expoſing their perſons againſt the Turks. Among the perſons of the firſt rank were the electoral prince of Bavaria, and prince Ferdinand his brother, prince Emanuel of Portugal, the count de Charolois, the prince de Dombes, the hereditary prince of Anhalt-Deſſau, with prince Leopold Maximilian, a prince of Saxony, a duke of Holſtein, two princes of Ligni, the prince of Pons, and the chevalier de Lorraine his brother.

The whole army was under arms by one in the morning, (Auguſt 16,) at which time there was the deepeſt ſilence in both camps; the Turks were intent on their preparations for an attack, and had not the leaſt notion of being attacked themſelves, when the Imperialiſts marched out of their entrenchments. The night, which was very clear, would have diſcovered their march, but about the time they began to move there fell a thick fog, which covered them like a cloud. The firſt line advanced, favoured by this accident, for two hours, ſlowly and without beat of drum, the right having orders to extend itſelf towards the bonnet before the Imperial camp, that it might be ſuſtained by the artillery on that work; the left, where it was expected the ſtreſs of the battle would be, was ordered to extend itſelf into the plain; the foot advancing in the middle. The fog all this time increaſed, ſo that at laſt the ſoldiers could ſcarcely ſee a yard before them. What had hitherto been an advantage proved now a detriment to the Imperialiſts, for the right wing, not being able to diſtinguiſh the bonnet before their own camp, fell in with the head of one of the Turkiſh trenches: both ſides were ſurpriſed. The Turks however made a briſk diſcharge, and then began ſcreaming and crying in ſuch a manner as alarmed indeed, but alſo confounded, their own army, which likewiſe fell to ſhouting and crying, ran in a hurry to their arms, and in as great hurry advanced towards the Imperial camp. The Imperialiſts endeavoured to take their poſts, but were forced to grope and feel their way; and, as one error is generally followed by another, the infantry on the right, regulating their march by the cavalry, ſtrayed out of the line after them, and left a void in the centre capable of affording room to ſeveral battalions. But, in ſpite of all this, the engagement which began on the right ſoon became general: the left wing fought without ſeeing its enemies; they heard each other, and that was all; they fired and advanced; fired again, received the enemies fire, and advanced ſtill; this however gave the Germans great advantage, becauſe they were regular troops, and knew what they did. The Turks on the other hand were all in confuſion; ſuch as had courage knew not how to uſe it, and ſuch as had none knew not how to fly. When they came to fight hand to hand, ſome of the German corps acted very imprudently, from a falſe notion of bravery; they puſhed forward before they could be ſupported, and were conſequently enveloped and cut to pieces, without doing any real ſervice. However, on the whole, the Imperialiſts every where gained ground; the infantry did wonders, they kept cloſe in their ranks, and overturned every thing that ſtood in their way. They never perceived their enemies nor were perceived by them, till the muzzles of their muſkets were at the breaſts of the Turks, who were utterly unprepared; ſo that every diſcharge did prodigious execution, and, before the remaining Turks could fire, they had either bayonets at their breaſts or were ſhot dead on the ſpot. No German ſoldier moved a ſtep before his companion in the centre, which ſecured them from the miſchief which had happened in the left, and which put it out of the power of the Turks to make even a tolerable reſiſtance. Multitudes were at work in the trenches when the fight began, and as they endeavoured to get out the Imperialiſts cut them down. In a word, the ſlaughter was great, and the confuſion ſtill greater.

The cavalry on the right as well as on the left were not ſo ſucceſsful: the ground before them was every where cut through with trenches, the fog made it ſo dark they could ſcarcely perceive them, and, while theſe obſtacles obliged them to advance but ſlowly, the Turkiſh artillery galled them very much. Theſe however were not the only misfortunes they met with: the Turks, puſhing out of their camp, ran by chance into the void ſpace in the center, and thereby cut off the right wing from the reſt of the army, and fell on the flanks of both. About this time the fog ſuddenly cleared up, and the air became perfectly ſerene; this proved the ruin of the Turks. The ſecond line advanced upon thoſe who had puſhed through the firſt, routed them, drove them back to their intrenchments, and filled up the void at once.

The Imperial army, perceiving the advantages they had gained in the dark, prepared now to advance forward, and ſtorm the enemy's works. The right wing poſſeſſed itſelf inſtantly of the batteries which had been playing upon them all the morning, and, without moving farther, turned the cannon on the infidels, and ſcoured the intrenchments, which immediately after they carried ſword in hand. The troops on the left endeavoured to do as much, but they were not able; the enemy were ſtrong on that ſide, and thoſe who fled from the right increaſed their numbers to ſuch a degree that they charged the Imperialiſts with prodigious weight. The Germans ſuſtained this ſhock, though with great loſs, without retreating a yard; and, notwithſtanding they were enfeebled, advanced on the Turks when they found the fury of their attack abate. They then puſhed them from trench to trench, till on a ſudden they found the battle was to begin again. Behind thoſe troops there was a battery of eighteen pieces of heavy cannon: the Germans cried out, that they would make themſelves maſters of it; but advancing nearer there appeared 20,000 foot and 10,000 ſpahis in excellent order. The Imperialiſts were conſtrained to halt, in order to form and to draw breath, the cannon playing upon them all the time. After ſome minutes they advanced again, the infantry with their muſkets on their ſhoulders, the horſe ſword in hand. The janizaries behaved at firſt very well, but, when they ſaw the Germans throw themſelves all at once on the battery, and creep through the embraſures, they were ſtruck with a panic; the cavalry in the mean time trod down the ſpahis, and, by the weight of their horſes, carried all before them. This buſineſs was bloody, but it ended entirely in favour of the Imperialiſts. The entrenchments were now forced, and the troops were much fatigued, yet there ſeemed to be but little done. The Turks rallied, and, to the number of 100,000, were forming in the plain, and there ſeemed to be no reaſon to queſtion that a new engagement would enſue. The Imperialiſts prepared for it, the horſe and foot repaired to their poſts, and began to move in battalia towards the Turks, who remained firm and in good order in the plain. When they arrived within muſket-ſhot, the janizaries threw down their arms and ran away; the reſt of the troops ſoon followed their example, leaving their ſtandards, tents, artillery, and baggage, all behind them. The Imperialiſts purſued them with great ſlaughter, and now thought the buſineſs over, when a body of ſpahis and Tartars took it in their heads to fall upon three regiments of horſe and dragoons, which put them into diſorder: they were preſently ſuſtained by the fire of the intrenchments; and two regiments of dragoons advancing to flank the Turks, they made a quick retreat. This happened about ten in the morning, and was the laſt ſcene of this important action; for the Turks, when once out of ſight of the field of battle, thought of nothing but getting away as faſt as they could. The Germans had now leiſure to ſurvey their camp, which looked like a large city well furniſhed with proviſions, and crowded with ammunition; all the tents were new, as were likewiſe their waggons and equipage, and even their artillery. As to the number of their dead, 3000 were ſlain in the purſuit, and upwards of 10,000 on the field of battle; about 5000 were wounded, and near the ſame number taken priſoners. The Imperialiſts had near 3000 killed, and about 4500 wounded, many of whom died ſoon after the battle. The next day prince Eugene ſummoned the baſhaw governor of Belgrade to ſurrender, threatening him with no quarter in caſe of refuſal, on which the garriſon mutinied and obliged him to ſubmit, but much againſt his inclination, as the place was ſtill in a tolerable ſtate of defence, and, as he thought, tenable againſt all the efforts of the enemy. He obtained honourable terms: the garriſon was conducted to Nizza, and the prince entered the town after having beſieged it upwards of two months. A peace ſoon followed; but, in 1738, the war broke out again; and in Auguſt, 1739, the Ottoman army laid ſiege to Belgrade, but without ſucceſs. A peace was concluded the ſame year between the Auſtrians and the Turks, by the mediation of the French; at whoſe requeſt, or rather direction, Belgrade was yielded to the Turks; but its fine fortifications were then entirely demoliſhed in purſuance of that treaty. It is 150 miles ſouth-ſouth-eaſt of Buda, and 440 north-weſt of Conſtantinople. Lat. 45. 3. N. lon. 37. 55. E. Ferro.

BE'LIA, anciently a town of hither Spain: now *Belchite*, in the kingdom of Arragon.

BELI'AL, [בליעל Heb. of בלי without, יעל he profited; of no profit.] A wicked worthleſs man, one who is reſolved to endure no ſubjection. Thus the inhabitants of Gibeah, who abuſed the Levite's wife, (Judges, xix. 22.) have the name of Belial given them. Hophni and Phineas, the high prieſt Eli's ſons, are likewiſe called ſons of Belial (1 Sam. ii. 12.) upon account of the ſeveral crimes they had committed, and the unbecoming manner in which they behaved themſelves in the temple of the Lord. Sometimes the name Belial is taken to denote the devil. Thus St. Paul ſays, (2 Cor. vi. 15.) "What concord hath Chriſt with Belial?" Whence it appears, that in his time the Jews, under the name of Belial, commonly underſtood the devil in the places where this term occurs in the Old Teſtament.

BELICE'NA, a town of Spain, in the country of Grenada, eleven leagues from Grenada.

BELI'CI, a river of Sicily, which empties itſelf into the ſea near Bigini, in the Val de Mazara.

BEL'IDES, in fabulous hiſtory, the fifty daughters of Danaus, otherwiſe called the Danaïdes. They were called Belides from Belus, whoſe grand-daughters they were. They married the fifty ſons of Ægyptus, but were directed by their father to murder their huſbands on their wedding-night, to which all, except Hypermneſtra, conſented. For this crime they were condemned in hell to draw water out of a well, and fill a tub which was full of holes.

BELIDOR' (Bernard Foreſt de), an engineer in the ſervice of France, but born in Catalonia in 1698. He was profeſſor in the new ſchool of artillery at la Fere, where he publiſhed his courſe of mathematics for the uſe of the artillery and engineers. He was the firſt who ſeriouſly conſidered the quantity of gunpowder proper for charges, and reduced it to two-thirds of the quantity. He was named aſſociate in the Academy of Sciences in 1751, and died September 8, 1761, at ſixty-three years of age. His works are: 1. Sommaire d'un Cours d'Architecture militaire, civile, & hydraulique, in 12mo, 1720. Nouveau Cours de Mathematiques, &c. in 4to, 1725. 3. La Science des Ingénieurs, in 4to, 1729. 4. Le Bombardier François, in 4to, 1734. 5. Architecture Hydraulique, 4 vols. in 4to, 1737. 6. Dictionnaire portatif de l'Ingénieur, in 8vo. 7. Traité des Fortifications, 4 vols. in 4to. Beſides ſeveral pieces inſerted in the volumes of the Memoirs of the Academy of Sciences, for the years 1737, 1750, 1753, and 1756.

To BELI'E, *v. a.* [from *be* and *lie.*] To counterfeit; to feign; to mimic. To give the lie to; to charge with falſehood:

Sure there is none but fears a future ſtate;
And, when the moſt obdurate ſwear they do not,
Their trembling hearts *belie* their boaſtful tongues. *Dryd.*

To calumniate; to raiſe falſe reports of any man. To give a falſe repreſentation of any thing. To fill with lies. This ſeems to be its meaning here:

'Tis ſlander, whoſe breath
Rides on the poſting winds, and doth *belie*
All corners of the world. *Shakeſpeare.*

BELIEF', *ſ.* [from *believe.*] Credit given to ſomething, which we know not of ourſelves, on account of the authority by which it is delivered:

Thoſe comforts that ſhall never ceaſe,
Future in hope, but preſent in *belief.* *Wotton.*

The theological virtue of faith, or firm confidence of the truths of religion.—No man can attain *belief* by the bare contemplation of heaven and earth; for that they neither are ſufficient to give us as much as the leaſt ſpark of light concerning the very principal myſteries of our faith. *Hooker.*—Religion; the body of tenets held by the profeſſors of faith.—In the heat of general perſecution, whereunto Chriſtian *belief* was ſubject upon the firſt promulgation, it much confirmed the weaker minds, when relation was made how God had been glorified through the ſufferings of martyrs. *Hooker.*—Perſuaſion; opinion. The thing believed; the object of belief.—Superſtitious prophecies are not only the *belief* of fools, but the talk ſometimes of wiſe men. *Bacon.*—Creed; a form containing the articles of faith.

Belief has no relation to any particular kind of means or arguments, but may be produced by any means whatever. Thus we are ſaid to believe our ſenſes, to believe our reaſon, to believe a witneſs, &c. And hence, in rhetoric, all ſorts of proofs, from whatever topics deduced, are called πιϛεις, becauſe apt to get belief or perſuaſion touching the matter in hand. Belief, in its more reſtrained and technical ſenſe, invented by the ſchoolmen, denotes that kind of aſſent which is grounded only on the authority or teſtimony of ſome perſon or perſons, aſſerting or atteſting the truth of any matter propoſed. In this ſenſe, belief ſtands oppoſed to *knowledge* and *ſcience.* We do not ſay we believe that ſnow is white, or that the whole is equal to its parts; but we ſee and know them to be ſo. That the three angles of a triangle are equal to two right angles, or that all motion is naturally rectilinear, are not ſaid to be things credible, but ſcientifical; and the comprehenſion of ſuch truths is not belief, but ſcience. But when a thing propounded to us is neither apparent to our ſenſe, nor evident to our underſtanding; neither certainly to be collected from any clear and neceſſary connection with the cauſe from which it proceeds, nor with the effects which it naturally produces; nor is taken up upon any real arguments, or relation thereof to other acknowledged truths; and yet, notwithſtanding, appears as true, not by manifeſtation, but by an atteſtation, of the truth, and moves us to aſſent, not of itſelf, but in virtue of a teſtimony given to it: this is ſaid to be properly credible; and an aſſent to this is the proper notion of belief or faith.

BELIE'NE, a town of Egypt, twelve miles S. of Girge.

BELIEV'ABLE, *adj.* Credible; that which may be credited or believed.

To BELIE'VE, *v. a.* [*gelyfan*, Sax.] To credit upon the authority of another, or from ſome other reaſon than our perſonal knowledge.—Adherence to a propoſition which they are perſuaded, but do not know, to be true, is not ſeeing, but *believing.* *Locke.*—To put confidence in the veracity of any one.—The people may hear when I ſpeak with thee, and *believe* thee for ever. *Exodus.*

To BELIEVE, *v. n.* To have a firm perſuaſion of any thing; to exerciſe the theological virtue of faith:

Now God be prais'd, that to *believing* ſouls
Gives light in darkneſs, comfort in deſpair. *Shakeſpeare.*

With the particle *in*, to hold as an object of faith.—*Believe in* the Lord your God, ſo ſhall you be eſtabliſhed. *2 Chron.*—With the particle *upon*, to truſt, to place a full confidence in, to reſt upon with faith.—To them gave he power to become the ſons of God, even to them that *believe on* his name. *John.*—*I believe*, is ſometimes uſed as a way of ſlightly noting ſome want of certainty or exactneſs.—Though they are, *I believe*, as high as moſt ſteeples in England, yet a perſon, in his drink, fell down, without any other hurt than the breaking of an arm. *Addiſon.*

BELIEV'ER, *ſ.* He that believes, or gives credit. A profeſſor of Chriſtianity.—Myſteries held by us have no power, pomp, or wealth, but have been maintained by the univerſal body of true *believers*, from the days of the apoſtles, and will be to the reſurrection; neither will the gates of hell prevail againſt them. *Swift.*

Believers was an appellation given toward the cloſe of the firſt century to thoſe Chriſtians who had been admitted into the church by baptiſm, and inſtructed in all the myſteries of religion. They had alſo acceſs to all the parts of divine worſhip, and were authoriſed to vote in the eccleſiaſtical aſſemblies. They were thus called in contradiſtinction to the catechumens, who had not been baptized, and were debarred from theſe privileges.

BELIEV'INGLY, *adv.* After a believing manner.

BELI'KE, *adv.* [from *like*, as *by likelihood.*] Probably; likely; perhaps.—There came out of the ſame woods a horrible foul bear, which fearing, *belike*, while the lion was preſent, came furiouſly towards the place where I was. *Sidney.* It is ſometimes uſed in a ſenſe of irony, as *it may be ſuppoſed.*—We think, *belike*, that he will accept what the meaneſt of them would diſdain. *Hooker.*

BE'LIO, a river of Luſitania, called otherwiſe *Limæas, Limeas, Limias*, and *Lethe*, or the 'river of oblivion:' the boundary of the expedition of Decimus Brutus. The ſoldiers refuſing out of ſuperſtition to croſs, he ſnatched an enſign out of the hands of the bearer, and paſſed over, by which his army was encouraged to follow. *Livy.* He was the firſt Roman who ever proceeded ſo far, and ventured to croſs. The reaſon of the appellation, according to Strabo, is, that in a military expedition a ſedition ariſing between the Celtici and Turduli after croſſing that river, in which the general was ſlain, they remained diſperſed there; and from this circumſtance it came to be called the river of Lethe or Oblivion. Now called *El Lima*, in Portugal, running weſtward into the Atlantic, to the ſouth of the Minho.

BELISA'RIUS, the celebrated general of the emperor Juſtinian's army, who overthrew the Perſians in the Eaſt, the Vandals in Africa, and the Goths in Italy; which ſee under ROME. After all his great exploits, he was falſely accuſed of a conſpiracy againſt the emperor. The real conſpirators had been detected and ſeized, with daggers hidden under their garments. One of them died by his own hand, and the other was dragged from the ſanctuary. Preſſed by remorſe, or tempted by the hopes of ſafety, he accuſed two officers of the houſehold of Beliſarius; and torture forced them to declare that they had acted according to the ſecret inſtructions of their patron. Poſterity will not haſtily believe, that an hero, who in the vigour of life had diſdained the faireſt offers of ambition and revenge, ſhould ſtoop to the murder of his prince, whom he could not long expect to ſurvive. His followers were impatient to fly; but flight muſt have been ſupported by rebellion, and he had lived enough for nature and for glory. Beliſarius appeared before the council with leſs fear than indignation: after forty years ſervice, the emperor had prejudged his guilt; and injuſtice was ſanctified by the preſence and authority of the patriarch. The life of Beliſarius was graciouſly ſpared: but his fortunes were ſequeſtered; and, from December to July, he was guarded as a priſoner in his own palace. At length his innocence was acknowledged; his freedom and honours were reſtored; but death, which might be haſtened by reſentment and grief, removed him from the world about eight months after his deliverance. That he was deprived of his eyes, and reduced by envy to beg his bread, "Give a penny to Beliſarius the general!" is a fiction of later times; which has obtained credit, or rather favour, as a ſtrange example of the viciſſitudes of fortune. The ſource of this idle romance may be derived from a miſcellaneous work of the twelfth century, the Chiliads of John Tzetzes, a monk. He relates the blindneſs and beggary of Beliſarius in ten vulgar or political verſes (Chiliad iii. No. 88. 339-348. in Corp. Poet. Græc. tom. ii. p. 311).

> Εκπωμα ξυλινον κρατων εϐοα τω μιλιω
> Βελισαριω οϐολον δοτε τω ϛρατὴλατη
> Ον τυχη μεν εδοξασει, αποτυφλοι δ' ὁ φθόνος.

This moral and romantic tale was imported in Italy with the language and manuſcripts of Greece; repeated before the end of the fifteenth century by Crinitus, Pontanus, and Volaterranus; attacked by Alciat for the honour of the law, and defended by Baronius for the honour of the church. Yet Tzetzes himſelf had read in other chronicles, that Beliſarius did not loſe his ſight, and that he recovered his fame and fortunes. The ſtatue in the Villa Borgheſe at Rome, in a ſitting poſture, with an open hand, which is vulgarly given to Beliſarius, may be aſcribed with more dignity to Auguſtus in the act of propitiating Nemeſis (*Winckleman, Hiſt. de l'Art.* tom. iii. p. 266). "Ex nocturno viſu etiam ſtipem, quotannis, die certo, emendicabat a populo, cavam manum aſſes porrigentibus prebens. *Sueton. in Aug.* c. 91.

BELITZ', a town of Germany, in the circle of Upper Saxony, and middle mark of Brandenburg, ſituated on the river Nieplitz, or Belitz, defended with old ramparts and ditches. In this place there is a conſiderable manufacture of cloth; and it is twenty-eight miles ſouth-weſt of Berlin, and twelve ſouth-weſt of Potſdam.

BELI'VE, *adv.* [*bilive*, Sax. probably from *bi* and *life*, in the ſenſe of vivacity, ſpeed, quickneſs.] Speedily; quickly. *A word out of uſe:*

By that ſame way the direful dames to drive
Their mournful chariot, fill'd with ruſty blood,
And down to Pluto's houſe are come *belive*. *Fairy Queen.*

BELIZA'NA, a name given by the Gauls to Minerva, and to whom they ſacrificed human victims.

BELKA'NI, a town of Aſiatic Turkey, in the province of Natolia, fourteen miles north of Satalia.

BEL'KIN, a town of Egypt, forty-five miles ſouth-weſt of Damietta, and fifty-four ſouth-weſt of Cairo.

BELKO'VA, a river of Ruſſia, in the government of Archangel, which runs into the Frozen Sea. Lat. 68. 30. N. lon. 76. 20. E. Ferro.

BELL, *ſ.* [*bel*, Sax. ſuppoſed by Skinner to come from *pelvis*, Lat. a baſin.] A veſſel or hollow body of caſt metal, formed to make a noiſe by the act of a clapper, hammer, or ſome other inſtrument, ſtriking againſt it. Bells are in the towers of churches, to call the congregation together:

Get thee gone, and dig my grave thyſelf,
And bid the merry *bells* ring to thy ear,
That thou art crowned, not that I am dead. *Shakeſpeare.*

It is uſed for any thing in the form of a bell, as the cups of flowers:

The humming bees, that hunt the golden dew,
In ſummer's heat on tops of lilies feed,
And creep within their *bells* to ſuck the balmy ſeed. *Dryd.*

A ſmall hollow globe of metal perforated, and containing in it a ſolid ball; which, when it is ſhaken, by bounding againſt the ſides, gives a ſound.—As the ox hath his yoke, the horſe his curb, and the falcon his *bells*, ſo hath man his deſires. *Shakeſpeare.*

To bear the BELL. To be firſt; from the wether that carries a bell among the ſheep, or the firſt horſe of a drove that has bells on his collar.—The Italians have carried away the *bell* from all other nations, as may appear both by their books and works. *Hakewill.*

To ſhake the BELLS. A phraſe in Shakeſpeare taken from the bells of a hawk:

Neither the king, nor he that loves him beſt,
The proudeſt he that holds up Lancaſter,
Dares ſtir a wing, if Warwick *ſhakes his bells. Shakeſpeare.*

On the origin of church-bells, Mr. Whitaker, in his Hiſtory of Mancheſter, obſerves, That bells being uſed, among other purpoſes, by the Romans, to ſignify the times of bathing, were naturally applied by the Chriſtians of Italy to denote the hours of devotion, and ſummon the people to church. The firſt application of them to this purpoſe is, by Polydore Virgil and others, aſcribed to Paulinus biſhop of Nola, a city of Campania, about the year 400. Hence, it is ſaid, the names *nolæ* and *campanæ* were given them; the one referring to the city, the other to the country. Though others ſay they took the latter of theſe names, not from their being invented in Campania, but becauſe it was here the manner of hanging and balancing them, now in uſe, was firſt practiſed; at leaſt that they were hung on the model of a ſort of balance invented or uſed in Campania; for in Latin writers we find *campana ſtatera*, for a ſteel-yard; and in the Greek καμπανιζειν, and *ponderare*, 'to weigh.' Bells, on their firſt introduction into the church, were called *ſaints*; hence *toc-ſaint*, or *tocſin*, the corruption which in proceſs of time followed. Pliny reports, that many ages before his time bells were in uſe, and called *tintinnabulæ*; and Suetonius ſays, that Auguſtus had one put at the gate of the temple of Jupiter to call the meeting of the people. In Britain, bells were applied to church-purpoſes, before the concluſion of the ſeventh century, in the monaſtic ſocieties of Northumbria, and as early as the ſixth even in thoſe of Caledonia. And they were therefore uſed from the firſt erection of pariſh-churches among us. Thoſe of France and England appear to have been furniſhed with ſeveral bells. In the time of Clotaire II. king of France, and in the year 610, the army of that king was frightened from the ſiege of the city of Sens, by ringing the bells of St. Stephen's church. The ſecond excerption of Egbert, about the year 750, which is adopted in a French Capitulary of 801, commands every prieſt, at the proper hours, to ſound the bells of his church, and then to go through the ſacred offices to God; and the council of Enham, in 1011, requires all mulcts for ſins to be expended in the reparation of the church, and the purchaſe of church veſtments and bells. Church-bells were ſometimes compoſed of iron in France; and in England, as formerly at Rome, were frequently of braſs. As early as the ninth century, there were many bells caſt of a large ſize and deep note. Ingulphus mentions, that Turketulus abbot of Croyland, who died about the year 870, gave a great bell to the church of that abbey, which he named Guthlac; and afterwards ſix others, viz. two which he called Bartholomew and Bettelin, two called Turketul and Tatwin, and two named Pega and Bega; all which rang together; and the ſame author ſays, "there was not then ſuch a ring of bells in all England." Not long after, Kinſens archbiſhop of York gave two great bells to the church of St. John at Beverly, and at the ſame time provided that other churches in his dioceſe ſhould be furniſhed with bells. Mention is made by St. Aldhem, and William of Malmeſbury, of bells given by

St. Dunſtan to the churches in the weſt. The number of bells in every church gave occaſion to the curious and ſingular piece of architecture in the campanile or bell-tower; an addition, which is more ſuſceptible of the grander beauties of architecture than any other part of the edifice, and is generally therefore the principle or rudiments of it. It was the conſtant appendage to every pariſh church of the Saxons, and is actually mentioned as ſuch in the laws of Athelſtan.

The Greek Chriſtians are uſually ſaid to have been unacquainted with bells till the ninth century, when their conſtruction was firſt taught them by a Venetian. Indeed, it is not true that the uſe of bells was entirely unknown in the ancient eaſtern churches, and that they called the people to church, as at preſent, with wooden mallets. Leo Alatius, in his diſſertations on the Greek temples, proves the contrary from ſeveral ancient writers. It is his opinion, that bells firſt began to be diffuſed among them after the taking of Conſtantinople by the Turks; who, it ſeems, prohibited them leſt their ſound ſhould diſturb the repoſe of ſouls, which, according to them, wander in the air. He adds, that they ſtill retain the uſe of bells in places remote from the intercourſe of the Turks; particularly, very ancient ones, in mount Athos. F. Simon thinks the Turks prohibited the Chriſtians the uſe of bells, rather out of political than religious reaſons; inaſmuch as the ringing of bells might ſerve as a ſignal for revolts, &c.

In the ancient monaſteries we find ſix kinds of bells enumerated by Durandus, viz. *Squila*, rung in the refectory; *cymbalum*, in the cloiſter; *nola*, in the choir; *nolula* or *dupla*, in the clock; *campana*, in the ſteeple; and *ſignum*, in the tower. Belethus has much the ſame; only that for ſquilla, he puts tintinnabulum, and places the campana in the tower, and campanella in the cloiſter. Others place the tintinnabulum, or tinniolum, in the refectory or dormitory; and adds another bell, called *corrigiuncula*, rung at the time of giving diſcipline, to call the monks to be flogged. The cymbalum is ſometimes alſo ſaid to have been rung in the cloiſter, to call the monks to meat. In the funeral monuments of Weever, are the following particulars relating to bells: "Bells had frequently theſe inſcriptions on them:

"Funera plango, Fulgura frango, Sabbata pango,
Excito lentos, Diſſipo ventos, Paco cruentos.

"In the Little Sanctuary at Weſtminſter king Edw. III. erected a clochier, and placed therein three bells for the uſe of St. Stephen's chapel: about the biggeſt of them were caſt in the metal theſe words:

"King Edward made me thirty thouſand weight and three,
Take me down and wey me, and more you ſhall fynd me.

"But, theſe bells being taken down in the reign of king Henry VIII. one writes underneath with a coal:

"But Henry the eight
Will bait me of my weight." *Ibid*, 492.

This laſt diſtich alludes to a fact mentioned by Stow in his Survey of London, ward of Farringdon Within, to wit, that near to St. Paul's ſchool ſtood a clochier, in which were four bells called *Jeſus's bells*, the greateſt in all England, againſt which Sir Miles Partridge ſtaked an hundred pounds, and won them of king Henry VIII. at a caſt of dice. Nevertheleſs it appears that abroad there are bells of greater magnitude. In the ſteeple at the great church at Roan in Normandy is a bell with this inſcription:

Je ſuis George d'Ambois,
Qui trente cinque mille pois.
Mes lui que me peſera
Trente ſix mille me trouera.

I am George of Ambois,
Thirtie five thouſand in pois.
But he that ſhall weigh me
Thirtie ſix thouſand ſhall find me. *Ibid.*

And it is a common tradition that the bells of King's-college chapel, in the univerſity of Cambridge, were taken by Henry V. from ſome church in France, after the battle of Agincourt. They were taken down ſome years ago, and ſold to Phelps the bell-founder in Whitechapel. The uſes of bells were ſummed up in the following diſtich, as well as that firſt above-mentioned:

Laudo Deum verum, plebem voco, conjugo clerum,
Defunctos ploro, peſtem fugo, feſta decoro.

Matthew Paris obſerves, that anciently the uſe of bells was prohibited in time of mourning; though at preſent they make one of the principal ceremonies of mourning. Mabillon adds, that it was an ancient cuſtom to ring the bells for perſons about to expire, to advertiſe the people to pray for them; whence our paſſing-bells. The paſſing-bell, indeed, was anciently rung for two purpoſes: one, to beſpeak the prayers of all good Chriſtians for a ſoul juſt departing; the other to drive away the evil ſpirits who ſtood at the bed's foot, and about the houſe, ready to ſeize their prey, or at leaſt to moleſt and terrify the ſoul in its paſſage: but, by the ringing of that bell (for Durandus informs us, evil ſpirits are much afraid of bells), they were kept aloof; and the ſoul, like a hunted hare, gained the ſtart, or had what is by ſportſmen termed *law*. Hence, perhaps, excluſive of the additional labour, was occaſioned the high price demanded for tolling the greateſt bell of the church; for, that being louder, the evil ſpirits muſt go farther off to be clear of its ſound, by which the poor ſoul got ſo much the more the ſtart of them: beſides, being heard farther off, it would likewiſe procure the dying man a greater number of prayers. This diſlike of ſpirits to bells is mentioned in the Golden Legend by W. de Worde. "It is ſaid, the evill ſpyrites that ben in the regyon of thayre, doubte moche when they here the belles rongen: and this is the cauſe why the belles ben rongen whan it thondreth, and whan great tempeſte and outrages of wether happen, to the ende the feinds and wycked ſpirytes ſhold be abaſhed and flee, and ceaſe of the movynge of tempeſte." Lobinean obſerves, that the cuſtom of ringing bells at the approach of thunder, is of ſome antiquity; but that the deſign was not ſo much to ſhake the air, and ſo diſſipate the thunder, as to call the people to church to pray that the pariſh might be preſerved from that terrible meteor.

In the Romiſh church, bells were baptized and anointed *oleo Chriſmatis*: they were exorciſed, and bleſſed by the biſhop; from a belief, that, when theſe ceremonies were performed, they had power to drive the devil out of the air, to calm tempeſts, to extinguiſh fire, and to recreate even the dead. The ritual for theſe ceremonies is contained in the Roman pontifical; whence the origin of giving to bells the name of ſome ſaint. In Chauncey's Hiſtory of Hertfordſhire, page 383, is a relation of the baptiſm of a ſet of bells in Italy with great ceremony, a ſhort time before the writing that book. The bells of the pariſh-church of Winnington in Bedfordſhire had their names caſt about the verge of every one in particular, with theſe rhiming hexameters:

Nomina Campanis hæc indita ſunt quoque noſtris.
1. Hoc ſignum Petri pulſatur nomine Chriſti.
2. Nomen Magdalene campana ſonat melode.
3. Sit nomen Domini benedictum ſemper in eum.
4. Muſa Raphaelis ſonat auribus Immannuelis.
5. Sum Roſa pulſata mundique Maria vocata.

Weev. Fun. 122.

By an old chartulary, once in the poſſeſſion of Weever the antiquary, it appears, that the bells of the priory of Little Dunmow in Eſſex were, anno 1501, new caſt, and baptized by the following names:

Prima in honore Sancti Michaelis Archangeli.
Secunda in honore S. Johannis Evangeliſti.
Tertia in honore S. Johannis Baptiſti.
Quarta in honore Aſſumptionis beatæ Mariæ.
Quinta in honore Sancti Trinitatis, et omnium ſanctorum.
Ibid. 633.

The bells of Oſney-abbey near Oxford were very famous; their ſeveral names were Douce, Clement, Auſtin, Hautecter [potius Hautcleri], Gabriel, and John.

The Ruſſians, it is ſaid, have a great paſſion for bell-ringing; and we are told, that the great bell of Moſcow weighs, according to Mr. Coxe, "432,000lbs. and which exceeds in bigneſs every bell in the known world. Its ſize is ſo enormous, that I could ſcarcely have given credit to the account of its magnitude, if I had not examined it myſelf, and aſcertained its dimenſions with great exactneſs. Its height is nineteen feet, its circumference at the bottom twenty-one yards eleven inches, its greateſt thickneſs twenty-three inches." It was caſt in the reign of the empreſs Anne; but, the beam on which it hung being burnt, it fell, and a large piece is broken out of it; ſo that it lately lay in a manner uſeleſs. Mr. Bruce, in his late memoirs, mentions a bell at Moſcow, founded in czar Boris's time, nineteen feet high, twenty-three in diameter, and two in thickneſs, that weighed 336,000lbs.

Nankin in China was anciently famous for the largeneſs of its bells: but their enormous weight brought down the tower, the whole building fell to ruin, and the bells have ever ſince lain on the ground. One of theſe bells is near twelve Engliſh feet high, the diameter ſeven and a half, and its circumference twenty-three; its figure almoſt cylindric, except for a ſwelling in the middle; and the thickneſs of the metal about the edges ſeven inches. From the dimenſions of this bell, its weight is computed at 50,000lbs. which is more than double the weight of that of Erfort, ſaid by father Kircher to be the greateſt bell in the world. Theſe bells were caſt by the firſt emperor of the preceding dynaſty, about 300 years ago. They have each their name; the hanger *(tchoui)*, the eater *(che)*, the ſleeper *(choui)*, the will *(fi)*. Father le Compte adds, that there are ſeven other bells in Pekin, caſt in the reign of Youlo, each of which weighs 120,000lbs. But the ſounds even of their biggeſt bells are very poor; being ſtruck with a wooden in lieu of an iron clapper.

The following is the weight of ſome of the largeſt bells in England. The Great Tom of Lincoln weighs 9,894lb. when gauged, it will hold 4,024 gallons; its compaſs is ſeven yards and a half and two inches. The bell Dunſtan, at Canterbury cathedral, weighs 70 cwt. The great bell of Exeter cathedral weighs 12,500lbs. The tenor-bell of St. Mary-le-Bow, London, weighs 53 cwt. That in York minſter, 53 cwt. St. Peter's, Norwich, 41 cwt. St. Giles's Cripplegate, London, 36 cwt. St. Michael's, Coventry, 31 cwt. St. Margaret's, at Lynn, in Norfolk, 30 cwt.

The practice of ringing bells in change, or regular peals, is ſaid to be peculiar to England; whence Britain has been termed the *ringing iſland*. The cuſtom ſeems to have commenced in the time of the Saxons, and was common before the conqueſt. The ringing of bells, though a recreation chiefly of the lower ſort, is in itſelf not incurious. The tolling a bell is nothing more than the producing a ſound by a ſtroke of the clapper againſt the ſide of the bell, the bell itſelf being in a pendant poſition and at reſt. In ringing, the bell, by means of a wheel and a rope, is elevated to a perpendicular: in its motion to this ſituation, the clapper ſtrikes forcibly on one ſide, and in its return downwards on the other ſide of the bell, producing at each ſtroke a ſound. There are in London ſeveral ſocieties of ringers, particularly one known by the name of the *College Youths*: of this it is ſaid Sir Matthew Hale, lord chief juſtice of the court of King's Bench, was, in his youthful days, a member; and in the life of this learned and upright judge, written by biſhop Burnet, ſome facts are mentioned which favour this relation. In England the practice of ringing is reduced to a ſcience, and peals have been compoſed which bear the name of their inventors. Some of the moſt celebrated peals were compoſed, about 50 years ago, by one Patrick, a barometer-maker. In 1684, Abraham Rudhall, of the city of Glouceſter, brought the art of bell-founding to great perfection. His deſcendants in ſucceſſion have continued the buſineſs of caſting bells; and by a liſt publiſhed by them it appears, that at Lady-day 1774 the family, in peals and odd bells, had caſt to the amount of 3,594. The peals of St. Dunſtan's in the Eaſt, and St. Bride's, London, and St. Martin's in the Fields, Weſtminſter, are in the number. The muſic of bells is altogether melody; but the pleaſure ariſing from it conſiſts in the variety of interchanges, and the various ſucceſſion and general predominance of the conſonances in the ſounds produced. Muſical authors, however, have written but little upon this ſubject.

The ſound of a bell is conjectured to conſiſt in a vibratory motion of its parts, much like that of a muſical chord. The ſtroke of the clapper muſt neceſſarily change the figure of the bell, and of a round make it oval: but, the metal having a great degree of elaſticity, that will return back again which the ſtroke drove fartheſt off from the centre, and that even ſome ſmall matter nearer the centre than before; ſo that the two parts which before were extremes of the longeſt diameter, do then become thoſe of the ſhorteſt; and thus the external ſurface of the bell undergoes alternate changes of figure, and by that means gives that tremulous motion to the air in which the ſound conſiſts. M. Perrault maintains, that the ſound of the ſame bell or chord is a compound of the ſounds of the ſeveral parts thereof; ſo that where the parts are homogeneous, and the dimenſions of the figure uniform, there is ſuch a perfect mixture of all theſe ſounds as conſtitutes one uniform, ſmooth, even, ſound; and the contrary circumſtances produce harſhneſs. This he proves from the bells differing in tone according to the part you ſtrike; and yet, ſtrike it any where, there is a motion of all the parts. He therefore conſiders bells as a compound of an infinite number of rings, which according to their different dimenſions have different tones, as chords of different lengths have; and, when ſtruck, the vibrations of the parts immediately ſtruck determine the tone, being ſupported by a ſufficient number of conſonant tones in the other parts. Bells are obſerved to be heard farther placed on plains than on hills; and ſtill farther in valleys than on plains: the reaſon of which will not be difficult to aſſign, if it be conſidered, that, the higher the ſonorous body is, the rarer is its medium: conſequently, the leſs impulſe it receives, and the leſs proper vehicle it is to convey it to a diſtance.

M. Reaumur, in his Memoirs of the Paris Academy, has the following obſervations relating to the ſhape moſt proper for bells, to give them the loudeſt and cleareſt ſound. He obſerves, "that, as pots and other veſſels more immediately neceſſary to the ſervice of life were doubtleſs made before bells, it probably happened that the obſerving theſe veſſels to have a ſound when ſtruck gave occaſion to making bells, intended only for ſound, in that form; but, that it does not appear that this is the moſt eligible figure; for lead, a metal which is in its common ſtate not at all ſonorous, yet becomes greatly ſo on its being caſt into a particular form, and that very different from the common ſhape of bells. In melting lead for the common occaſions of caſting in ſmall quantities, it is uſually done in an iron ladle; and, as the whole is ſeldom poured out, the remainder, which falls to the bottom of the ladle, cools into a maſs of the ſhape of that bottom. This is conſequently a ſegment of a ſphere, thickeſt in the middle, and thinner towards the edges; nor is the ladle any neceſſary part of the operation, ſince, if a maſs of lead be caſt in that form in a mould of earth or ſand, in any of theſe caſes it is found to be very ſonorous. Now, if this ſhape alone can give ſound to a metal which in other forms is perfectly mute, how much more muſt it neceſſarily give it to other metals naturally ſonorous in whatever form? It ſhould ſeem, that bells would much better perform their office in this than in any other form: and that it muſt particularly be a thing of great advantage to the ſmall bells of common houſe-clocks, which are required to have a ſhrill note, and yet are not allowed any great ſize." He adds, "that had our forefathers had opportunities of being acquainted with the ſound of metals in this ſhape we ſhould probably have had all our bells at preſent of this form."

The uſe of bells is very ancient, as well as extenſive, both among Jews, Greeks, Romans, Chriſtians, and heathens; by all of whom they were variouſly applied; as on the necks of men, beaſts, birds, horſes, ſheep, &c. Among the Jews it was ordained, that the lower part of the blue tunic which the high-prieſt wore when he performed religious ceremonies, ſhould be adorned with pomegranates and gold bells, intermixed equally and at equal diſtances. As to the number of the bells worn by the high-prieſt, the ſcripture is ſilent; and authors are not well agreed: but the ſacred hiſtorian has let us into the uſe and intent of them in theſe words: (Exod. xxviii. 33-35.) "And it ſhall be upon Aaron to miniſter, and his ſound ſhall be heard when he goeth into the holy place before the Lord, and when he cometh out, that he die not." The kings of Perſia are ſaid to have the hem of their robes adorned like the Jewiſh high-prieſts with pomegranates and gold-bells. It was, in the opinion of Calmet, with a deſign of giving notice that the high-prieſt was paſſing by, that he wore little bells on the hem of his robe; or rather it was as it were a kind of public notice that he was going to the ſanctuary: for as, in the king of Perſia's court, no one was ſuffered to enter the apartments without giving notice thereof by the ſound of ſomething; ſo the high-prieſt, out of reſpect to the divine preſence reſiding in the holy of holies, did, by the ſound of little bells faſtened to the bottom of his robe, deſire as it were permiſſion to enter, that the ſound of the bells might be heard, and he not puniſhed with death for an improper intruſion. The figure of theſe bells is not known to us. The prophet Zachariah (xiv. 20.) ſpeaks of bells hung to war-horſes. "In that day (ſays the prophet) there ſhall be upon the bells of horſes, Holineſs unto the Lord."

Among the Greeks, thoſe who went the nightly rounds in camps or garriſons, carried with them a little bell, which they rung at each ſentry-box to ſee that the ſoldiers on watch were awake. A codonophorous or bell-man alſo walked in funeral proceſſions, at a diſtance before the corpſe, not only to keep off the crowd, but to advertiſe the *flamen dialis* to keep out of the way, for fear of being polluted by the ſight, or by the funerary muſic. The prieſt of Proſerpine at Athens, called *hierophantus*, rung a bell to call the people to ſacrifice. There were alſo bells in the houſes of great men to call up the ſervants in a morning. Zonara aſſures us, that bells were hung with whips on the triumphal chariots of their victorious generals, to put them in mind that they were ſtill liable to public juſtice. Bells were put on the necks of criminals going to execution, that perſons might be warned by the noiſe to get out of the way of ſo ill-an omen as the ſight of the hangman or the condemned criminal, who was devoted and juſt going to be ſacrificed to the *dii manes*. In England, the curfew, or evening bell, was eſtabliſhed by William the Conqueror, who appointed, under a ſevere penalty, that, at the ringing of this bell at eight o'clock in the evening, every one ſhould put out their fires and candle, and go to bed. It is remarkable, that this inſtitution, though a mark of national diſgrace and ſlavery, is continued in almoſt every town and city in the kingdom, to the preſent day.

BELL, in chemiſtry, denotes a glaſs veſſel placed over ſome matter in a ſtate of exhalation, either to collect the vapour or gather the flowers. Chemical bells are a ſort of receptacles chiefly uſed in preparing the oil or ſpirit of ſulphur, for gathering and condenſing fumes into a liquor.

Electrical BELLS, are uſed in a variety of entertaining experiments by electricians. The apparatus, which is of German invention, conſiſts of three ſmall bells ſuſpended from a narrow plate of metal; the two outermoſt by chains, and that in the middle, from which a chain paſſes to the floor, by a ſilken ſtring. Two ſmall knobs of braſs are alſo hung by ſilken ſtrings, one on each ſide of the bell in the middle, which ſerve for clappers. When this apparatus is connected with an electrified conductor, the outermoſt bells ſuſpended by chains will be charged, attract the clappers, and be ſtruck by them. The clappers becoming electrified likewiſe will be repelled by theſe bells, and attracted by the middle bell, and diſcharge themſelves upon it by means of the chain extending to the floor. After this, they will be again attracted by the outermoſt bells, and, by ſtriking them alternately, will occaſion a ringing, which may be continued at pleaſure. Flaſhes of light will be ſeen in the dark between the bells and clappers; and, if the electrification be ſtrong, the diſcharge will be made without actual contact, and the ringing will ceaſe. An apparatus of this kind, connected with one of thoſe conductors that are erected for ſecuring buildings from lightning, will ſerve to give notice of the approach and paſſage of an electrical cloud.

To BELL, *v. n.* To grow in buds or flowers, in the form of a bell.—Hops, in the beginning of Auguſt, *bell*, and are ſometimes ripe. *Mortimer.*

Diving-BELL. See DIVING.

BELL-FASHIONED, *adj.* [from *bell* and *faſhion.*] Having the form of a bell; campaniform.—The thorn-apple riſes with a ſtrong round ſtalk, having large *bell-faſhioned* flowers at the joints. *Mortimer.*

BELL-FLOWER. See CAMPANULA and CANARINA.

BELL-FOUNDERY. See FOUNDERY.

BELL-WEED, in botany. See JACEA.

BEL'LA (Stefano de la), an eminent engraver, born at Florence in 1610. He was a diſciple of Canta Gallina, the inſtructor of Callot. De la Bella at firſt imitated the manner of Callot; but his abilities ſoon began to manifeſt themſelves; and, as by degrees he acquired a facility in handling the graver, he quitted the ſtyle in which he only ſhone as an imitator, and adopted one entirely his own, which in freedom and ſpirit is ſaid to have ſurpaſſed that of his fellow-diſciple. He went to Paris in 1642, where he formed an acquaintance with Iſrael Silveſtre, then newly returned from Rome; and he was much employed by Henriete the uncle of Silveſtre. Cardinal Richlieu engaged him to go to Arras and make drawings of the ſiege of that town by the royal army; which drawings he engraved at his return. After abiding ſome conſiderable time at Paris, his family-affairs obliged him to return to Florence; where he obtained a penſion from the grand duke, and was appointed to inſtruct the prince Coſmus his ſon in the art of deſign. Being ſubject to violent pains in the head, his life was rendered very uncomfortable by that cruel diſorder, which put an end to it in 1664, when he was only fifty-four years of age. De la Bella drew very correctly, and with great taſte. His works manifeſt much genius and vaſt fertility of invention. The fire and animation which appear in them compenſate for their ſlightneſs; and we may reaſonably expect to find them ſlight, when we are told that he engraved 1400 plates!

BELLAC', a town of France, and principal place of a diſtrict, in the department of the Upper Vienne, ſituated on the Vincon. It owes its name to an ancient caſtle, built in the tenth century. The number of inhabitants is about 2500, and it is ſeven leagues N. N. W. of Limoges, and five north of St. Junien. Lat. 46. 7. N. lon. 18. 43. E. Ferro.

BELLADAC', a town of Aſia, in the province of Diarbekir, forty-five miles weſt of Rabba.

BELLADON'NA, *ſ.* [from *bella donna*, Ital. handſome lady.] Deadly nightſhade. It is ſo called becauſe the ladies of Italy uſe it to take away the too florid colour of their faces. See AMARYLLIS and ATROPA.

BELLAI' (William du), lord of Langey, a French general, who ſignalized himſelf in the ſervice of Francis I. He was alſo an able negociator; ſo that the emperor Charles V. uſed to ſay, "that Langey's pen had fought more againſt him than all the lances in France." He was ſent to Piedmont in quality of viceroy, where he took ſeveral towns from the Imperialiſts. His addreſs in penetrating into the enemy's deſigns was ſurpriſing. In this he ſpared no expence, and thereby had intelligence of the moſt ſecret councils of the emperor and his generals. He was ſent ſeveral times into Germany to the princes of the Proteſtant league, and was made a knight of the order of St. Michael. He was a man of learning, having compoſed ſeveral works; the moſt remarkable of which was, the Hiſtory of his Own Times, in Latin; divided into ogdoades, that is, ſeveral parts each conſiſting of eight books. When Langey was in Piedmont in 1542, he had ſome remarkable intelligence which he was deſirous himſelf to communicate to the king, and, being very infirm, he ordered a litter for his conveyance; but after having paſſed the mountain of Taiara, betwixt Lyons and Roan, he found himſelf ſo extremely ill at Saphorin, that he was obliged to ſtop there, where he died the 9th of January, 1543. He was buried in the church of Mans, and a noble monument was erected to his memory.

BEL'LAMY (George Anne), a celebrated comedian of the ancient ſchool, originally introduced by Mr. Rich on the Covent Garden ſtage, though much againſt the approbation of Mr. Quin. She was the child of a fortuitous intercourſe between a Miſs Seale, and lord Tyrawly, an Iriſh nobleman. Her firſt *entré* was in the character of Monimia, in the Orphan, in which ſhe gained great and deſerved applauſe, and for a length of time attracted a crouded audience. At the entreaty of Mr. Sheridan, ſhe viſited Dublin in company with the celebrated Garrick, and performed on the Iriſh ſtage with ſingular *eclat*. On her return to England, ſhe became a great favourite of Quin, and appeared again on the Covent Garden ſtage in the character of Athenias, in Theodoſius. Youth, and a conſiderable ſhare of beauty, rendered her a deſirable object of ſeduction; inſomuch that ſhe was caught up by a gentleman of the name of Metham, juſt as ſhe was going upon the ſtage in the 5th act of the Provoked Wife. He forced her into a coach, and carried her to lodgings provided for the purpoſe; and from hence muſt be dated that period of her life which was ſo remarkably chequered with misfortunes. After ſome time ſhe reſumed her theatrical profeſſion, and was introduced on the ſtage of Old Drury, by Mr. Garrick. She played the character of Juliet with great ſucceſs; and, during her continuance at this theatre, her perfomances were ſo much approved, that the late lord chief juſtice Mansfield exclaimed, "I came to admire Garrick, but I go away enchanted with Bellamy." She long continued to be the favourite of both theatres; and was honoured with the acquaintance of a great number of the moſt diſtinguiſhed perſonages among the Engliſh and Iriſh nobility; yet the viciſſitudes of her life was ſuch, that ſhe was often reduced to great ſtraits, and finally, died in the moſt diſtreſſed circumſtances. She wrote an Apology for her Life, in 5 vols. 12mo. which is not without merit, and was favourably received by the public.

BELLA'NO, a town of Italy, in the Milaneſe: ſeventeen miles north of Como.

BEL'LARMIN (Robert,) an Italian Jeſuit, one of the beſt controverſial writers of his time. In 1576 he read lectures at Rome on controverſies; and in 1599, he was honoured with a cardinal's hat. No Jeſuit ever did greater honour to his order than he; and no author ever defended the cauſe of the Romiſh church in general, and that of the pope in particular, to more advantage. He was a man of great chaſtity and temperance, and remarkable for his patience.

BEL'LATRIX, in aſtronomy, a ruddy glittering ſtar of the ſecond magnitude, in the left ſhoulder of Orion. It takes its name from *bellum*, as being anciently ſuppoſed to have a great influence in kindling wars, and forming warriors.

BELLE, *ſ.* [*beau*, *belle*, Fr.] A young lady:

> What motive could compel
> A well-bred lord t' aſſault a gentle *belle*?
> O ſay, what ſtranger cauſe, yet unexplor'd,
> Could make a gentle *belle* reject a lord? *Pope.*

BELLEAU' (Remi), a French poet of eminence. He lived in the family of Renatus of Lorraine, marquis of Elbeuf, general of the French galleys; and attended him in his expedition into Italy, in 1557. This prince greatly eſteemed Belleau for his courage; and having alſo a high opinion of his abilities, entruſted him with the education of his ſon Charles of Lorraine. Belleau was one of the ſeven poets of his time who were denominated the *French Pleiades*. He wrote ſeveral pieces; and tranſlated the odes of Anacreon into the French language, but in this he is thought not to have preſerved the natural beauties of the original. His paſtoral pieces are in the greateſt eſteem. His verſes in that way are expreſſed with ſuch beauty and ſimplicity, that they ſeem to be a living picture of what they deſcribe. He alſo wrote an excellent poem on the nature and difference of precious ſtones, which by ſome has been reputed his beſt performance. He died at Paris in March 1577.

BELLE-BAY, on the ſouth coaſt of Newfoundland, and north of Fortune Bay: forty miles north of Pont May.

BELLEFOREST' (Francis de), a French author, born in 1530. He was but ſeven years of age when he loſt his father; and his mother was left in poor circumſtances, but ſhe contributed all in her power to his education. He was ſupported ſome years by the queen of Navarre, ſiſter to Francis I. Some time after he went to ſtudy at Bourdeaux; thence he removed to Toulouſe: and at laſt to Paris, where he became acquainted with men of learning, and was honoured with the friendſhip of many perſons of quality. He wrote, 1. A Hiſtory of the nine Charles's of France. 2. Annotations on the Books of St. Auguſtin. 3. An Univerſal Hiſtory of the World. 4. The Chronicles of Nicholas Gillet, augmented. 5. An Univerſal Coſmography. 6. Annals, or a General Hiſtory of France, and many other works. He died in 1583.

BELLEGAR'DE, a town of France, and fortreſs, in the department of the Averon, it was taken by the Spaniards in the year 1674, and retaken the following year by marechal Schomberg. After the peace of Nimeguen, Louis XIV. had a regular fortreſs built with five baſtions to defend the paſſage of the Pyrenées. In the month of June, 1793, this town was ſurrounded and bombarded by the Spaniards; and the garriſon, which conſiſted of 900 men, being reduced to great diſtreſs, was compelled to ſurrender, after a ſiege of thirty-three days. But in 1694 it was recovered; and in the month of Auguſt that year, the Spaniards, under command of the count de l'Union, were defeated near this town by the French, with the loſs of 2500 killed, and a great number wounded and taken priſoners. In this action the French general Mirabel was killed. The town is diſtant five leagues ſouth of Perpignan, and one and a half ſouth-eaſt of Ceret.

BELLEGARDE, a town of France, in the department of the Loiret, and chief place of canton, in the diſtrict of Bois-Commun: three miles ſouth-eaſt of Bois-Commun.

BELLEGARDE, a town of France, in the department of the Creuſe, and chief place of a canton, in the diſtrict of Aubuſſon: two leagues eaſt of Aubuſſon, and four and a half ſouth-ſouth-weſt of Evaux.

BELLEI'SLE, or BELLEISLE-EN-MER, an iſland in the Bay of Biſcay, near the weſt coaſt of France; about nine miles long, and from two to four broad, ſurrounded by ſharp rocks, which leave only three fortified paſſages to reach the iſland. The ſoil is diverſe, rocky, ſalt marſhes and ſome fertile grounds. Palais is the capital; it contains three other ſmall towns, and about twenty villages. The inhabitants are very poor, and the only trade carried on is the curing of pilchards. There are three harbours in the iſland, viz. Palais, Sauzon, and Gouldford; every one of which labours under ſome capital defect, either in being expoſed, ſhallow, or dangerous in the entrance. In 1761, an expedition was undertaken againſt this iſland by a Britiſh fleet under the command of commodore Keppel, having on-board a conſiderable land force commanded by general Hodgſon. The fleet ſailed from Spithead on the

29th of March, and arrived before Belleiſle on the 7th of April. The iſland was defended by a ſtrong fortreſs, conſtructed by the famous Vauban, near the town of Palais. On the firſt diſembarkment of the troops, they met with a very ſevere repulſe, being compelled precipitately to retreat, with the loſs of near 500 men. But the Engliſh commanders, ſecure of the zeal and ardour of their troops, determined to make another effort, which was attended with happier ſucceſs; and a body of marines and grenadiers, making good their landing on the craggy point of Lomeria, ſuſtained their poſition with wonderful intrepidity againſt a very ſuperior force, till joined by the remainder of their corps, conſiſting of near 8000 men. M. de St. Croix, the French commandant, then recalled his detachments, and prepared for a vigorous defence of the citadel, the avenues to which he had fortified with ſix additional redoubts; which, with much effuſion of blood, were ſucceſſively attacked by the Engliſh; who then urged, with the moſt perſevering ardour, the ſiege of the citadel. On the 7th of June, a practicable breach being made, and a general aſſault on the point of being ordered, M. de St. Croix ſolicited a capitulation, which was granted on the moſt honourable conditions. Thus, at the expence of near two thouſand lives, and an enormous ſum expended in fitting out the expedition, the Engliſh atchieved the conqueſt of a barren rock; but acquired, as uſual, the nobleſt laurels of victory. This iſland was reſtored to the French at the peace of 1763. Lat. 47. 20. N. lon. 14. 30. E.

Belleisle, a ſmall iſland of France, in the river Loire, in the department of the Mayenne: half a league weſt of St. Mathurin.

Belleisle, an iſland in the river St. Lawrence, about ſeven leagues in circuit, and on the north-weſt ſide has a ſmall harbour fit for ſmall-craft, called *Lark Harbour*, within a little iſland that lies cloſe to the ſhore; and at the eaſt point it has another ſmall harbour or cove, that will only admit fiſhing ſhallops; from whence it is only ſixteen miles to the coaſt of Labrador. The narrow channel between Newfoundland and the coaſt of Labrador is called the *Straits of Belleiſle*; five leagues north from Newfoundland. Lat. 52. N. lon. 55. 15. W. Greenwich.

Belleisle, an iſland near the eaſt coaſt of Newfoundland. Lat. 50. 50. N. lon. 55. 35. W. Greenwich.

Belleisle en Terra, a town of France, in the department of the Northern Coaſt, and chief place of a canton, in the diſtrict of Guingamp, ſituated on an iſland in the river Guer: three leagues weſt of Guingamp.

Belleisle, an iſland of Ireland, in Lough Erne, in the county of Fermanagh: ſix miles S. E. Enniſkillen.

BELLELAY', a town of Germany, in the circle of the Upper Rhine and biſhopric of Bâle, with a rich abbey; the cheeſe made in the environs is in great eſteem: ten miles ſouth-ſouth-eaſt of Porentrui.

BEL'LEM, a cape of Spain, on the coaſt of Galicia, between Cape Finiſterre and Corunna.

BEL'LEN, a town of Swiſſerland, in the canton of Schweitz: nine miles north-eaſt of Zug.

BELLENA'VE, a town of France, in the department of the Allier, and chief place of a canton, in the diſtrict of Gannat: three leagues north-weſt of Gannat, and two and a half ſouth-eaſt of Montmarault.

BELLENCOM'BRE, a town of France, in the department of the Lower Seine, and chief place of a canton, in the diſtrict of Neufchatel: three leagues weſt of Neufchatel, and five ſouth-ſouth-eaſt of Dieppe.

BEL'LENDEN, or Ballantine (William), a celebrated author who flouriſhed in the beginning of the 17th century, was profeſſor of belles-lettres at Edinburgh, and maſter of the requeſts to James I. of England. He reſided almoſt conſtantly at Paris, where he publiſhed, in 1608, his *Cicero Princeps*, a ſingular work; in which he extracted, from Cicero's writings, detached paſſages, and compriſed them into one regular body, containing the rules of monarchical government, with the line of conduct to be purſued, and the virtues proper to be encouraged by, the prince himſelf: and the treatiſe, when finiſhed, he dedicated, from a principle of patriotiſm, to Henry then prince of Wales. In 1612, he proceeded to publiſh another work of a ſimilar nature, which he called *Cicero Conſul, Senator Senatuſque Romanus*, in which he treated with much perſpicuity, and a fund of ſolid information, on the nature of the conſular office, and the conſtitution of the Roman ſenate. Finding thoſe works received, as they deſerved, with the unanimous approbation of the learned, he ſet on foot a third work, *De Statu priſci Orbis*, or Hiſtory of the progreſs of Government and Philoſophy, from the times before the flood, to their various degrees of improvement under the Hebrews, Greeks, and Romans. Bellenden alſo wrote another work, publiſhed after his death, *De tribus Luminibus Romanorum*, whom he conceives to be Cicero, Seneca, and the elder Pliny.

BELLE PLEINE, a valley of Piedmont, in the Alps, ſituated partly in the county of Nice, partly in the county of Tenda, a few miles north-weſt of Saorgio.

BELLEREAU', a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Pont-a-Mouſſon: two leagues ſouth-eaſt of Pont-a-Mouſſon, and two and a half north of Nancy.

BELLE'ROPHON, in fabulous hiſtory, was the ſon of Glaucus king of Epirus, who, happening accidently to kill his brother, fled to Prœtus king of Argos, who gave him an hoſpitable reception: but Stenobea, his queen, falling in love with the beautiful ſtranger, and finding that nothing could induce him to injure his benefactor, ſhe accuſed him to her huſband of an attempt to violate her honour. Prœtus, however, not willing to break the laws of hoſpitality, ſent him to Jobates king of Lyſia, the father of Sthenobea, with orders to put him to death: whence the proverb *Bellerophontis literas afferet*, equivalent to *Literæ Oriæ*. That prince, at his arrival, was celebrating a feſtival of nine days, which prevented Bellerophon's deſtruction. Jobates, however, ſent him to ſubdue the Solymi, the Amazons, and Lyſians, and thought to get rid of him by expoſing him to theſe dangers; but by his prudence and courage he came off victorious. Jobates next employed him to deſtroy the Chimæra; when Minerva, or, according to others, Neptune, in conſideration of his innocence, furniſhed him with the horſe Pegaſus, by whoſe aſſiſtance he killed the Chimæra. Jobates, on his return, being convinced of his truth and integrity, and charmed with his heroic virtues, gave him his daughter Philonoë in marriage, and declared him his ſucceſſor; which when Sthenobea heard, ſhe killed herſelf. Bellerophon, afterwards growing vain with his proſperity, reſolved, by the aſſiſtance of Pegaſus, to aſcend the ſkies; when Jupiter checked his preſumption, by ſtriking him blind in his flight; on which he fell to the earth, and wandered till death in contempt and miſery: but, Pegaſus mounting into heaven, Jupiter placed him among the conſtellations. *Homer. Ovid.*

BELLES LETTRES, *ſ.* [Fr.] Polite literature. It has no *ſingular*.—The exactneſs of the other, is to admit of ſomething like diſcourſe, eſpecially in what regards the *belles lettres*. *Tatler.*

Whether we conſult the voluminous dictionaries of the French language, or thoſe treatiſes that profeſs to point out the method of ſtudying and teaching the belles lettres, we find not, in the one or the other, either a clear definition or a ſuccinct explication of the words *belles lettres*, nor any ſummary of thoſe ſciences which are comprehended under that general and collective denomination. It appears to be a vague term, under which every one may include whatever he thinks proper. Sometimes we are told that by the belles lettres is meant, the knowledge of the arts of poetry and oratory; ſometimes that the true belles lettres are natural philoſophy, geometry, and other eſſential parts of learning; and ſometimes, that they comprehend the art of war, by land and ſea: in ſhort, they are made to include all that we know, and whatever we pleaſe; ſo that, in treating on the belles lettres, they talk of the uſe of the ſacraments, &c. (See Rollin on the Belles Lettres.)

tres.) Some comprehend under the term, all thoſe inſtructive and pleaſing ſciences which occupy the memory and the judgment, and do not make part either of the ſuperior ſciences, of the *polite arts*, or of mechanic profeſſions: hence they make hiſtory, chronology, geography, genealogy, philology, &c. the belles lettres. In a word, it were an endleſs taſk to attempt to enumerate all the parts of literature which different learned men have comprehended under this title.

BELLES'ME, a town of France, and principal place of a diſtrict, in the department of the Orne; it contains about 2500 inhabitants: three leagues ſouth of Mortagne, and ſix and a half eaſt-ſouth-eaſt of Alençon.

BELLEVES'VRE, a town of France, in the department of the Saone and Loire, and chief place of a canton, in the diſtrict of Louhans; four leagues and a half N.N.E. Louhans, and ſix and a half eaſt of Chalons ſur Saone.

BELLEVIL'LE, a town of France, in the department of Paris, and chief place of a canton, in the diſtrict of St. Denis: half a league eaſt of Paris.

Belleville, a town of France, in the department of the Rhone and Loire, and chief place of a canton, in the diſtrict of Villefranche: nine leagues eaſt of Roanne, and two and a half north of Villefranche.

Belleville, a town of France, in the department of Vendée, and chief place of a canton, in the diſtrict of La Roche-ſur-Yon: one league north of La Roche, and four ſouth of Montaigne.

BELLEVOIS', a celebrated painter of ſea-pieces, known through all parts of Europe as a great artiſt, though no particulars have been handed down concerning his life. He died in 1684. His ſubjects are views of havens, ſea-ports, ſhores, calms, and ſtorms at ſea: but his calms have the greateſt excellence.

BEL'LEY, a town of France, and principal place of a diſtrict, in the department of the Ain, before the revolution the capital of Bugey, and ſee of a biſhop, ſituated between the mountains, about two miles from the Rhone: eleven leagues ſouth-eaſt of Bourg en Breſſe, and twelve eaſt of Lyons. Lat. 45. 45. N. lon. 23. 21. E. Ferro.

BEL'LIBONE, ſ. [*belle & bonne*, Fr.] A woman excelling both in beauty and goodneſs. *A word now out of uſe.*

Pan may be proud that ever he begot
Such a *bellibone*. *Spenſer.*

BELLIDIAS'TRUM, ſ. in botany. See Doronicum.

BELLIDIOI'DES, ſ. See Chrysanthemum.

BELLI'GERANT, or Belligerous, *adj.* [*begiller.*] Waging war.

BEL'LING, ſ. A hunting term, ſpoken of a roe, when ſhe makes a noiſe in rutting time.

BEL'LINGHAM, in the county of Northumberland, is thirty-two miles north-weſt from Newcaſtle, ſeventeen miles north from Hexam, ſix miles north of Simonburn, and nine miles ſouth-weſt from Elſdon. Twenty-five houſes were burnt down in this ſmall place on the 25th of Auguſt, 1780. Here is a fair annually on the 15th of Sept.

BELLI'NI (Gentil), a Venetian painter, born in 1421. He was employed by the republic of Venice, and to him and his brother the Venetians are indebted for the noble paintings which are to be ſeen in the council-hall. We are told that Mahomet II. having ſeen ſome of his performances, was ſo ſtruck with them, that he wrote to the republic for him. The painter accordingly went to Conſtantinople, where he executed many admirable pieces. He painted the decollation of St. John the Baptiſt, whom the Turks revere as a great prophet. Mahomet admired the proportion and ſhadowing, but he remarked one defect in regard to the ſkin of the neck, from which the head was ſeparated; and in order to prove the truth of his obſervation, he ſent for a ſlave and ordered his head to be ſtruck off; to compare it with the picture. This ſo ſhocked the painter, that could not be eaſy till he had obtained his diſmiſſion; which the grand ſignior granted; and made him a preſent of a gold chain. The republic ſettled a penſion upon him at his return, and made him a knight of St. Mark. He died in 1501, in the 80th year of his age. John Bellini, his brother, painted with great art and ſweetneſs, and died in 1512, aged ninety.

Bellini (Laurence), an eminent phyſician, born at Florence in 1643. After having finiſhed his ſtudies in polite literature, he went to Piſa, where he was aſſiſted by the generoſity of the grand duke Ferdinand II. and ſtudied under two of the moſt learned men of that age, Oliva and Borelli. Oliva inſtructed him in natural philoſophy, and Borelli taught him mathematics. At twenty years of age, he was choſen profeſſor of philoſophy at Piſa, but did not continue long in this office; for he had acquired ſuch a reputation for his ſkill in anatomy, that the grand duke procured him a profeſſorſhip in that ſcience. Bellini, after having held his profeſſorſhip almoſt thirty years, went to Florence, where he practiſed phyſic with great ſucceſs, and was appointed firſt phyſician to the grand duke Coſmus III. He wrote the following books in Latin: 1. An anatomical Diſcourſe on the Structure and Uſe of the Kidneys. 2. A Speech by way of Thanks to the Duke of Tuſcany. 3. Anatomical Obſervations, and a Propoſition in Mechanics. 4. Of the Urine and Pulſe, &c. &c. 5. Tracts concerning the Motion of the Heart and Bile, &c. He died January 8, 1703, being ſixty years of age. His works were read and explained publicly by Dr. Pitcarin, profeſſor of phyſic in Leyden.

BELLINZO'NA, a town of Swiſſerland, and capital of a ſmall country on the eaſt ſide of the Alps, on the confines of the Milaneſe, ſituated at the northern extremity of Lake Maggiora, at the conflux of the Teſin and the Molſa: this country formerly belonged to the biſhopric of Como from a pretended or real grant of the kings of Lombardy, but was annexed to the Swiſs cantons of Uri, Schwitz, and Underwalden, and confirmed to them in the year 1616. The richneſs of the country conſiſts in its paſturage and cattle. The corn produced is not ſufficient for the conſumption of the inhabitants, who are ſupplied by the Milaneſe. The town is fortified: twenty-five miles north-north-weſt of Como, and forty ſouth of Zurich. Lat. 46. 1. N. lon. 26. 21. E. Ferro.

BELLI'POTENT, *adj.* [*bellipotens*, Fr.] Puiſſant; mighty in war.

BEL'LIS, ſ. [*bellus*, Lat. pretty, handſome.] The Daisy. In botany, a genus of the claſs ſyngeneſia, order polygamia ſuperflua, natural order compoſitæ diſcoideæ. The generic characters are—Calyx: common, hemiſpheric, upright; leaflets to twenty in a double row, lanceolate, equal. Corolla: compound, radicate; corollules hermaphrodite, tubular, numerous in the diſk; female ligulate, more in number than the leaves of the calyx in the ray; proper of the hermaphrodite funnel-form, five-cleft; of the female ligulate, lanceolate, ſcarcely three-toothed. Stamina: of the hermaphrodite filaments five, capillary, very ſhort; anthera cylindric, tubular. Piſtillum: germ ovate; of the hermaphrodite ſtyle ſimple, ſtigma emarginate; of the female, ſtyle filiform; ſtigmas two, patulous. Pericarpium: none; calyx unchanged. Seeds: ſolitary, obovate, compreſſed; down none. Receptaculum: naked, conical.—*Eſſential Character.* Calyx; hemiſpheric, with equal ſcales; ſeeds ovate, with no down; receptaculum naked, conical.

Species. 1. Bellis perennis, or perennial or common daiſy: ſcape naked. Common daiſy is ſufficiently diſtinguiſhed by its perennial root; truncate or præmorſe at the end; leaves radical, inverſely ovate or lanceolate, or rather ſpatulate, blunt at the end, notched and often waved about the edge, an inch or more in length and about half an inch in breadth; ſcapes hirſute, ſolid at bottom, hollow at top, from two to four inches long, having ſometimes a ſingle leaf, and terminated by one radiate flower, frequently near an inch in diameter: florets in the diſk yellow, numerous (one hundred and fifty); in the ray white, often purple on the outſide, and ſometimes at the tip, amounting frequently to near fifty in number: receptacle ſurrounded by very ſmall tubercles, which perhaps may be nectaries: ſeeds cordate-oblong or emarginate, compreſſed, ſurrounded by a whitiſh rim, bay-aſh-coloured in the middle, having a few whitiſh hairs on them. It is a native of moſt parts of Europe in paſtures; flowers almoſt all the year, and ſhuts up cloſe every night and in wet weather. The taſte of the leaves is ſomewhat acrid; in ſome countries however it is uſed as a potherb. The roots have a penetrating pungency. It is ungrateful to cattle, and even to geeſe; it occupies therefore a large ſhare of paſture lands, to the excluſion of graſs and profitable herbs. It has been much recommended as excellent for freſh wounds externally, and againſt inflammatory diſorders, &c. internally; but it is now wholly out of uſe. Lady Margaret, counteſs of Richmond, bore three white daſies (Margudrites) on a green turf. Varieties of the garden daiſy are double white, red, white and red ſtriped, variegated, ſcarlet, and pied. Double quilled or with fiſtular florets. Double cock's-comb ſhaped, white, red, and ſpeckled. Proliferous, childing or hen and chicken daiſy.

2. Bellis annua, or annual daiſy: ſtem ſomewhat leafy. This is a low annual plant, ſeldom riſing more than three inches high, with an upright ſtalk having leaves on the lower part, but the upper part naked, and ſupporting a ſingle flower like that of the common daiſy, but ſmaller. Native of Sicily, Spain, about Montpellier, Verona, and Nice. Cultivated in 1759, by Mr. Miller.

Propagation and Culture. The common wild daiſy being a troubleſome weed in paſture lands, and the lawns and graſs walks in gardens, is never cultivated. The garden daiſies flower in April and May, when they make a pretty variety, being intermixed with plants of the ſame growth; they ſhould be planted in a ſhady border, and a loamy ſoil without dung, in which they may be preſerved without varying, provided the roots are tranſplanted and parted every autumn; which is all the culture they require, except the keeping them clear from weeds. Theſe were formerly planted for edgings to borders, but they are very unfit for this purpoſe; becauſe, where they are fully expoſed to the ſun, they frequently die in large patches, whereby the edgings become bald in many places. Mr. Curtis, on the contrary, thinks that daiſies appear to moſt advantage in edgings to borders, not that they are equal to box for this purpoſe, but becauſe they enliven the border more, and add much to the general gaiety of the garden. He recommends the roots to be taken up the laſt week in September, or the firſt in October, to be divided into ſingle plants, and to be planted three inches apart in a trench, not in holes by a dibber, ſpreading out the fibres, and ſpreading the earth cloſely round them; by which means they will not be ſubject to be drawn out of the ground by the worms. Such edgings ſhould be replanted every autumn, becauſe the plants, if they grow well, ſpread too wide. Mr. Curtis affirms, that if they remain undiſturbed in the ſame ſpot, they will recur to their natural ſtate and become ſingle, notwithſtanding Mr. Miller informs us that he never obſerved them ſo to do. See ANTHEMIS, ASTER, ATHANASIA, BELLIUM, CALENDULA, CHRYSANTHEMUM, COTULA, DORONICUM, ECLIPTA, OSMITES, SAPONARIA. BELLIS MAJOR, ſee CHRYSANTHEMUM. BELLIS CÆRULEA, ſee GLOBULARIA.

BEL'LIUM, *ſ.* in botany, a genus of the claſs ſyngeneſia, order polygamia ſuperflua, natural order compoſitæ diſcoideæ. The generic characters are—Calyx: common ſimple, with very many, equal, boat-ſhaped, leaflets. Corolla: compound radiated; in the ray female, ten or twelve; in the diſk hermaphrodite, very many; proper, of the hermaphrodite, funnel-ſhaped, quadrifid, erect; of the females, elliptic, emarginate, ligulate. Stamina: in the hermaphrodite, filaments four, ſhort; antheræ cylindric. Piſtillum: in the hermaphrodite, germ turbinate; ſtyle filiform; ſtigma bifid, oblong; in the females, germ turbinate; ſtyle very ſhort; ſtigma bifid, minute. Pericarpium: none; calyx unchanged. Seeds: turbinate; crown chaffy, eight-leaved, rounded; down with eight ſimple awns. Receptaculum: naked, conic.—*Eſſential Character.* Calyx with equal leaflets; ſeeds conic, with a chaffy eight-leaved crown, and awned down; receptaculum naked.

Species. 1. Bellium bellidioides: ſcapes naked filiform. This has the habit of the daiſy, but differs eſſentially from it in having a down to the ſeed. Native of Italy, about Rome; and in the iſland of Majorca.

2. Bellium minutum: ſtem leafy. This is one of the minuteſt of plants. Stem capillary, an inch in length; the whole plant ſmooth and aſcending. Native of the Levant. Introduced in 1772, by M. Richard.

BEL'LO, a town of Italy, in the kingdom of Naples, and province of Baſilicata: two miles S. S. E. Muro.

BELLO'CULUS, *ſ.* [from *bellus* fair, and *oculus* the eye.] A precious ſtone reſembling the eye, and ſuppoſed to be uſeful in its diſorders. Caſtellus ſays, it is *quaſi Beli oculus*.

BEL'LON, *ſ.* A diſtemper common in countries where they ſmelt lead ore. It is attended with languor, intolerable pains and gripings in the belly, and generally coſtiveneſs. Beaſts, poultry, &c. as well as men, are ſubject to this diſorder: hence a certain ſpace round the ſmelting-houſes is called *bellon-ground*, becauſe it is dangerous for an animal to feed upon it.

BELLO'NA, in pagan mythology, the goddeſs of war, is generally reckoned the ſiſter of Mars, and ſome repreſent her as both his ſiſter and wife. She is ſaid to have been the inventreſs of the needle; and from that inſtrument is ſuppoſed to have taken her name Βελονη, ſignifying a *needle*. This goddeſs was cruel and ſavage, delighting in bloodſhed and ſlaughter; and was not only the attendant of Mars, but took a pleaſure in ſharing his dangers. She is commonly repreſented in an attitude expreſſive of fury and diſtraction, her hair compoſed of ſnakes clotted with gore, and her garments ſtained with blood; ſhe is generally depicted driving the chariot of Mars, with a whip in her hand; but ſometimes ſhe is drawn holding a lighted torch or brand, and at others a trumpet. Bellona had a temple at Rome, near the Circus Flaminius, before which ſtood the column of war, from whence the conſul threw his lance when he declared war. She was worſhipped at Comana, in Cappadocia; and Camden obſerves, that in the time of the emperor Severus there was a temple of Bellona in our city of York.

BELLONA'RII, prieſts of Bellona, the goddeſs of war. The bellonarii cut and mangled their bodies with knives and daggers in a cruel manner, to pacify the deity. In this they are ſingular, that they offered their own blood, not that of other creatures, in ſacrifice. In the fury and enthuſiaſm with which they were ſeized on theſe occaſions, they ran about uttering prophecies, and foretelling blood and ſlaughter, devaſtations of cities, revolutions of ſtates, and the like: whence Martial calls them *turba entheata Bellonæ*.

BELLO'NIA, *ſ.* [So named by Plumier, in honour of the famous French phyſician Pierre Belon, who has left many valuable tracts on natural hiſtory.] In botany, a genus of the claſs pentandria, order monogynia, natural order rubiaceæ. The generic characters are—Calyx: perianthium one-leafed, ſuperior, ſemiquinquefid, permanent; diviſions lanceolate, acute. Corolla: monopetalous, wheel-ſhaped; tube very ſhort; border flat, ſemiquinquefid, obtuſe, large. Stamina: filaments five, ſubulate, erect, very ſhort; antheræ erect, converging, ſhort. Piſtillum: germ inferior; ſtyle ſubulate, ſtraight, longer than the ſtamens; ſtigma acute. Pericarpium: capſule turbinate, wrapped up in the calyx, and beaked with its converging diviſions, one-celled. Seeds: numerous, roundiſh, ſmall.—*Eſſential Character.* Corolla wheel-ſhaped; capſule one-celled, inferior, many-ſeeded, beaked with the calyx.

Species. 1. Bellonia aſpera: leaves ovate, ſerrate, flowers corymbed, terminating. This is a ſhrub, ten or twelve feet in height, ſending out many lateral branches. This ſpecies is yet little known, and according to Schwartz has been ſeen only by Plumier, and reſts only upon his authority. Mr. Miller ſays, that it is very common in ſeveral of the warm iſlands in America, whence he has received the ſeeds. As there is no ſpecimen of it in his herbarium, which is now in the poſſeſſion of Sir Joſeph Banks, we cannot form a judgment whether the plant which he ſpeaks of might be that of Plumier, or the ſecond ſpecies, diſcovered in Hiſpanolia by Schwartz.

2. Bellonia ſpinoſa: thorny; leaves ovate, angular, tooth-ſerrate, peduncles axillary, one-flowered.

Propagation and Culture. It is propagated by ſeeds, which ſhould be ſown early in the ſpring, in a pot filled with light freſh earth, and plunged into a hot-bed of tanners bark, obſerving to water it frequently, as the earth appears dry; but you muſt be careful not to waſh the ſeeds out of the ground. When the plants are come up half an inch high, they ſhould be carefully tranſplanted into pots filled with light freſh earth, and plunged into the hot-bed again, obſerving to water and ſhade them until they have taken root; after which time they ſhould have air admitted to them every day, when the weather is warm; they muſt alſo be frequently watered. When the plants have filled theſe pots with their roots, they ſhould be carefully ſhaken out of them, and their roots trimmed, and put into larger pots filled with light freſh earth, and plunged into the hot-bed again. In warm weather they ſhould have free air admitted to them every day; but in autumn they muſt be plunged into the bark-ſtove, and treated in the ſame manner as other tender exotic plants. The ſecond year theſe plants will ſometimes flower, but they rarely produce good ſeeds in this climate; however, they may be propagated by cuttings in the ſummer months, provided they are planted in light earth on a moderate hot-bed, and carefully watered and ſhaded until they have taken root. Theſe plants muſt be conſtantly kept in the ſtove, and ſhould have a large ſhare of free air in warm weather; but, if they are ſet abroad, they will not thrive here.

BELLO'RI (John Peter), of Rome; a celebrated antiquary and connoiſſeur in the polite arts. Author of the lives of the modern painters, architects, and ſculptors, and of other works on antiquities and medals. He died in 1696.

BELLO'VACHI, anciently a people of Gallia Belgica, reckoned the braveſt of the Belgæ; now the *Beauvaſis*, in the iſle of France.

To BEL'LOW, *v. n.* [*bellan*, Sax.] To make a noiſe as a bull:

> What bull dares *bellow*, or what ſheep dares bleat,
> Within the lion's den? *Dryden.*

To make any violent outcry. To vociferate: in this ſenſe it is a word of contempt:

> The full fat captain, with a hound's deep throat,
> Would *bellow* out a laugh in a baſe note. *Dryden.*

To roar as the ſea in a ſtorm, or as the wind; to make any continued noiſe, that may cauſe terror:

> The riſing rivers float the nether ground;
> And rocks the *bellowing* voice of boiling ſeas rebound.
> *Dryden.*

BEL'LOWS, *ſ.* [*bilig*, Sax. perhaps it is corrupted from *bellies*, the wind being contained in the hollow, or *belly*. It has no *ſingular*; for we uſually ſay, *a pair of bellows*: but Dryden has uſed *bellows* as a *ſingular*.] The inſtrument uſed to blow the fire.—The lungs, as *bellows*, ſupply a force of breath; and the *aſpera arteria* is as the noſe of *bellows*, to collect and convey the breath. *Holder.*—In the following paſſage it is *ſingular*:

> Thou neither, like a *bellows*, ſwell'ſt thy face,
> As if thou wert to blow the burning maſs
> Of melting ore. *Dryden.*

Bellows are of various conſtructions, according to their different purpoſes; but in general they are compoſed of two flat boards, ſometimes of an oval, ſometimes of a triangular, figure: two or more hoops, bent according to the figure of the boards, are placed between them; a piece of leather, broad in the middle and narrow at both ends, is nailed on the edges of the boards, which it thus unites together; as alſo on the hoops which ſeparate the boards, that the leather may the eaſier open and fold again: a tube of iron, braſs, or copper, is faſtened to the undermoſt board, and there is a valve within, that covers the holes in the under board to keep in the air. Anacharſis the Scythian is recorded as the inventor of bellows. Their action, as above remarked, bears a near affinity to that of the lungs; and what we call *blowing* in the latter, affords a good illuſtration of what is called *reſpiring* in the former. Animal life itſelf may on ſome occaſions be ſubſiſted by blowing into the lungs with a pair of bellows. Dr. Hooke's experiment to this effect is famous: having laid the thorax of a dog bare, by cutting away the ribs and diaphragm, pericardium, &c. and having cut off the aſpera arteria below the epiglottis, and bound it on the noſe of a bellows, he found, that as he blowed the dog recovered, and as he ceaſed fell convulſive; and thus was the animal kept alternately alive and dead for more than an hour. There are bellows made wholly of wood, without any leather about them; one of which is preſerved in the repoſitory of the Royal Society; and Dr. Plot deſcribes another in the copper-works at Elſdon in Staffordſhire. Ant. della Fruta contrived a ſubſtitute for bellows, to ſpare their expence in the fuſion of metals. This is called by Kircher *camera æolia*, and in England the *water-bellows*; where water falling through a funnel into a cloſe veſſel, ſends forth ſo much air continually as blows the fire. See FURNACE.

Smiths and founders bellows, whether ſingle or double, are wrought by means of a rocker, with a ſtring or chain faſtened to them, which the workman pulls. The bellows pipe is fitted into that of the tewel. One of the boards is fixed, ſo as not to play at all. By drawing down the handle of the rocker, the moveable board riſes, and by means of a weight on the top of the upper board it ſinks again. The bellows of forges and furnaces of mines uſually receive their motion from the wheels of a water-mill. Others, as the bellows of enamellers, are wrought by means of one or more ſteps or treddles under the workman's feet. The bellows of organs are worked by a man called the *blower*; and in ſmall organs by the foot of the player. Butchers have alſo a kind of bellows of a peculiar make, by which they bloat or blow up their meat when killed, in order to give it a finer appearance.

Bone BELLOWS, φυσητηρες οστεινοι, occur in Herodotus for thoſe applied by the Scythians to the genitals of mares, in order to diſtend the uterus, and by this compreſſion make them yield a greater quantity of milk.

Heſſian BELLOWS, *ſ.* A contrivance for driving air into a mine, for the reſpiration of the miners. This M. Papin improved, changing its cylindrical form into a ſpiral one.

Hydroſtatic BELLOWS. See HYDROSTATICS.

BELLOWS ROCKS, in the Atlantic, near the weſt coaſt of Ireland, and county of Galway. Lat. 53. 19. N. lon. 10. 4. W. Greenwich.

BEL'LUINE, *adj.* [*belluinus*, Lat.] Beaſtly; belonging to a beaſt; ſavage; brutal.—If human actions were not to be judged, men would have no advantage over beaſts. At this rate, the animal and *belluine* life would be the beſt. *Atterbury.*

BELLUNE'SE, a ſmall country of Italy, belonging to the republic of Venice, making part of the marquiſate of Treviſa, bounded on the north by the Cadorni and part of Friuli, on the eaſt by a large foreſt which ſeparates it from Friuli, on the ſouth by the Treviſan and Feltrin, and on the weſt by the biſhopric of Trent.

BELLU'NO, a town of Italy, and capital of the Belluneſe, and ſee of a biſhop, ſuffragan of the archbiſhop of Udina, ſituated on the Piava: forty-three miles north of Venice, and forty-eight eaſt of Trent. Lat. 46. 10. N. lon. 30. 48. E. Ferro.

BEL'LY, *ſ.* [*balg*, Dutch, *bol*, *bola*, Welſh.] That part of the human body which reaches from the breaſt to the thighs, containing the bowels.—In beaſts, it is uſed, in general, for that part of the body next the ground.—And the Lord ſaid unto the ſerpent, Upon thy *belly* ſhalt thou go, and duſt ſhalt thou eat, all the days of thy life. *Geneſis.*—The womb: in this ſenſe, it is commonly uſed ludicrouſly or familiarly.—The ſecret is grown too big for the pretence, like Mrs. Primly's big *belly*. *Congreve.*—That part of man which requires food, in oppoſition to the *back*, or that which demands clothes.—Whoſe god is their *belly*. *Phil.*—The part of any thing that ſwells out into a larger capacity.—Fortune ſometimes turneth the handle of the bottle, which is eaſy to be taken hold of; and after the *belly*, which is hard to graſp. *Bacon.*—Any place in which ſomething is incloſed.—Out of the *belly* of hell cried I, and thou heardeſt my voice. *Jonah.*

"The BELLY has no ears." [From *Venter non habet aures*, Lat. The French ſay: *Ventre affamé n'a point d'oreilles.*] This proverb intimates, that there is no arguing the matter with hunger, the mother of impatience and anger: it is a prudent caution not to contend with hungry perſons, or contradict their quarrelſome tempers, by ill-timed apologies or perſuaſions to patience: it is a lecture of civility and diſcretion, not to diſturb a gentleman at his repaſt. There is one reaſon, why the belly ſhould have no ears, ſince neither words, nor even muſic, will ſatisfy it. The Germans ſay: *Guts worte machen einen nicht ſatt.*

To BELLY, *v. n.* To ſwell into a larger capacity; to hang out; to bulge out:

The pow'r appeas'd, with winds ſuffic'd the ſail,
The *bellying* canvas ſtrutted with the gale. *Dryden.*

BEL'LY-ACHE, *ſ.* [from *belly* and *ache.*] The cholic; or pain in the bowels.

BEL'LY-BOUND, *adj.* [from *belly* and *bound.*] Diſeaſed, ſo as to be coſtive, and ſhrunk in the belly.

BEL'LY-FRETTING, *ſ.* [from *belly* and *fret.*] In farriery, the chafing of a horſe's belly with the fore-girt. A great pain in a horſe's belly, cauſed by worms.

BEL'LYFUL, *ſ.* [from *belly* and *full.*] As much food as fills the belly, or ſatisfies the appetite. It is often uſed ludicrouſly for more than enough; thus, king James told his ſon that he would have his *bellyful* of parliamentary impeachments.

BEL'LYGOD, *ſ.* [from *belly* and *god.*] A glutton; one makes a god of his belly.—What infinite waſte they made this way, the only ſtory of Apicius, a famous *bellygod*, may ſuffice to ſhew. *Hakewill.*

BEL'LY-PINCHED, *adj.* [from *belly* and *pinched.*] Starved.

This night, wherein the cub-drawn bear would couch,
The lion and the *belly-pinched* wolf
Keep their fur dry, unbonnetted he runs. *Shakeſpeare.*

BEL'LYROLL, *ſ.* [from *belly* and *roll.*] A roller, ſo called, as it ſeems, from entering into the hollows.—They have two ſmall harrows that they clap on each ſide of the ridge, and ſo they harrow right up and down, and roll it with a *bellyroll*, that goes between the ridges when they have ſown it. *Mortimer.*

BEL'LY-TIMBER, *ſ.* [from *belly* and *timber.*] Food; materials to ſupport the belly:

The ſtrength of every other member
Is founded on your *belly-timber.* *Prior.*

BEL'LY-WORM, *ſ.* [from *belly* and *worm.*] A worm that breeds in the belly.

BEL'MAN, *ſ.* [from *bell* and *man.*] He whoſe buſineſs it is to proclaim any thing in towns, and to gain attention by ringing his bell.

BEL'METAL, *ſ.* The metal of which bells are made. The baſis of the compoſition of belmetal is copper, which is alloyed chiefly with tin. Silver is ſaid to be ſometimes added. A ſmall proportion of tin, added to copper, deprives it of its malleability ſo far as to render it quite brittle; and the ſpecific gravity of the compound is always greater than would be deduced by computation from the quantities and ſpecific gravities of its component parts. In certain proportions, it even exceeds that of the heavier metals. The colour of belmetal is much whiter than might be expected from the proportion of tin which enters into its compoſition; and, when this laſt metal conſtitutes one-third of the maſs, the compound is ſo perfectly white, as to reflect the images of all coloured bodies without alteration, when duly poliſhed. See SPECULUM.

BEL'MONT, a town of France, in the department of the Rhone and Loire, and chief place of a canton, in the diſtrict of Roanne: fourteen miles north-eaſt of Roanne.

BELMONT, a town of France, in the department of the Aveiron, and chief place of a canton, in the diſtrict of St. Afrique, containing about 3000 inhabitants: nine leagues eaſt of Alby, and three and a half ſouth-ſouth-weſt of St. Afrique.

BELMON'TE, a town of Italy, in the kingdom of Naples, and province of Calabria Citra: eleven miles weſt-ſouth-weſt of Coſenza.

To BELOCK', *v. a.* [from *be* and *lock.*] To faſten as with a lock:

This is the hand, which with a vow'd contract
Was faſt *belock'd* in thine. *Shakeſpeare.*

BE'LOMANCY, *ſ.* [βελος, an arrow, and μαντεια, divination.] Divination by arrows, practiſed in the eaſt, but chiefly among the Arabians. It was performed in different ways. One was to mark a parcel of arrows, and put eleven or more of them into a bag: theſe were afterwards drawn out; and according as they were marked or not, they judged of future events. Another way was to have three arrows, upon one of which was wrote, "God orders it me;" upon another, "God forbids it me;" and upon the third nothing. Theſe were put into a quiver, out of which they drew one of the three at random; if it happened to be that with the firſt inſcription, the thing they conſulted about was to be done: if it chanced to be that with the ſecond inſcription, it was let alone; but if it proved that without inſcription, they drew over again. Belomancy is an ancient practice, and probably that which Ezekiel mentions, chap. xxi. 21. At leaſt St. Jerome underſtands it ſo, and obſerves that the practice was frequent among the Aſſyrians and Babylonians. Something like it is alſo mentioned in Hoſea, chap. iv. only that ſtaves are there mentioned inſtead of arrows, which is rather rhabdomancy than belomancy. Grotius, as well as Jerome, confounds the two together, and ſhews that it prevailed much among the Magi, Chaldeans, and Scythians; whence it paſſed to the Sclavonians, and thence to the Germans, whom Tacitus obſerves to make uſe of it.

BE'LON (Peter), of Mans, in France, flouriſhed about the middle of the 16th century. He publiſhed ſeveral books in Latin. He wrote in French, of birds, beaſts, fiſhes, ſerpents, and the neglected culture of plants; and a book of Travels, or obſervations of many ſingularities and memorable things found in Greece, Aſia, Judæa, Egypt, Arabia, and other foreign countries. He was murdered near Paris in 1564.

BE'LONE, *ſ.* in ichthyology. See ESOX.

To BELONG', *v. n.* [*belangen*, Dutch.] To be the property of.—To light on a part of a field *belonging* to Boaz. *Ruth.*—To be the province or buſineſs of.—To Jove the care of heav'n and earth *belongs*. *Dryden.*—To adhere, or be appendant to.—He went into a deſert *belonging* to Bethſaida. *Luke.*—To have relation to.—To whom *belongeſt* thou? whence art thou? 1 *Samuel.*—To be the quality or attributes of.—The faculties *belonging* to the ſupreme ſpirit, are unlimited and boundleſs, fitted and deſigned for infinite objects. *Cheyne.*—To be referred to; to relate to.—He careth for things that *belong* to the Lord. 1 *Corinth.*

BELO'VED, *participle*; [from *belove*, derived of *love*. It is obſervable, that though the *participle* be of very frequent uſe, the *verb* is ſeldom or never admitted; as we ſay, you are much *beloved* by me, but not I *belove* you.] Loved; dear:

I think it is not meet,
Mark Anthony, ſo well *belov'd* of Cæſar,
Should outlive Cæſar. *Shakeſpeare.*

BELOW', *prep.* [from *be* and *low.*] Under in place; not ſo high. Inferior in dignity.—The noble Venetians think themſelves equal at leaſt to the electors of the empire, and but one degree *below* kings. *Addiſon.*—Inferior in excellence.—His Idylliums of Theocritus are as much *below* his Manilius, as the fields are *below* the ſtars. *Felton.*—Unworthy of; unbefitting.

Below, *adv.* In the lower place; in the place neareſt the centre.—To men ſtanding *below* on the ground, thoſe that be on the top of Paul's ſeem much leſs than they are, and cannot be known; but, to men above, thoſe *below* ſeem nothing ſo much leſſened, and may be known. *Bacon.*—On earth, in oppoſition to *heaven:*

And let no tears from erring pity flow,
For one that's bleſs'd above, immortaliz'd *below.* *Smith.*

In hell; in the regions of the dead: oppoſed to *heaven* and *earth:*

When ſuff'ring ſaints aloft in beams ſhall glow,
And proſp'rous traitors gnaſh their teeth *below.* *Tickell.*

Below, or Belan, a river of England, which runs into the Eden: two miles north of Kirkby Stephen, in the county of Weſtmoreland.

To BELOWT', *v. a.* from *be*, and *lowt*, a word of contempt.] To treat with opprobrious language; to call names. *Obſolete.*—Sieur Gaulard, when he heard a gentleman report, that at ſupper they had not only good cheer, but alſo favoury epigrams and fine anagrams, returning home, rated and *belowted* his cook, as an ignorant ſcullion, that never dreſſed him either epigrams or anagrams. *Camden.*

BEL'PECH, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Caſtelnaudary: two leagues and three quarters north-weſt of Mirepoix, and three and three quarters ſouth-weſt of Caſtelnaudary. Lat. 43. 12. N. lon. 19. 25. E. Ferro.

BELRIGUAR'DO, a town of Italy, in the duchy of Ferrara, on a branch of the Po; eight miles ſouth-eaſt from Ferrara.

BELSHAZ'ZAR, the laſt king of Babylon, generally ſuppoſed to be the ſon of Evil-merodach, and grandſon to the great Nebuchadnezzar. During the time that Babylon was beſieged by Cyrus, Belſhazzar made an entertainment for a thouſand of his moſt eminent courtiers, (Dan. v. 1, &c.) and being heated with wine, ordered that the veſſels of gold and ſilver which his grandfather Nebuchadnezzar had taken out of the temple at Jeruſalem might be brought to the banqueting-houſe, that he and his princes, together with his wives and concubines, might drink out of them, which accordingly was done; and, to add to their profaneneſs, in the midſt of their cups they ſang ſongs in praiſe of their idols. But it was not long before a damp was put to the king's mirth, by an hand appearing upon the wall, which in three words wrote the ſentence of his condemnation. The king ſaw the hand that wrote; and, being exceedingly affrighted, commanded his wiſe men, magicians, and aſtrologers, to be immediately called, that they might read the writing, and explain its meaning. When they came, the king promiſed, that whoever ſhould expound this writing ſhould be made the third perſon of his kingdom in place and power. But the magi could comprehend nothing of it; which encreaſed the uneaſineſs of the king and his court: whereupon Daniel was ſent for. The king made him the ſame offer of honours and rewards that he had done to his magicians, if he would explain the writing. Daniel modeſtly refuſed thoſe offers: but, having undertaken to perform what he required of him, he firſt reproved the king for his ingratitude to God, who had advanced him to the rank of a ſovereign, and for the profanation of the veſſels which were conſecrated to his ſervice; and then proceeded to the interpretation of the words, which were theſe, *Mene, Tekel, Upharſin. Mene,* ſays he, which ſignifies *number,* intimates, that the days both of your life and reign are numbered, or that you have but a ſhort time to live; *Tekel,* which ſignifies *weight,* intimates, that you have been weighed in the balance of God's juſtice, and found too light; and *Upharſin,* which ſignifies a *fragment,* intimates, that your kingdom ſhall be divided and given to the Medes and Perſians. Which accordingly came to paſs: for that very night, in the midſt of their feaſting and revelling, the city was taken by ſurpriſe, Belſhazzar ſlain, and the kingdom tranſlated to Cyaxares, whom the Scripture calls *Darius the Mede.* See Babylon.

BELSUN'CE (M. de), biſhop of Marſeilles, was of the family of Belſunce, in the province of Guienne in France. He had taken the vows of a Jeſuit, and became afterwards biſhop of Marſeilles. In conſideration of the eminent ſervices he rendered to that city during the plague in 1720, the regent offered him the richer and more honourable fee of Loan in Picardy. He refuſed that biſhopric, giving as a reaſon, his unwillingneſs to leave a flock that had been endeared to him by their ſufferings: he was, however, prevailed upon to accept of a peculiar diſtinction with reſpect to the court in which any lawſuits he might have the unhappineſs to be engaged in ſhould be tried. His pious and intrepid labours are commemorated in a picture in the town-hall of Marſeilles, in which he is repreſented in his epiſcopal habit, attended by his almoners, giving his benediction to the dying and the dead that are at his feet. Father Vanniere, in his *Prædium Ruſticum,* alludes to M. de Belſunce in theſe lines:

———vitæ qui præſul et auri
Prodigus, aſſiduis animos et corpora curis
Suſtinuit, mortem viſus calcare metumque
Intrepido vadens per ſtrata cadavera paſſu.

Profuſe of life, and prodigal of gold,
The ſacred paſtor tends his ſick'ning fold;
Repoſe of body and of mind diſdains,
To calm their woes, and mitigate their pains;
Bravely deſpiſes death and ev'ry fear,
With holy rites their drooping hearts to cheer;
Vaſt heaps of dead without diſmay he views,
And with firm ſtep his gen'rous way purſues.

M. de Belſunce wrote the Lives of his Predeceſſors in the See of Marſeilles, and ſome religious tracts.

BEL'SWAGGER, *ſ.* A cant word for a whoremaſter.—You are a charitable *belſwagger*; my wife cried out fire, and you cried out for engines. *Dryden.*

BELT, *ſ.* [*belt,* Sax. *baltheus,* Lat.] A girdle; a cincture in which a ſword, or ſome weapon, is commonly hung.—Ajax ſlew himſelf with the ſword given him by Hector, and Hector was dragged about the walls of Troy by the *belt* given him by Ajax. *South.*

Belt is alſo applied to a ſort of bandages in uſe among ſurgeons, &c. as quickſilver belts, uſed for the itch; belts for keeping the belly light, and diſcharging the water in the operation of tapping, &c.

Belt is alſo a diſeaſe frequent in ſheep, cured by cutting their tails off, and laying the ſore bare; then calling mould on it, and applying tar and gooſe-greaſe.

Belts, in aſtronomy, are zones or girdles ſurrounding the body of the planet of Jupiter. See Astronomy.

Belt (Great), a narrow ſtrait of the ſea, which forms a communication between the Schager Rack, or Cattegat Sea, and the Baltic, between the iſlands of Zealand and Funen. In 1658 this ſtrait was frozen ſo hard, that Charles Guſtavus king of Sweden marched over it with a deſign to beſiege Copenhagen.

Belt (Little), a narrow ſtrait, which forms a communication between the Cattegat and the Baltic, and ſeparates the iſland of Funen from Jutland.

BEL-TEIN, a ſuperſtitious cuſtom obſerved in the Highlands of Scotland. It is a kind of rural ſacrifice, performed by the herdſmen on the firſt of May. They cut a ſquare a ſquare trench on the ground, leaving a turf in the middle: on that they make a fire of wood, on which they dreſs a large caudle of eggs, butter, oatmeal, and milk; and bring, beſides the ingredients of the caudle, plenty of beer and whiſky; for each of the company muſt contribute ſomething. The rites begin with ſpilling ſome of the caudle on the ground, by way of libation: on that, every one takes a cake of oatmeal, upon which are raiſed nine ſquare knobs, each dedicated to ſome particular being, the ſuppoſed preſerver of their flocks and herds, or to ſome particular animal, the real deſtroyer of them: each perſon then turns his face to the fire, breaks off a knob, and, flinging it over his ſhoulder, ſays, "This I give to thee, preſerve thou my horſes; this to thee, preſerve thou my ſheep;" and ſo on. After that they uſe the ſame ceremony to the noxious animal: "This I give to thee, O fox: ſpare thou my lambs; this to thee, O hooded crow! this to thee, O eagle!" When this ceremony is over, they dine on the caudle; and, after the feaſt is finiſhed, what is left is hid by two perſons deputed for that purpoſe; but on the next Sunday they re-aſſemble and finiſh the reliques of the firſt entertainment.

BEL'TINGHAM, near the influx of Weſt-Alun into the Tyne, this was once a market-town, but now a mean village, in the county of Northumberland, ten miles from Hexham, and 294 from London.

BELTUR'BET, a town of Ireland, in the county of Cavan; it is a borough, and ſends two members to the Iriſh parliament: eight miles north-north-weſt of Cavan.

BELTZ, a town of Croatia: twelve miles ſouth-ſouth-weſt of Varaſdin.

BELVEDE'RE, *ſ.* in Italian arcitecture, denotes either a pavilion on the top of a building, or an artificial eminence in a garden; the word literally ſignifying a *fine proſpect.*

Belvedere, *ſ.* in botany. See Scoparia.

Belvedere, a town of European Turkey, in the Morea, and capital of a country to which it gives name: twenty miles ſouth of Chiarenza.

Belvedere, a town of Italy, in the kingdom of Naples, and country of Otranto: five miles eaſt of Tarento.

Belvedere, a town of Italy, in the kingdom of Naples, and province of Calabria Citra: fifteen miles S. E. Scalea.

Belvedere, a town of Italy, in the duchy of Parma: ſeventeenteen miles ſouth of Parma.

BEL'VEZ, a town of France, and principal place of a diſtrict, in the department of the Dordogne: four leagues ſouth-weſt of Sarlat, and nine and a half ſouth-ſouth-eaſt of Perigueux. Lat. 44. 26. N. lon. 18. 40. E. Ferro.

BELU'GA. See Delphis.

BELUL'CUM, *ſ.* [from ϐελος, a dart, and ελκω, to draw out.] A ſurgeon's inſtrument for extracting thorns or darts.

BE'LUNUM, anciently a town of Rhætia, above Feltria, in the territory of the Veneti; now *Belluno*, capital of the Belluneſe in the territory of Venice.

BE'LUS, a ſmall river of Galilee, at the diſtance of two ſtadia from Ptolemais, running from the foot of Mount Carmel out of the lake Cendevia. Near this place, according to Joſephus, was a round hollow or valley, where was a kind of ſand fit for making glaſs; which, though exported in great quantities, was found to be inexhauſtible. Strabo ſays, the whole of the coaſt from Tyre to Ptolemais has a ſand fit for making glaſs; but that the ſand of Belus and its neighbourhood is a better ſort; and here, according to Pliny, the making of glaſs was firſt diſcovered.

Belus, the moſt ancient king of Babylon, and the firſt perſon to whom an idol was ſet up and worſhipped.

BELUT'TA, *ſ.* in botany. See Celosia and Crinum.

BEL'WETHER, *ſ.* [from *bell* and *wether.*] A ſheep which leads the flock with a bell on his neck:

The fox will ſerve my ſheep to gather,
And drive to follow after their *belwether.* *Spenſer.*

—To offer to get your living by the copulation of cattle; to be bawd to a *belwether.* *Shakeſpeare.*—The flock of ſheep and *belwether* thinking to break into another's paſture, and being to paſs over another bridge, juſtled till both fell into the ditch. *Howell.*

BELZ, or Belez, a town of Poland, and capital of a palatinate to which it gives name, in Red Ruſſia: the town is large, but not rich or commercial, and is ſituated in the middle of a fine plain. This palatinate was joined to Hungary in the year 1773, by an agreement between the emperor of Germany, empreſs of Ruſſia, and the king of Pruſſia: 148 miles eaſt of Cracow, 152 ſouth-ſouth-eaſt of Warſaw, and 268 ſouth-ſouth-eaſt of Konigſberg. Lat. 50. 30. N. lon. 42. 44. E. Ferro.

BEL'ZICA, a town of Poland, in the palatinate of Lublin: fourteen miles ſouth-weſt of Lublin.

BELZIG', a town of Germany, in the circle of Upper Saxony and electorate of Saxony, ſituated on the Welſe: thirty miles eaſt of Magdeburg, and twenty-one north of Wittenberg.

BE'MA, *ſ.* in antiquity, a ſtep or pace. The bema made a kind of itinerary meaſure among the Greeks, the length of which was equivalent to one cubit and two thirds, or to ten palms. Whence alſo the term βημαλιζειν, to *meaſure* a road.

Bema, in the eccleſiaſtical writers, denotes the altar or ſanctuary in the ancient churches. In which ſenſe *bema* made the third or innermoſt part of the church, anſwering to the chancel among us.

Bema was alſo uſed for the biſhop's chair, ſeat, or throne, placed in the ſanctuary. It was called *bema* from the ſteps by which it was to be aſcended.

Bema was alſo uſed for the reader's deſk. This in the Greek church was denominated ϐημα γνοϛων, in the Latin church *ambo.*

Bema is more particularly uſed for the Manichees altar, which was in a different place from that of the Catholics.

Bema was alſo a denomination given by this ſect to the anniverſary of the day when Manes was killed, which with them was a ſolemn feaſt and day of rejoicing. One of the chief ceremonies of the feaſt conſiſted in ſetting out and adorning their bema or altar with great magnificence.

To BEMAD', *v. a.* [from *be* and *mad.*] To make mad; to turn the brain:

Of what unnatural and *bemadding* ſorrow
The king hath cauſe to plain. *Shakeſpeare.*

BEM'BE, a province of the kingdom of Angola in Africa. It is divided into Higher and Lower: and extends on one ſide along the ſea, and on the other divides Angola from the foreign ſtates on the ſouth. The country is large, populous, and abounding with cattle; with the fat of which they anoint their heads and bodies, and clothe themſelves with their hides. The province is watered by the river *Lutano*, or *San Franciſco*, which abounds with crocodiles, ſea-horſes, and monſtrous ſerpents.

BEM'BO (Peter), a noble Venetian, ſecretary to Leo X. and afterwards cardinal, was an eminent writer of the 16th century. He was a good poet, both in Italian and Latin. He publiſhed, beſides his poems, A Hiſtory of Venice; Letters; and a book in praiſe of the Duke and Ducheſs of Urbino. He died in 1547, in the 72d year of his age.

BEM-CU'RINI, *ſ.* in botany. See Justicia.

BE'MELS, a town of the Netherlands, in the duchy of Luxemburg, ſituated on the eaſt ſide of the Moſelle: two miles north-eaſt of Graven Macheren.

BE'MINSTER. See Beaminster.

To BEMI'RE, *v. a.* [from *be* and *mire.*] To drag or encumber in the mire; to ſoil by paſſing through dirty places.

BEM'NASIR, a town of Perſia, in the province of Kerman: 140 miles ſouth-eaſt of Sirgian.

To BEMO'AN, *v. a.* [from *to moan.*] To lament; to bewail; to expreſs ſorrow for:

He falls, he fills the houſe with heavy groans,
Implores their pity, and his pain *bemoans.* *Dryden.*

BEMOAN'ER, *ſ.* A lamenter; the perſon that laments.

To BE'MOCK, *v. a.* [from *mock.*] To treat with mocks.—*Bemock* the modeſt moon. *Shakeſpeare.*

To BEMOI'L, *v. a.* [*be* and *moil*, from *mouiller*, Fr.] To bedraggle; to bemire; to encumber with dirt and mire.

To BEMON'STER, *v. a.* [from *be* and *monſter.*] To make monſtrous:

Thou chang'd and ſelf-converted thing! for ſhame,
Bemonſter not thy feature. *Shakeſpeare.*

BEMU'SED, *adj.* [from *to muſe.*] Overcome with muſing; dreaming: a word of contempt:

Is there a parſon much *bemus'd* in beer,
A maudlin poeteſs, a rhiming peer? *Pope.*

BEN, *ſ.* [בהן *behn*, Arab.] An oily nut brought from Arabia. It is alſo called *balanus myrepſica*, or *glans unguentaria.* Naturaliſts diſtinguiſh two kinds of bens, viz. the great, *ben magnum*, which reſembles the filbert, and is by ſome called *avellana purgatrix*, brought from America; and the ſmall, *ben parvum*, brought from Ethiopia. Ben-nuts yield, by expreſſion, much oil, which is obtained from the nut by ſimple preſſure. It is remarkable for its not growing rancid in keeping, or at leaſt not until it has ſtood for a number of years; and, on this account, it is uſed in extracting the aromatic principle of ſuch odoriferous flowers as yield little or no eſſential oil in diſtillation. Theſe preparations are made in Spain, Portugal, and more eſpecially Italy, by the following method, according to Neumann: Some fine carded cotton is dipped in oil, and laid in the bottom of a proper veſſel; on this is ſpread a pretty thick layer of freſh flowers, above theſe ſome more of the dipped cotton; and thus alternately till the veſſel is full. The whole is then digeſted, for a day and a night, in the heat of a water-bath; after which the flowers are taken out, the cotton ſtratified in the ſame manner with freſh flowers, and the proceſs repeated until the oil ſqueezed out from the cotton is found to be ſufficiently impregnated with the odour of the ſubject. The digeſting veſſel is either of tin, with a cover to ſcrew upon it; or of porcelain, compoſed of two parts, which are cloſely luted together. Moſt of them have an air-hole in the top, which is ſtopped with a doſſil of the oiled cotton, which retains ſuch of the odorous effluvia as would otherwiſe make their eſcape. Some, inſtead of the oil of ben, take the ben itſelf, cut it in pieces, ſtratify it repeatedly with the flowers, and then preſs out its oil; but the oil thus obtained is greatly inferior in fragrance to the other.

BE'NA, a kingdom of Africa, near the ſource of the river Sierra Leona, and ſouth of the country of Mandinga.

BENAC', a town of France, in the department of the Ille and Villaine, and chief place of a canton, in the diſtrict of Redon: two leagues and a half north-north-eaſt of Redon, and eight and a half ſouth of Rennes.

BENAI'AH, [of בנה a building, and יה the Lord, Heb. i. e. the Lord's building.] The ſon of Jehoiada.

BENA'MENIL, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Luneville: two leagues and a half eaſt of Luneville, and two and a quarter weſt of Blamont.

BENA'RES, a country or ſubah of Hindoſtan, bounded on the north and north-weſt by Oude, on the eaſt by Bahar, and on the ſouth by the Oriſſa, about 120 miles long, and 100 broad: the principal towns are Benares, Jionpour, Gazypour, Merzapour, and Chunar; the ſoil is fertile, and the country populous: it was ceded to the Engliſh in the year 1775, and produces a revenue of near 400,000l. a year.

BENARES, the capital of the above ſubah, and one of the largeſt cities of Hindoſtan, ſituated on the ſide of the Ganges: its ancient Indian name is *Baranaſſi* or *Caſchi*, which name it had when taken by Mahmoud, king of Gaſnin, the firſt Mahometan who became maſter of it. It is about ſix miles long, and four wide. Benares is the univerſity of the original Gentoos, or principal ſeminary of the bramins or prieſts, where ſome thouſands of them reſide. It is a place of great ſanctity, having ſeveral noble pagodas or temples, beſides hoſpitals, and other public charities. It is celebrated for its ancient obſervatory, of which Sir W. Baker gives the following deſcription, in vol. lxvii. of the Philoſophical Tranſactions. "Having, ſays he, frequently heard that the ancient Bramins had a knowledge of aſtronomy, and being confirmed in this by their information of an approaching eclipſe both of the ſun and moon, I made enquiry, when at that place in 1772, among the principal Bramins, to endeavour to get ſome information relative to the manner in which they were acquainted of an approaching eclipſe. I was told, that theſe matters were confined to a few, who were in poſſeſſion of certain books and records; ſome containing the myſteries of their religion; and others the tables of aſtronomical obſervations written in the Shanſcrit language, which few underſtood but themſelves: that they would take me to a place which had been conſtructed for the purpoſe of making ſuch obſervations as I was enquiring after, and from whence they ſuppoſed the learned Bramins made theirs. I was then conducted to an ancient building of ſtone, the lower part of which, in its preſent ſituation, was converted into a ſtable for horſes, and a receptacle for lumber; but, by the number of court-yards and apartments, it appeared that it muſt once have been an edifice for the uſe of ſome public body of people. We entered this building, and went up a ſtaircaſe to the top of a part of it, near to the river Ganges, that led to a large terrace, where, to my ſurpriſe and ſatisfaction, I ſaw a number of inſtruments yet remaining, in the greateſt preſervation, ſtupendouſly large, immovable from the ſpot, and built of ſtone, ſome of them being upwards of twenty feet in height; and, although they are ſaid to have been erected 200 years ago, the graduations and diviſions on the ſeveral arcs appeared as well cut, and as accurately divided, as if they had been the performance of a modern artiſt. The execution in the conſtruction of theſe inſtruments exhibited a mathematical exactneſs in the fixing, bearing, fitting of the ſeveral parts, in the neceſſary and ſufficient ſupports to the very large ſtones that compoſed them, and in the joining and faſtening each into the other by means of lead and iron. The ſituation of two large quadrants adapted to one of the inſtruments, and whoſe radius is nine feet two inches, by their being at right angles with a gnomon at twenty-five degrees elevation, are thrown into ſuch an oblique ſituation as to render them the moſt difficult, not only to conſtruct of ſuch a magnitude, but to ſecure in their poſition for ſo long a period, and affords a ſtriking inſtance of the ability of the architect in their conſtruction: for, by the ſhadow of the gnomon, thrown on the quadrants, they do not appear to have altered in the leaſt from their original poſition; and ſo true is the line of the gnomon, that, by applying the eye to a ſmall iron ring of an inch diameter at one end, the ſight is carried through three others of the ſame dimenſions, to the extremity at the other end, diſtant thirty-eight feet eight inches, without obſtruction: ſuch is the firmneſs and art with which this inſtrument has been executed. This performance is the more wonderful and extraordinary when compared with the works of the artificers of Hindoſtan at this day, who are not under the immediate direction of an European mechanic; but arts appear to have declined equally with ſcience in the eaſt. The Bramins, without the aſſiſtance of optical glaſſes, ſeem to have had an advantage unexperienced by aſtronomers of the more northern climates. The ſerenity and clearneſs of the atmoſphere in the night-time in the Eaſt Indies, except at the ſeaſons of changing the monſoons or periodical winds, is difficult to expreſs to thoſe who have not ſeen it, becauſe we have nothing in compariſon to form our ideas upon: it is clear to perfection, a total quietude ſubſiſts, ſcarcely a cloud is to be ſeen; and the light of the heavens, by the numerous appearance of the ſtars, affords a proſpect both of wonder and contemplation." This obſervatory at Benares is ſaid to have been built by the order of the emperor Ackbar: for, as this wiſe prince endeavoured to improve the arts, ſo he wiſhed alſo to recover the ſciences of Hindoſtan, and therefore directed that three ſuch places ſhould be erected; one at Delhi, another at Agra, and a third at Benares. It is 120 miles weſt of Patna, and 335 north-weſt of Calcutta. Lat. 25. 24. N. lon. 83. 10. E. Greenwich.

BENARU', a town of Perſia, in the province of Fariſtan: 108 miles ſouth-ſouth-eaſt of Schiras.

BENARVIL'LE, a town of France, in the department of the Lower Seine: five leagues N. E. of Montivilliers.

BENATCK', or BENATEK, a town of Bohemia, in the circle of Boleſlaw, ſituated on the Iſſer: the celebrated Tycho Brahe died here in 1601: eight miles ſouth-ſouth-weſt of Jung Buntzel, and twenty-two north-eaſt of Prague.

BE'NATH, *ſ.* [בנאת *benath*, Arab.] Small puſtles which riſe in the night.

BENAVA'RI, a town of Spain, in the country of Aragon, on the frontiers of Catalonia: ſix leagues eaſt of Balbaſtro.

BENAVEN'TE, a town of Spain, in the country of Leon, on the Eſla, containing ſeven pariſhes, ſix convents, two hoſpitals, and about 4000 inhabitants: thirteen leagues ſouth of Leon.

BENAVI'DUS, or BONAVITUS (Marcus Mantua), a celebrated civilian, who taught civil law during ſixty years, at Padua the place of his birth; and died in 1582, aged ninety-three. His principal works are, 1. Collectanea ſuper Jus Cæſareum. 2. Conſiliorum, tom. ii. 3. Problematum legalium. 4. De illuſtribus Juriſconſultis, &c.

BENBECU'LA, one of the weſtern iſlands of Scotland, lying between North and South Viſt, ſeparated from South Viſt by a narrow channel, which at low water is hardly four feet deep; it is about ten miles in circumference, with a harbour for ſmall fiſhing veſſels. It has ſeveral freſh-water lakes, well ſtored with fiſh and fowl.

BEN'BOW (admiral John). This brave ſeaman was deſcended from a reſpectable family in Shropſhire. Both his uncle Thomas Benbow, and his father John Benbow, Eſqrs. poſſeſſed good eſtates in that county. On the rupture between Charles I. and his parliament, theſe two brothers were among the firſt and forwardeſt to venture their lives and fortunes in the royal cauſe; they were both colonels in the king's army. At the memorable battle of Worceſter, which was fought on the 3d of September 1653, they were taken priſoners. Colonel Thomas Benbow was brought to a trial, together with the earl of Derby and Sir Timothy Featherſtonhaugh: they were all found guilty of being in the king's ſervice: the earl was executed at Bolton, in Lancaſhire; Sir Timothy at Cheſter; and colonel Benbow was ſhot on the 19th of October at Shrewſbury. Admiral Benbow's father was ſo fortunate as to effect his eſcape from priſon, and concealed himſelf until the reſtoration; but his fortune was entirely gone, and, in advanced years, he was deſtitute of a ſubſiſtence. In this diſtreſs he gladly accepted of an inconſiderable poſt belonging to the ordnance in the Tower, which only furniſhed a ſcanty pittance for himſelf and his family. Here he continued until the firſt Dutch war in the reign of Charles II. when the king, going to inſpect his arſenal in the Tower, caſt his eyes on his faithful adherent Benbow, whoſe head had been ſilvered over for twenty years. Colonel Benbow, (ſaid the king,) what do you do here?" "I have, (replied the colonel,) a place of fourſcore pounds a year, in which I ſerve your majeſty as cheerfully as if it brought me in four thouſand." "Alas! (ſaid Charles,) is that all that can be found for an old friend at Worceſter?" The king hereupon ordered him to be with him the next morning, declaring he would provide for him and his family. The joy at this unexpected good fortune was too intenſe for the exhauſted powers of a feeble old man, ſo that, throwing himſelf upon a bench hard by, he there breathed his laſt before the king was well out of the Tower. As Charles did not ſee his "old Worceſter friend" as he had appointed, it is moſt probable that he thought no more of the engagements he had made to him; ſo that his family from that hour became deſtitute, and added one to the many inſtances of that king's neglect of his beſt friends. Admiral Benbow, the ſon of this unfortunate royaliſt, was bred to the ſea, and ſome writers aſſert, that his ſtation was, at firſt, no better than a waterman's boy; nor is the probability of this fact at all leſſened by his being owner and commander of a ſhip, called the *Benbow frigate* in ſome part of Charles II's reign. In this veſſel he traded up the Mediterranean, in which employment he recommended himſelf to the eſteem of the merchants, for his bravery, ſkill, and activity. As a commander, he had the character of treating his ſeamen kindly, but at the ſame time keeping up a rigid diſcipline. He might probably have ſpent his whole life in this undiſtinguiſhed ſituation, without having his talents exerted in rendering eſſential ſervice to his country, but for the following event, which very ſtrongly marked the ſingularity of the man, as well as his intrepidity; and which cauſed his future advancement.

In the year 1686, captain Benbow, in his own veſſel the Benbow frigate, was attacked, in his paſſage to Cadiz, by a Sallee rover, againſt whom he defended himſelf, though very unequal in the number of men, with the utmoſt bravery; till at laſt the Moors boarded him, but were quickly beat out of the ſhip, with the loſs of thirteen men, whoſe heads captain Benbow ordered to be cut off, and thrown into a tub of pork pickle. When he arrived at Cadiz he went aſhore, and ordered a negro ſervant to follow him, with the Moors' heads in a ſack. He had ſcarcely landed, before the officers of the revenue inſiſted on ſeeing what he had in his ſack. Captain Benbow anſwered that he was no ſtranger there; that he did not uſe to run goods; and pretended to take it ill that he was ſuſpected. The officers, however, took him to the cuſtom-houſe; where the magiſtrates told him, that, ſince he had refuſed to ſhew the contents of his ſack to their officers, the nature their employment obliged them to demand a ſight of them. The captain anſwered ſternly, "They are ſalt proviſions for my own uſe; Cæſar, throw them down upon the table; and, gentlemen, if you like them, they are at your ſervice." The Spaniards were exceedingly ſtruck at the ſight of the Moors' heads, and no leſs aſtoniſhed at the account of the captain's adventure, who with ſo ſmall a force had been able to defeat ſuch a number of theſe corſairs. They ſent an account of the whole matter to Madrid, and Charles II. then king of Spain, was ſo much pleaſed with it, that he ſent for the Engliſh captain to court, where he was received with great marks of reſpect, and not only diſmiſſed with a handſome preſent, but his Catholic majeſty was alſo pleaſed to write a letter in his behalf to king James, who, upon the captain's return, gave him a ſhip, which was his introduction to the royal navy.

After the revolution he diſtinguiſhed himſelf by ſeveral ſucceſsful cruizes in the channel; where he was employed at the requeſt of the merchants, and not only did his duty by protecting the trade, and annoying the enemy, but was alſo remarkably careful in examining the French ports, gaining intelligence, and forming ſchemes for annoying the French commerce, and ſecuring our own. For this reaſon, he was commonly made choice of to command the ſquadrons employed in bombarding the French ports; in all which he ſhewed no leſs courage than conduct, being always preſent in his boat, as well to encourage as to inſtruct the ſeamen and engineers. The diligence and activity of captain Benbow could not fail of recommending him to the favour of ſo wiſe and brave a prince as king William; to whoſe perſonal kindneſs, founded on a juſt ſenſe of Mr. Benbow's merit, he owed his being ſo early promoted to a flag; after which, he was generally employed, as the moſt experienced ſeaman in the navy, to watch the motions of the French at Dunkirk, and to prevent, as far as it was poſſible, the depredations of Bart, the French admiral; in which he ſhewed ſuch diligence, and did ſo great ſervice, by preſerving our merchant-ſhips, that his conduct remained unimpeached, while almoſt every other officer of rank in the navy fell under the laſh of cenſure, either on the ſcore of negligence, timidity, or diſaffection. In 1697, he protected the Weſt-India and Virginia fleets from the attack of the French privateers; for which eſſential ſervice he received the thanks of the merchants. When the peace of Ryſwick took place, rear-admiral Benbow was ſent, with a ſmall ſquadron, into the Weſt Indies. At the time when the general peace of Europe was reſtored by that treaty, king William foreſaw the ſhortneſs of its duration; he therefore determined to ſend an experienced and active officer into that part of the world, with private inſtructions to acquaint himſelf, as perfectly as poſſible, with the condition of the Spaniſh ſettlements there; whilſt he maintained a friendly intercourſe with the reſpective governors, and rendered them every aſſiſtance which might lie in his power. He continued in this employment two years, and executed every thing that could be expected from him with the ſmall force which he carried out. The Britiſh Weſt-India iſlands were relieved, and the intereſt of the merchants and planters promoted; but his circumſcribed ſtrength procured him no civilities from the Spaniſh governors. Parliament arraigned the conduct of the miniſtry, for ſending out ſo ſmall a ſquadron, and ſo late in the ſeaſon, it being the month of November before he left England; at the ſame time they gave great praiſe to the admiral's conduct while on that ſtation.

By the time admiral Benbow returned to Europe, the deſigns of Louis XIV. to procure the crown of Spain for one of his grandſons became more apparent, and king William had already taken preparatory ſteps to defeat that ſcheme. As he foreſaw another general war ready to break out in Europe, he made a promotion of naval officers, by which Mr. Benbow became vice-admiral of the blue. In order to diſappoint the French in their views upon the Spaniſh ſucceſſion, it was thought neceſſary to ſend out a ſtrong ſquadron to the Weſt Indies. The choice of an officer to command, in this important ſervice, greatly embarraſſed the miniſtry. Our admiral indeed was named as ſoon as the deſign was formed; but the king thought it was exacting too much from his gallant admiral, to ſend him back to a ſtation where he muſt continue a conſiderable time, and was likely to encounter nothing but difficulties and hard ſervice; he therefore rejected the propoſal, and bade them name ſome other officer. Others were accordingly pitched upon, but none could be found to reliſh the appointment; each urged ſome reaſon for declining it. Naval commands were, at that time, too much entruſted to men as little ſkilled in the duties of their profeſſion as warmed with a zeal for the ſervice, both of which are neceſſary to conſtitute an uſeful officer. Court favour brought forward a ſet of well-bred gentlemen, who had no reliſh for the hardy toils, and the familiar acquaintance with danger, which ought to be inſeparable from the profeſſion. The king hereupon ſaid, jocularly, "Well, I find we muſt ſpare our beaus, and ſend honeſt Benbow." Accordingly, his majeſty aſked him if he was willing to go again to the Weſt Indies? at the ſame time leaving it to his own choice, to accept or refuſe the offer. The blunt tar replied, that he did not underſtand ſuch compliments; that he knew of no right he had to chooſe his ſtation; and that, if his majeſty thought fit to ſend him to the Eaſt Indies, or to the Weſt, or even to the Antipodes, he would cheerfully and faithfully execute his orders, as was his duty to do." Hereupon vice-admiral Benbow received the unenvied command of the Weſt-India ſquadron. Benbow's rough manners were not reliſhed by the captains who ſerved under him whilſt they continued at Jamaica, therefore they determined to ſacrifice the intereſts of their country, to gratify a private pique againſt their commander; for which purpoſe they entered into a confederacy, that if they ſhould happen to fall in with any part of the French fleet, not to fight, but to leave their admiral to bear the brunt of the action as well as he could. Admiral Benbow, with ſix ſhips, fell in with a ſquadron under M. Du Caſſe, on the 19th of Auguſt, 1701, conſiſting of ten ſail in all: only four of the enemy, however, were ſhips of force; ſo that the Engliſh admiral was in a fair way of taking or deſtroying them, if he had not been deſerted during the action. The admiral had one of his legs ſhattered to pieces during the engagement by a chain-ſhot; and, finding it impoſſible to make the reſt of the men-of-war do their duty, he was compelled to give over the chace, and return to Jamaica; where thoſe captains who deſerted him were tried for cowardince and breach of orders; and captains Kirby and Wade were ſentenced to be ſhot; captain Hudſon died before his trial, and captain Conſtable was ſentenced to be caſhired. Wade and Kirby were executed according to their ſentence, on their arrival at Plymouth, without being ſuffered to come on-ſhore; and it was thought that queen Anne could not have done a piece of juſtice more ſerviceable, or more acceptable at that time to the kingdom, than by ordering theſe wretches for execution immediately on their return home, and without ſuffering them to ſet foot upon their native ſhore. The vice-admiral took this miſcariage ſo much to heart, that he became melancholy; and grief, co-operating with the fever occaſioned by his wounds, put a period to his life, on the 4th of November, 1702.

BEN'BRICK, a mountain of Scotland, in the county of Perth: twelve miles north-north-weſt of Crieff.

BENBUL'BEN, mountains of Ireland, in the county of Sligo: ſeven miles north of Sligo.

BENCH, *ſ.* [*benc*, Sax. *banc*, Fr.] A ſeat, diſtinguiſhed from a *ſtool* by its greater length. A ſeat of juſtice; the ſeat where judges ſit:

To pluck down juſtice from your awful *bench*;
To trip the courſe of law. *Shakeſpeare.*

The perſons ſitting on a bench; as, The whole *bench* voted the ſame way.

Bench, or Banc, in law. See the articles Free-Bench and King's-Bench.

Amicable Bench. See Amicable Benches.

To Bench, *v. a.* To furniſh with benches. To ſeat upon a bench.

BENCHAL'LIN, a mountain of Scotland, in the county of Perth, eighteen miles ſouth of George Town.

BENCH'ER, *ſ.* Thoſe gentlemen of the inns of court are called *benchers*, who have been readers; they, being admitted to plead within the bar, are alſo called *inner barriſters*. The benchers, being the ſeniors of the houſe, are intruſted with its government and direction, and out of them is a treaſurer yearly choſen.

BENCOO'LEN, a ſea-port town of Aſia, in the iſland of Sumatra, on the ſouth-weſt coaſt. The Engliſh ſettled here in 1685, and in the year 1690 the Eaſt-India company built a fort here, calling it Fort York. A convenient river on its north-weſt ſide brings the pepper out of the inland country; but there is great inconveniency in ſhipping it, by reaſon of a dangerous bar at the river's mouth. The place, which is almoſt two miles in compaſs, is known at ſea by a high ſlender mountain, which riſes in the country twenty miles beyond it, called the *Sugar Loaf*. In 1693, there happened a great mortality here, the governor and council all dying, one after another, in a ſhort time; the town ſtanding on a ſtinking moraſs, not agreeable to European conſtitutions. Wherefore, in 1719, a new fort was erecting in a more wholeſome part, and fitter for regular fortifications; but no ſooner did the walls begin to riſe, than the natives roſe and ſet fire to the fort and moſt of the Engliſh buildings; the governor, garriſon, &c. thought beſt to embark for Batavia with all ſpeed, leaving ſome cheſts of money, artillery, arms, ammunition, &c. behind. But the natives a year after ſuffered the Engliſh to return, and encouraged them to poſſeſs again their new ſettlement, and proceed with building their fort, which has the name of Marlborough Fort. This ſettlement and fort were taken by the French, in 1760, and the fort deſtroyed; but it has been ſince repaired. The adjacent country is mountainous and woody, and there are many volcanoes in the iſland. The air is, indeed, full of malignant vapours, and the mountains always covered with thick clouds, which burſt in ſtorms of thunder, rain, &c. Tame buffaloes may be had here in plenty. Fiſh and poultry are ſcarce and dear. The ſoil is a fertile clay, producing high graſs; but near the ſea it is all moraſs. The natives build their dwellings on bamboo pillars. Lat. 4. S. lon. 101. 5. E. Greenwich.

To BEND, *v.a.* pret. *bended* or *bent*; part. paſſ. *bended* or *bent*. [*benden*, Sax. *bander*, Fr. as Skinner thinks, from *pandare*, Lat.] To make crooked; to crook; to inflect.—The rainbow compaſſeth the heaven with a glorious circle, and the hands of the Moſt High hath *bended* it. *Ecclus.*—To direct to a certain point:

To that ſweet region was our voyage *bent*,
When winds, and ev'ry warring element,
Diſturb'd our courſe *Dryden.*

To apply to a certain purpoſe; to intend the mind.—When he fell into the gout, he was no longer able to *bend* his mind or thoughts to any public buſineſs. *Temple.*—To put any thing in order for uſe: a metaphor taken from the bending the bow.—As a fowler was *bending* his net, a blackbird aſked him what he was doing? *L'Eſtrange.*—To incline:

But when to miſchief mortals *bend* their will,
How ſoon they find fit inſtruments of ill! *Pope.*

To ſubdue; to make ſubmiſſive: as, War and famine will *bend* our enemies.

To bend the brow. To knit the brow; to frown.—Some have been ſeen to bite their pen, ſcratch their head, *bend their brows*, bite their lips, beat the board, and tear their paper. *Camden.*

To BEND, *v.n.* To be incurvated. To lean or jut over:

There is a cliff, whoſe high and *bending* head
Looks fearfully on the confined deep. *Shakeſpeare.*

To reſolve; to determine: in this ſenſe the participle is commonly uſed:

Not ſo, for once indulg'd they ſweep the main,
Deaf to the call, or, hearing, hear in vain;
But, *bent* on miſchief, bear the waves before. *Dryden.*

To be ſubmiſſive; to bow.—The ſons of them that afflicted thee ſhall come bending unto thee. *Iſaiah.*

BEND, *ſ.* Flexure; incurvation:

His coward lips did from their colour fly;
And that ſame eye, whoſe bend doth awe the world,
Did loſe its luſtre. *Shakeſpeare.*

The crooked timbers which make the ribs or ſides of a ſhip. With heralds, one of the eight honourable ordinaries, containing a fifth when uncharged; but, when charged, a third part of the eſcutcheon. It is made by two lines, drawn thwartways from the dexter chief to the ſiniſter baſe point.

"It is beſt to *bend*, while it is a twig." The French ſay,

Ce que poulain prend en jeuneſſe,
Il le continue dans la vieilleſſe.

'What the colt learns, the horſe ſeldom forgets.' This proverb is deſigned as a leſſon to parents to bring up their children, as Solomon ſays, in the way they are to go, while they are young, and not, by a ſupine neglect, or too eaſy carriage towards them, to ſuffer them to contract evil habits, which it will be very difficult to break them of, or to imbibe principles which cannot be eaſily effaced in more advanced years.

BEND, a town of Perſia, in the province of Farſiſtan, 100 miles north-eaſt of Schiras.

BEND'ABLE, *adj.* That may be incurvated; that may be inclined.

BENDA'LI, a town of Perſia, in the province of Kerman, 140 miles ſouth of Sirgian.

BENDARMALAN'KA, a town of Hindoſtan, in the circar of Rajamundry, thirty-eight miles ſouth of Rajamundry, and fifty north-eaſt of Maſulipatam.

BENDEIRG', a mountain of Scotland, in the county of Perth, 3550 feet above the level of the ſea. It is ſeven miles north of Blair Athol.

BEND'ER, *ſ.* The perſon who bends. The inſtrument with which any thing is bent.—Theſe bows, being ſomewhat like the long bows in uſe amongſt us, were bent only by a man's immediate ſtrength, without the help of any *bender*, or rack, that are uſed to others. *Wilkins.*

BENDER, or TEKIN, a town of European Turkey, in Beſſarabia, ſituated on the Dnieſter. It was ſeized by the Ruſſians in the year 1770, and again in 1789, but reſtored in 1790. Charles XII. king of Sweden, when he put himſelf under the protection of the Turks, reſided at Bender, until, refuſing to quit their territory, he was attacked by them, and, being made priſoner, was carried to the neighbourhood of Adrianople, where he remained another year, and then returned ſecretly to his own dominions. It is 100 miles weſt of Otchakov, and 100 eaſt of Jaſſi. Lat. 47. 0. N. lon. 47. 58. E. Ferro.

BENDER DU SER, a town of Perſia, in the province of Kerman, 160 miles ſouth of Sirgian.

BENDER ABBASSI. See GOMROON.

BENDER DELEM, a town of Perſia, in the province of Farſiſtan, on the north coaſt of the Perſian gulf, 130 miles weſt of Schiras.

BENDER IBRAHIM, a town of Perſia, at the mouth of the river Ibrahim, in the Perſian gulf.

BENDER RIGK, a town of Perſia, in the province of Kerman, on the north coaſt of the Perſian gulf, governed by an Arabian prince, who has other poſſeſſions in the ſame province, which render him, in ſome reſpects, dependent on the throne of Perſia. It is 132 miles weſt-ſouth-weſt of Schiras.

BENDI'DA, *ſ.* in antiquity, a feſtival, not unlike the Bacchanalia, celebrated by the Athenians in honour of Diana.

BEND'ING, *ſ.* The reducing a body to a curved or crooked form. The bending of boards, planks, &c. is effected by means of heat, whether by boiling or otherwiſe, by which their fibres are ſo relaxed that they may be bent into any figure. Bernouilli has a diſcourſe on the bending of ſprings, or elaſtic bodies. And Amontons gives ſeveral experiments concerning the bending of ropes. The friction of a rope bent or wound about an immoveable cylinder, is ſufficient, with a very ſmall power, to ſuſtain very great weights.

BENDING, in the ſea-language, the tying two ropes or cables together: thus they ſay, *bend the cable*, that is, make it faſt to the ring of the anchor; *bend the ſail*, make it faſt to the yard.

BENDO'RAN, a mountain of Scotland, in the county of Argyle.

BENDORF', a town of Germany, in the circle of Weſtphalia, and chief place of a bailiwick of the ſame name, in the county of Sayn, inhabited by Roman Catholics and Lutherans. It is five miles north of Coblentz.

BEN DUBH, a mountain of Ireland, ſituated partly in King's County, and partly in the county of Tipperary, ſixteen miles weſt of Kilkenny.

BEN'DY, *ſ.* in heraldry, is the field divided into four, ſix, or more, parts, diagonally, and varying in metal and colour. The general cuſtom of England is to make an even number; but in other countries they regard it not, whether even or odd.

BE'NE, a town of Italy, in the principality of Piedmont, and diſtrict of Mondovi, defended by an ancient caſtle. It contains about 4000 inhabitants, two churches, and three convents. It was taken by the French revolutionary troops in April, 1796; and is five miles ſouth of Cheraſco, and twenty-eight ſouth of Turin.

BENEAP'ED, *adj.* [from *neap.*] A ſhip is ſaid to be beneaped, when the water does not flow high enough to bring her off the ground, over a bar, or out of a dock.

BENEATH', *prep.* [*beneoth*, Sax. *beneden*, Dut.] Under; lower in place; oppoſed to *above*:

Their woolly fleeces, as the rites requir'd,
He laid *beneath* him, and to reſt retir'd. *Dryden.*

Under, as overborne or overwhelmed by ſome preſſure:

Our country ſinks *beneath* the yoke;
It weeps, it bleeds, and each new day a gaſh
Is added to her wounds. *Shakeſpeare.*

Lower in rank, excellence, or dignity.—We have reaſon to be perſuaded, that there are far more ſpecies of creatures above us, than there are *beneath*. *Locke.*—Unworthy of; unbeſeeming; not equal to.—He will do nothing that is *beneath* his high ſtation, nor omit doing any thing which becomes it. *Atterbury.*

Beneath, *adv.* In a lower place; under.—I deſtroyed the Amorite before them; I deſtroyed his fruits from above, and his roots from *beneath*. *Amos.*—Below, as oppoſed to *heaven*:

Trembling I view the dread abyſs *beneath*,
Hell's horrid manſions, and the realms of death. *Yalden.*

BENEDI'CITE, *ſ.* An appellation given to the Song of the Three Children in the fiery furnace, on account of its beginning with the word *benedicite*. This ſong in Chriſtian worſhip is very ancient, ſince it was ſung in all churches as early as St. Chryſoſtom's time.

BE'NEDICT, *adj.* [*benedictus*, Lat.] Having mild and ſalubrious qualities: *an old phyſical term.*—It is not a ſmall thing won in phyſic, if you can make rhubarb, and other medicines that are *benedict*, as ſtrong purgers as thoſe that are not without ſome malignity. *Bacon.*

Benedict XIV. Pope, (Proſper Lambertini of Bologna,) celebrated for his learning and moderation, which gained him the eſteem of all ſenſible Proteſtants. He was the patron of learned men and celebrated artiſts; and an elaborate writer, on theological ſubjects. His works make 12 vols. in folio. He died in 1758.

Benedict (St.) the founder of the order of the Benedictine monks, was born in Italy, about the year 480. He was ſent to Rome when he was very young, and there received the firſt part of his education. At fourteen years of age he was removed to Sublaco, about forty miles diſtant. Here he lived a moſt aſcetic life, and ſhut himſelf up in a cavern, where nobody knew any thing of him except St. Romanus, who, we are told, uſed to deſcend to him by a rope, and to ſupply him with proviſions; but, being afterwards diſcovered by the monks of a neighbouring monaſtery, they choſe him for their abbot. Their manners, however, not agreeing with thoſe of Benedict, he returned to his ſolitude; whither many perſons followed him, and put themſelves under his direction, ſo that in a ſhort time he built twelve monaſteries. In 528, or the following year, he retired to mount Caſſino, where idolatry was ſtill prevalent in the temple of Apollo. He inſtructed the people in the adjacent country, and, having converted them, he broke the image of Apollo, and built two chapels on the mountain. Here he founded a monaſtery, and inſtituted the order of his name, which in time became ſo famous, and extended all over Europe. It was here that he compoſed his *Regula Monachorum*, which Gregory the Great ſpeaks of as the moſt ſenſible and beſt-written piece of the kind ever publiſhed. The time of his death is uncertain, but is placed between 540 and 550. He was looked upon as the Eliſha of his time; and is reported to have wrought a great number of miracles, which are recorded in the ſecond book of the dialogues of St. Gregory the Great.

Benedict, abbot of Peterborough, was educated at Oxford, became a monk in the monaſtery of Chriſt's-church in Canterbury, and was choſen prior by the members of that ſociety. Though he had been a great admirer of archbiſhop Becket, and wrote a life of that prelate, he was ſo much eſteemed by Henry II. that by the influence of that prince he was elected abbot of Peterborough, in 1177. He aſſiſted at the coronation of Richard I. and was advanced to be keeper of the great ſeal, A. D. 1191. But he did not long enjoy this high dignity, as he died on Michaelmas day, 1193. Beſides his Life of Archbiſhop Becket, he compoſed a Hiſtory of Henry II. and Rich. I. which hath been juſtly eſteemed as the beſt accounts of the tranſactions of thoſe times. A beautiful edition of this work was publiſhed at Oxford, by Mr. Hearne, in 1735.

BENEDIC'TINS, in church hiſtory, an order of monks, who profeſs to follow the rules of St. Benedict. The Benedictins, being thoſe only that are properly called *monks*, wear a looſe black gown, with large wide ſleeves, and a capuche, or cowl, on their heads, ending in a point behind. In the canon law, they are ſtyled *black friars*, from the colour of their habit. The rules of St. Benedict, as obſerved by the Engliſh monks before the diſſolution of the monaſteries, were as follows: They were obliged to perform their devotions ſeven times in twenty-four hours, the whole circle of which had a reſpect to the paſſion and death of Chriſt: they were obliged always to go two and two together: every day in Lent they were obliged to faſt till ſix in the evening, and abated of their uſual time of ſleeping and eating; but they were not allowed to practiſe any voluntary auſterity without leave of their ſuperior: they never converſed in their refectory at meals, but were obliged to attend to the reading of the Scriptures: they all ſlept in the ſame dormitory, but not two in a bed; they lay in their clothes: for ſmall faults they were ſhut out from meals; for greater, they were debarred religious commerce, and excluded from the chapel; and, as to incorrigible offenders, they were excluded from the monaſteries. Every monk had two coats, two cowls, a table-book, a knife, a needle, and a handkerchief; and the furniture of their bed was a mat, a blanket, a rug, and a pillow. The time when this order came into England is well known; for to it the Engliſh owe their converſion from idolatry. In the year 596, pope Gregory ſent hither Auguſtin, prior of the monaſtery of St. Andrew at Rome, with ſeveral other Benedictin monks. St. Auguſtin became archbiſhop of Canterbury; and the Benedictins founded ſeveral monaſteries in England, as alſo the metropolitan church of Canterbury, and all the cathedrals that were afterwards erected.

Pope John XXII. who died in 1334, after an exact enquiry, found that, ſince the firſt riſe of the order, there had been of it 24 popes, near 200 cardinals, 7000 archbiſhops, 15,000 biſhops, 15,000 abbots of renown, above 4000 ſaints, and upwards of 37,000 monaſteries. There have been likewiſe of this order twenty emperors and ten empreſſes, forty-ſeven kings and above fifty queens, twenty ſons of emperors, and forty-eight ſons of kings; about 100 princeſſes, daughters of kings and emperors; beſides dukes, marquiſſes, earls, counteſſes, &c. innumerable. The order has produced a vaſt number of eminent writers and learned men. Their Rabanus ſet up the ſchool of Germany. Their Alcuinus founded the univerſity of Paris. Their Dionyſius Exiguus perfected the eccleſiaſtical computation. Their Guido invented the ſcale of muſic; and their Sylveſter, the organ. They boaſt to have produced Anſelmus, Ildephonſus, Venerable Bede, &c.

There are nuns likewiſe who follow the rule of St. Benedict; among whom, thoſe who call themſelves *mitigated* eat fleſh three times a-week, on Sundays, Tueſdays, and Thurſdays: the others obſerve the rule of St. Benedict in its rigour, and eat no fleſh unleſs they are ſick.

BENEDIC'TION, *ſ.* [*benedictio*, Lat.] Bleſſing; a decretory pronunciation of happineſs:

From him will raiſe
A mighty nation; and upon him ſhow'r
His *benediction* ſo, that, in his ſeed,
All nations ſhall be bleſt. *Milton.*

The advantage conferred by bleſſing.—Proſperity is the bleſſing of the Old Teſtament; adverſity is the bleſſing of the New; which carrieth the greater *benediction*, and the clearer revelation of God's favour. *Bacon.*—Acknowledgments for bleſſings received; thanks.—Such ingenious and induſtrious perſons are delighted in ſearching out natural rarities; reflecting upon the Creator of them his due praiſes and *benedictions*. *Ray.*—The form of inſtituting an abbot.—What conſecration is to a biſhop, that *benediction* is to an abbot; but in a different way: for a biſhop is not properly ſuch till conſecration; but an abbot, being elected and confirmed, is properly ſuch before *benediction*. *Ayliffe.*

Nuptial BENEDICTION, the external ceremony performed by the prieſt in the office of matrimony. This is alſo called *ſacerdotal* and *matrimonial* benediction, by the Greeks ιερολογια and ιεροτελεστια. The nuptial benediction is not eſſential to, but the confirmation of, a marriage in the civil law.

Beatic BENEDICTION, (*benedictio beatica,*) is the viaticum given to dying perſons. The pope begins all his bulls with this form: *Salutem et apoſtolicam benedictionem.*

BENEDICTION is alſo uſed in the Romiſh church for an eccleſiaſtical ceremony, whereby a thing is rendered ſacred or venerable. In this ſenſe benediction differs from conſecration, as in the latter unction is applied, which is not in the former: thus the chalice is conſecrated, and the pix bleſſed; as the former, not the latter, is anointed: though, in the common uſage, theſe two words are applied promiſcuouſly. The ſpirit of piety, or rather of ſuperſtition, has introduced into the Romiſh church benedictions for almoſt every thing. We read of forms of benedictions for wax-candles, for boughs, for aſhes, for church-veſſels, and ornaments; for flags or enſigns, arms, firſt-fruits, houſes, ſhips, paſcal eggs, cilicium or the hair-cloth of penitents, church-yards, &c. In general, theſe benedictions are performed by aſperſions of holy water, ſigns of the croſs, and prayers ſuitable to the nature of the ceremony. The forms of theſe benedictions are found in the Roman pontifical, in the Roman miſſal, in the book of eccleſiaſtical ceremonies printed in pope Leo's time, and in the rituals and ceremonies of the different churches which are found collected in father Martene's work on the rites and diſcipline of the church.

BENEFA'CA, a town of Spain, in the province of Valencia, ten leagues from Valencia.

BENEFAC'TION, *ſ.* [from *benefacio*, Lat.] The act of conferring a benefit. The benefit conferred: which is the more uſual ſenſe.—One part of the *benefactions*, was the expreſſion of a generous and grateful mind. *Atterbury.*

BENEFAC'TOR, *ſ.* [from *benefacio*, Lat.] He that confers a benefit: frequently he that contributes to ſome public charity: it is uſed with *of*, but oftener with *to*, before the perſon benefited:

Then ſwell with pride, and muſt be titled gods,
Great *benefactors of* mankind, deliverers,
Worſhip'd with temple, prieſt, and ſacrifice. *Milton.*

BENEFAC'TRESS, *ſ.* A woman who confers a benefit.

BE'NEFICE, *ſ.* [from *beneficium*, Lat.] Advantage conferred on another. In middle-age writers, it is uſed for a fee, ſometimes denominated more peculiarly *beneficium militare*. In this ſenſe, benefice was an eſtate in land, at firſt granted for life only; ſo called, becauſe it was held *ex mero beneficio* of the donor: and the tenants were bound to ſwear fealty to the lord, and to ſerve him in the wars. In aftertimes, as theſe tenures became perpetual and hereditary, they left their name of *beneficia* to the livings of the clergy, and retained to themſelves the name of *feuds*.

BENEFICE, in an eccleſiaſtical ſenſe, a church endowed with a revenue for the performance of divine ſervice; or the revenue itſelf aſſigned to an eccleſiaſtical perſon, by way of ſtipend, for the ſervice he is to do in that church. All church-preferments, except biſhoprics, are called *benefices*; and all benefices are, by the canoniſts, ſometimes ſtyled *dignities*: but we now ordinarily diſtinguiſh between benefice and dignity; applying dignity to biſhoprics, deaneries, archdeaconries, and prebendaries; and benefice to parſonages, vicarages, and donatives. Benefices are divided by the canoniſts into ſimple and ſacerdotal. In the firſt there is no obligation but to read prayers, ſing, &c. ſuch are canonries, chaplainſhips, chantries, &c. the ſecond are charged with the cure of ſouls, or the direction and guidance of conſciences; ſuch as vicarages, rectories, &c. The Romaniſts again diſtinguiſh benefices into regular and ſecular. *Regular* or titular benefices are thoſe held by a religious, or a regular, who has made profeſſion of ſome religious order; ſuch are abbeys, priories, conventuals, &c. or rather, a regular benefice is that which cannot be conferred on any but a religious, either by its foundation, by the inſtitution of ſome ſuperior, or by preſcription: for preſcription, forty years poſſeſſion by a religious makes the benefice regular. *Secular* benefices are only ſuch as are to be given to ſecular prieſts, i. e. to ſuch as live in the world, and are not engaged in any monaſtic order. All benefices are reputed ſecular, till the contrary is made to appear. They are called *ſecular benefices*, becauſe held by ſeculars; of which kind are almoſt all cures. The canoniſts diſtinguiſh three manners of vacating a benefice, viz. 1. *De jure*, when the perſon enjoying it is guilty of certain crimes expreſſed in thoſe laws, as hereſy, ſimony, &c. 2. *De facto*, as well as *de jure*, by the natural death or the reſignation of the incumbent; which reſignation may be either expreſs or tacit, as when he engages in a ſtate, &c. inconſiſtent with it, as, among the Romaniſts, by marrying, entering into a religious order, or the like. 3. By the *ſentence of a judge*, by way of puniſhment for certain crimes, as concubinage, perjury, &c.

Benefices began about 500. The following account of thoſe in England is given as the fact by Dr. Burn, viz. that there are 1071 livings not exceeding 10l. per annum; 1467 livings above 10l. and not exceeding 20l. per annum; 1126 livings above 20l. and not exceeding 30l. per annum; 1049 livings above 30l. and not exceeding 40l. per annum; 884 livings above 40l. and not exceeding 50l. per annum; 5597 livings under 50l. per annum. It muſt be 500 years before every living can be raiſed to 60l. a-year by queen Anne's bounty, and 339 years before any of them can exceed 50l. a-year. On the whole, there are above 11,000 church-preferments in England, excluſive of biſhoprics, deaneries, canonries, prebendaries, prieſt-vicars, lay-vicars, ſecondaries, &c. belonging to cathedrals, or choriſters, or even curates to well-beneficed clergymen.

BENEFICE IN COMMENDAM is that, the direction and management of which, upon a vacancy, is given or recommended to an eccleſiaſtic, for a certain time, till he may be conveniently provided for.

BE'NEFICED, *adj.* Poſſeſſed of a benefice, or church preferment.—The uſual rate between the *beneficed* man and the religious perſon, was one moiety of the benefice. *Ayliffe.*

BENE'FICENCE, *ſ.* The practice of doing good; active goodneſs.—Love and charity extends our *beneficence* to the miſeries of our brethren. *Rogers.*

BENEFICENCE is emblematically deſcribed by a damſel of an agreeable aſpect; young, becauſe the remembrance and acknowledgment of benefits ſhould never grow old; beautiful, becauſe beneficence charms every one; naked, to ſhew that it ought to be without intereſt or oſtentation; holding in one hand a bag of gold, and variety of jewels, as ready to diſtribute them, and in the other a chain of gold, to ſignify that beneficence ties and obliges. Beneficence, ſay the moraliſts, is the higheſt and utmoſt ſtrain of humanity, when a man out of a pure inclination that ariſes either from a native generoſity of ſoul, or from pity and compaſſion to a perſon in diſtreſs, is at ſome pains or charge in beſtowing freely upon another, what may relieve his neceſſity or promote his advantage. The virtue that anſwers to beneficence in the giver, is gratitude in the receiver.

BENE'FICENT, *adj.* [from *beneficus*, *beneficentior*, Lat.] Kind; doing good. It differs from *benign*, as the act from the diſpoſition; *beneficence* being kindneſs, or *benignity* exerted in action.—Such a creature could not have his origination from any leſs than the moſt wiſe and *beneficent* being, the great God. *Hale.*

BENEFI'CIAL, *adj.* [from *beneficium*, Lat.] Advantageous; conferring benefits; profitable; uſeful: with *to* before the perſon benefited.—The war, which would have been moſt *beneficial* to us, and deſtructive to the enemy, was neglected. *Swift.*—Helpful; medicinal.—In the firſt acceſs of ſuch a diſeaſe, any deobſtruent, without much acrimony, is *beneficial. Arbuthnot.*

BENEFICIAL, *ſ.* An old word for a benefice:

For that the groundwork is, and end of all,
How to obtain a *beneficial*. *Spenſer.*

BENEFI'CIALLY, *adv.* Advantageouſly; profitably; helpfully.

BENEFI'CIALNESS, *ſ.* Uſefulneſs; profit; helpfulneſs.

BENEFICIA'RII, *ſ.* in Roman antiquity, denote ſoldiers who attended the chief officers of the army, being exempted from other duty. Beneficiarii were alſo ſoldiers diſcharged from the military ſervice or duty, and provided with *beneficia* to ſubſiſt on. Theſe were probably the ſame with the former, and both might be compriſed in the ſame definition. They were old experienced ſoldiers, who, having ſerved out their legal time, or received a diſcharge as a particular mark of honour, were invited again to the ſervice, where they were held in great eſteem, exempted from all military drudgery, and appointed to guard the ſtandard, &c. Theſe, when thus recalled to ſervice, were alſo denominated *evocati*; before their recal, *emeriti*.

BENEFICIARII was alſo uſed for thoſe raiſed to a higher rank by favour of the tribunes or other magiſtrates. The word *beneficiarius* frequently occurs in the Roman inſcriptions found in Britain, where *conſulis* is always joined with it; but beſides *beneficiarius conſulis*, we find in Grutar *beneficiarius tribuni, prætorii, legati, præfecti, proconſulis*.

BENEFI'CIARY, *adj.* [from *benefice*.] Holding ſomething in ſubordination to another; having a dependent and ſecondary poſſeſſion, without ſovereign power.—The duke of Parma was tempted by no leſs promiſe, than to be made a feudatory, or *beneficiary*, king of England, under the ſeigniory in chief of the pope. *Bacon.*

BENEFICIARY, *ſ.* He that is in poſſeſſion of a benefice.—A benefice is either ſaid to be a benefice with the cure of ſouls, or otherwiſe. In the firſt caſe, if it be annexed to another benefice, the *beneficiary* is obliged to ſerve the pariſh church in his own proper perſon. *Ayliffe.*

BEN'EFIELD (Sebaſtian), an eminent divine, born in 1559 at Preſtonbury in Glouceſterſhire, and educated at Corpus Chriſti college, Oxford. In 1608 he took the degree of doctor in divinity, and five years after was choſen Margaret profeſſor in that univerſity. He had been preſented ſeveral years before to the rectory of Meyſey-Hampton in Glouceſterſhire. He publiſhed Commentaries upon the firſt, ſecond, and third, chapters of Amos; a conſiderable number of ſermons; and ſome Latin treatiſes. He died in 1630.

BE'NEFIT, *ſ.* [*beneficium*, Lat.] A kindneſs; a favour conferred; an act of love.—Bleſs the Lord, O my ſoul, and forget not all his *benefits. Pſalms.*

Offer'd life
Neglect not, and the *benefit* embrace
By faith, not void of works. *Milton.*

Advantage; profit; uſe.—The creature abateth his ſtrength for the *benefit* of ſuch as put their truſt in thee. *Wiſdom.*—In law, *benefit of clergy* is an ancient liberty of the church. When a prieſt, or one within orders, is arraigned of felony before a ſecular judge, he may pray his clergy; that is, pray to be delivered to his ordinary, to purge himſelf of the offence objected to him: and this might be done in caſe of murder. The ancient law, in this point of *clergy*, is much altered; for clerks are no more delivered to their ordinaries to be purged, but now every man, though not within orders, is put to read at the bar, being found guilty, and convicted of ſuch felony as this benefit is granted for; and ſo burnt in the hand, and ſet free for the firſt time, if the ordinary's commiſſioner, or deputy, ſtanding by, do ſay, *Legit ut clericus*; or, otherwiſe, ſuffereth death for his tranſgreſſion. See CLERGY.

To BENEFIT, *v. a.* To do good to; to advantage.—He was ſo far from *benefiting* trade, that he did it a great injury, and brought Rome in danger of a famine. *Arbuthnot.*

To BENEFIT, *v. n.* To gain advantage; to make improvement.—To tell you therefore what I have *benefited* herein, among old renowned authors, I ſhall ſpare. *Milton.*

BENEM'PT, *adj.* Named; marked out. *Obſolete:*

Much greater gifts for guerdon thou ſhalt gain,
Than kid or coſſet, which I thee *benempt*. *Spenſer.*

BENERMOID', a mountain of Scotland, in the county of Sutherland, ſixteen miles ſouth of Tongue.

BENESCHAU', a town of Sileſia, in the principality of Oppau, eight miles eaſt of Troppau.

BENESCHOW', or PEN'SEN, a town of Bohemia, in the circle of Kaurzim, where they manufacture the beſt paper in Bohemia. It is eighteen miles ſouth-weſt of Kaurzim, and twenty ſouth-ſouth-eaſt of Prague.

To BENET', *v. a.* [from *net*.] To enſnare; to ſurround as with toils:

Being thus *benetted* round with villains,
Ere I could mark the prologue, to my bane
They had begun the play. *Shakeſpeare.*

BENET', a town of France, in the department of Vendée, and chief place of a canton, in the diſtrict of Fontenay le Comte: three leagues and a half ſouth-eaſt of Fontenay.

BE'NEVEN, a mountain of Scotland, in the county of Inverneſs, twenty-one miles eaſt of Fort William.

BENEVEN'TE, a town of France, in the department of the Creuſe, and chief place of a canton, in the diſtrict of Bourganeuf, ten miles weſt-ſouth-weſt of Gueret, and ten north-north-weſt of Bourganeuf.

BENEVEN'TO, a duchy of Italy, in the kingdom of Naples, given to the pope by the emperor Henry III. in exchange for ſome feudal rights in the city of Bamberg, which belonged to the church. A ſmall diſtrict, with the city of Benevento, was all that formed the duchy, which lately produced about 6000 crowns a-year to the pope.

BENEVENTO, a city of Italy, in the kingdom of Naples, and capital of the Principato Ultra; the ſee of an archbiſhop, erected in the year 969. In a plain near the town Charles of Anjou, king of Naples, defeated and killed Manfred his competitor, in the year 1266. In the year 545, this city was taken and laid waſte by Totila; and, in the year 1703, it ſuffered greatly by an earthquake. It contains nine churches, twelve convents for monks, and two for nuns. The arch of Trajan, called *Porta Aurea*, forms one of the entrances to the city. This arch is in tolerable preſervation, and the architecture and ſculpture are both ſingularly beautiful. This elegant monument was erected in the year of Chriſt 114, about the commencement of the Parthian war. The order is Compoſite; the materials, white marble; the height, ſixty palms; length, thirty-ſeven and a half; and depth, twenty-four. It conſiſts of a ſingle arch, the ſpan of which is twenty palms, the height thirty-five. The intercolumniations and frize are covered with baſſo-relievos, repreſenting the battles and triumphs of the Dacian war. Except the old metropolis of the world, no city in Italy can boaſt of ſo many remains of ancient ſculpture as are to be found in Benevento. It is thirty miles north-eaſt of Naples, and twenty-three eaſt of Capua. Lat. 41. 7. N. lon. 32. 22. E. Ferro.

BENEVEN'TUM, a town of the Samnites, formerly called *Maleventum* from the unwholeſomeneſs of the air, and under that appellation it is mentioned by Livy; but, after a Roman colony was led thither in the 485th year of the city, it came to have the name of Beneventum as a more auſpicious title. It is mentioned by Horace as ancient city ſaid to have been built by Diomedes before the Trojan war. Now BENEVENTO.

BE'NEVIS, or Bennevis, a mountain of Scotland, in the county of Inverneſs, 4300 feet above the level of the ſea, and ſeven miles north of Callender.

BENE'VOLENCE, *ſ.* [*benevolentia*, Lat.] Diſpoſition to do good; kindneſs; charity; good will. The good done; the charity given:

Graſp the whole worlds of reaſon, life, and ſenſe,
In one cloſe ſyſtem of *benevolence*. *Pope.*

Benevolence is uſed in the chronicles and ſtatutes of this realm for a voluntary gratuity given by the ſubjects to the king. And Stow ſaith, that it grew from Edward the Fourth's days: we find it alſo 11 Hen. VII. c. 10, yielded to that prince in regard of his great expences in wars, and otherwiſe. 12 *Rep.* 19. And by act of parliament, 13 Car. II. c. 4, it was given to Charles II. but with a proviſo that it ſhould not be drawn into future example: as thoſe benevolences were frequently extorted without a real and voluntary conſent, ſo that all ſupplies of this nature are now by way of taxes, by grant of parliament; any other way of raiſing money for the crown is illegal. Stat. 1 Will. & Mary, 2. c. 2. It was aboliſhed by Richard III.

BENE'VOLENT, *adj.* [*benevolens*, *benevolentia*, Lat.] Kind; having good will, or kind inclinations.—Thou good old man, *benevolent* as wiſe. *Pope.*

BENEVOLEN'TIA Regis Habenda, the form of purchaſing the king's pardon and favour, in ancient fines and ſubmiſſions, to be reſtored to eſtate, title, or place. *Paroch. Antiq.* 172.

BENE'VOLENTNESS, *ſ.* The ſame with Benevolence.

BE'NEZET (Anthony), an American, who in early life was put apprentice to a merchant; but, finding commerce opened temptations to fraud, he declined it, and devoted himſelf to ſchool-keeping, in which employment he continued during the greateſt part of his life. He was author of a "A Caution to Great Britain and her Colonies, on the calamitous State of the enſlaved Negroes in the Britiſh Dominions, 8vo. 1767;" alſo an "Account of Guinea; with an Enquiry into the Riſe and Progreſs of the Slave Trade, and its lamentable Effects, 8vo. 1772;" and ſome other tracts on the ſame ſubject. He poſſeſſed uncommon activity and induſtry in every thing he undertook. He uſed to ſay, "the higheſt act of charity was to bear with the unreaſonableneſs of mankind." He generally wore pluſh clothes; and gave as a reaſon for it, that after he had worn them for two or three years, they made comfortable garments for the poor. Few men ever lived a more diſintereſted life; and yet upon his death-bed he ſaid, he wiſhed to live a little longer, "that he might bring down SELF." The laſt time he ever walked acroſs his room was to take from his deſk ſix dollars, which he gave to a poor widow whom he had long aſſiſted to maintain. His funeral was attended by perſons of all religious denominations, and by many hundred negroes. An officer, who had ſerved in the American army during the late war, in returning from the funeral, pronounced an eulogium upon him. It conſiſted only of the following words: "I would rather (ſaid he) be Anthony Benezet in that coffin, than George Waſhington with all his fame."

BEN'FIELD, or Benfel'den, a town of France, and principal place of a diſtrict, in the department of the Lower Rhine, ſituated on the Ill, three leagues north-north-eaſt of Schletſtat, and four and a half ſouth of Straſburgh. Lat. 48. 22. N. lon. 25. 15. E. Ferro.

BENFI'OL, a mountain of Scotland, in the iſland of Coll.

BENGA'L, a country of India, and the moſt eaſterly part of Hindoſtan, lying on each ſide of the Ganges, bounded on the north by the country of Bootan, on the eaſt by Aſſam and Meckley, on the ſouth by the ſea called the *Bay of Bengal*, and on the weſt by Bahar and Oriſſa, extending from 86° to 92° 30′ eaſt longitude from Greenwich, and from 21° 30′ to 26° 40′ north latitude. Its greateſt length from weſt to eaſt is about 720 miles, and its breadth from ſouth to north, where greateſt, is not leſs than 300; though in ſome places not above 150. Bengal is conſidered as the ſtorehouſe of the Eaſt Indies. The whole country belongs to the Engliſh Eaſt-India company, and, together with the country of Bahar, produces a neat annual revenue of 1,290,000l. The Engliſh Eaſt-India company exerciſe the ſovereignty, make laws, eſtabliſh tribunals, and govern the whole with an unlimited authority. Calcutta is the capital: the principal rivers are the Ganges, Burrampooter, Dummooda, Cooſy, Sanpou or Teeſta, beſides many ſmaller ones.

As this country lies almoſt entirely within the torrid zone, and in the middle of a very extenſive continent, it is ſometimes ſubject to ſuch extremes of heat, as render it fatal to European conſtitutions. This unhealthineſs ariſes from the mere circumſtance of heat; for, in all the ſouthern parts of India, when the wind blows over land, it is ſo extremely hot and ſuffocating as ſcarcely to be borne. When the air is clear, the ſun-beams are much more powerful than in our climate, inſomuch that the light at noon-day is too powerful for the eyes to bear; and the large ſtars, as Venus and Jupiter, ſhine with a ſurpriſing luſtre. Another cauſe of the unhealthineſs of Bengal, is owing to the inundations of the Ganges and Burrampooter, by which ſuch quantities of putreſcible matters are brought down as infect the air with the moſt malignant vapours when the waters retire. Though the rainy ſeaſon begins in Bengal only in the month of June, the river begins to ſwell in the mountains of Thibet early in April, and by the latter end of that month in Bengal alſo. The reaſon of this is partly the melting of the ſnow on the mountains, and partly the vaſt collection of vapours brought by the ſoutherly or ſouth-weſt monſoon, which are ſuddenly ſtopped by the high mountains of Thibet. Hence it is obvious, that the accumulation and condenſation of theſe vapours muſt firſt take place in the neighbourhood of the mountains which oppoſe them; and thus the rainy ſeaſon commences ſooneſt in thoſe places which lie neareſt the mountains. See Monsoon. The rivers begin to riſe at firſt very ſlowly; but, by the latter end of July, all the lower parts of Bengal, contiguous to the Ganges and Burrampooter, are overflowed, and preſent a ſurface of water more than 100 miles wide. This vaſt collection of fluid is owing in a great meaſure to the rains which fall on the low country itſelf; for the lands in the neighbourhood are overflowed ſome time before the bed of the river is filled. It muſt be obſerved, that the ground on the bank of the river, and even to ſome miles diſtance, is higher than that which is more remote; and thus a ſeparation is made for a conſiderable time betwixt the waters of the land-flood and thoſe of the river.

As ſome of the lands in Bengal would receive damage from ſuch a copious inundation, they for this reaſon are guarded by ſtrong dykes to reſiſt the waters, and admit only a certain quantity. Theſe, collectively taken, are ſaid to be more than 1000 miles in length, and are kept up at an enormous expence; yet they do not always anſwer the purpoſe, on account of the looſeneſs of the earth of which they are compoſed, even though ſome are of the thickneſs of an ordinary rampart at the baſe. One particular branch of the Ganges, navigable inland, is conducted for ſeventy miles between dykes: and, when full, the paſſengers look down upon the adjacent country as from an eminence. As the tide loſes its power of counteracting ſuch an impetuous torrent of freſh water, the height of the inundation gradually diminiſhes as it approaches the ſea, and totally vaniſhes at the point of confluence; which is owing to the facility with which the waters of the inundation ſpread over the level of the ocean. But, when the force of the wind conſpires with that of the tide, the waters are retarded in ſuch a manner as ſometimes to raiſe the inundation two feet above the ordinary level; which has been known to occaſion the loſs of whole crops of rice. In 1763, a melancholy accident happened at Luckipour, when a ſtrong gale of wind, conſpiring at a high ſpring tide, at a ſeaſon when the periodical flood was within a foot and a half of its higheſt pitch, the waters are ſaid to have riſen ſix feet above their ordinary level. Thus the inhabitants of a particular diſtrict were ſwept away with their houſes and cattle; and, to aggravate the diſtreſs, it happened in a part of the country where it was ſcarcely poſſible to find a tree for a drowning man to eſcape to. For ſome days before the middle of Auguſt the inundation is at a ſtand, and then begins to abate by a ceſſation of rains in the mountains, though great quantities ſtill continue to fall on the low country. The inundation does not, however, in its decreaſe, always keep pace with that of the river, by reaſon of the height of the banks; but, after the beginning of October, when the rain has nearly ceaſed, the remainder goes off quickly by evaporation, leaving the ground exceedingly fertilized, and equally rich with the banks of the Nile.

From the time that the monſoon changes in October to the middle of March, the rivers are in a ſtate of tranquillity; when the north-weſt winds begin, and may be expected once in three or four days till the commencement of the rainy ſeaſon. Theſe are the moſt formidable enemies of the prodigious inland navigation carried on by the large rivers. They are ſudden and violent ſqualls, attended with rain; and, though their duration is commonly but ſhort, they ſometimes produce fatal effects, whole fleets of trading boats having been ſwept away by them almoſt inſtantaneouſly. They are more frequent in the eaſtern than the weſtern part of Bengal, and happen oftener towards the cloſe of the day than at any other time; but, as they are indicated ſome time before they approach by the riſing and ſingular appearance of the clouds, the traveller has commonly time enough to ſeek for a place of ſhelter. It is in the great rivers alone that they are ſo formidable, and that about the end of May or beginning of June, when the rivers are much increaſed in width. The boats uſed in the inland navigation are called *budgeroes*, and are formed ſomewhat like a pleaſure-barge. Some have cabins fourteen feet broad and proportionally long, drawing from four to five feet water.

Bengal produces the vegetables and animals common to other countries in the torrid zone. Its great produce of grain is rice, which is commonly exported from thence into other countries. By various accidents, however, the crop of rice ſometimes fails, and a famine is produced; and of this there have been many inſtances in Bengal as well as in other parts of Hindoſtan. One of the moſt deplorable of this kind happened in 1770. The nabob and ſeveral great men of the country diſtributed rice gratis to the poor until their ſtocks began to fail, when thoſe donations were of conſequence withdrawn. Vaſt multitudes then came down to Calcutta, in hopes of meeting with relief at that place. The granaries of the company, however, being quite empty, none could be afforded; ſo that, when the famine had prevailed about a fortnight, many thouſands languiſhed in the ſtreets and fields; whoſe bodies, mangled by the dogs and vultures, corrupting the air, ſeemed to threaten a plague as the conſequence of the famine. An hundred people were daily employed on the company's account, with doolys, ſledges, and bearers, to throw them into the river. At this time the fiſh could not be eaten, the river being ſo full of carcaſes; and many of thoſe who ventured to feed upon them died ſuddenly. Hogs, ducks, and geeſe, alſo fed moſtly on carnage; ſo that the only meat that could be procured was mutton; and this, from the dryneſs of the ſeaſon, was uncommonly ſmall; and ſcarcely eatable.

In Auguſt following a moſt alarming phenomenon appeared, of a large black cloud at a diſtance in the air, which ſometimes obſcured the ſun, and ſeemed to extend a great way over and about Calcutta. The hotter the day proved, the lower this cloud ſeemed to deſcend, and for three days it occaſioned great ſpeculation. The bramins pretended, that this phenomenon, which was a cloud of inſects, ſhould make its appearance three times; and, if ever they deſcended to the earth, the country would be deſtroyed by ſome untimely misfortune. They ſaid, that about 150 years before there had been ſuch another bad time, when the earth was parched for want of water; and this cloud of inſects made its appearance, though it came much lower the ſecond time than it had done before. On the third day, the weather being very hot and cloudy, they deſcended ſo low that they could be plainly ſeen. They ſeemed to be about the ſize of a dragon-fly, with a long red body, large head and eyes, keeping cloſe together like a ſwarm of bees, and, to appearance, flying quite on a line. None, however, were caught, as the people were ſo much frightened by the prognoſtications of the bramins. Whilſt it rained they continued in one poſition for near a quarter of an hour; then they roſe five or ſix feet at once, and in a little time deſcended as much, until a ſtrong north-weſt wind blew for two days ſucceſſively. During its continuance they aſcended and deſcended, but more precipitately than before; and next morning the air was quite clear. For ſome days before the cloud made its appearance, the toads, frogs, and inſects, which during the rains make a continual noiſe through the night, diſappeared, and were neither heard nor ſeen, except in the river.

This dreadful famine was occaſioned by a preternatural drought. In this country they have two harveſts, one in April, called the *little harveſt*, which conſiſts of the ſmaller grain; the ſecond, called the *grand harveſt*, is only of rice. But by a drought which happened in 1769 the great harveſt of that year failed, as did alſo the little one of 1770, which produced the dreadful conſequences above-mentioned.

Bengal is the richeſt and moſt populous province in the empire of Hindoſtan. Beſides its own conſumption, which is very conſiderable, its exports are immenſe. One part of its merchandiſe is carried into the inland country. Thibet takes off a quantity of its cottons, beſides ſome iron and cloths of European manufacture. The inhabitants of thoſe mountains fetch them from Patan themſelves, and give muſk and rhubarb in exchange. But the trade of Thibet is nothing in compariſon of that which Bengal carries on with Agra, Delhi, and the provinces adjacent to thoſe ſuperb capitals, in ſalt, ſugar, opium, ſilk, ſilk-ſtuffs, calicoes, and an infinite quantity of cottons, and particularly muſlins. The maritime trade, managed by the natives of the country, may be divided into two branches, of which Catek is in poſſeſſion of the greater part. Catek is a diſtrict of ſome extent, a little below the moſt weſtern mouth of the Ganges. Balaſore, ſituated upon a navigable river, ſerves it for a port. The navigation to the Maldives, which the Engliſh and French have been obliged to abandon on account of the climate, is carried on entirely from this road. Here they load their veſſels with rice, coarſe cottons, and ſome ſilk ſtuffs, for theſe iſlands; and receive cowries in exchange, which are uſed for money in Bengal, and ſold to the Europeans.

The inhabitants of Catek, and ſome other people of the Lower Ganges, maintain a conſiderable correſpondence with the country of Aſham. This kingdom, which is thought to have formerly made a part of Bengal, and is only divided from it by a river that falls into the Ganges, deſerves to be better known, if what is aſſerted be true, that gun-powder has been diſcovered there, and that it was communicated from Aſham to Pegu, and from Pegu to China. Its gold, ſilver, iron, and lead, mines, would have added to its fame, if they had been properly worked. In the midſt of theſe riches, which were of very little ſervice to this kingdom, ſalt was an article of which the inhabitants were ſo much in want, that they were reduced to the expedient of procuring it from a decoction of certain plants. But in a ſhort time ſome bramins of Bengal carried their ſuperſtitions to Aſham, where the people were guided ſolely by the dictates of natural religion. The prieſts perſuaded them, that it would be more agreeable to Brama if they ſubſtituted the poor and wholeſome ſalt of the ſea to that which they uſed. The ſovereign conſented,

ſented, on condition that the excluſive trade ſhould be in his hands; that it ſhould only be brought by the people of Bengal; and that the boats laden with it ſhould ſtop at the frontiers of his dominions. Thus have all theſe falſe religions been introduced by the influence and for the advantage of the prieſts who teach, and of the kings who admit, them. Since this arrangement has taken place, forty veſſels from 500 to 600 tons burden each are annually ſent from the Ganges to Aſham laden with ſalt, which yields 200 per cent. profit. They receive in payment a ſmall quantity of gold and ſilver, ivory, muſk, eagle-wood, gum-lac, and a large quantity of ſilk.

A ſtill more conſiderable branch of commerce, which the Europeans at Bengal carry on with the reſt of India, is that of opium. Patna, ſituated on the Upper Ganges, is the moſt celebrated place in the world for the cultivation of opium. The fields are covered with it. Beſides what is carried into the inland parts, there are annually 3000 or 4000 cheſts exported, each weighing 300 pounds. It ſells upon the ſpot at the rate of from 24l. to 25l. a cheſt. This opium is not purified like that of Syria and Perſia, which we make uſe of in Europe; it is only a paſte that has undergone no preparation, and has not a tenth part of the virtue of purified opium. The rich merchandiſe carried to Arabia is paid for entirely in gold and ſilver. Though this trade paſſes through the hands of the Europeans, and is carried on under their protection, it is not entirely on their own account. The Moguls, indeed, who are uſually ſatisfied with the places they hold under the government, have ſeldom any concern in theſe expeditions; but the Armenians, who, ſince the revolutions in Perſia, are ſettled upon the banks of the Ganges, to which they formerly only made voyages, readily throw their capitals into this trade. The Indians employ ſtill larger ſums in it. The impoſſibility of enjoying their fortunes under an oppreſſive government does not deter the natives of this country from labouring inceſſantly to encreaſe them. As they would run too great a riſk by engaging openly in trade, they are obliged to have recourſe to clandeſtine methods. As ſoon as an European arrives, the Gentoos, who know mankind better than is commonly ſuppoſed, ſtudy his character; and, if they find him frugal, active, and well-informed, offer to act as his brokers and caſhiers, and lend or procure him money upon bottomry, or at intereſt. This intereſt, which is uſually nine per cent. at leaſt, is higher when he is under a neceſſity of borrowing of the Cheyks. Theſe Cheyks are a powerful family of Indians, who have, time immemorial, inhabited the banks of the Ganges. Their riches have long ago procured for them the management of the bank belonging to the court, the farming of the public revenue, and the direction of the money, which they coin afreſh every year in order to receive annually the benefit ariſing from the mint. By uniting ſo many advantages, they are enabled to lend the government 2,625,000l. or even 4,375,000l. at a time. When the government finds it impoſſible to refund the money, they are allowed to indemnify themſelves by oppreſſing the people.

The Portugueſe, who firſt frequented this rich country, had the wiſdom to eſtabliſh themſelves at Chatigan, a port ſituated upon the frontier of Arracan, not far from the moſt eaſtern part of the Ganges. The Dutch, who, without incurring the reſentment of an enemy at that time ſo formidable, and deſirous of ſharing in their good fortune, were engaged in ſearching for a port which, without obſtructing their plan, would expoſe them the leaſt to hoſtilities. In 1603, their attention was directed to Balaſore; and all the companies, rather through imitation than in conſequence of any well-concerted ſcheme, followed their example. Experience taught them the propriety of fixing as near as poſſible to the markets from whence they had their merchandiſe; and they ſailed up that branch of the Ganges which, ſeparating itſelf from the main river at Mourcha above Caſſimbuzar, falls into the ſea near Balaſore under the name of the river *Hughly*. The government of the country permitted them to erect warehouſes wherever there was plenty of manufactures, and to fortify themſelves upon this river. The Portugueſe had formerly made Bandel, which is eighty leagues from the mouth of the Ganges, and a quarter of a league above the Hughly, the principal ſeat of their commerce. Their flag is ſtill diſplayed; and there are a few unhappy wretches remaining there, who have forgotten their country after having been forgotten by it. This factory has no other employment than that of ſupplying the Moors and the Europeans with miſtreſſes.

The exports from Bengal to Europe conſiſt of muſk, gum-lac, nicaragua-wood, pepper, cowries, and ſome other articles of leſs importance brought thither from other places. Thoſe that are the immediate produce of the country are borax, ſalt-petre, ſilk-ſtuffs, muſlins, callicoes, and cottons. The ſum total of the purchaſes made in Bengal by the European nations, amounted a few years ago to no more than 870,000l. One third of this ſum was paid in iron, lead, copper, woollens, and Dutch ſpices: the remainder was diſcharged in money. Since the Engliſh have made themſelves maſters of this rich country, its exports have been increaſed, and its imports diminiſhed, becauſe the conquerors have carried away a greater quantity of merchandiſe, and pay for it out of the revenues they receive from the country. There is reaſon to believe, that this revolution in trade of Bengal has not arrived at its criſis, and that ſooner or later it will be attended with more important conſequences and effects. The ſugar-cane has been lately cultivated in Bengal, and bids fair to become a valuable ſource of commerce to this country. For the hiſtory of Bengal, and its conqueſts by the Britiſh, ſee the article HINDOSTAN.

BENGAL, ſ. [from *Bengal* in the Eaſt Indies.] A ſort of thin ſlight ſtuff, made of ſilk and hair, for women's apparel.

BENGEVA'I, a town of Perſia, in the province of Segeſtan: ſeventy-five miles ſouth of Zareng.

BENGHUR', a town of Perſia, in the province of Cabul: thirty-two miles north of Cabul.

BENG'LO, a mountain of Scotland, in the county of Perth, the higheſt point of which is 3724 feet above the level of the ſea: five miles north-eaſt of Blair Athol.

BEN'GORE HEAD, a cape of Ireland, on the north coaſt of the county of Antrim: ten miles north-eaſt Coleraine. Lat. 55. 15. N. lon. 6. 19. W. Greenwich.

BENGUE'LA, a country of Africa, bounded on the north by Angola, on the eaſt by the country of Jaga, Caſſangi, on the ſouth by Mataman, and on the weſt by the ſea. Cape Negro forms its ſouthern boundaries, from whence mountains run northward, in which are contained the ſprings of many rivers. The productions are nearly ſimilar to thoſe of Angola and Congo, one of the principal is Manioc; divers ſorts of palms are found; dates grow in great abundance; the vines naturally form alleys and harbours; caſſia and tamarinds alſo flouriſh: and, from the humidity of the ſoil, they have two fruit-ſeaſons in the year. The air of the country is exceedingly unwholeſome, and is ſaid even to affect its produce, and taint the waters of the rivers. Few Europeans care to venture on land, ſo that we know but little of the ſtate of the country. Moſt parts of the kingdom were once populous, but have ſuffered much by frequent wars; the chief towns are Old Benguela, St. Philip, or New Benguela, and Man-ki-kondo, and Kaſchil. Lat. 13. 30. to 15. 30. S. lon. 30. to 35. E. Ferro.

BENGUELA (Old), a town of Africa, in the province ſo called, ſituated on the ſouth ſide of a bay, to which it gives name, near the Atlantic Ocean. Lat. 11. 5. S. lon. 30. E. Ferro.

BENGUELA (New), or ST. PHILIP, a town in the country of Benguela, on the north ſide of a large bay, called by the Portugueſe, *Bahia-das-vaccas*, where the Portugueſe have a ſettlement, and a governor reſides, with a ſmall garriſon.

BENGUI'SI, or BENGASI, a ſeaport town of Africa, in the country of Tripoli, on the Mediterranean. Lat. 32. 33. N. lon. 37. 50. E. Ferro.

BEN-HA'DAD, [בן־הדד Heb. i. e. the ſon of noiſe.] A king of Syria.

BENHIN'NOM, a valley in the ſuburbs, and to the eaſt of Jeruſalem, either a part of or conjoined with the valley of Kidron; infamous for ſacrificing children, or paſſing them through the fire. The place in the valley where the idol ſtood to which the ſacrifice was made, was called *Tophet*, (2 Kings xxiii. 10. Jer. vii. 31, 32. and xix. 2.) from beating drums or tabours to drown the cries or ſhrieks of the children: called alſo *Geenon* or the *Valley of Ennon:* whence ſome derive *Gehenna*, the place of future puniſhment.

BEN'JAMIN, [בנימין of בן a ſon, and ימין Heb. the right-hand, i. e. the ſon of the right hand.] The youngeſt of Jacob's twelve ſons.

Benjamin, *ſ.* A gum. See Benzoin.

Benjamin-tree, *ſ.* in botany. See Laurus.

BE'NI-AS'SER, a town of Egypt: two miles N. of Aſna.

BE'NI-BA'SHID, or Beni Arax, a town of Africa, in the country of Algiers.

BENICAR'LOS, a town of Spain, in the country of Valencia, celebrated for the wine which is made in its neighbourhood: three miles north of Penniſcola.

BENIFA'JO, a town of Spain, in the province of Valencia: five leagues from Valencia.

To BENI'GHT, *v. a.* [from *night.*] To involve in darkneſs; to darken; to ſhrowd with the ſhades of night:

He that has light within his own clear breaſt
May ſit i' th' centre, and enjoy bright day;
But he that hides a dark ſoul, and foul thoughts,
Benighted walks under the mid-day ſun;
Himſelf is his own dungeon. *Milton.*

To ſurpriſe with the coming on of night:

Here ſome *benighted* angel in his way,
Might eaſe his wings; and, ſeeing heav'n appear
In its beſt work of mercy, think it there. *Dryden.*

To debar from intellectual light; to cloud with ignorance:

But what ſo long in vain, and yet unknown
By poor mankind's *benighted* wit, is ſought,
Shall in this age to Britain firſt be ſhewn. *Dryden.*

BENI'GN, *adj.* [*benignus*, Lat. It is pronounced without the *g*, as if written *benine*; but the *g* is preſerved in *benignity.*] Kind; generous; liberal; actually good:

This turn hath made amends! Thou haſt fulfill'd
Thy words, Creator bounteous and *benign!*
Giver of all things fair. *Milton.*

Wholſeſome; not malignant.—Theſe ſalts are of a *benign* mild nature, in healthy perſons; but, in others, retain their original qualities, which they diſcover in cachexies. *Arbuthnot.*

Benign Disease, is when all the uſual ſymptoms appear in the ſmall-pox, or any acute diſeaſe, favourably, and without any irregularities, or unexpected changes.

BENIG'NITY, *ſ.* [from *benign.*] Graciouſneſs; goodneſs.—It is true, that his mercy will forgive offenders, or his *benignity* co-operate to their converſion. *Brown.*—Actual kindneſs.—The king was deſirous to eſtabliſh peace rather by *benignity* than blood. *Hayward*—Salubrity; wholeſome quality; friendlineſs to vital nature.—Bones receive a quicker agglutination in ſanguine than in choleric bodies, by reaſon of the *benignity* of the ſerum, which ſendeth out better matter for a callus. *Wiſeman.*

BENIGN'LY, *adv.* Favourably; kindly; graciouſly:

Oh, truly good, and truly great!
For glorious as he roſe *benignly* ſo he ſet. *Prior.*

BE'NI-HA'SAN, a town of Egypt, on the eaſt ſide of the Nile, remarkable for its grottos, dug in the mountains, which formerly were uſed for temples: ſix miles north of Aſhmunien.

BE'NI-JE'HIE, a town of Egypt: twelve miles ſouth of Aſhmunien.

Beni-jehie, a town of Egypt: 8 miles eaſt of Enſene.

BENILET', a town of Aſia, in the Arabian Irak: 145 miles north-weſt of Baſſora.

BE'NI-MA'RAN, a town of Egypt: nine miles ſouth of Aſhmunien.

BE'NI-MEZ'ZAB, a diſtrict of Africa, in the country of Algiers, ſouth of Mount Atlas. Lat. 32. to 33. N. lon. 20. to 21. E. Ferro.

BE'NI-MI'SUR, a town of Egypt: three miles ſouth of Abu-Girge.

BE'NI MOHA'MED EL KI'SUR, a town of Egypt: nine miles ſouth of Abu Girge.

BE'NIN, a country or kingdom of Africa, extending a courſe of ſixty leagues on the borders of the Atlantic; how far it extends inland is not known; it is watered by a conſiderable number of ſtreams, ſome of which are conſiderable rivers. The ſoil near the ſea coaſt is low and marſhy, and the climate unhealthy; farther from the ſea the land is more elevated, and the air more pure. In ſome diſtricts ſprings are ſo rare, that officers are appointed to ſupply travellers with freſh water, who elſe muſt die with thirſt; but this commodity is not given, he who drinks muſt pay. In the rivers are a great number of crocodiles, ſea-horſes, and a ſpecies of torpedo, with many kinds of excellent fiſh. Among the animals are elephants, tygers, leopards, ſtags, wild boars, apes, civet cats, mountain cats, horſes, hares, and hairy ſheep; there are alſo a vaſt number of reptiles, ſerpents, and others. Of the birds, the principal are paroquets, pigeons, partridges, ſtorks, and oſtriches. The ſoil in general is fertile; oranges and lemons grow on the ſides of the roads; the pepper which grows here is ſmaller than that of the Indies; cotton grows on a tree which abounds every where; the water is moſt excellent. The negroes of Benin are ſaid to be kind and honeſt, yielding to mildneſs, but with great courage reſiſting injuſtice; attached to their ancient cuſtoms, they are complaiſant to ſtrangers, generous, ſenſible, yet reſerved and diffident: the children of both ſexes are circumciſed, and go naked till they are twelve years old. Polygamy is common, and the king is ſaid to have 600 wives. Jealous of each other, they offer their wives to an European. The king exerciſes an abſolute authority over his ſubjects; three great officers, diſtinguiſhed by a ſtring of coral, continually attend upon him to conſult, inſtruct, or decide, in his name. The king names his ſucceſſor among his ſons, who is not publicly announced till after the death of his father. A regency is appointed, which then takes the adminiſtration of affairs, while the new king elect is removed ſome miles from the capital, there to learn the art of government; the firſt fruit of which, on his return, is putting to death the reſt of his brothers. He rarely ſhews himſelf, and always with pomp amidſt his wives and concubines: his revenues are conſiderable, and he can bring an army of 100,000 men into the field. As to their religion, they ſeem to have an idea of, and a reverence for, a Supreme Being, but this is mixed with a number of idolatrous and abſurd ceremonies. The dreſs of the inhabitants is neat and ornamental; the rich among them wear firſt white callico or cotton petticoats, about a yard in length, and half a yard in breadth, by way of drawers. This they cover with another fine piece of callico of ſixteen or twenty yards, which they very artfully and becomingly plait in the middle, throwing over it a ſcarf, a yard long, and a foot wide, the ends of which are adorned with a handſome lace or fringe. As to the upper part of the body, it is moſtly naked. Such is the dreſs in which they appear in public; at home their clothing is more ſimple and leſs expenſive, conſiſting only of a coarſe paan for drawers, covered with a large painted cloth, worn in the manner of a cloak, of home manufacture.

Benin, a city of Africa, and capital of Benin the kingdom above deſcribed. The ſtreets are long and broad, where are continual markets for kine, cotton, elephants teeth, and European wares; notwithſtanding which they are kept very clean. The houſes are large and handſome, with clay walls, and covered with reed-ſtraw, or leaves. The town is pleaſantly ſituated on the river Formoſa. The king's court is ſituated in a large plain. The inhabitants are all natives, foreigners not being permitted to live in the city. The rich men continually attend the court, not troubling themſelves with trade, agriculture, or any thing elſe, but leave all to their numerous wives, who go to the circumjacent villages, and trade in all ſorts of merchandiſes, or otherwiſe ſerve for daily wages, and are obliged to bring the greateſt part of their gains to their huſbands. The male ſlaves here are foreigners; for the inhabitants cannot be ſold for ſlaves, only they bear the name of the king's ſlaves. Lat. 7. N. lon. 20 30. E. Ferro.

BE'NI-SAM'TI, a town of Egypt: two miles ſouth of Abu Girge.

BE'NI-SHE'KIR, a town of Egypt: ſix miles north-weſt of Manfalout.

BE'NISH-DAYS, among the Egyptians, a term for three days of the week, which are days of leſs ceremony in religion than the other four, and have their name from the *beniſh*, a garment of common uſe, not of ceremony. In Cairo, on Sundays, Tueſdays, and Thurſdays, they go to the baſhaw's divan; and theſe are the general days of buſineſs. Fridays they ſtay at home, and go to their moſques at noon; but, though this is their day of devotion, they never abſtain from buſineſs. The three other days of the week are the beniſh-days, in which they throw off all buſineſs and ceremony, and go to their ſummer-houſes in the country.

BE'NISON, *ſ.* [*benir*, to bleſs *beniſon*, Fr.] Bleſſing; benediction: not now uſed unleſs ludicrouſly:

Unmuffle, ye fair ſtars, and thou, fair moon,
That wont'ſt to love the traveller's *beniſon*. *Milton.*

BENISUEF', a town of Egypt, in the Nile, the capital of a diſtrict, and reſidence of a bey: it is large, with manufactures of ſtuff made of woollen and linen mixed; the houſes are built with bricks baked in the ſun: fifty miles ſouth of Cairo. Lat. 29. 14. N. lon. 48. 44. E. Ferro.

BENLAW'ERS, a mountain of Scotland, in the county of Perth, 3588 feet above the level of the ſea: eleven miles ſouth of George Town.

BEN-LEVA'GH, a mountain of Ireland, in the county of Galway, four miles ſouth-weſt of Roſs.

BEN-LO'MOND, a mountain of Scotland, in the county of Stirling, 3240 feet above the level of the ſea: twenty-ſix miles weſt of Stirling.

BENNAVEN'TA, or BENNAVENNA, anciently a town of Britain, on the Auſona Major, or the Antona of Tacitus: ſuppoſed to be Northampton on the Nen; but Camden ſays it is Wedon, a village ſix miles to the weſt of Northampton.

BEN'NECUM, a town of Guelderland: two miles north of Wageningen.

BEN'NECKSTEIN, a town of Germany, in the circle of Upper Saxony, and county of Klettenberg: twenty-two miles ſouth-ſouth-weſt of Halberſtadt.

BEN'NET (Henry), earl of Arlington, deſcended from an ancient family in Middleſex. In the beginning of the civil war, he was appointed under-ſecretary to lord Digby, ſecretary of ſtate; but afterwards entered as a volunteer for the royal cauſe, and did great ſervice at Andover in Hampſhire, where he received ſeveral wounds. When the wars were ended, he left not the king when ſucceſs did, but attended his intereſt in foreign parts. He was made ſecretary to the duke of York; received the honour of knighthood from Charles II. at Bruges, in 1658: and was ſent envoy to the court of Spain. Upon his return to England, he was made keeper of the privy purſe, and principal ſecretary of ſtate. In 1670 he was one of the council diſtinguiſhed by the title of *cabal*, and one of thoſe who adviſed ſhutting up the exchequer. In 1672 he was made earl of Arlington and viſcount Thetford, and ſoon after knight of the garter. In 1673, he was appointed one of the three plenipotentiaries from the court of Great Britain to Cologne, to mediate a peace between the emperor and the king of France. The houſe of commons, in 1673, drew up articles of impeachment againſt him. Yet in 1674 he was made chamberlain of his majeſty's houſehold, with this public reaſon, that it was in recompence of his long and faithful ſervices. He held his lord chamberlain's place to the day of his death, in 1685. His much-eſteemed Letters to Sir William Temple were publiſhed after his death.

BENNET (Chriſtopher), an eminent phyſician in the 16th century, was the ſon of John Bennet, of Raynton, in Somerſetſhire. He was educated at Lincoln college, Oxford; and wrote a treatiſe on conſumptions, intitled, Theatri Tabidorum Veſtibulum, &c. alſo Exercitationes Diagnoſticæ, cum Hiſtoriis demonſtrativis, quibus Alimentorum et Sanguinis vitia deteguntur in pleribiſque morbis, &c.

BENNET (Dr. Thomas), an eminent divine, born at Saliſbury the 7th of May 1673, and educated at St. John's college, Cambridge. In 1700, he was made rector of St. James's, in Colcheſter; afterwards lecturer of St. Olave's, Southwark, and morning-preacher at St. Lawrence, Jewry; and at laſt was preſented to the vicarage of St. Giles's, Cripplegate, worth 500 a-year. He wrote, 1. An Anſwer to the Diſſenter's Plea for Separation. 2. A Confutation of Popery. 3. Diſcourſe of Schiſm. 4. An Anſwer to a book intitled Thomas againſt Bennet. 5. A Confutation of Quakeriſm. 6. A brief Hiſtory of the joint Uſe of pre-conceived Forms of Prayer. 7. An Anſwer to Dr. Clarke's Scripture-doctrine of the Trinity. 8. A Paraphraſe, with Annotations, on the Book of Common Prayer. 7. An Hebrew Grammar; and other pieces. He died October 9th, 1728, in the 56th year of his age.

BENNET, Herb. See GEUM.

BENNEVANA'GH, mountains of Ireland, in the county of Londonderry, eight miles weſt of Coleraine.

BEN'NINGTON, a town of the United States of America, and capital of Vermont, in the county called alſo *Bennington*, ſituated near the Green Mountain, on the borders of the ſtate of New York: eighteen miles from the conflux of the Mohock and Hudſon's river, 118 weſt-north-weſt of Boſton, and 135 north of New York. A famous battle was fought near this town, during the American war in 1777 between brigadier-general Starke, at the head of eight hundred militia, and a detachment of general Burgoyne's army, commanded by colonel Baum: in this action, and the one ſucceeding it, in the ſame place, and on the ſame day, between a reinforcement of the Britiſh, under colonel Bregmen, and general Starke, who was reinforced by colonel Warner, with a continental regiment, were taken four braſs field-pieces, and other military ſtores, and ſeven hundred priſoners. The overthrow of theſe detachments was the firſt link in the grand chain of cauſes which finally proved the ruin of Burgoyne's army. This is one of the oldeſt towns in the ſtate, being firſt ſettled about the year 1764.

BENNISCH', a town of Sileſia, in the principality of Jagerndorf.

BENOI'T (Renatus), a famous doctor of the Sorbonne, and curate of Euſtathius at Paris in the 16th century. He was a ſecret favourer of the Proteſtant religion; and, that his countrymen might be able to read the Bible in their own tongue, he publiſhed at Paris the French tranſlation, which has been made by the reformed miniſters at Geneva. He died in 1608.

BENON', a town of France, in the department of the Lower Charente, and chief place of a canton, in the diſtrict of Rochfort: five leagues and a half north-north-eaſt of Rochfort, and four and a half eaſt of Rochelle.

BENON, a town of Arabia: 130 miles S. E. El Catif.

BENRAD', a town in Germany, in the circle of Weſtphalia, and duchy of Berg: ſeven miles ſouth-ſouth-eaſt of Duſſeldorp.

BENS'BERG, a town of Germany, in the circle of

Weſtphalia, and duchy of Berg, where the elector palatine has a chateau : ſeven miles eaſt of Mulheim.

BENSERA'DE (Iſaac de), an ingenious French poet of the 17th century, born at Lyons. He was known at at court by his verſes and his wit, and had the good fortune to pleaſe the cardinals de Richelieu and Mazarin. After the death of Richelieu, he got into favour with the duke de Breze, whom he accompanied in moſt of his expeditions; and when this nobleman died, he returned to court, where his poetry became highly eſteemed. He wrote, 1. A Paraphraſe upon Job. 2. Verſes for interludes. 3. Rondeaux upon Ovid. 4. Several Tragedies. A ſonnet which he ſent to a young lady with his Paraphraſe on Job being put in competition with the Urania of Voiture, cauſed him to be much ſpoken of; for what an honour was it to be head of a party againſt this celebrated author? Thoſe who gave the preference to Benſerade's performance were ſtyled the *Jobiſts*, and their antagoniſts the *Uraniſts*; and the diſpute long divided the whole court and the wits. M. l'Abbé Olivet ſays, that Benſerade towards the latter end of his life, withdrew from court, and made Gentilly the place of his retirement. When he was a youth, he ſays it was the cuſtom to viſit the remains of the ornaments with which Benſerade had embelliſhed his houſe and gardens, where every thing ſavoured of his poetical genius. The bark of the trees were full of inſcriptions: and, amongſt others, the firſt which preſented itſelf was as follows:

Adieu fortune, honneurs adieu, vous et les votres,
Je viens ici vous oublier;
Adieu toi-meme amour, bien plus que les autres
Difficile à congedier.

Fortune and honours, all adieu,
And whatſoe'er belongs to you.
I to this retirement run,
All your vanities to ſhun.
Thou too adieu, O powerful love;
From thee 'tis hardeſt to remove.

Benſerade ſuffered ſo much from the ſtone, that, notwithſtanding his great age, he reſolved to ſubmit to the operation of cutting. But his conſtancy was not put to this laſt proof; for a ſurgeon letting him blood, by way of precaution, pricked an artery, and, inſtead of endeavouring to ſtop the effuſion of blood, ran away. There was but juſt time enough to call F. Commire, his friend and confeſſor, who came ſoon enough to ſee him die. This happened the 19th of October 1691, in the 82d year of his age.

BENSHAU'SEN, a town of Germany, in the circle of Franconia, and county of Henneburg: ſeven miles ſouth-eaſt of Smalkalden.

BEN'SHEIM, a town of Germany, in the circle of the Upper Rhine, and archbiſhopric of Mayence: twenty miles north of Heidelberg, and ten eaſt-north-eaſt of Worms.

BEN'SON (George), a learned diſſenting miniſter, born at Great Salkeld, in Cumberland, in 1699. His love of learning was ſo ſucceſsful, that, at eleven years of age, he was able to read the Greek Teſtament. He afterwards ſtudied at Dr. Dixon's academy at Whitehaven, from whence he removed to the univerſity of Glaſgow. In 1721 he was elected paſtor of a congregation of diſſenters at Abingdon in Berkſhire; and in 1740, was choſen by the congregation of Crutched Friars, colleague to the learned and judicious Dr. Lardner. The light which Mr. Locke had thrown on the obſcureſt parts of St. Paul's epiſtles, by making him his own expoſitor, encouraged and determined Mr. Benſon to attempt to illuſtrate the remaining epiſtles in the ſame manner. In 1731, he publiſhed A Paraphraſe and Notes on the Epiſtle to Philemon, as a ſpecimen. This was well received, and the author was encouraged to proceed in his deſign. Mr. Benſon proceeded with great diligence to publiſh Paraphraſes and Notes on the two Epiſtles of the Theſſalonians, the firſt and ſecond to Timothy, and the Epiſtle to Titus; adding, Diſſertations on ſeveral important Subjects, particularly on Inſpiration. In 1735, he publiſhed Hiſtory of the firſt Planting of Chriſtianity, taken from the Acts of the Apoſtles, 2 vols. 4to. He alſo wrote, The reaſonableneſs of the Chriſtian Religion; The Hiſtory of the Life of Jeſus Chriſt; A Paraphraſe and Notes on the Seven Catholic Epiſtles; and ſeveral other works which procured him great reputation. One of the univerſities in Scotland ſent him a diploma with a doctor's degree; and he purſued the ſame ſtudies with great application till the time of his death, which happened in 1762, in the 64th year of his age.

BENT, *ſ.* [from the verb *To bend.*] The ſtate of being bent; a ſtate of flexure; curvity.—There are divers ſubtle inquiries concerning the ſtrength required to the bendings of bows; the force they have in the diſcharge, according to the ſeveral *bents*; and the ſtrength required to be in the ſtring of them. *Wilkins.*—Declivity:

A mountain ſtood,
Threat'ning from high, and overlook'd the wood;
Beneath the low'ring brow, and on a *bent*,
The temple ſtood of Mars armipotent. *Dryden.*

Utmoſt power, as of a bent bow:

Then let thy love be younger than thyſelf,
Or thy affection cannot hold the *bent*. *Shakeſpeare.*

Application of the mind; ſtrain of the mental powers.—The underſtanding ſhould be brought to the knotty parts of knowledge, that try the ſtrength of thought, and a full *bent* of the mind, by inſenſible degrees. *Locke.*—Inclination; diſpoſition towards ſomething:

The golden age was firſt; when man, yet new,
No rule but uncorrupted reaſon knew;
And, with a native *bent*, did good purſue. *Dryden.*

Determination; fixed purpoſe.—Their unbelief we may not impute into inſufficiency in the mean which is uſed, but to the wilful *bent* of their obſtinate hearts againſt it. *Hooker.*—Turn of the temper, or diſpoſition; ſhape, or faſhion, ſuperinduced by art:

Then thy ſtraight rule ſet virtue in my ſight,
The crooked line reforming by the right;
My reaſon took the *bent* of thy command,
Was form'd and poliſh'd by thy ſkilful hand. *Dryden.*

Tendency; flexion; particular direction.—The exerciſing the underſtanding in the ſeveral ways of reaſoning, teacheth the mind ſuppleneſs, to apply itſelf more dextrouſly to *bents* and turns of the matter, in all its reſearches. *Locke.*—A ſtalk of graſs called *bent-graſs*.—June is drawn in a mantle of dark graſs-green, upon his head a garland of *bents*, king-cups, and maidenhair. *Peacham.*

BEN'TENDORF JEPLIT'ZA, a town of Hungary: four miles north-eaſt of Roſenberg.

BENT-GRASS, *ſ.* in botany. See AGROSTIS.

BEN'THAM (Thomas), biſhop of Litchfield and Coventry, was born at Shirburn in Yorkſhire in 1513, and educated in Magdalene college, Oxford. He took the degree of bachelor of arts in 1543, and in 1546 was admitted perpetual fellow, and proceeded maſter of arts the year following. He now threw off the maſk of popery, which during the equivocal reign of Henry VIII. he had worn with reluctance. When Mary came to the crown, being deprived of his fellowſhip by her viſitors, he retired to Baſil in Switzerland, where for ſome time he expounded the Scriptures to the Engliſh exiles in that city; but, being ſolicited by ſome Proteſtants in England, he returned to London before the death of the queen, and was appointed ſuperintendant of a private congregation in that city. Immediately on the acceſſion of Elizabeth, Bentham was preferred in the church, and conſecrated biſhop of Litchfield and Coventry. He died at Eccleſhall in Staffordſhire in 1570, aged ſixty-five. He had the character of a pious and zealous reformer, and was particularly celebrated for his knowledge of the Hebrew language. His works are, 1. Expoſition of the Acts of the Apoſtles; manuſcript. 2. A Sermon on Chriſt's Temptation; London

8vo. 3. Epiſtle to M. Parker; manuſcript. 4. The Pſalms, Ezekiel, and Daniel, tranſlated into Engliſh in queen Elizabeth's Bible.

Bentham (Edward), canon of Chriſt-church, Oxford, and king's profeſſor of divinity in that univerſity, was born in the college at Ely, July 23, 1707. His father, Mr. Samuel Bentham, was vicar of Witchford, near that city; who having a numerous family, his ſon Edward, on the recommendation of Dr. Smalridge, dean of Chriſt-church, was ſent in 1717 to the ſchool of that college. Having there received the rudiments of claſſical education, he was in Lent term, 1723, admitted of the univerſity of Oxford, and placed at Corpus Chriſti college under his relation Dr. John Burton. In this ſituation, his ſerious and regular deportment, and his great proficiency in all kinds of academical learning, recommended him to the friendſhip of ſeveral eminent men. Having taken the degree of B. A. he was invited by Dr. Cotes, principal of Magdalen-hall, to be his vice-principal; and was admitted to that ſociety, March 6, 1730. Here he continued only a ſhort time; for, on the 23d of April in the year following, he was elected fellow of Oriel college. In act term, 1732, he proceeded to the degree of M. A. and, about the ſame time, was appointed tutor in the college; in which capacity he diſcharged his duty, in the moſt laborious and conſcientious manner, for more than twenty years. March 26, 1743, Mr. Bentham took the degree of B. D. and April 22, in the ſame year, was collated to the prebend of Hundreton, in the cathedral church of Hereford. July 8, 1749, he proceeded to the degree of D. D. and in April 1754 was promoted to the fifth ſtall in that cathedral. Here he continued the ſame active and uſeful courſe of life for which he had always been diſtinguiſhed. He ſerved the offices of ſub-dean and treaſurer, for himſelf and others, above twelve years. Being appointed by the king to fill the divinity chair, vacant by the death of Dr. Fanſhawe, Dr. Bentham was, with much reluctance, and after having repeatedly declined it, perſuaded, by archbiſhop Secker, to accept of it; and, on the 9th of May, 1763, he was removed to the eighth ſtall in the cathedral. He ſet himſelf immediately to draw out a courſe of lectures for the benefit of young ſtudents in divinity, which he conſtantly read at his houſe at Chriſt-church, *gratis*, three times a week during term-time, till his deceaſe. Dr. Bentham was a very early riſer, and had tranſacted half a day's buſineſs before many others begin their day. Of himſelf he never was heard to ſpeak; and, if his own merits were touched upon in the ſlighteſt manner, he felt a real uneaſineſs. He was conſtantly engaged in writing, or in ſome laborious ſtudy; and it was not till he was abſolutely forbidden by his phyſicians, that he gave over a particular courſe of reading, that had been undertaken by him with a view of making remarks on Mr. Gibbon's Roman Hiſtory. After a few days illneſs, a quiet ſigh put a period to his temporal exiſtence, on the 1ſt of Auguſt, 1776, when he had entered into the 69th year of his age. Dr. Bentham, for the laſt thirty years of his life, ſeldom failed carrying all his family once a year, to meet all his brothers and ſiſters at Ely, amongſt whom the greateſt harmony and affection prevailed.

Bentham (James), prebendary of Ely, and domeſtic chaplain to lord Cadogan, was the brother of the abovementioned Edward. Having received the rudiments of claſſical learning in the grammar-ſchool of Ely, he was admitted of Trinity-college, Cambridge, March 26, 1727, where he proceeded B. A. 1730, and M. A. 1738, and was elected F. A. S. 1767. In the ſame year he was preſented to the vicarage of Wymondham in Norfolk, which he reſigned in the year following for the rectory of Feltwell St. Nicholas, in the ſame county. This he reſigned in 1774 for the rectory of Northwold, which in 1779 he was induced to change for a prebendal ſtall in the church of Ely, though he was far from improving his income by the change. But his attachment to his native place, with which church the family had been connected without any intermiſſion for more than 100 years, ſurmounted every other conſideration. In 1783 he was preſented to the rectory of Bow-brick-hill, by the Rev. Edward Guellaume. From his firſt appointment to an office in the church of Ely, he ſeems to have directed his attention to the ſtudy of church architecture. The hiſtory of the church with which he was connected afforded him full ſcope for the exerciſe of his talents. It abounds with almoſt all the various ſpecimens of church architecture uſed in England to the time of the reformation. Having previouſly examined with great attention every hiſtorical monument and authority, he publiſhed The Hiſtory and Antiquities of the conventual and cathedral Church of Ely, from the foundation of the monaſtery, A. D. 675, to the year 1771, illuſtrated with copper-plates, Cambridge, 1771, 4to. He died Nov. 17, 1794, in the 86th year of his age.

BENT'HEIM, a town of Germany, in the circle of Weſtphalia, and capital of a county, to which it gives name, ſituated on an eminence; it contains one Roman Catholic, and one Proteſtant, church. The caſtle, or palace, is flanked with towers: twenty-ſix miles north-north-weſt of Munſter, twenty-four weſt of Oſnabruck, and forty-four eaſt-north-eaſt of Zutphen. Lat. 52. 21. N. lon. 24. 47. E. Ferro.

Bentheim, a county of Germany, in the circle of Weſtphalia, bounded on the north and weſt by Overiſſel, on the eaſt and ſouth by the biſhopric of Munſter, about forty miles in length, and from three to twelve in breadth; the ſoil is in general fertile, and produces more than is ſufficient for the inhabitants. In the mountains are found quarries of excellent ſtone, and the plains are divided into fertile corn-fields, and beautiful meadows, where they feed great quantities of ſheep and cattle; the foreſts abound with game: the principal commerce conſiſts in thread, wool, linen cloth, honey, cattle, ſtone for building, wood, &c. The principal river is the Vechte, which runs through the county, and is navigable for boats. The principal towns are Bentheim, Schuttorf, Northorn, and Nienhus. The county of Bentheim is rated at 152 florins a month, or ſix horſe and twenty foot; and for each chamber term, at 121 rixdollars and ſixty-ſix kruitzers.

BENT'HOORN, a town of Holland: ſix miles ſouth-ſouth-eaſt of Leyden.

BENTHULUD', a town of Africa, in the kingdom of Fez, at the foot of the Atlas Mountain.

BENTHUY'SEN, a town of Holland: ſix miles ſouth of Leyden.

BENTIVO'GLIO (Guy), born at Ferrara, in 1579. He went to ſtudy at Padua, where he made a conſiderable proficiency in polite literature. Upon his leaving the univerſity, he went to reſide at Rome, where he became univerſally eſteemed. He was ſent nuncio to Flanders, and then to France; in both which employments his behaviour was ſuch as gave great ſatisfaction to Paul V. who made him a cardinal. Bentivoglio was at this time in France, where Louis XIII. congratulated him on his new dignity; and, when he returned to Rome, the king entruſted him with the management of the French affairs at that court. Pope Urban VII. had a high regard for him on account of his fidelity, diſintereſtedneſs, and conſummate knowledge. He was beloved by the people, and eſteemed by the cardinals; and his qualities were ſuch, that in all probability he would have been raiſed to the pontificate on the death of Urban, had he not fallen into a fever, of which he died the 7th of September 1644, aged ſixty-five. He has left ſeveral works; the moſt remarkable of which are, A Hiſtory of the Civil Wars of Flanders, An Account of Flanders, with Letters and Memoirs.

Bentivoglio, a town of Italy, and principality of Bologna: ten miles north of Bologna.

BENT'LEY (Richard), an eminent critic and divine, was the ſon of a mechanic at Wakefield in Yorkſhire, where he was born in 1662, and probably received the firſt part of his education. Being removed to St. John's college, Cambridge, he followed his ſtudies with indefatigable induſtry; and, his inclination leading him ſtrongly to critical learning, the acquirements he had made in that department of ſcience recommended him to Dr. Edward Stillingfleet, who was bred at the ſame college, and in 1685 appointed him private tutor to his ſon. In 1689 he attended his pupil to Wadham college in Oxford, where he was incorporated maſter of arts July 4th that year, having taken that degree ſome time before in his own univerſity. He was then in orders, and his patron (to whom he had been very ſerviceable), being advanced to the ſee of Worceſter in 1692, collated him to a prebend in that church, into which he was inſtalled October 2d of that year, and alſo made him his domeſtic chaplain, in which ſtation he continued till his lordſhip's death. That learned prelate, as well as Dr. William Lloyd, then biſhop of Lichfield, had ſeen proofs of his extraordinary merit, when they concurred in recommending him as a fit perſon to open the lectures upon Mr. Boyle's foundation, in defence of natural and revealed religion. This gave him a fine opportunity of eſtabliſhing his fame. He ſaw it well; and reſolved to puſh it to the utmoſt. Sir Iſaac Newton's Principia had been publiſhed but a few years, and the book was little known and leſs underſtood; Mr. Bentley therefore determined to ſpare no pains in diſplaying to the beſt advantage the profound demonſtrations which that excellent work furniſhed in proof of a Deity; and, that nothing might be wanting which lay in his power to complete his deſign, he applied to the great author, and received from him the ſolution of ſome difficulties, which had not fallen within the plan of his work. This was the hypotheſis of deriving the frame of the world, by mechanic principles, from matter evenly ſpread through the heavens, which is ſo clearly ſtated and computed by that incomparable mathematician and philoſopher, as his manner was, that the reader curious in theſe matters will be glad to peruſe it in four letters from Sir Iſaac Newton to Dr. Bentley, &c. London, 1756, 8vo. Mr. Bentley's diligence in conſulting Sir Iſaac on this occaſion was highly commendable; and, if he had been equally diligent in conſulting the Principia, he would have eſcaped the error of proving the moon not to turn round her own axis, becauſe ſhe always ſhews the ſame face to the earth; a miſtake in theſe ſermons, which laid him open to the raillery of Dr. Keill. Yet, notwithſtanding this error, Mr. Bentley's ſermons at Boyle's lectures became the wonder and admiration of the world, and raiſed the higheſt opinion of the preacher's abilities. Accordingly he ſoon reaped the fruits of his reputation, being appointed keeper of the royal library at St. James's the following year. But he was ſcarcely ſettled in this office, when he fell under the diſpleaſure of the Hon. Mr. Charles Boyle, eldeſt ſon to the earl of Orrery; a young nobleman of the greateſt hopes, who was then in the courſe of his ſtudy at Chriſt-church in Oxford. Mr. Boyle was about to put out a new edition of the "Epiſtles of Phalaris," and for that purpoſe had obtained the uſe of a MS. of the book out of St. James's library. But the librarian demanding it back ſooner than was expected, and before the collation of it was finiſhed, was reſented by Mr. Boyle, and gave riſe to the well-known controverſy betwixt Boyle and Bentley. This was carried on with admirable ſpirit, wit, and learning, in ſeveral writings on both ſides until the year 1699, and gave our author another opportunity of ſurpriſing the world with his genius and knowledge in critical learning: and, Dr. Montague dying the next year, he was preſented by the crown to the maſterſhip of Trinity-college, Cambridge, upon which promotion he reſigned his prebend of Worceſter. He was afterwards collated to the archdeaconry of Ely, June 12, 1707, and beſides this was preſented to a benefice in that iſland. He was alſo appointed chaplain both to king William and queen Anne.

Having thus obtained eaſe, affluence, and honour, he took his doctor's degree in divinity, entered into matrimony, and indulged his inclination in critical purſuits; and, as he gave the fruits of his labours occaſionally to the public, theſe were obſerved ſeverally ſo to abound with erudition and ſagacity, that he grew by degrees up to the character of being the firſt critic of his age. In the mean time he carried on matters with ſo high a hand in the government of his college, that in 1709 a complaint was brought before the biſhop of Ely, as viſitor, againſt him, by ſeveral of the fellows; who, in order to have him removed from the maſterſhip, charged him with embezzling the college money, and other miſdemeanors. In anſwer to this, he preſented his defence to the biſhop, which was publiſhed in 1710, under the title of the Preſent State of Trinity College, 8vo. and thus began a laſting quarrel, which, having the nature of a *bellum inteſtinum*, was carried on, like other civil wars, with the moſt virulent animoſity on each ſide, till, after above twenty years continuance, it ended at laſt in the doctor's favour. Nor was this the only trial which exerciſed his ſpirit, and procured him triumph over his adverſaries. During the courſe of the former diſpute, he had been promoted to the regius profeſſorſhip of divinity; and George I. on a viſit to the univerſity in October 1717, having nominated by mandate, as uſual on ſuch occaſions, ſeveral perſons for a doctor's degree in that faculty; Dr. Bentley, to whom belonged the ceremony called *creation*, made a demand of four guineas from each perſon as a fee due to his office, beſides a broad piece of gold, which had cuſtomarily been received as a preſent, and abſolutely refuſed to create any doctor without the fee. Hence grew a long and warm diſpute, during which the doctor was firſt ſuſpended from his degrees by the univerſity, October 3, 1718, and then degraded on the 17th of that month; but, on a petition to the king for relief from that ſentence, the affair was referred by the council to the court of king's bench, where the proceedings againſt him being reverſed, a mandamus was iſſued on the 7th of February the ſame year, charging the univerſity to reſtore him.

He was happily endued with a natural hardineſs of temper, which enabled him to ride out both theſe ſtorms without any extraordinary diſturbance, ſo that he went on as before in the career of literature; where he never failed to make a conſpicuous figure. The 5th of November, 1715, he preached a ſermon before the univerſity, which was printed with the title of A Sermon upon Popery; and, ſome Remarks being publiſhed upon it, the doctor anſwered in a piece intitled Reflections on the ſcandalous Aſperſions caſt on the Clergy by the Author of the Remarks, &c. This came out in 1717, 8vo. He had the preceding year printed ſome account of an edition which he intended to give of the New Teſtament in Greek; and having revolved the deſign in his mind for the ſpace of four years, in 1721 he iſſued propoſals for printing it by ſubſcription, together with the Latin verſion of St. Jerom, to which a ſpecimen of the whole was annexed. Theſe were attacked warmly by Dr. Conyers Middleton, who had been a fellow of his college, and was from the firſt, and all along continued to be, a principal leader among his antagoniſts there. Some pieces were written upon the occaſion: the reſult of which was, that the deſign was dropped. In 1726 came out, in 4to. his Terence with notes, and a ſchediaſma concerning the metre and accents of that writer. This was reprinted the following year at Amſterdam, with ſome corrections and additions by the author, who alſo annexed thereto a beautiful edition, with notes, of Phædrus's Fables in Latin. The laſt piece which employed the doctor's critical talents was Milton's Paradiſe Loſt, a new edition of which he gave the public in 1732, 4to. with notes and emendations: but, though ſome of thoſe exhibited ſtrong proofs of his maſterly genius, yet in the main here was a great falling off, ſuch as evidently diſcovered that he was now declining apace. Indeed he grew apparently ſenſible of his decay; and, though he continued on this ſide the grave ten years longer, yet he languiſhed the remainder of his days a *miles emeritus*, feeble and inactive, to his death, which happened July 14, 1742, at the age of fourſcore years. He died in his lodge at Trinity-college, Cambridge, and was buried in that chapel, to which he had been a conſiderable benefactor. His literary character is known in all parts of Europe, wherever learning is known. In his private character he was hearty, ſincere and warm in his friendſhip, an affectionately tender huſband, and a good father; he loved hoſpitality and reſpect, maintained the dignity and munificence of the ancient abbots in houſe-keeping at his lodge; and in converſation he tempered the ſeverity of the critic with a peculiar ſtrain of vivacity and pleaſantry. By his wife, who was an excellent woman, and died before him in 1740, he had three children; a ſon called after his own name, and two daughters, Elizabeth and Joanna. His ſon was bred under his own tuition at Trinity-college, where he was choſen a fellow, and ſucceeded his father in the library-keeper's place at St. James's, but reſigned it in 1745. His eldeſt daughter Elizabeth was married about the year 1727, to Sir Humphrey Ridge, eldeſt ſon to a Mr. Ridge, brewer to the navy at Portſmouth, a gentleman of an ample fortune. The youngeſt, Joanna, eſpouſed not long after the eldeſt ſon of Dr. Richard Cumberland, biſhop of Peterborough; the firſt iſſue of which match is now a diſtinguiſhed ornament to the republic of letters. Beſides thoſe already mentioned, the pieces he publiſhed are, 1. A Collection of the Fragments of Callimachus, with notes, printed in 1697, by Grævius, in his edition of that poet's works. 2. Notes upon the Firſt Comedies of Ariſtophanes, publiſhed at Amſterdam, in 1710. 3. Emendationes, &c. on the Fragments of Menander and Philemon, printed about the ſame time at Rheims. This he ſubſcribed by the feigned name of Phileleuthrus Lipſienſis. 4. Under that character he appeared again in 1713, in his Remarks upon Collins's Diſcourſe of Free Thinking, for which he received the thanks of the univerſity. 5. His edition of Horace, which is reckoned his capital work, came out in 1711.

Bentley (Thomas), his nephew, was the author of the Wiſhes, a comedy, which appeared at Drury-lane in the ſummer of 1761, and was revived in 1782; but the piece, as it was ſuppoſed, having ſome tendency to party ſatire, was condemned, and withdrawn from the ſtage by the author. He wrote alſo Philodamus, a tragedy, 1767; and Patriotiſm, a ſevere ſatirical poem, preſerved in Dilly's Repoſitory. He died about 1782.

To BENUM', *v. a.* [*benumen,* Sax.] To make torpid; to take away the ſenſation and uſe of any part by cold, or by ſome obſtruction.—It ſeizes upon the vitals and *benums* the ſenſes; and where there is no ſenſe, there can be no pain. *South.*—To ſtupify:

These accents were her laſt: the creeping death
Benumm'd her ſenſes firſt, then ſtopp'd her breath. *Dryden.*

BENVO'LICH, a mountain of Scotland, in the county of Perth: ſeven miles north-eaſt of George Town.

BENVOR'LICH, a mountain of Scotland, in the county of Perth: ſeven miles north of Callender.

BENWYR'VIS, a mountain of Scotland, in the county of Roſs: ſeven miles north-weſt of Dingwall.

BE'NY, a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Caen, two leagues and a quarter north-north-weſt of Caen.

Beny (Le), a town of France, in the department of the Calvados, and chief place of a canton, in the diſtrict of Vire: ſeven leagues and a half ſouth-weſt of Caen, and two north of Vire.

BENYOW'SKY (count Mauritius Auguſtus de), magnate of the kingdoms of Hungary and Poland, was born in 1741, at Ferbowa, the hereditary lordſhip of his family, ſituated in the county of Nittria, in Hungary. The hiſtory of this nobleman is extraordinary. The early part of his life was employed in the courſe of education which the court of Vienna affords to ſuch of its vaſſals as are of illuſtrious families; and upon his attaining the age of fourteen years, he fixed on the profeſſion of arms. He was accordingly received into the regiment of Siebenſchien, in quality of lieutenant; and joining the imperial army, then in the field againſt the king of Pruſſia, was preſent at the battles of Lowoſitz, Prague, Schweidnitz, and Darmſtadt. Soon after this period, 1758, he quitted the imperial ſervice and haſtened into Lithuania, at the inſtance of his uncle the ſtaroſt of Benyowſky, and ſucceeded as his heir to the poſſeſſion of his eſtates. The tranquillity, however, which he now enjoyed was interrupted by intelligence of the death of his father, and that his brothers-in-law had taken poſſeſſion of his inheritance. Theſe circumſtances demanding his immediate preſence in Hungary, he quitted Lithuania with the ſole view of obtaining poſſeſſion of the property of his family; but on his arrival he found the whole in the hands of his brothers-in-law, who by force oppoſed his entrance into his own caſtle. Attending in this conjuncture to the juſtice of his cauſe, and the dictates of his vivacity, he repaired to Kruſſava, a lordſhip dependant on the caſtle of Verbowa, where, after having cauſed himſelf to be acknowledged by his vaſſals, and being aſſured of their fidelity, he armed them, and by their aſſiſtance gained poſſeſſion of all his effects; but his brothers, thus defeated of their uſurpation, repreſented him at the court of Vienna as a rebel and diſturber of the public peace; and, in conſequence of this falſe information, the empreſs queen iſſued a decree in chancery againſt the count, by which he was not only deprived of his property, but compelled to withdraw with the utmoſt expedition into Poland. This expulſion from his native country, joined to the active diſpoſition of his mind, made him determine to travel; but after taking ſeveral voyages to Hamburgh, Amſterdam, and Plymouth, with intention to apply himſelf to navigation, he received letters from the magnates and ſenators of Poland, which induced him to repair to Warſaw, where he joined the confederation then forming, and entered into an obligation, upon oath, not to acknowledge the king, until the confederation, as the only lawful tribunal of the republic, ſhould have declared him lawfully elected; to oppoſe the Ruſſians by force of arms; and not to forſake the colours of the confederation ſo long as the Ruſſians ſhould remain in Poland. Leaving Warſaw, he attempted to make his rights known at the court of Vienna; but diſappointed in this endeavour, and deprived of all hope of juſtice, he reſolved to quit for ever the dominions of the houſe of Auſtria. On his return to Poland, he was attacked, during his paſſage through the county of Zips, with a violent fever; and being received into the houſe of Mr. Henſky, a gentleman of diſtinction, he became enamoured of one of his daughters, with whom he ſoon after had the pleaſure to be united by marriage; but it was not his fate to continue long in poſſeſſion of happineſs or repoſe. The confederate ſtates of Poland, a party of whom had declared themſelves at Cracow, obſerving that the count was one of the firſt who had ſigned their union at Warſaw, wrote to him to join them; and, compelled by the ſtrong tie of the oath he had taken, he departed without informing his wife, and arrived at Cracow on the very day count Panin made the aſſault.

He was received with open arms by marſhal Czarneſky, and immediately appointed colonel-general, commander of cavalry, and quarter-maſter-general. On the 6th of July 1768, he was detached to Navitaig to conduct a Poliſh regiment to Cracow, and he not only brought the whole regiment, compoſed of ſix hundred men, through the camp of the enemy before the town, but ſoon afterwards defeated a body of Ruſſians at Kremenka; reduced Landſcroen, which prince Lubomirſky, who had joined the confederacy with two thouſand regular troops, had attempted in vain; and, by his great gallantry and addreſs, contrived the means of introducing ſupplies into Cracow when beſieged by the Ruſſians: but the count, having loſt above ſixteen hundred men in affording this aſſiſtance to the town, was obliged to make a precipitate retreat the moment he had effected his purpoſe; and being purſued by the Ruſſian cavalry, compoſed of coſſacks and huſſars, he had the misfortune to have his horſe killed under him, and fell at laſt, after receiving two wounds, into the hands of the enemy. Apraxin, the Ruſſian general, being informed of the ſucceſsful manœuvre of the count, was impreſſed with a very high opinion of him, and propoſed to him to enter into the Ruſſian ſervice; but, rejecting the overtures with diſdain, he was only ſaved from being ſent to Kiovia with the other priſoners by the interpoſition of his friends, who paid 962l. ſterling for his ranſom. Thus ſet at liberty, he conſidered himſelf as releaſed from the parole which he had given to the Ruſſians; and, again entering the town of Cracow, he was received with the moſt perfect ſatisfaction by the whole confederacy. The town being no longer tenable, it became an object of the utmoſt conſequence to ſecure another place of retreat; and the count, upon his own propoſal and requeſt, was appointed to ſeize the caſtle of Lublau, ſituated on the frontier of Hungary: but after viſiting the commanding officer of the caſtle, who was not apprehenſive of the leaſt danger, and engaging more than one half of the garriſon by oath in the intereſts of the confederation, an inferior officer, who was diſpatched to aſſiſt him, indiſcreetly divulged the deſign; and the count was ſeized and carried into the fortreſs of Georgenburgh, and ſent from thence to general Apraxin. On his way to that general, he was reſcued by a party of confederates, and returned to Lublin, a town where the reſt of the confederation of Cracow had appointed to meet, in order to join thoſe of Bar, from which time he performed a variety of gallant actions, and underwent great viciſſitudes of fortune. On the 19th of May, the Ruſſian colonel, judging that the count was marching towards Stry to join the confederate parties at Sauok, likewiſe haſtened his march, and arrived thither half a day before the count, whoſe forces were weakened by fatigue and hunger. In this ſtate he was attacked about noon by colonel Brincken, at the head of four thouſand men. The count was at firſt compelled to give way; but, on the arrival of his cannon, he, in his turn, forced the colonel to retire, who at laſt quitted the field and retreated towards Stry. The advantage of the victory ſerved only to augment the miſery of the count, who in this ſingle action had three hundred wounded and two hundred and ſixty-eight ſlain, and who had no other proſpect before him than either to periſh by hunger with his troops in the foreſt, or to expoſe himſelf to be cut to pieces by the enemy. On the morning of the 20th, the count, by the advice of his officers and troops, reſumed his march, and arrived about ten o'clock at the village of Szuka, where, being obliged to halt for refreſhment, he was ſurpriſed by a party of coſſacks, and had only time to quit the village and form his troops in order of battle on the plain, before he was attacked by the enemy's cavalry, and ſoon after by their infantry. In the heat of the combat, the count, having received two wounds with a ſabre, was wounded in the body by the ſhot of a cannon loaded with old iron and other deſtructive rubbiſh. His fate decided that of his party; and the Ruſſians had at laſt the ſatisfaction of ſeeing him their priſoner. The count was ſent to the commander in chief of the Ruſſian armies, then encamped at Tampool, a man equally cruel and baſe, who, contrary to every ſentiment of humanity, inſulting the miſfortunes of his priſoner, not only forbade the ſurgeons to dreſs his wounds, but, after reducing him to bread and water, loaded him with chains, and in that ſtate tranſported him to Kiow. On his arrival at Polene, his neglected wounds had ſo far endangered his life, that his conductor was induced to apply to colonel Sirkow, the commanding officer at that place, and he was ſent to the hoſpital, where he was cured of his wounds by a French ſurgeon of the name of Blanchard, and afterwards lodged in the town, with an advance of fifty roubles for his ſubſiſtence. Upon the arrival, however, of brigadier Banna, who relieved colonel Sirkow in his command, and who had a ſtrong prejudice againſt the count, he was again loaded with chains, and conducted to the dungeon with the reſt of the priſoners, to whom this inhuman tyrant allowed no other ſubſiſtence than bread and water. Upon his entrance he recognized ſeveral officers and ſoldiers who had ſerved under him; and their demonſtration of eſteem and friendſhip was the only conſolation he received in this diſtreſſed ſituation. Twenty-two days were thus conſumed in a ſubterraneous priſon, together with eighty of his companions, without light, and even without air, except what was admitted through an aperture which communicated with the caſements. Theſe unhappy wretches were not permitted to go out even on their natural occaſions, which produced ſuch an infection, that thirty-five of them died in eighteen or twenty days; and ſuch was the inhumanity of the commander, that he ſuffered the dead to remain and putrefy among the living. On the 16th of July the priſon was opened, and one hundred and forty-eight priſoners, who had ſurvived out of ſeven hundred and eighty-two, were driven, under every ſpecies of cruelty that can be well imagined, from Polene to Kiow, where the ſtrength of the count's conſtitution, which had hitherto enabled him to reſiſt ſuch an accumulation of hardſhips and fatigue, at length gave way, and he was attacked with a malignant fever, which produced a delirium. The governor, count Voicikow, being informed of his quality, ordered that he ſhould be ſeparately lodged in a houſe, and that two roubles a day ſhould be paid him for ſubſiſtence. This treatment, by enabling the count to procure proper diet, ſoon put him in a fair way of recovery; but at this criſis an order arrived from Peterſburgh to ſend all the priſoners to Cazan. The count, from the fatigues of the journey, experienced a relapſe, and the officer was obliged to leave him at Nizym, a town dependant on the government of Kiow. At this place, Mr. Lewner, a German merchant, intereſted himſelf in favour of the count, procured him comfortable accommodations, ſuperintended the reſtoration of his health, and on his departure made him a preſent of two hundred roubles, which he placed for ſafety in the hands of the officer until his arrival at Cazan, but who had afterwards the effrontery to deny that he had ever received the money; and carried his malice ſo far, that he accuſed the count of attempting to raiſe a revolt among the priſoners, and cauſed him to be loaded with chains, and committed to the priſon of Cazan, from which he was not delivered but at the preſſing inſtances of marſhal Czarneſky Potockzy and the young Palanzky. On his deliverance from priſon, he was lodged at the houſe of a goldſmith, of the name of Vendiſchow, a native of Sweden; and, being invited to dine with a man of quality in the place, he was ſolicited, and conſented, to join in a confederacy againſt the government. But on the 6th of November 1769, on a quarrel happening between two Ruſſian lords, one of them informed the governor that the priſoners, in concert with the Tartars, meditated a deſign againſt his perſon and the garriſon. This apoſtate lord accuſed the count, in order to ſave his friends and countrymen; and on the 7th, at eleven at night, the count, not ſuſpecting any ſuch event, heard a knocking at the door. He came down, entirely undreſſed, with a candle in his hand, to enquire the cauſe; and, upon opening his door, was ſurpriſed to ſee an officer with twenty ſoldiers, who demanded if the priſoner was at home. On his replying in the affirmative, the officer ſnatched the candle out of his hand, and, ordering his men to follow him, went haſtily up to the count's apartment. The count immediately took advantage of his miſtake, quitted his houſe; and, after appriſing ſome of the confederates that their plot was diſcovered, he made his eſcape, and arrived at Peterſburgh on the 19th of November, where he engaged with a Dutch captain to take him to Holland. The captain, however, inſtead of taking him on-board purſuant to his promiſe, appointed him to meet on the bridge over the Neva at midnight, and there betrayed him to twenty Ruſſian ſoldiers collected for the purpoſe, who ſeized him, knocked him down, and carried him to count Cſecſerin, lieutenant-general of the police. He was now conveyed to the fort of St. Peter and St. Paul, confined in a ſubterraneous dungeon, and after three days faſt was preſented with a morſel of bread and a pitcher of water; but, on the 22d of November 1769, he at length, in hopes of procuring his diſcharge, was induced to ſign a paper, promiſing for ever to quit the dominions of her Imperial majeſty, and obliging himſelf upon pain of death not to enter them again on any pretext whatever.

The count having ſigned the engagement, inſtead of being ſet at liberty, as he expected, was reconducted to his priſon, and there confined till the 4th of December, when, about two hours after midnight, an officer with ſeven ſoldiers came to him; and, giving orders that they ſhould take off his chains, and clothe him with a ſheep-ſkin garment, he was conducted into the court of the priſon, thrown upon a ſledge to which two horſes were harneſſed, and immediately driven away with the greateſt ſwiftneſs. The darkneſs of the night prevented the count from diſcerning the objects around him; but the continual noiſe of bells, which reſounded from a variety of places, induced him to ſuppoſe that he was followed by ſeveral ſledges conſtructed for the purpoſe of paſſing the frozen plains over which he was now deſtined to go. On the approach of day-light he perceived that major Wynblath, Vaſſili Panow, Hippolitus Stephanow, Aſaph Baturin, Ivan Sopronow, and ſeveral other priſoners, were the companions of his misfortunes; and after ſuffering, from the unexampled brutality of their conductor, a ſeries of hardſhips, equally difficult and painful to relate, in paſſing through Tobolzk the capital of Siberia, the city of Tara, the town and river of Tomſky, the villages of Jakutzk and Judoma, they embarked in the harbour of Ochoczk, on the 26th of October 1770, and arrived at Kamſchatka on the 3d of December following. The enſuing day they were conducted before Mr. Nilow the governor; and the following orders and regulations which were made will afford ſome faint idea of the treatment which unfortunate exiles meet with, in this dreary, diſtant, and inhoſpitable, region of the globe. 1ſt, That they ſhould be ſet at liberty on the following day, and provided with ſubſiſtence for three days, after which they muſt depend upon themſelves for their maintenance. 2dly, That each perſon ſhould receive from the chancery a muſquet and a lance, with one pound of powder, four pounds of lead, a hatchet, ſeveral knives and other inſtruments, and carpenter's tools, with which they might build cabins in any ſituations they choſe, within one league of the town; but that they ſhould be bound to pay in furs, during the firſt year, each one hundred roubles, in return for theſe advantages. 3dly, That every one muſt work at the corvee, one day in the week, for the ſervice of government, and not abſent themſelves from their huts for twenty-four hours without the governor's permiſſion. 4thly, That each exile ſhould bring to the chancery ſix ſables ſkins, fifty rabbits ſkins, two foxes ſkins, and twenty-four ermines, every year. 5thly, That no exile could poſſeſs property; and that the ſoldiers of the garrriſon may enter their huts and carry away whatever they pleaſe. 6thly, That if an exile ſhould be ſo raſh, upon any provocation, to ſtrike a citizen or ſoldier, he ſhall be ſtarved to death. 7thly, That their lives being granted to them for no other purpoſe than to implore mercy of God, and the remiſſion of their ſins, they could be employed only in the meaneſt works to gain their daily ſubſiſtence. Under theſe regulations the exiles ſettled the places of their habitations, built miſerable huts to ſhelter themſelves from the inclemency of the weather, formed themſelves into a congreſs; and after chooſing the count de Benyowſky their chief or captain, in order to rivet their union, they ſwore with great ſolemnity mutual friendſhip and eternal fidelity. Among the number of unhappy wretches who had long groaned under the miſeries of baniſhment, was a Mr. Cruſtiew, who had acquired conſiderable aſcendancy over his fellow-ſufferers; and to obtain the particular confidence and eſteem of this man was the firſt object of the count's attention; in which, with the talent he ſo ſingularly poſſeſſed of agitating and impelling the minds of others, it is almoſt unneceſſary to ſa that he ſoon ſucceeded. The pains and perils incident to the ſituation to which theſe men were reduced, were borne for ſome time in murmuring ſufferance, until the accidental finding an old copy of Anſon's Voyage inſpired them with an idea of making an eſcape from Kamſchatka to the Marian iſlands; and the count, Mr. Panow, Baturin, Stephanow, Solmanow, majors Wynblath, Cruſtiew, and one Waſili, an old and faithful ſervant of the count's, who had followed his maſter into exile, formed a confederacy for this purpoſe. While theſe tranſactions were ſecretly paſſing, the fame of count Benyowſky's rank and abilities reached the ear of the governor; and, as he ſpoke ſeveral languages, he was after ſome time admitted familiarly into the houſe of the governor, and at length appointed to ſuperintend the education of his ſon and his three daughters. "One day," ſays the count, "while I was exerciſing my office of language-maſter, the youngeſt of the three daughters, whoſe name was Aphanaſia, who was ſixteen years of age, propoſed many queſtions concerning my thoughts in my preſent ſituation, which convinced me that her father had given them ſome information concerning my birth and misfortunes. I therefore gave them an account of my adventures, at which my ſcholars appeared to be highly affected, but the youngeſt wept very much. She was a beautiful girl, and her ſenſibility created much emotion in my mind: but, alas, I was an exile!" The merits of the count however ſoon ſurmounted the diſadvantages of his ſituation in the generous mind of Miſs Nilow; and the increaſing intimacy and confidence which he daily gained in the family, joined to the advantages of a fine perſon and moſt inſinuating addreſs, ſoon converted the feelings of admiration into the flame of love; and on the 11th of January 1771, madame Nilow the mother conſented that her daughter ſhould do the honours of an entertainment then in contemplation, and be publicly declared his future ſpouſe. But the count, though he had cultivated and obtained the affections of his fair pupil, had acted more from policy than paſſion, and, intending to uſe her intereſt rather as a means of effectuating the meditated eſcape of himſelf and his companions, than as any ſerious object of matrimonial union, contrived to ſuſpend the nuptials, by perſuading the governor to make an excurſion from Kamſchatka to the neighbouring iſlands, under pretence of eſtabliſhing a new colony. During theſe tranſactions the exiles were ſecretly at work; and, in order to conceal their deſign from all ſuſpicion, Mr. Cruſtiew and Mr. Panow were on the 30th of March deputed to wait on the governor, to requeſt that he would pleaſe to receive the title of *protector* of the new colony; upon which orders were given to prepare every thing that might be neceſſary for the execution of the project. At this criſis, however, an intercourſe took place between one of the inſurgents and the governor's ſervant-maid, whereby the whole plot was diſcovered. In conſequence of this, the governor determined to put the count in irons; and at five o'clock in the evening of the 26th of April 1771, a corporal, with four grenadiers, ſtopped at the count's door, demanding admittance in the name of the empreſs, and ordered him to follow the guard to the fort. The count propoſed to the corporal, that he ſhould enter alone and drink a glaſs of wine; but on his being admitted the door was inſtantly ſhut upon him, and four piſtols clapped to his breaſt; by the terror of which he was made to diſcloſe every thing that was tranſacting at the fort, and at length obliged to call the four grenadiers ſeparately into the houſe, under pretence of drinking, when they were all five bound together, and depoſited ſafely in the cellar.

This meaſure was, of courſe, the ſignal of reſiſtance, and the count, marſhalling his aſſociates, who had ſecretly furniſhed themſelves with arms and ammunition by the treachery of the ſtore-keepers, iſſued forth from the houſe to oppoſe, with greater advantage, another detachment that had been ſent to arreſt him. After levelling ſeveral ſoldiers to the ground, the count, by the miſmanagement of their commander, ſeized their cannon, turned them with ſucceſs againſt the fort itſelf, and, entering by means of the drawbridge, diſpatched the twelve remaining guards who were then within it. "Madame Nilow and her children," ſays the count, "at ſight of me implored my protection to ſave their father and huſband. I immediately haſtened to his apartment, and begged him to go to his children's room to preſerve his life; but he anſwered that he would firſt take mine, and inſtantly fired a piſtol, which wounded me. I was deſirous nevertheleſs of preſerving him, and continued to repreſent that all reſiſtance would be uſeleſs, for which reaſon I entreated him to retire. His wife and children threw themſelves on their knees, but nothing would avail: he flew upon me, ſeized me by the throat, and left me no other alternative than either to give up my own life, or run my ſword through his body. At this period the petard, by which my aſſociates attempted to make a breach, exploded, and burſt the outer gate. The ſecond was open; and I ſaw Mr. Panow enter at the head of a party. He entreated the governor to let me go; but, not being able to prevail on him, he ſet me at liberty by ſplitting his ſkull." The count by this event became complete governor of Kamſchatka; and having time, without danger, to prepare every thing neceſſary for the intended departure, he amuſed himſelf with ranſacking the archives of the town, where he found ſeveral manuſcripts of voyages made to the eaſtward of Kamſchatka. The count alſo, "to profit by the leiſure time he enjoyed, and to divert diſagreeable reflections," was led to form a chart, with details reſpecting Siberia and the ſea-coaſt of Kamſchatka, and a deſcription of the Kurelles and Aleuthes iſlands; but this chart has not ſurvived the fate of its compoſer.

We are now to behold him, not in the character of a deſigning captive meditating ſchemes for the attainment of his liberty, but in that of an intrepid commander, at the head of a troop of obedient followers, boldly ſeeking their vagrant fortunes as fate or fancy pointed out the way. The conſpirators, previous to their hoſtilities againſt the governor, had previouſly ſecured a corvette of the name of *St. Peter and St. Paul*, which then rode at anchor in the port of Bolſha; and their ſubſequent ſucceſs afforded them the means of providing her with ſuch ſtores as were neceſſary for the intended voyage. On the 11th of May 1771, the count, as commander in chief, attended by Mr. Cruſtiew as ſecond, by ſixteen of his fellow-captives as quarter-guards, and by fifty-ſeven foremaſt men, together with twelve paſſengers and nine women, among whom was the lovely Aphanaſia, diſguiſed in ſailor's apparel, went on-board this veſſel; and on the next day weighed anchor, and ſailed out of the harbour on a ſouthern courſe, intending to continue their voyage to China. After experiencing many hardſhips and dangers at ſea, they arrived on Sunday the 28th of Auguſt at the iſland of Formoſa. The inhabitants of Formoſa at firſt appeared inclined to treat the count with reſpect and civility, particularly don Hieronymo Pacheco, formerly captain at the port of Cavith at Manilla, who had fled from that employment to the iſland of Formoſa, in conſequence of his having in a moment of rage maſſacred his wife and a Dominican whom he had found in her company: but theſe profeſſions were ſoon found to be deceitful; for, on ſending his men on ſhore to fetch water, they were attacked by a party of twenty Indians, many of them dangerouſly wounded, and Mr. Panow, the count's moſt faithful friend, killed. Don Hieronymo, however, contrived to exculpate himſelf from any knowledge of, or concern in, this treachery, and to adviſe the count to ſeek revenge by a conqueſt of the iſland; but he contented himſelf with provoking the natives to a ſecond attack, and repulſing them with conſiderable ſlaughter. His men, however, inſiſted on going in queſt of the Indians, in order to make them feel their farther vengeance. The remonſtrances of the count were to no effect, and at length, complying with their deſires, he requeſted don Hieronymo to guide them towards the principal reſidence of the nation who had given him ſo bad a reception, where, after a ſhort and unequal conflict, he killed eleven hundred and fifty-ſix, took ſix hundred and forty-three priſoners, who had proſtrated themſelves on the ground to beg for mercy from their aſſailants, and ſet fire to their town. The prince of the country, notwithſtanding this maſſacre of his ſubjects, was introduced to the count by his Spaniſh friend, and a cordiality at length took place between them to ſuch a degree, that the count entered into a formal treaty for returning and ſettling at Formoſa; but his motives for making this engagement appear to have been, the execution of a project he had ſecretly conceived of eſtabliſhing a colony on the iſland.

On the 12th of September the count and his aſſociates ſailed from Formoſa; on the Thurſday following the coaſt of China appeared in ſight; and two days afterwards his veſſel was piloted into the port of Macao. At this place he was treated with great reſpect by the governor and the principal men of the town; and on the 3d of October 1771, captain Gore, then in the ſervice of the Engliſh Eaſt-India company, made an offer of ſervices to him on the part of the directors, and a free paſſage to Europe, provided he would bind himſelf to entruſt his manuſcripts to the company, engage to enter into their ſervice, and make no communication of the diſcoveries he had made. But, having accepted propoſals from the French directors, the offers of captain Gore were rejected, and the count ſoon afterwards returned from Macao to Europe on-board a French ſhip. He arrived on the 8th of Auguſt 1772 in Champagne, where the duke d'Aiguillon, the miniſter of France, then was; "and he received me," ſays the count, "with cordiality and diſtinction, and propoſed to me to enter the ſervice of his maſter, with the offer of a regiment of infantry; which I accepted, on condition that his majeſty would be pleaſed to employ me in forming eſtabliſhments beyond the Cape." In conſequence of this condition, the duke his patron propoſed to him from his majeſty to form an eſtabliſhment on the iſland of Madagaſcar, upon the ſame footing as he had propoſed upon the iſland of Formoſa, the whole ſcheme of which is publiſhed in his memoirs of his own life, and diſcovers vaſt knowledge of the intereſts of commerce, and a deep inſight into the characters of men.

To a romantic mind and adventurous ſpirit ſuch as the count poſſeſſed, a propoſal like the preſent was irreſiſtible; and after receiving the moſt poſitive aſſurances from the French miniſtry, that he ſhould conſtantly receive from them the regular ſupplies neceſſary to promote the ſucceſs of his undertaking, he ſet ſail on the 22d of March 1773 from port l'Orient for Madagaſcar, under the treacherous auſpices of recommendatory letters to M. de Ternay, governor of the iſle of France, where he landed with a company of between four and five hundred men on the 22d of September following. Inſtead of receiving the promiſed aſſiſtance at this place, the governor endeavoured by every means in his power to thwart the ſucceſs of his enterpriſe; and "no other ſtep," ſays the count, "remained for me to take, than that of haſtening my departure for Madagaſcar, at the riſque of being expoſed to the laſt miſery, and abandoned in the moſt cruel manner." The count accordingly ſet ſail in the Des Torges, a veſſel badly provided with thoſe ſtores that were moſt likely to be of uſe, and came to an anchor at Madagaſcar on the 14th of February 1774. The oppoſition which he met from the ſeveral nations placed him in a delicate and dangerous ſituation; but by the ſpirit and addreſs that marked every action of his life, he at length, with great difficulty, formed an eſtabliſhment on Foul Point, entered into a commercial intercourſe, and formed treaties of friendſhip and alliance with the greater part of the inhabitants of this extenſive iſland; "and if I had not been," ſays the count, "totally abandoned by the miniſter, which was the ſource of the diſeaſes, miſeries, and mortality, to which myſelf and my people were expoſed, the iſland of Madagaſcar, in alliance with France, would have formed a power capable of ſupporting her colonies in the iſles of France and Bourbon,

bon, and defending her eſtabliſhments in India, as well as ſecuring new branches of commerce to that kingdom, which would have carried immenſe ſums into the royal treaſury." But whether the count, whoſe commiſſion only extended to open a friendly intercourſe with the natives, was abandoned by the miniſter from the cruelty of neglect, whilſt he was in the regular execution of the commands of his ſovereign, or becauſe his exorbitant ſpirit and ambition began to ſoar to more than an ordinary pitch of power and greatneſs, the following curious and extraordinary narrative of his ſubſequent conduct will manifeſtly ſhew.

The iſland of Madagaſcar is of vaſt extent, and is inhabited by a great variety of different nations. Among theſe is the nation of Sambarines, formerly governed by a chief of the name and titles of *Rohandrian Ampanſacabé Ramini Larizon*; whoſe only child, a lovely daughter, had, it ſeems, been taken priſoner, and ſold as a captive; and from this circumſtance, upon the death of Ramini, his family was ſuppoſed to be extinct. "On the 2d of February," ſays the count, "M. Corbi, one of my moſt confidential officers, with the interpreter, informed me, that the old negreſs Suſanna, whom I had brought from the iſle of France, and who in her early youth had been ſold to the French, and had lived upwards of fifty years at the iſle of France, had reported, that her companion the daughter of Ramini, having likewiſe been made a priſoner, was ſold to foreigners, and that ſhe had certain marks that I was her ſon. This officer likewiſe repreſented to me, that in conſequence of her report the Sambarine nation had held ſeveral *cabars* to declare me the heir of Ramini, and conſequently proprietor of the province of Manahar, and ſucceſſor to the title of *ampanſacabé*, or ſupreme chief of the nation. This information appeared to me of the greateſt conſequence, and I determined to take the advantage of it, to conduct that brave and generous nation to a civilized ſtate. But, as I had no perſon to whom I could entruſt the ſecret of my mind, I lamented to myſelf at the reflection how blind the miniſter of Verſailles was to the true intereſts of France. On the ſame day I interrogated Suſanna on the report ſhe had ſpread concerning my birth. The good old woman threw herſelf at my knees, and excuſed herſelf by confeſſing that ſhe had acted entirely upon a conviction of the truth. For ſhe ſaid that ſhe had known my mother, whoſe phyſiognomy reſembled mine, and that ſhe had herſelf been inſpired in a dream by the Zahanhar to publiſh the ſecret. Her manner of ſpeaking convinced me that ſhe really believed what ſhe ſaid. I therefore embraced her, and told her that I had reaſons for keeping the ſecret reſpecting my birth; but that nevertheleſs if ſhe had any confidential friends ſhe might acquaint them with it. At theſe words ſhe aroſe, kiſſed my hands, and declared that the Sambrine nation was informed of the circumſtances, and that the Rohandrian Raffangour waited only for a favourable moment to acknowledge the blood of Ramini."

The fallacy to which the old woman thus gave evidence, feeble as the texture of it may appear to enlightened and penetrating minds, was managed by the count with ſuch profound dexterity and addreſs, that he was declared the heir of Ramini, inveſted with the ſovereignty of the nation, received ambaſſadors and formed alliances in the capacity of a king, with other tribes, made war and peace, led his armies in perſon into the field, and received ſubmiſſion from his vanquiſhed enemies. In this ſituation it is not wonderful that he ſhould forget the allegiance he was under to the king of France; and, repreſenting to his ſubjects the difficulties he had experienced from the neglect of the miniſter, and the probable advantages that might reſult by forming a new and national compact either with that or ſome other powerful kingdom in Europe, he perſuaded them to permit him to return to Europe for that purpoſe; and "on the 11th of October 1776," ſays the count, "I took my leave to go on-board: and at this ſingle moment of my life I experienced what a heart is capable of ſuffering, when torn from a beloved and affectionate ſociety to which it is devoted."

This account concludes his narrative; but among the memoirs and papers which fill the remaining part of the volume, it appears, that on his arrival in Europe his propoſals to the court of France were rejected; that he made ſubſequent offers of his ſervice to the emperor of Germany, which met with no better ſucceſs; and that on the 25th of December 1783 he offered, in the character of ſovereign of the iſland of Madagaſcar, terms for an offenſive and defenſive alliance with the king of Great Britain: but this propoſal was alſo declined. The ardour of the count, however, was not abated by theſe diſapointments; he looked with contempt on kings who could be ſo blind to the intereſts and advantages of their people; and, ſending for his family from Hungary, he ſailed from London with ſome of his aſſociates for Maryland, on the 14th of April 1784, with a cargo of the value of near 4000l. ſterling, conſiſting of articles intended for the Madagaſcar trade. A reſpectable commercial houſe in Baltimore was induced to join in his ſcheme, and ſupplied him with a ſhip of 450 tons, whoſe lading was eſtimated at more than 1000l. in which he ſailed from that place on the 25th of October 1784, and landed at Antangara, on the iſland of Madagaſcar, on the 7th of July 1785, from whence he departed to Angouci, and commenced hoſtilities againſt the French by ſeizing their ſtore-houſe. Here he buſied himſelf in erecting a town after the manner of the country, and from hence he ſent a detachment of one hundred men to take poſſeſſion of the French factory at Foul Point; but they were prevented from carrying their purpoſe into execution by the ſight of a frigate which was at anchor off the Point. In conſequence of theſe movements, the governor of the iſle of France ſent a ſhip with ſixty regulars on-board, who landed and attacked the count on the morning of the 23d of May 1786. He had conſtructed a ſmall redoubt defended by two cannon, in which himſelf, with two Europeans and thirty natives, waited the approach of the enemy. The blacks fled at the firſt fire, and Benyowſky, having received a ball in his right breaſt, fell behind the parapet; whence he was dragged by the hair, and expired a few minutes afterwards.

BENZO'E, *ſ.* in botany. See CROTON.

BENZO'IN, *ſ.* in the materia medica, a concrete reſinous juice, obtained from a ſpecies of ſtyrax. See STYRAX, and LAURUS.

BEOL'CO (Angelo), ſurnamed *Ruzzante*, was born at Padua, and died in 1542. He applied himſelf early in life to ſtudy the manners, geſture, and language, of villagers, and copied every particular that ſavoured of ſimplicity, drollery, and the groteſque. He was the Vadé of the Italians. His ruſtic farces, though written in a low and vulgar ſtyle, are yet pleaſing to people of education, by the exactitude with which the countrymen are repreſented, and by the acute witticiſms with which they are ſeaſoned. He preferred being the firſt in this ſpecies of compoſition, to being the ſecond in a more elevated line. His principal pieces are, la Vaccaria, l'Anconitana, la Moſchetta, la Fiorina, la Piovana, &c. Theſe were printed with other poems of the ſame kind in 1584 in 12mo, under this title: *Tutte le Opere del famoſiſſimo Ruzzante.*

To BE'PAINT, *v. a.* [from *paint.*] To cover with paint:

Thou know'ſt, the maſk of night is on my face,
Elſe would a maiden bluſh *bepaint* my cheek. *Shakeſpeare.*

To BEPIN'CH, *v. a.* To mark with pinches.—Their ſides, arms, ſhoulders, all *bepincht. Chapman.*

To BEPISS', *v. a.* [from *piſs.*] To wet with urine.—One cauſed at a feaſt a bagpipe to be played, which made the knight *bepiſs* himſelf, to the great diverſion of all them preſent, as well as confuſion of himſelf. *Derham.*

To BEQUE'ATH, *v. a.* [*cwithe*, Sax. a will.] To leave by will to another.—Methinks this age ſeems reſolved to *bequeath* poſterity ſomewhat to remember it. *Glanville.*

BEQUEATH'MENT, *ſ.* A legacy.

BEQUEST', *ſ.* [from *bequeath.*] Something left by will; a legacy.

BE'RAMS, *ſ.* A coarſe cloth, made with cotton-thread, which comes from the Eaſt Indies, particularly from Surat.

BERA'MUN, a town of Egypt, on the Nile: three miles north-eaſt of Manſora.

BE'RAR, or BARAR, a province of Hindoſtan, bounded on the north by Malwo and Allahabad, on the eaſt by Oriſſa, on the ſouth by Hydrabad, and on the weſt by the Candiſh and Dowlatabad. This province is fertile in wheat, rice, poppies, and many ſorts of legumes. In the ſouthern part is found the deer which yields the bezoar ſtone. The ſheep of this province are of a different ſpecies from the common, the neck is lengthened, the tail very ſhort, their ears long, and their wool is not curled. The principal rivers are the Ganga, Barnah, and Pouneah. It was formerly a kingdom, it is now divided; part of it is ſubject to a rajah, and part of to the nizam, or prince of the Deccan.

BERASTEGUE', a mountain of Spain, in the province of Guipuſcoa: three legues from Toloſa.

To BERAT'TLE, *v. a.* [from *rattle.*] To fill with noiſe; to make a noiſe at in contempt.

BERAU'N, a town of Bohemia, and capital of a circle of the ſame name; ſometimes called the *Circle of Podverd.* The principal produce of the circle is wood and corn: the Muldau and the Mies yield abundance of fiſh, and in ſome parts are found mines of iron. The town of Beraun was built in the year 746; but its opulence does not keep pace with its antiquity; it is ſituated on the Mies, or Miza: fourteen miles ſouth-weſt of Prague. Lat. 49. 54. N. lon. 31. 49. E. Ferro.

BER'BE, or BERBICHE, a river of South America, in the country of Guiana, which runs into the Atlantic, about lat. 6. N. lon. 59. W. Greenwich.

BERBEC'Z, a river of European Turkey, which runs into the Birlet, near Tecuczi, in the province of Moldavia.

BER'BEGAL, a town of Spain, in Arragon: three leagues from Balbaſtro.

BER'BERIS, *ſ.* [An Arabic name, uſed by Averrhoes, and the officinal writers.] The BARBERRY. In botany, a genus of the claſs hexandria, order monogynia. The generic characters are—Calyx: perianthium ſix-leaved, patulous; leaflets ovate, with a narrower baſe, concave, alternately ſmaller, coloured, deciduous. Corolla: petals ſix, roundiſh, concave, erect-expanding, ſcarcely larger than the calyx; nectary, two ſmall, roundiſh, coloured, bodies, faſtened to the baſe of each petal. Stamina: filaments ſix, erect, compreſſed, obtuſe; antheræ two, faſtened on each ſide to the top of the filaments. Piſtillum: germ cylindric, the length of the ſtamens; ſtyle none; ſtigma orbiculate, broader than the germ, ſurrounded with a ſharp edge. Pericarpium: berry cylindric, obtuſe, umbilicated with a point, one-celled. Seeds: two, oblong, cylindric, obtuſe.—*Eſſential Character.* Calyx ſix-leaved; petals ſix, with two glands at the claws; ſtyle none; berry two-ſeeded.

Species. 1. Berberis vulgaris, or common barberry: peduncles racemed, ſpines triple. The common barberry is a ſhrub riſing to the height of eight or ten feet. The ſtems are upright and branched, ſmooth and ſlightly grooved, brittle, with a large white pith, and covered with a whitiſh or aſh-coloured bark which is yellow on the inſide. Both ſtems and branches are armed with ſharp thorns, which commonly grow by threes. Linnæus affirms, that the firſt leaves of the preſent year change into theſe thorns the next; this however is denied by others. Berries at firſt green, but when ripe turning to a fine red colour: they are ſuperior, of an ovate-cylindric form, and have a brown pervious teat at top; the cell of the ſtone is larger than the ſeeds, and has a raiſed ſtreak on one ſide from the hole downwards. There are uſually two, rarely three, ſeeds, free or looſe except at bottom, where they are faſtened to a very minute tubercle; they are oblong, thicker at top, blunt, ſmooth, of a pale teſtaceous colour, and hard. The ſeed-lobes are of an elliptic form. It is a native of the eaſtern countries, and now of moſt parts of Europe, in woods, coppices, and hedges. In England, chiefly in a chalky ſoil, as particularly about Saffron Walden in Eſſex. The flowers appear in May, and the fruit ripens in September. There are many varieties of this ſhrub. The leaves of this kind are gratefully acid. The ſmell of the flowers is offenſive when near, but pleaſant at a certain diſtance. The berries are ſo very acid, that birds ſeldom touch them. The barberry however is cultivated for the ſake of theſe, which are pickled and uſed for garniſhing diſhes; and, being boiled with ſugar, form a moſt agreeable rob or jelly; they are uſed likewiſe as a ſweetmeat, and are put into ſugar-plums or comfits. The roots boiled in lye yield a yellow colour: and in Poland they dye leather of a fine yellow with the bark of the root. The inner bark of the ſtems alſo will dye linen of a fine yellow, with the aſſiſtance of alum. Kine, ſheep, and goats, are ſaid to eat it; horſes and ſwine to refuſe it. The fruit of the barberry is conſidered as a mild reſtringent acid, agreeable to the ſtomach, and of efficacy (like other vegetable acids) in hot bilious diſorders, and in a putrid diſpoſition of the humours. According to Proſper Alpinus, the Egyptians employed a diluted juice of the berries in ardent and peſtilential fevers. Their method is to macerate them in about twelve times their quantity of water, and let them ſtand for about twenty-four hours, and then to add a little fennel-ſeed. The liquor is then preſſed out and ſtrained, and ſweetened with ſugar, or ſyrup of citrons, roſes, &c. and given plentifully as a drink. A concrete ſimilar to cream of tartar may be obtained from the juice, by mixing it with lemon-juice, in the proportion of two pounds of barberry-juice and two ounces of lemon-juice, and digeſting them in a ſand-heat for two days; and then gently evaporating the filtered liquor to one half, and ſetting it in a cellar for ſome days. The tartar-incruſtates the ſides of the veſſel, and is a grateful medicine in febrile diſorders. In fact it is the eſſential ſalt of the barberry. The berries of this ſhrub are alſo made into an agreeable jelly, by boiling them with an equal weight of fine ſugar to a proper conſiſtence, and then ſtraining it. The leaves themſelves of the barberry are acid, and have been ſometimes employed for nearly the ſame purpoſes as the fruit: they have alſo been uſed as an ingredient in ſalads. The inner yellow bark, which is auſtere and bitteriſh, has been ſometimes uſed with ſucceſs as a gentle purgative in the jaundice, taken in the form of a decoction, in ale or other liquors. In this manner it was uſed with ſucceſs by the celebrated Mr. Ray. Inſects of various kinds are remarkably fond of the flowers of barberry. Linnæus obſerved long ſince, that, when bees in ſearch of honey touch the filaments, the antheræ approximate to the ſtigma, and explode the pollen. Dr. Smith has given the following particular account of this curious phenomenon: The ſtamens of ſuch flowers as are open bend back to each petal, and ſhelter themſelves under their concave tips. No ſhaking of the branch has any effect upon them; but, if the inſide of the filaments be touched with a ſmall bit of ſtick, they inſtantly ſpring from the petal, and ſtrike the anthera againſt the ſtigma. The outſide of the filament has no irritability, nor has the anthera itſelf any; as may eaſily be proved by touching either of them with a blunt needle, a fine briſtle, a feather, or any thing which cannot injure the ſtructure of the part. If a ſtamen be bent to the ſtigma, by means of a pair of ſciſſars applied to the anthera, no contraction in the filament is produced. From all this it is evident, that the ſpring of the ſtamens is owing to an high degree of irritability in the ſide of the filament next the germ, by which, when touched, it contracts, that ſide becomes ſhorter than the other, and conſequently the filament is bent towards the germ. This irritability is perceptible in ſtamens of all ages; in flowers only ſo far expanded as to admit a briſtle; and in old flowers ready to fall off. If the germ be cut off, the filaments will ſtill contract, and, nothing being in their way, will bend over quite

quite to the oppoſite ſide of the flower. After irritation, the ſtamens will return to their original place. On being touched they will contract with the ſame facility as before: and this may be repeated three or four times. The purpoſe, which this curious contrivance of nature anſwers, is evident. In the original poſition of the ſtamens, the antheræ are ſheltered from rain by the concavity of the petals. Thus probably they remain, till ſome inſect, coming to extract honey from the baſe of the flower, thruſts itſelf between the filaments, and almoſt unavoidably touches them in the moſt irritable part: thus the impregnation of the germ is performed; and, as it is chiefly in fine ſunny weather that inſects are on the wing, the pollen is alſo in ſuch weather moſt fit for the purpoſe of impregnation. This ſhrub has lately acquired an ill name for a very miſchievous effect, which, if true, ſhould induce every huſbandman to extirpate it from the vicinity of his corn-lands. It is affirmed, that ears of wheat which grow near it never fill, and that its influence in this reſpect has been known to extend three or four hundred yards. Mr. Macro, a very reſpectable farmer at Barrow in Suffolk, planted a barberry buſh in his garden, on purpoſe to aſcertain the fact. He ſet wheat round it three ſucceeding years, and it was all ſo completely mildewed, that the beſt of the little grain it produced was only about the ſize of thin rice, and that without any flour. He adds, that ſome, which he ſet on the oppoſite ſide of his garden one of the years, produced very good grain, although the ſtraw was a little mildewed. There are other accounts from practical men correſponding with this of Mr. Macro's. We can ſcarcely however yield our aſſent to an appearance ſo ſtrange and ſo wholly unaccountable, till the fact has been examined more accurately. The barberry is ſo common in the hedges about Saffron Walden in Eſſex, and many miles round that place, where corn grows frequently up to the very edge, that we can ſcarcely ſuppoſe ſuch an intereſting effect to have eſcaped obſervation. The celebrated Duhamel long ſince looked upon the mildewing power of barberry as totally void of foundation; and M. Brouſſonet, who has bent his attention particularly to agriculture, aſſures us of the ſame thing, from his own obſervation.

2. Berberis cretica, or cretan or box-leaved barberry: peduncles ſubumbelled; ſpines triple. This never riſes more than three or four feet high in England. It ſends out many ſtalks from the root, which are ſtrongly armed with ſpines at every joint; the leaves are produced without order, and are ſhaped like thoſe of the narrow-leaved box-tree; the flowers come out from between the leaves, each upon a ſlender peduncle, but theſe are not ſucceeded by fruit in England. Native of the iſland of Crete or Candia, and alſo of Japan. Cultivated in 1759, by Mr. Miller. It flowers in April and May.

3. Berberis ilicifolia, or holm-leaved barberry: leaves obovate, ſerrate-ſpinous; pedicles elongated, cymoſe; ſpines digitate. Leaves ſtiff, on very ſhort petioles, quite entire at the baſe, but having two or three ſerratures on each ſide towards the middle, and terminated by a ſpine, as is alſo the point of the leaf, very ſmooth, and more glaucous beneath. Found in the Terra del Fuego by Sparrman. The inhabitants there uſe the wood for bows, on account of its great elaſticity.

4. Berberis Sibirica, or Siberian barberry: peduncles one-flowered, ſolitary, nodding; ſpines palmate. This is a ſmall ſhrub, ſcarcely a ſpan in height. Branches numerous, ſtiff, upright, covered with a grey or dirty yellow bark, except at the ends, which are green. Native of Siberia, where it was obſerved by Pallas.

Propagation and Culture. The common ſort is generally propagated by ſuckers, which are put out in great plenty from the root; but theſe plants are very ſubject to ſend out ſuckers in greater plenty than thoſe which are propagated by layers; therefore the latter method ſhould be preferred. The beſt time for laying down the branches is in the autumn, when their leaves begin to fall; the young ſhoots of the ſame year are the beſt for this purpoſe; theſe will be well rooted by the next autumn, when they may be taken off, and planted where they are deſigned to remain. Where this plant is cultivated for its fruit, it ſhould be planted ſingle, (not in hedges, as was the old practice,) and the ſuckers every autumn taken away, and all the groſs ſhoots pruned out: by this method the fruit will be much fairer, and in greater plenty, than upon thoſe which are ſuffered to grow wild. A few of theſe ſhrubs may be allowed to have place in wilderneſſes, or plantations of ſhrubs, where they will make a pretty variety, and the fruit will be food for the birds; but they ſhould not be planted in great quantities, near walks which are much frequented, becauſe their flowers emit a very ſtrong diſagreeable odour. The Canada ſort was more common in the Engliſh gardens ſome years paſt, than at preſent. This may be propagated in the ſame way as the common ſort, and is equally hardy. The box-leaved ſort is at preſent very rare in England; and while young, the plants, being ſomewhat tender, are killed by ſevere froſt. This ſort may be propagated by laying down the branches in the ſame manner as the firſt; but when the young plants are taken off, they ſhould be planted in pots, and ſheltered under a frame in the winter, till they have obtained ſtrength, when they may be turned out of the pots, and planted in a warm ſituation.

BER'BI, a town of Africa, on the Ivory coaſt. Lat. 4. 30. N. lon. 12. 30. W. Ferro.

BER'BICE, a river of South America, in the country of Surinam, which gives name to a Dutch ſettlement, in which are cultivated cotton, indigo, &c. This ſettlement was taken by the Engliſh in 1781; but it was ſoon after retaken by the French, and reſtored to the Dutch. In 1796 it was again taken by the Engliſh. The river runs into the Atlantic, lat. 6. 30. N.

BERBU'DA. See BARBUDA.

BER'BURG, a town of the Netherlands, in the duchy of Luxemburg: twelve miles north-eaſt of Luxemburg.

BER'CAD, a town of Poland, in the palatinate of Braclaw, near the Bog: fifty-two miles ſouth-ſouth-eaſt of Braclaw.

BERCA'RIA, BERQUERIA, or BERKERIA, *ſ.* [The word is abbreviated from *berbicaria*; of *berbex*, detorted from *vervex*. Hence alſo a ſhepherd was denominated *berbicarius* and *berquarius*.] In middle-age writers, denotes a ſheep-fold, ſheep-cote, ſheep-pen, or other incloſure for the ſafe keeping a flock of ſheep.

BER'CHEM, a town of Brabant: four miles ſouth-weſt of Raveſtein.

BERCHEM, or BERGEN, a town of Germany, in the circle of Weſtphalia, and duchy of Juliers: nine miles eaſt of Juliers.

BERCHEROI'T, or BERKOITS, *ſ.* A weight uſed at Archangel, and in all the Ruſſian dominions, to weigh ſuch merchandizes as are heavy and bulky. It is about 364lb. Engliſh averdupois weight.

BER'CHETT (Peter), an eminent hiſtory-painter, born in France in 1659, and at the age of eighteen was employed in the royal palaces. He came to England in 1681, and was ſent by king William to the palace he was building at Loo, where he was employed fifteen months. We are informed by Mr. Walpole, that he painted the ceiling of the chapel of Trinity-college, Oxford, the ſtair-caſe at the duke of Schomberg's in Pall-mall, and the ſummer-houſe at Ranelagh. His drawings in the academy were much approved. Towards the cloſe of his life he retired to Marybonne, where he painted ſmall pieces of fabulous hiſtory, and died in January 1720.

BERCH'TOLDSDORF, or PETERSDORF, a town of Germany, in the archduchy of Auſtria: ſix miles ſouth-weſt of Vienna.

BERCHTOLDSGA'DEN, or BERCHTESGADEN, a provoſtſhip and principality of Germany, in the circle of Bavaria, environed in the archbiſhopric of Salzburg, but exempt from the juriſdiction of that ſee, and only ſubject to the pope. It is wholly mountainous, and contains two towns and a few villages: it contains alſo ſeveral lakes. It is aſſeſſed two horſes and twenty foot, or 100 florins for a Roman month; and pays each chamber term 121 rixdollars, ſixty-ſix kreutzers.

BERC'KEL, a town of Holland: five miles E. Delft.

BERCKEL, a river of Germany, which riſes in the biſhopric of Munſter, and runs into the Iſſel, at Zutphen.

BERCK'SENBROECK, a town of Holland: ſix miles north of Rotterdam.

BERD, a river of Siberia, which runs into the Oby, near Berſkoi.

BERDA'A, a town of Aſia, in Armenia, 160 miles eaſt of Erivan.

BER'DANIEH, a town of Aſiatic Turkey, in the province of Caramania: thirty-two miles north of Alameh.

BERDAS'CHIR, a town of Perſia. See BARSIR.

BER'DASH, *ſ.* A name formerly uſed in England for a certain kind of neck-dreſs; and hence a perſon who made or fold ſuch neck-cloths was called a *berdaſher*, from which is derived our word *haberdaſher*.

BERDIC'ZOW, a town of Poland, in the palatinate of Volhynia: 148 miles eaſt-ſouth-eaſt of Lucho, and 324 ſouth-weſt of Warſaw.

BERDO'A, a deſert country of Africa, between Egypt and Sahara.

To BERE'AVE, *v. n.* preter. *I bereaved*, or *bereft*; part. *bereft*; [*bereoſian*, Sax.] To ſtrip of; to deprive of. It has generally the particle *of* before the thing taken away:

Madam, you have *bereft* me *of* all words,
Only my blood ſpeaks to you in my veins. *Shakeſp.*

Sometimes it is uſed without *of*:

Bereave me not,
Whereon I live! thy gentle looks, thy aid,
Thy counſel in this uttermoſt diſtreſs. *Milton.*

To take away from:

All your intereſt in thoſe territories
Is utterly *bereft* you, all is loſt. *Shakeſpeare.*

BEREA'VEMENT, *ſ.* Deprivation.

BERECYN'THIA, a name of Cybele, becauſe ſhe had a temple on mount Berecynthus in Phrygia.

BEREFT', *part. paſſ.* of *bereave*:

The chief of either ſide *bereft* of life,
Or yielded to the foe, concludes the ſtrife. *Dryden.*

BEREG'SZAZ, a town of Hungary: twenty-four miles north of Zatmar.

BEREIL'LY, a town of Hindoſtan, in the Rohilcund Circar: 120 miles north-north-weſt of Lucknow, and 112 eaſt of Delhi. Lat. 28. 20. N. lon. 79. 45. E. Greenwich.

BERE'LOS, a lake of Egypt, between Damietta and Roſetta: thirty-two miles long, and ten wide in the middle, but gradually narrowing towards each end; it has ſeveral iſlands in it.

BERELOS, a town of Egypt, 30 miles weſt of Damietta.

BE'REN, or BIERON, a town of Sileſia, in the principality of Ratibor: thirty-four miles eaſt of Ratibor.

BERENGA'RIANISM, *ſ.* A name given by the eccleſiaſtical writers to the opinion of thoſe who deny the reality of the body and blood of Chriſt in the euchariſt. The denomination took its riſe from Berenger, archdeacon and ſcholaſtic of the church of St. Mary at Anjou about the year 1035, who poſitively denied tranſubſtantiation in the ſacrament. He was oppoſed by Lanfranc, Guitmond, Adelmannus, Albericus, &c. Divers ſynods were held, wherein he was condemned, at Rome, Verſailles, Florence, Tours, &c. He died in 1088.

BERENGA'RIUS (Jacob), an eminent ſurgeon and anatomiſt of Carpo, famous for being the firſt that cured the lues venerea with a mercurial ointment, which carried it entirely off by a ſalivation; by which diſcovery he gained both riches and reputation. He flouriſhed about 1520.

BE'RENICE, daughter of Ptolemy Auletes king of Egypt, ſucceeded her father before his death. This baniſhed prince implored the aſſiſtance of the Romans, and Pompey reſtored him. Berenice, to ſupport herſelf on the throne, allured a prince, whoſe name was Seleucus, deſcended from the kings of Syria, and admitted him to her nuptial bed and to her ſceptre. She was ſoon weary of him, and put him to death. She next caſt her eye on Archelaus, who married her, and put himſelf at the head of her troops to repulſe the Romans. He was killed in a battle. Ptolemy returned to Alexandria, and put his rebellious daughter to death.

BERENICE, wife of Ptolemy Evergetes king of Egypt, cut off her hair in purſuance of a vow, and conſecrated it in the temple of Venus. This depoſit being afterwards loſt, Conon the mathematician, in compliment to her, declared that the queen's locks had been conveyed to heaven, and compoſed thoſe ſeven ſtars near the tail of the bull, called *coma Berenices.*

BERENICE, daughter of Coſtobarus and Salome ſiſter to Herod the Great, was married firſt to Ariſtobulus, ſon of the ſame Herod and Mariamne. He, having a brother who married the daughter of Archelaus king of Cappadocia, often upbraided Berence that he demeaned himſelf in wedding her. Berenice related theſe diſcourſes to her mother, and exaſperated her ſo furiouſly, that Salome, who had much power over Herod's mind, made him ſuſpect Ariſtobulus, and was the principal cauſe that urged this cruel father to get him diſpatched. She married again; and, having loſt her ſecond huſband, went to Rome, and was taken into favour by Auguſtus.

BERENICE, grand-daughter of the preceding, and daughter of Agrigpa I. king of Judea, was betrothed to Marcus, but he died before the marriage. Soon after, ſhe married his uncle Herod, who at the deſire of Agrippa, both his brother and father-in-law, was created king of Cholcis by the emperor Claudius. She loſt her huſband in the eighth year of the emperor Claudius; and in her widowhood ſhe committed inceſt with her brother Agrippa. To put a ſtop to this report, ſhe offered herſelf in marriage to Polemon king of Cilicia, provided he would change his religion. He accepted her offer, was circumciſed, and married her. Berenice ſoon left him to follow her own inclination; and he abandoned Judaiſm to return to his former religion. She drew Titus into her ſnares; but, the murmurs of the Roman people hindering her from becoming his wife, there remained nothing for her but the title of *concubine of the emperor.* The French ſtage, in the 17th century, reſounded with the amours of Titus and Berenice.

BERENICE, the name of ſeveral ancient cities, particularly of a celebrated port-town on the Sinus Arabicus; now SUEZ.

BERE'NICIUS, a man utterly unknown, who appeared in Holland in the year 1670. He was thought to be a Jeſuit, or a renegado from ſome other religious fraternity. He got his bread by ſweeping chimnies and grinding knives. He died in a bog, ſuffocated in a fit of drunkenneſs. His talents, if the hiſtorians that mention him are to be credited, were extraordinary. He verſified with ſo much eaſe, that he could recite extempore, and in tolerably good poetry, whatever was ſaid to him in proſe. He has been ſeen to tranſlate the Flemiſh gazettes from that language into Greek or Latin verſe, ſtanding on one foot. The dead languages, the living languages, Greek, Latin, French, and Italian, were as familiar to him as his mother tongue. He could repeat by heart Horace, Virgil, Homer, Ariſtophanes, and ſeveral pieces of Cicero, of the one and the other Pliny; and, after reciting long paſſages from them, point out the book and the chapter from whence they were taken. It is ſuppoſed that the Georgarchoniomachia is by him.

BE'RENTZ, a town and caſtle of Hungary: twenty miles north-north-eaſt of Preſburg.

BE'RE RE'GIS, a ſmall town in the county of Dorſet, near which is Woodbury Hill, celebrated for its annual fair. It has a weekly market on Wedneſdays: nine miles from Blandford, and 113 weſt of London.

BERES'KY, a town of Poland, in the palatinate of Braclaw: forty miles ſouth-eaſt of Braclaw.

BERETEL'SKO, a town of Poland, in the palatinate of Volhynia: 24 miles ſouth-ſouth-weſt of Lucko.

BERETIN' (Peter), born at Cortona in Tuſcany in 1596, at firſt betrayed but little talent for painting; but his diſpoſitions burſt forth on a ſudden, to the aſtoniſhment of thoſe who had laughed at his incapacity. Rome and Florence ſucceſſively had him. Alexander VII. created him knight of the golden ſpur. The grand duke Ferdinand II. alſo conferred on him ſeveral marks of his eſteem. That prince one day admiring the figure of a child weeping which he had juſt painted, he only gave it one touch of the pencil, and it appeared laughing; then, with another touch, he put it in its former ſtate: "Prince," ſaid Berétin, "you ſee how eaſily children laugh and cry." He died in 1669. His company was amiable, his manners pure, his nature mild, his heart ſenſible to friendſhip. His genius was unbounded, and required grand ſubjects for its employment. He threw a ſingular grace into the airs of his heads, a brilliancy and freſhneſs into his colouring, and gave a dignity to his ideas; but his drawing is not always correct. Berétin, known alſo under the name of *Pietro di Cortona*, was not leſs ſucceſsful in architecture.

BERETZHAU'SEN, a town of Germany, in the circle of Bavaria and principality of Neuburg: twelve miles weſt-north-weſt of Ratiſbon.

BEREWI'CHA, or **BEREWICA**, denotes a village or hamlet belonging to ſome town or manor. The word frequently occurs in Doomſday-book: *Iſtæ ſunt berewichæ ejuſdem manerii.*

BERE'ZA, a town of Poland, in the palatinate of Kiov: thirty miles weſt of Bialacerkiew.

BEREZA, a town of Lithuania, in the palatinate of Brzeſc: fifty-ſix miles eaſt-north-eaſt of Brzeſc.

BEREZEC', a town of Little Ruſſia, in the palatinate of Chelm: twenty-two miles eaſt of Chelm.

BERE'ZEN, a river which runs into the Black Sea: twenty miles weſt of Otchakov.

BEREZEU'KA, a town of Ruſſia, in the government of Saratov, on the weſt ſide of the Volga: 124 miles ſouth of Saratov.

BEREZI'NA, a river of Lithuania, which riſes in the palatinate of Wilna, and runs into the Niemen: ſixteen miles north-eaſt of Novogrodek.

BEREZINA, a town of Lithuania, in the palatinate of Minſk: forty-four miles north-eaſt of Minſk.

BEREZIN'SKOI, a town of Siberia, on the north ſide of the Irtiſch: forty miles eaſt of Tobolſk.

BEREZ'NIKI, a town of Lithuania, in the palatinate of Troki: forty miles north-north-weſt of Troki.

BEREZOV', a diviſion of the province of Tobolſk in Siberia. It is bounded on the north by the ſtraits of Waigatz, on the eaſt by a large bay of the frozen ocean, which runs into the land towards the ſouth, and at the 65th degree of latitude ſeparates into two arms; one of which is called the *Obſkaia-Guba* or *Oby-bay*; and the other *Tazowſkaia-Guba*, or the *bay of Tazow*. The river Oby empties itſelf into the former, and the Taz into the latter. This diſtrict was under the Ruſſian dominion long before the other parts of Siberia were conquered, being reduced by the czar Gabriel ſo early as the year 1530.

BEREZOV, a town of Siberia, and capital of the above diſtrict, on the weſt ſide of the Oby: 372 miles north-north-weſt of Tobolſk. Lat. 64. N. lon. 83. E. Ferro.

BEREZOV, a town of Ruſſia, in the government of Olonetz: 180 miles north-north-weſt of Petrozavodſkoi. Lat. 64. 15. N. lon. 48. 20. E. Ferro.

BERE'ZOVOI, a fortreſs of Aſiatic Ruſſia, in the government of Orenburg, on the Uvelka: 240 miles eaſt of Upha, and ſixty-eight ſouth-eaſt of Tcheliabinſk.

BEREZOVS'KOI, a fortreſs of Aſiatic Ruſſia, in the government of Orenburg, on the Ural: 140 miles eaſt-north-eaſt of Orenburg.

BERG, a duchy and principality of Germany, in the circle of Weſtphalia, bounded on the weſt and ſouth by the archbiſhopric of Cologne, from which it is ſeparated by the Rhine; on the north by the duchy of Cleves, and on the eaſt by the duchy of Marck; about ſixty miles long, and from eight to twenty-two in breadth. The country along the Rhine is flat and fertile, and produces great quantities of corn: on the hills the inhabitants cultivate vines, in the vallies are meadows, and upon the mountains vaſt foreſts. There are mines of lead, iron, and coal. The inhabitants conſume more wheat than they grow. The principal manufactures are ſwords, knives, and other articles of iron and ſteel. There are alſo ſome manufactures of cloths, ribbands, and handkerchiefs. The principal rivers are the Wipper, the Seig, and the Ruhr: the principal towns are Duſſeldorf, Everfeld, Gemarke, Ronſdorf, Solingen, Lennep, &c. This duchy formerly belonged to the elector palatine. In 1795 it was entirely overrun by the French.

BERG, a town of Norway; twelve miles ſouth of Frederickſtadt.

BER'GA, a town of Norway: ſixty miles eaſt-north-eaſt of Chriſtiana. Lat. 59. 50. N. lon. 27. 24. E. Ferro.

BERGA, a town of Germany, in the circle of Upper Saxony, and circle of Neuſtadt: five miles weſt of Weyda.

BERGAMAS'CO, a country of Italy, part of the late ſtates of Venice, bounded on the north by the country of the Griſons, on the eaſt by the Breſſan, on the ſouth by the Cremaſco, and on the weſt by the Milaneſe; towards the north it is mountainous and uncultivated; in the environs of Bergamo it is exceedingly fertile; ſome of the vallies produce large quantities of wine and oil, others are unproductive. In the mountains are mines of iron. The people in general are inclined to corpulency, and ſubject to the goitre, or rupture of the throat; nevertheleſs they are intelligent in commerce, and carry on a conſiderable traffic in iron, wool, carpets which they manufacture, cattle, marble, and mill-ſtones. This territory now forms a part of the Ciſalpine republic, by the eighth article of the treaty of Udine, ſigned October 17, 1797, between the French republic and the emperor of Germany; at which time the Venetian ſtates were totally diſſolved, and that beautiful country was divided between the French and the emperor.

BER'GAMO, a city of Italy, and capital of the country of Bergamaſco, fortified with walls, baſtions, and ditches, ſituated upon ſeveral ſmall hills. Between the city and a lofty mountain is a ſtrong caſtle. It has ſeveral ſuburbs; in one of which is kept a large fair at the feaſt of St. Bartholomew, at which a vaſt concourſe of merchants aſſemble from Italy, Germany, and Swiſſerland. It is the ſee of a biſhop, ſuffragan of Milan, and contains thirteen pariſh-churches, twelve convents for men, ten for women, and about thirty thouſand inhabitants. The principal commerce is wool and ſilk; the former has been very conſiderable, and the ſerges as well as the tapeſtry of Bergamo have been celebrated; their ſilks equal thoſe of Turin. The inhabitants are active and laborious; their language is a bad Italian. The environs of the place are ſandy, but made very fertile by the induſtry of the inhabitants. Lewis XII. of France, after defeating the Venetians at the battle of Agnadel, ſeized on this city; but reſtored it to the republic, ſix years after, by the treaty of 1516. It is twenty-five miles north-eaſt of Milan, and twenty-ſix north-weſt of Breſcia. Lat. 45. 42. N. lon. 27. 10. E. Ferro.

BERGAMO (James Philip de), an Auguſtin monk, born at Bergamo in 1434, wrote in Latin a Chronicle from the creation of the world to the year 1503, and a Treatiſe of Illuſtrious Women. He died in 1518.

BERGAMOT', *ſ.* A ſpecies of citron, caſually produced by an Italian's grafting a citron on the ſtock of a bergamot pear-tree, whence the fruit produced by this union participated both of the citron and the pear. The fruit hath a fine taſte and ſmell, and its eſſential oil is in high eſteem as a perfume. The eſſence of bergamot is alſo called *eſſentia de cedra*. It is extracted from the yellow rind of the fruit by firſt cutting it in ſmall pieces, and then ſqueezing the oil out of them into a glaſs veſſel. This liquor is an etherial oil. A water is diſtilled from the peel as follows: take the outer rind of three bergamots, a gallon of pure proof-ſpirit, and four pints of pure water; draw off a gallon in a balneum mariæ, then add as much of the beſt white ſugar as will be agreeable. Or take of the eſſence of bergamot three drachms and a half, of rectified ſpirit of wine three pints, of volatile ſal ammoniac a drachm; diſtil off three pints in a balneum mariæ.

Bergamot is alſo a coarſe tapeſtry, manufactured with flocks of ſilk, wool, cotton, hemp, ox, cow, or goat's, hair, and ſuppoſed to be invented by the people of Bergamo in Italy.

BER'GAS, a town of Aſiatic Turkey: forty miles weſt of Artaki.

BERGA'SE, a town of European Turkey, in the province of Romania: forty-four miles eaſt-north-eaſt of Adrianople.

BER'GEN, a city and ſea-port town of Norway, and capital of the province of Bergenhus, ſituated in the centre of a valley, diſpoſed in the form of a creſcent; ſeven lofty mountains render it almoſt inacceſſible by land, and towards the ſea it is defended by fortifications and batteries. The principal articles of commerce for exportation are fiſh, ſkins, tallow, and timber. It was built in 1076, and has been in a more flouriſhing ſtate than it now is. It contains about 19,000 inhabitants. It is the ſee of a biſhop, ſuffragan of the archbiſhop of Drontheim. The harbour is reckoned one of the beſt in Europe: ninety leagues ſouth-weſt of Drontheim, and thirty-ſix north of Stavanger. Lat. 60. 10. N. lon. 22. 54. E. Ferro.

Bergen, a town of Germany, in the circle of the Upper Rhine, and principality of Hanau Munzenburg: the environs produce excellent wine. Here the Hanoverians were defeated by the French in the year 1759: ſix miles north-north-weſt of Hanau, and three north-eaſt of Francfort on the Maine.

Bergen, a town of Germany, in the circle of Upper Saxony, and capital of the iſle of Rugen: its ancient name was *Gora*. It is ſituated in the centre of the iſland, where are held the tribunals of Swediſh Pomerania. Lat. 54. 32. N. lon. 31. 3. E. Ferro.

Bergen, a county of New Jerſey, in the United States of North America.

Bergen on the Dumme, a town of Germany, in Lower Saxony, and principality of Zell: twelve miles ſouth-weſt of Danneberg.

BER'GENHUS, the moſt weſterly province of Norway, ſituated between Aggerhus and the ſea: about ſixty leagues long, and twenty-ſeven wide. Bergen the capital.

BER'GERAC, a town of France, and principal place of a diſtrict, in the department of the Dordogne: ſituated in a beautiful and extenſive plain on the Dordogne, which ſeparates it into two towns, called *St. Martin* and *St. Magdalene*: it is a rich, commercial, and populous, town, containing near 8000 inhabitants. Before the revocation of the edict of Nantes, it is ſaid there were 40,000 Proteſtants in this town and neighbourhood: ſeven leagues and a half ſouth of Perigueux, and thirteen north of Agen. Lat. 44. 15. N. lon. 18. 8. E. Ferro.

BERGGIEFZHU'BEL, or Berg Gieshubel, a town of Germany, in the circle of Upper Saxony, and margraviate of Meiſſen, near which are warm medicinal ſprings: ſix miles ſouth of Pirna.

BERG-GRUIN, ſ. An earth uſed in painting, properly called *green okre*, though not known among the colourmen under that name. It is found in many parts of Germany, Italy, and England, commonly in the neighbourhood of copper-mines, from particles of which metal it receives its colour. In many parts of Germany, they have a purer kind, ſeparated by art from the waters draining from the copper-mines, and differing no otherwiſe from this native ſubſtance, than as the waſhed okres of Oxfordſhire, &c. do from thoſe ſent us in their natural condition. The characters by which the native kind is known from other green earths, are theſe: it is a denſe compact ſubſtance, conſiderably heavy, and of a pale green; of a rough and uneven ſurface, and ſomewhat unctuous to the touch. It adheres firmly to the tongue; does not break eaſily between the fingers; nor at all ſtains the hands. It is of a brackiſh diſagreeable taſte, and does not ferment with acids.

BERGH, or Berghland, an iſland in the Indian Sea, lying ſouth-weſt of Sumatra. Lat. 2. 30. S. Lon. 100. E. Greenwich.

BERG'HEIM, a town of Germany, in the circle of the Upper Rhine, and county of Waldeck: four miles ſouth-eaſt of Waldeck.

BERG'HEM (Van), was born at Haarlem in 1624, and died there aged fifty-nine. This painter, who nearly attained to univerſal excellence, having great elegance in his choice, and happineſs of compoſition, was particularly eſtimable; for that notwithſtanding his freedom of deſign in general, his bold grouping, and great maſſes of light and ſhade, ſeem, at firſt view, to indicate rather a haſty execution, yet not the minuteſt object in his pieces will be found to diſcover any negligence: on the contrary, a ſtone, a plant, are obſerved to be in equal accuracy and perfection with his principal figure.

BERGHI'RI, a town of Aſia, in the province of Kurdiſtan: ſeventy miles ſouth-eaſt of Betlis.

BERGH'MASTER, ſ. [from *berg*, Sax. a hill.] A bailiff or chief officer among the Derbyſhire miners, who alſo executes the office of a coroner. The Germans call a mountaineer, or miner, a *bergman*. *Blount.*

BERGH'MOTH, or Berghmote, ſ. [from *berg*, a hill, and *gemote*, Sax. an aſſembly.] An aſſembly or court upon a hill, which is held in Derbyſhire, for deciding pleas and controverſies among the miners. And on this court of berghmote Mr. Manloue, in his treatiſe of the cuſtoms of the miners, hath a copy of verſes, with references to ſtatutes, &c. Vide *Squire* on the *Anglo-Saxon government.*

BERGIER' (Nicholas), had the title of *hiſtoriographer of France*, but he is more known by his curious hiſtory of the great roads of the Roman empire, which are now ſurpaſſed by ours in beauty, though not in ſolidity. His ſon put the finiſhing hand to this uſeful work, and printed it under the reign of Lewis XIV. He died in 1723.

BERG'MANN (Sir Torbern), a celebrated chemiſt and philoſopher, born in 1735, at Catharineberg in Weſtgothland. His father was receiver-general of the finances, and had deſtined him to the ſame employment; but nature formed him for the ſciences. His firſt ſtudies were confined to mathematics and phyſics: and the efforts that were made to divert him from ſcience having proved ineffectual, he was ſent to Upſal with permiſſion to follow the bent of his inclination. Linnæus at that time filled the whole kingdom with his fame. Inſtigated by his example, the Swediſh youth flocked around him: and accompliſhed diſciples, leaving his ſchool, carried the name and the ſyſtem of their maſter to the moſt diſtant parts of the globe. Bergmann was ſtruck with the ſplendour of his renown; he attached himſelf to the man whoſe merit had procured it, and by whom he was very ſoon diſtinguiſhed. He applied himſelf at firſt to the ſtudy of inſects, and made ſeveral ingenious reſearches into their hiſtory. He diſcovered that the leech is oviparous; and that the coccus aquaticus is the egg of this animal, from whence iſſue ten or twelve young. Linnæus, who had at firſt denied this fact, was ſtruck with aſtoniſhment when he ſaw it proved. *Vidi et obſtupui!* were the words he pronounced, and which he wrote at the foot of the memoir when he gave it his ſanction. Mr. Bergmann ſoon diſtinguiſhed himſelf as an aſtronomer, naturaliſt, and geometrician; but theſe are not the titles by which he acquired his fame. The chair of chemiſtry and mineralogy, which had been filled by the celebrated Wallerius, becoming vacant by his reſignation, Mr. Bergmann was among the number of the competitors: and, without having before this period diſcovered any particular attention to chemiſtry, he publiſhed a memoir on the preparation of alum that aſtoniſhed his friends as well as his adverſaries. Nobody was able to conceive how in ſo ſhort a time he could have made a courſe of experiments ſo complete, on a ſubject ſo new to him. His diſſertation was warmly attacked in the periodical publications, and Wallerius himſelf criticiſed upon it. But in the midſt of ſo many enemies, he poſſeſſed a firm friend. The prince Guſtavus, ſince king of Sweden, and then chancellor of the univerſity, took cognizance of the affair. After having conſulted two perſons, the moſt able to give him advice, and whoſe teſtimony went in favour of Bergmann, he addreſſed a memorial, written with his own hand, in anſwer to all the grievances alleged againſt the candidate, to the conſiſtory of the univerſity, and to the ſenate, who confirmed the wiſhes of his royal highneſs. Mr. Bergmann had now a hard duty to fulfil: he had to ſatiſfy the hopes that were conceived of him; to fill the place of Wallerius; and to put envy to ſilence. He did not follow the common track in the ſtudy of chemiſtry. As he had received the leſſons of no maſter, he was tainted with the prejudices of no ſchool. Accuſtomed to preciſion, and having no time to loſe, he applied to experiments without paying any attenton to theories: he repeated thoſe often which he conſidered as the moſt important and inſtructive, and reduced them to method; an improvement till then unknown. He firſt introduced into chemiſtry the proceſs by analyſis, which ought to be applied to every ſcience; for there ſhould be but one method of teaching and learning, as there is but one of judging well. Theſe views have been laid down by Mr. Bergmann in an excellent diſcourſe, which contains, if we may ſay ſo, his profeſſion of faith in what relates to the ſciences. It is here that he diſplays himſelf without diſguiſe to his reader; and here it is of importance to ſtudy him with attention. The productions of volcanoes had never been analyſed, when Meſſrs. Ferber and Troil brought a rich collection into Sweden. At the ſight of them Mr. Bergmann conceived the deſign of inveſtigating their nature. He examined firſt of all the matters leaſt altered by the fire, and the forms of which were ſtill to be diſcerned: he followed them in their changes progreſſively; he determined, he imitated, their more complicated appearances; he knew the effects which would reſult from the mixture and decompoſition of the ſaline ſubſtances which abound ſo much in theſe productions. He diſcovered ſuch as were formed in the humid way; and then in his laboratory he obſerved the proceſs of nature; that combat of flames and exploſions; that chaos in which the elements ſeem to claſh and to confound one another, unfolded themſelves to his view. He ſaw the fire of volcanoes kindled in the midſt of pyritical combinations, and ſea-ſalt decompoſed by clays; he ſaw fixed air diſengaged from calcined calcareous ſtones, ſpreading upon the ſurface of the earth, and filling caverns in which flame and animal life are equally extinguiſhed; he ſaw the ſulphureous acid thrown out in waves, convert itſelf into the vitriolic by mere contact with the air; and, diſtilling through the rocks, form the alum veins of the ſolfatara. He ſaw the bitumens as they melted; the inflammable and ſulphureous airs exhaling; and the waters become mineral and impregnated with the fire and vapour of theſe ſtupendous furnaces, preparing for the beings that move and diſpute on the cruſt of the abyſs, a remedy for pain, and a balſam for diſeaſe. The continual application which Mr. Bergmann beſtowed on his ſtudies having affected his health, he was adviſed to interrupt them if he wiſhed to prolong his life: but he found happineſs only in ſtudy, and wiſhed not to forfeit his title to reputation by a few years more of inactivity and languor. He exhauſted his ſtrength, and died in the month of June in the year 1784. The univerſity of Upſal paid the moſt diſtinguiſhed honours to his memory; and the academy of Stockholm conſecrated to him a medal to perpetuate the regret of all the learned in Europe for his loſs. The ſmaller works of Sir Torbern Bergmann were in part collected and publiſhed in ſix octavo volumes; the firſt and ſecond at Upſal, by himſelf; the third at Leipſic, by profeſſor Leſke; the fourth, fifth, and ſixth, at the ſame place, under the inſpection of profeſſor Hebenſtreit. Of theſe volumes three (viz. 1. 2. 4.) have been tranſlated and publiſhed by Dr. E. Cullen. The whole collection compriſes ſeventy-two eſſays on ſubjects highly intereſting in chemiſtry, phyſics, and natural hiſtory. The collection is ſtill very far from being complete; it does not comprehend many articles in which the genius and ſagacity of this celebrated man appear to a peculiar advantage. The catalogue of his works given at the end of Peter James Hjelm's *Gedachtniſe Rede* (Commemoratory Oration) before the royal Swediſh academy, contains 106 articles; all on ſubjects worthy the attention and inveſtigation of the learned. The moſt important is a Treatiſe on Phyſical Geography publiſhed originally in Swediſh in 2 vols. 4to. It has been tranſlated into German; and we ſpeedily hope to ſee it in Engliſh. The high eſtimation in which it is held on the continent, is fully evinced by the intention of profeſſor Hebenſtreit to tranſlate it into Latin, to promote univerſally the knowledge of phyſical geology.

BERGMAN'NIAN SOCI'ETY, a modern inſtitution, ſet on foot for the promotion of chemiſtry, pharmacy, mineralogy, geology (phyſical geography), and electrity. Real eminence in theſe ſciences are the only means of admiſſion into it. The preſent liſt of the members or fellows of the Bergmannian ſociety (F. B. S. or S. B. S.) compriſes the names of ſeveral of the moſt illuſtrious cultivators of theſe ſciences both at home and on the continent. Its utmoſt number is 150, of whom fifty may be foreigners. The preſident of this ſociety is Dr. Henry Hodgſon, of Market-Raſen, Lincolnſhire, elected on the 16th of Sept. 1795; by whom communications coinciding with their plan, are received, and laid before the ſociety.

BERGO'MUM, anciently a town of the Tranſpadana, built by the Gauls on their incurſions into Italy; now BERGAMO.

BERG-OP-ZOOM, a maritime town of Dutch Brabant, ſituated on the river Zoom, at its union with the Scheldt; firſt ſurrounded by a wall in 1287, by Gerard de Weſemael, firſt lord of the town, and erected into a marquiſate by the emperor Charles V. in 1533. The church is a beautiful ſtructure, and was made collegiate in 1442. This is one of the ſtrongeſt places belonging to the Dutch, having been regularly fortified in 1629, and eſteemed nearly impregnable: towards Antwerp is a grand half moon, extending to a fort called *Kyck-in-de-Pot*, furniſhed with four redoubts, and well mounted with cannon; by a canal which communicates with the Scheldt, ſuccours may be thrown into the place during a ſiege: between the town and the ſea are eleven forts well ſupplied, with a number of redoubts and palliſadoes; towards Steenberg alſo the outworks are very ſtrong, with a number of redoubts and intrenchments. Berg-op-Zoom had its particular lords ſo long ſince as the year 1211. After the death of John de Glimes, whom the ducheſs of Parma ſent into Spain, and who died in priſon in the year 1567, the marquiſate came to Eitel Frederick, prince of Hohenzollern, of the houſe of Brandenburg, by a marriage with Elizabeth de Berg, heireſs of the late marquis: with their daughter it was received as a marriage portion by Maurice de la Tour d'Auvergne, governor and ſeneſchal of Limoſin, &c. This prince died in 1707, leaving his ſon Conſtantine, who quitted the ſervice of France, and retired to Holland, where he was made lieutenant-general of the Dutch forces. In 1707, he eſpouſed Mary Anne, daughter of Philip duke of Aremberg and Arſchot, by whom he had one only daughter, Mary Henrietta, and died in 1710, at Douay, in the flower of his age. The commander, don Louis de Requeſens, governor of the Netherlands, was defeated near this place, on the 29th of January, 1574. The town of Middleburg being much preſſed by the confederates, he equipped a fleet, which he divided to occupy both branches of the Scheldt, to ſail towards Zealand. One part he entruſted to John de Glimes, the vice-admiral, and Julien Romero; the other to don Sanchez Avila. The two firſt were defeated by the Zealanders, under the command of Loüis Boiſſot, admiral of Zealand, who loſt an eye in the engagement. The conquerors took nine ſhips, and burnt the Spaniſh admiral; Glimes was ſlain: Romero ſwam to ſhore. The commander being on the bank was witneſs of the unfortunate ſucceſs of the enterpriſe, of the whole of which he was informed by Airla, who retired to Antwerp.

The prince of Parma attempted to take it in 1588, without ſucceſs; and in 1622, the marquis of Spinola laid ſiege to it again, but the beſieged defended themſelves ſo valiantly, and the prince of Orange took ſuch meaſures to throw ſuccours into the place, that the marquis was obliged 10 raiſe the ſiege on the 2d of October, after having loſt more than ten thouſand men, from the 18th of July, when he began his approach. In the year 1746, the marechal Saxe, having amuſed the allies with marches and counter-marches, at length detached count Lowendahl, with ſix and thirty thouſand men to beſiege Berg-op-Zoom. It was ſecured with a garriſon of three thouſand men, and well provided with artillery, ammunition, and magazines. The enemy appeared before it on the 12th of July, and ſummoned the governor to ſurrender. The prince of Saxe-Hildburghauſen was ſent to its relief, with twenty battalions and fourteen ſquadrons of the troops that could be moſt conveniently aſſembled: he entered the lines of Berg-op-Zoom, where he remained in expectation of a ſtrong reinforcement from the confederate army; and the old baron Cronſtrom, whom the ſtadtholder had appointed governor of Brabant, aſſumed the command of the garriſon. The beſiegers carried on their operations with great vivacity, and the troops in the town defended it with equal valour. The eyes of all Europe were turned upon this important ſiege: comte Lowendahl received divers reinforcements, and a conſiderable body of troops was detached from the allied army, under the command of baron Schwartzemburgh, to co-operate with the prince of Saxe-Hildburghauſen. The French general loſt a conſiderable number of men by the cloſe and continual fire of the beſieged: while he, in his turn, opened ſuch a number of batteries, and played them ſo warmly, that the defences began to give way. From the 16th of July to the 15th of September, the ſiege produced an unintermitting ſcene of horror and deſtruction; deſperate ſallies were made, and mines ſprung with the moſt dreadful effects; the works began to be ſhattered, the town was laid in aſhes, the trenches were filled with carnage; nothing was ſeen but fire and ſmoke, nothing heard but one continued roar of bombs and cannon. But ſtill the damage fell chiefly upon the beſiegers, who were ſlain in heaps, while the garriſon ſuffered very little, and could be occaſionally relieved or reinforced from the lines. In a word, it was generally believed that comte Lowendahl would be baffled in his endeavours; and by this belief the governor of Berg-op-Zoom ſeems to have been lulled into a blind ſecurity. At length ſome inconſiderable breaches were made in one ravelin and two baſtions, and theſe the French general reſolved to ſtorm, though Cronſtrom believed they were impracticable; and on that ſuppoſition preſumed that the enemy would not attempt an aſſault. For this reaſon comte Lowendahl reſolved to hazard the attack, before the preparations ſhould be made for his reception. He accordingly regulated his diſpoſitions, and at four o'clock in the morning, on the 16th of September, the ſignal was made for the aſſault. A prodigious quantity of bombs being thrown into the ravelin, his troops threw themſelves into the foſſe, mounted the breaches, forced open a ſally-port, and entered the place almoſt without reſiſtance. In a word, they had time to extend themſelves along the curtains, and form in order of battle, before the garriſon could be aſſembled. Cronſtrom was aſleep, and the ſoldiers upon duty had been ſurpriſed by the ſuddenneſs and impetuoſity of the attack. Though the French had taken poſſeſſion of the ramparts, they did not gain the town without oppoſition. Two battalions of the Scottiſh troops, in the pay of the States General, were aſſembled in the market-place, and attacked them with ſuch fury that they were driven from ſtreet to ſtreet, until freſh reinforcements arriving compelled the Scots to retreat in their turn, yet they diſputed every inch of ground, and fought until two-thirds of them were killed upon the ſpot. Then they brought off the old governor, abandoning the town to the enemy; the troops that were encamped in the lines retreating with great precipitation; all the forts in the neighbourhood immediately ſurrendered to the victors, who now became maſters of the whole navigation of the Scheldt. Berg-op-Zoom was reſtored to the Dutch at the peace of Aix-la-Chapelle; and was taken by the French revolutionary troops in 1793: eighteen miles north-north-weſt of Antwerp. Lat. 51. 29. N. lon. 21. 46. E. Ferro.

BERG'STADT, a town of Moravia, in the circle of Olmutz: eighteen miles north of Olmutz.

BERGSTRAS'SE, a long tract or tongue of land, on the ſide of the Rhine, between Heidelberg and Darmſtadt; it contains a few ſmall places, as Benſheim, Oppenheim, and Wenheim.

BER'GUES, or Berg, or Bergues St. Vinox, a town of France, and principal place of a diſtrict, in the department of the north: ſo called from St. Vinox, a Flemiſh lord, who lived in that place; it is ſituated on the river Colne, at the union of ſeveral canals, which conduct to Dunkirk, Gravelines, St. Omer, Furnes, &c. It contains two pariſhes. Berg was the laſt town of Weſt Flanders which held out for the Dutch in the war in the 16th century. The prince of Parma beſieged it in 1583, but found ſo much reſiſtance, that the ſiege was changed into a blockade, and M. de Villeneuve ſurrendered the place on honourable terms. It was taken by the French in 1658, and confirmed to that country by the peace of the Pyrenées the year following. Since that time ſeveral new works have been added to the fortifications, and by means of ſluices the country round can be laid under water: one league and a half ſouth of Dunkirk, and eleven north-weſt of Lille.

BERGWER'HEN, a town of Germany, in the circle of Upper Saxony: two miles north of Weiſſenfels.

BERG'WERK, a town of Hungary: thirteen miles weſt of Steinam.

BERGZA'BERN, a town of Germany, in the circle of the Upper Rhine, and duchy of Deux Ponts, ſituated on the Erlbach, with two churches, one for Catholics, and the other for Lutherans; and a chateau, the ordinary reſidence of the dowager ducheſs: thirty miles ſouth-eaſt of Deux Ponts, and ſix ſouth-ſouth-weſt of Landau. Lat. 49. 4. N. lon. 25. 40. E. Ferro.

To BERHY'ME, *v. a.* [from *rhyme.*] To mention in rhyme, or verſes: a word of contempt:

I ſought no homage from the race that write;
I kept, like Aſian monarchs, from their ſight:
Poems I heeded, now *berhym'd* ſo long,
No more than thou, great George! a birthday ſong. *Pope.*

BE'RIA, Berie, Berry, ſignifies a large open field; and thoſe cities and towns in England which end with that word are built on plain and open places, and do not derive their names from boroughs as Sir Henry Spelman imagines. Moſt of our gloſſographers in the names of places have confounded the word *berie* with that of *bury* and *borough*, as the appellatives of ancient towns: whereas the true ſenſe of the word *berie*, is a flat wide campaign, as is proved from ſufficient authorities by the learned Du Freſne, who obſerves that *Beria Sancti Edmundi*, mentioned by Mat. Pariſ. ſub. ann. 1174, is not to be taken for the town, but for the adjoining plain. To this may be added, that many flat and wide meads, and other open grounds, are called by the name of *beries* and *bery-fields*; the ſpacious meadow between Oxford and Iſley, was in the reign of king Athelſtan called *Bery*; as is now the largeſt paſture-ground in Quarendon in the county of Bucks, known by the name of *Beryfield*. And, though theſe meads have been interpreted *demeſne* or manor meadows, yet they were truly any flat or open meadows that lay adjoining to any villa or farm.

BERIBE'RI, *ſ.* [This word in the Indian language means a ſheep.] A ſort of palſy of the extremities, common in the Indies; ſo called, becauſe perſons afflicted with it imitate ſheep in their walking.

BERIE'ZEN, a town of Ruſſia, in the government of Tchernigov, on the Deſna: twenty-four miles eaſt-north-eaſt of Tchernigov, and 516 ſouth of Peterſburg.

BERIGAN', a town of Africa, in the kingdom of Algiers, and capital of the country of Beni-Mezzab. Lat. 32. 15. N. lon. 20. 45. E. Ferro.

BERIGA'RD (Claude), born at Moulins in 1578, taught philoſophy at Piſa, and Padua, where he died of an umbilical hernia in 1663, at the age of eighty-five. We have by him, 1. Circulus Piſanus, printed in 1641 at Florence, 4to. This book treats of the ancient philoſophy, and that of Ariſtotle. 2. Dubitationes in dialogum Galilæi pro Terræ immobilitate, 1632, 4to. a work which brought upon him the charge of pyrrhoniſm and materialiſm, not without foundation. He has been reproached with acknowledging no other moving principle of the world than primitive matter. The real name of this philoſopher is, Claude Guillermet de Beauregarde.

BERINBAL', a town of Egypt, on the weſt branch of the Nile: ſeven miles ſouth-eaſt of Roſetta.

BE'RING (Vitus), profeſſor in poetry at Copenhagen, and hiſtorographer to the king of Denmark about the middle of the 16th century, left a great number of Latin poems of all kinds. Such as read other Latin poetry than that of the ancients, eſteem his lyrics. Several of his pieces have been collected in the 2d vol. of the Beauties of the Daniſh poets.

BERIN'GEN, a town of Germany, in the circle of Weſtphalia, and biſhopric of Liege: eighteen miles north-weſt of Maeſtricht.

BERINGOU', or KAMANDARSKOI. See BEERING'S ISLAND.

BERINSCHUL', a rocky iſland in the Mediterranean, near the coaſt of Algiers.

BE'RITH, *ſ.* A ſimple mentioned in Scripture, uſed for cleanſing or taking out ſpots, (Jer. ii. 22.) Some will have it to be the *kali* or ſalt-wort, from the aſhes of which ſoap is made; and in our verſion it is rendered *ſoap*: others, after Rudbeck, ſuppoſe it to be the dye of the purple-fiſh.

BER'KA, a town of Germany, in the circle of Upper Saxony, and principality of Weimar, on the Ilm: ſix miles ſouth-ſouth-weſt of Weimar.

BERKA, a town of Germany, in the circle of Upper Saxony, and principality of Eiſenach, on the Werra: nine miles weſt of Eiſenach.

BERKASZES'TI, a town of European Turkey, in the province of Moldavia, on the Berbecz: fifty-ſix miles north-weſt Galatz.

BERKE'LEY, [*beorcean*, probably of *beorce*, a beech-tree, and *lan* for *leag*, a field, Sax. by reaſon of plenty of beech-trees growing there.] A market-town in Glouceſterſhire, pleaſantly ſituated on a branch of the Severn. It is a very ancient corporated town, under the government of a mayor and twelve aldermen. The caſtle is a noble Gothic ſtructure, and has been for ſeveral centuries the reſidence of the earls of Berkeley. It was begun to be built in the reign of Henry I. in 1108, and finiſhed in that of Stephen, and was enlarged and repaired in the reign of Henry II. Its hall is very large and much admired. It ſtands on a riſing ground among the meadows, commanding a delightful view of the ſurrounding county and river Severn. In the civil wars it ſuffered conſiderably; as it did a few years ſince by an accidental fire. The preſent building conſiſts of a range of apartments round an irregular court. The room in which Edward II. was impriſoned is ſtill to be ſeen. The town conſiſts chiefly of one ſtreet of mean buildings. The church is a large handſome edifice; the tower, which is new, ſtands at a diſtance from it. In the church are ſome elegant monuments of the Berkleys, who have a vault built for the family. The Severn for almoſt ſix miles, runs by this pariſh, which lies ſo low, that it is reckoned neither pleaſant nor healthy, but it is famous for producing good cheeſe. The town carries on a conſiderable trade in timber, coal, malt, and cheeſe: it has a weekly market on Tueſdays, and an annual fair on the 14th of May. At one mile diſtant is the village of Newport, through which paſſes the great road from Bath, Briſtol, &c. to the north of England, via Glouceſter. Poſt in and out every day. In this pariſh are very extenſive linſeed-oil mills. Berkeley has ſeveral ſloops that navigate the Severn, but none that are any ways conſtant in their paſſage to or from any particular place. The living of Berkeley is in the gift of earl Berkeley; it is worth about 300l. per annum. It is the largeſt pariſh in the county; and conſiſts chiefly of rich meadow-grounds; above thirty pariſhes depend on this manor, for which a fee-farm rent was paid, in Henry II's time, of 500l. 17s. 2d. which ſhews the vaſt extent and value of his eſtate. Berkeley is 113 miles from London, Briſtol 18, Glouceſter 16, Durſley 5, and Thornbury 8.

BERKELEY, Earls of. See HERALDRY.

BERKELEY (George), the learned and moſt ingenious biſhop of Cloyne in Ireland, was born in that kingdom, at Kilcrin, near Thomaſtown, the 12th of March 1684. He was the ſon of William Berkeley of Thomaſtown, in the county of Kilkenny; whoſe father, the family having ſuffered for their loyalty to Charles I. went over to Ireland after the reſtoration, and there obtained the collectorſhip of Belfaſt. George had the firſt part of his education at Kilkenny ſchool; was admitted penſioner of Trinity college, Dublin, at the age of fifteen, under Dr. Hiſton; and choſen fellow of that college June 9, 1707, and placed under the tuition of Dr. Hall.

The firſt public proof he gave of his literary abilities was, Arithmetica abſque Algebra aut Euclide demonſtrata; which, from the preface, he appears to have written before he was twenty years old, though he did not publiſh it till 1707. It is dedicated to Mr. Palliſer, ſon to the archbiſhop of Caſhel; and is followed by a mathematical miſcellany, containing obſervations and theorems inſcribed to his pupil Mr. Samuel Molineux, whoſe father was the friend and correſpondent of Locke. In 1709, came forth the Theory of Viſion, which, of all his works, ſeems to do the greateſt honour to his ſagacity; being the firſt attempt that ever was made to diſtinguiſh the immediate and natural objects of ſight from the concluſions we have been accuſtomed from infancy to draw from them. The boundary is here traced between the ideas of touch and ſight; and it is ſhewn, that, though habit has ſo connected theſe two claſſes of ideas in our minds, that they are not without a ſtrong effort to be ſeparated from each other, yet originally they have no ſuch connection; inſomuch, that a perſon born blind, and ſuddenly made to ſee, would at firſt be utterly unable to tell how any object that affected his ſight would affect his touch; and particularly would not from ſight receive any idea of diſtance, outneſs, or external ſpace, but would imagine all objects to be in his eye, or rather in his mind. This was ſurpriſingly confirmed in the caſe of a young man born blind, and couched at fourteen years of age by Mr. Cheſelden in 1728. A Vindication of the Theory of Viſion was publiſhed by him in 1733.

In 1710 appeared The Principles of Human Knowledge; and, in 1713, Dialogues between Hylas and Philonous: the object of both which pieces is, to prove that the commonly-received notion of the exiſtence of matter is falſe; that ſenſible material objects, as they are called, are not external to the mind, but exiſt in it, and are nothing more than impreſſions made upon it by the immediate act of God, according to certain rules termed *laws of nature*, from which, in the ordinary courſe of his government, he never deviates; and that the ſteady adherence of the Supreme Spirit to theſe rules is what conſtitutes the reality of things to his creatures. Theſe works are declared to have been written in oppoſition to ſceptics and atheiſts; and herein is inquired into the chief cauſe of error and difficulty in the ſciences, with the grounds of ſcepticiſm, atheiſm, and irreligion: which cauſe and grounds are found to be the doctrines of the exiſtence of matter. He ſeems perſuaded, that men never could have been deluded into a falſe opinion of the exiſtence of matter, if they had not fancied themſelves inveſted with a power of abſtracting ſubſtance from the qualities under which it is perceived; and hence, as the general foundation of his argument, is led to combat and explode a doctrine maintained by Locke and others, of there being a power in the mind of abſtracting general ideas. Mr. Hume, having regard to theſe writings, ſays, that they "form the beſt leſſons of ſcepticiſm, which are to be found either among the ancient or modern philoſophers, Bayle not excepted." He profeſſes, however, in his title-page, and undoubtedly with great truth, to have compoſed his books againſt the ſceptics, as well as againſt the atheiſts and freethinkers: but that all his arguments, though otherwiſe intended, are, in reality, merely ſceptical, appears from this, that they "admit of no anſwer, and produce no conviction." Their only effect is, to cauſe that momentary amazement and irreſolution and confuſion, which is the reſult of ſcepticiſm. It may juſt be obſerved, that Berkely had not reached his 27th year, when he publiſhed this ſingular ſyſtem.

In 1712, he publiſhed three ſermons in favour of paſſive obedience and non-reſiſtance, which underwent at leaſt three editions, and afterwards had nearly done him ſome injury in his fortune. They cauſed him to be repreſented as a Jacobite, and ſtood in his way with the houſe of Hanover, till Mr. Molineux took off the impreſſion, and firſt made him known to queen Caroline, whoſe ſecretary, when princeſs, Mr. Molineux had been. Acuteneſs of parts and beauty of imagination were ſo conſpicuous in his writings, that his reputation was now eſtabliſhed, and his company courted, even where his opinions did not find admiſſion. Men of oppoſite parties concurred in recommending him; ſir Richard Steele, for inſtance, and Dr. Swift. For the former he wrote ſeveral papers in the Guardian, and at his houſe became acquainted with Pope, with whom he always lived in friendſhip. Swift recommended him to the celebrated earl of Peterborough, who, being appointed ambaſſador to the king of Sicily, took Berkeley with him as chaplain in November 1713. He returned to England with this nobleman in Auguſt 1714, and towards the cloſe of the year had a fever, which gave occaſion to Dr. Arbuthnot to indulge a little pleaſantry on Berkeley's ſyſtem. Poor philoſopher Berkeley, ſays he to his friend Swift, has now the *idea* of health, which was very hard to produce in him; for he had an *idea* of a ſtrange fever on him ſo ſtrong, that it was very hard to deſtroy it by introducing a contrary one.

His hopes of preferment expiring with the fall of queen Anne's miniſtry, he ſome time after embraced an offer, made him by Aſhe, biſhop of Clogher, of accompanying his ſon in a tour through Europe. In this he employed four years; and, beſides thoſe places which fall within the grand tour, viſited ſome that are leſs frequented. He travelled over Apulia (from which he wrote an account of the tarantula to Dr. Friend), Calabria, and the whole iſland of Sicily. This laſt country engaged his attention ſo ſtrongly, that he had with great induſtry collected very conſiderable materials for a natural hiſtory of it, but unfortunately loſt them in the paſſage to Naples; and what an injury the literary world has ſuſtained by this miſchance may be collected from the ſpecimen of his talents for this ſort of work, in a letter to Mr. Pope concerning the iſland of Inarime (now Iſchia) dated October 22, 1717; and in another from the ſame city to Dr. Arbuthnot, giving an account of an eruption of Veſuvius. His way was now open to the very firſt company. Mr. Pope introduced him to lord Burlington, and lord Burlington recommended him to the duke of Grafton; who, being lord-lieutenant of Ireland, took him over as one of his chaplains in 1721. November this year, he accumulated the degrees of bachelor and doctor in divinity. The year following he had a very unexpected increaſe of fortune from Mrs. Vanhomrigh, the celebrated Vaneſſa, to whom he had been introduced by Swift: this lady had intended Swift for her heir; but, perceiving herſelf to be ſlighted by him, ſhe left near 8000l. between her two executors, of whom Berkeley was one. May 18, 1724, he was promoted to the deanery of Derry, worth 1100l. per annum.

In 1725, he publiſhed A Propoſal for converting the Savage Americans to Chriſtianity, by a College to be erected in the Summer Iſlands, otherwiſe called the *Iſles of Bermuda*: a ſcheme which employed his thoughts for three or four years; and it is ſurpriſing to conſider how far he carried it. He offered to reſign all his preferment, and to dedicate the remainder of his life to inſtruct the American youth, on a ſtipend of 100l. yearly: he prevailed with three junior fellows of Trinity college, Dublin, to give up all their proſpects of preferment at home, and to exchange their fellowſhips for a ſettlement in the Atlantic Ocean at 40l. a-year; he procured his plan to be laid before George I. who commanded Sir Robert Walpole to lay it before the commons; and further granted him a charter for erecting a college in Bermuda, to conſiſt of a preſident and nine fellows, who were obliged to maintain and educate Indian ſcholars at 10l. a-year each. He obtained a grant from the commons of a ſum to be determined by the king; and accordingly 10,000l. was promiſed by the miniſter, for the purchaſe of lands and erecting the college. He married the daughter of John Forſter, Eſq. ſpeaker of the Iriſh houſe of commons, on the 1ſt of Auguſt, 1728; and actually ſet ſail in September following for Rhode-iſland, which lay neareſt to Bermuda, taking with him his wife, a ſingle lady, and two gentlemen of fortune. The ſcheme, however, entirely failed; and Berkeley was obliged to return, after reſiding near two years at Newport: the reaſon given is, that the miniſter never heartily embraced the project, and the money was turned into another channel.

In 1732 he publiſhed The Minute Philoſopher, in two volumes 8vo. This maſterly work is written in a ſeries of dialogues on the model of Plato, a philoſopher he is ſaid to have been very fond of; and in it he purſues the freethinker through the various characters of atheiſt, libertine, enthuſiaſt, ſcorner, critic, metaphyſician, fataliſt, and ſceptic. The ſame year he printed a ſermon, preached before the ſociety for propagating the goſpel in foreign parts. In 1733, he was made biſhop of Cloyne, and might have been removed in 1745, by lord Cheſterfield, to Clogher, but declined it. He reſided conſtantly at Cloyne, where he faithfully diſcharged all the offices of a good biſhop, yet continued his ſtudies with unabated attention.

About this time he engaged in a controverſy with the mathematicians, which made a good deal of noiſe in the literary world; and the occaſion of it is ſaid to have been this: Mr. Addiſon had given the biſhop an account of their common friend Dr. Garth's behaviour in his laſt illneſs, which was equally unpleaſing to both theſe advocates of revealed religion. For, when Addiſon went to ſee the doctor, and began to diſcourſe with him ſeriouſly about another world, "Surely Addiſon," replied he, "I have good reaſon not to believe thoſe trifles, ſince my friend Dr. Halley, who has dealt ſo much in demonſtration, has aſſured me, that the doctrines of Chriſtianity are incomprehenſible, and the religion itſelf an impoſture." The biſhop, therefore, addreſſed to him, as to an infidel mathematician, a diſcourſe called the Analyſt; with a view of ſhewing, that myſteries in faith were unjuſtly objected to by mathematicians, who admitted much greater myſteries, and even falſehoods in ſcience, of which he endeavoured,

deavoured to prove, that the doctrine of fluxions furniſhed a clear example. This attack gave occaſion to Maclaurin's treatiſe, and other works, upon the ſubject of fluxions; but the direct anſwers to the Analyſt were ſet forth by a perſon under the name of *Philalethes Cantabrigienſis*, but generally ſuppoſed to be Dr. Jurin, who publiſhed a piece intitled, Geometry no Friend to Infidelity, 1734. To this the biſhop replied in A Defence of Free-thinking in Mathematics, 1735; which drew a ſecond anſwer the ſame year from Philalethes, ſtyled, The Minute Mathematician, or the Free-thinker no juſt Thinker; and here the controverſy ended.

In July 1752, he removed with his lady and family to Oxford, partly to ſuperintend the education of a ſon, but chiefly to indulge the paſſion for learned retirement, which had ever ſtrongly poſſeſſed him, and was one of his motives to form the Bermuda project. He would have reſigned his biſhopric for a canonry at Oxford; but it was not permitted him. At Oxford he lived highly reſpected, and collected and printed the ſame year all his ſmaller pieces in 8vo. but he did not live long; for, on Sunday evening, January 14, 1753, as he was liſtening to a ſermon which his lady was reading to him, he was ſeized with a palſy in the heart, and inſtantly expired. The accident was ſo ſudden, that his body was cold, and the joints ſtiff, before it was diſcovered; as he lay upon a couch, and ſeemed to be aſleep, till his daughter, on preſenting him with a diſh of tea, firſt perceived his inſenbſility. His remains were interred at Chriſt-church Oxford, and there is an elegant marble monument over him, with an inſcription by Dr. Markham, then dean.

As to his perſon, he was handſome, with a countenance full of meaning and kindneſs, remarkable for great ſtrength of limbs; and, till his ſedentary life impaired it, of a very robuſt conſtitution. He was, however, often troubled with the hypochondria, and a nervous colic, from which however he was greatly relieved by the virtues of tar-water, on which he publiſhed a very intereſting treatiſe. At Cloyne he conſtantly roſe by four o'clock in the morning, and ſummoned his family to a leſſon on the baſs viol, from an Italian maſter he kept in the houſe for the inſtruction of his children. He ſpent the reſt of the morning, and often a great part of the day, in ſtudy; and Plato, from whom many of his notions were borrowed, was his favourite author. The excellence of his moral character is conſpicuous in his writings: he was certainly a very amiable as well as very great man; and Pope is ſcarcely thought to have ſaid too much, when he aſcribes

> To Berkeley every virtue under heaven.

Berkeley (George), ſecond ſon of the above biſhop of Cloyne, by Anne, eldeſt daughter of the Hon. John Forſter, ſpeaker of the Iriſh houſe of commons, by Anne, daughter to the Hon. John Monck, brother to the duke of Albermarle, was born on the 28th of September 1733, in Groſvenor-ſtreet, London. Inſtructed in every elegant and uſeful accompliſhment, Mr. Berkeley was, at the age of nineteen, ſent to Oxford; his father leaving it to his own choice to enter a gentleman commoner. But biſhop Conybeare, then dean of Chriſt-church, on his arrival offering him a ſtudentſhip in that ſociety, he accepted it. His firſt tutor was the preſent learned archbiſhop of York; on whoſe removal to Weſtminſter-ſchool, he put himſelf under the tuition of the preſent worthy biſhop of Oxford. Having taken the degree of B. A. he ſerved the office of collector in the univerſity, and as he was allowed by his cotemporaries to be an excellent Latain ſcholar, no wonder that his collector's ſpeech was univerſally admired. In 1758 he took a ſmall living from his ſociety, the vicarage of Eaſt Garſton, Berks, from which he was removed, in 1759, by archbiſhop Secker his ſole patron, to the famous vicarage of Bray, Berks; of which he was only the fifth vicar ſince the reformation. In 1759 he took the degree of M. A. The kindneſs of archbiſhop Secker did not reſt here; he gave him alſo the chancellorſhip of Brecknock, the rectory of Acton, Middleſex, and the ſixth prebendal ſtall in the church of Canterbury. In 1768 he had taken the degree of LL. D. for which he went out grand compounder. He ſoon afterwards reſigned the rectory of Acton in a noble unſolicited manner. The vicarage of Bray he exchanged for that of Cookham near Maidenhead. He had afterwards from the church of Canterbury the vicarage of Eaſt-Peckham, Kent, which he relinquiſhed on obtaining the rectory of St. Clement's Danes; which with the vicarage of Tyſhurſt, Suſſex, (to which he was preſented by the church of Canterbury in 1792, when he vacated Cookham,) and with the chancellorſhip of Brecknock, he held till his death.

Dr. Berkeley publiſhed ſome ſingle ſermons; one of which, preached on the anniverſary of king Charles's martyrdom, 1785, intitled, "Danger of violent Innovations in the State, how ſpecious ſoever the Pretence, exemplified from the Reigns of the two firſt Stuarts," has gone through ſix editions, the laſt in 1794; one on Good Friday, 1787; one at Cookham, on the king's acceſſion, 1789. He married, in 1761, Eliza eldeſt daughter and co-heireſs of the reverend Henry Finſham, M. A. by whom he had four children, now no more. He died on the 6th of January, 1795; and was buried in the ſame vault where his father lies, in the cathedral of Chriſt-church, Oxford.

BER'KENHOUT (John), was born about the year 1730, at Leeds in Yorkſhire. His father, who was a merchant, and a native of Holland, intended him for trade; and with that view ſent him at an early age to Germany, to learn foreign languages. After continuing a few years in that country, he made the tour of Europe in company with ſome Engliſh noblemen. On their return to Germany they viſited Berlin, where Mr. Berkenhout met with a near relation of his father's, the baron de Bielfeldt, a nobleman then in high eſtimation with the late king of Pruſſia; diſtinguiſhed as one of the founders of the royal academy of ſciences at Berlin, and univerſally known as a politician and a man of letters. With this relation he fixed his abode for ſome time; and, regardleſs of his original deſtination, became a cadet in a Pruſſian regiment of foot. He ſoon obtained an enſign's commiſſion; and, in a few years, was advanced to the rank of captain. He quitted the Pruſſian ſervice on the declaration of war between England and France in 1756, and had the command of a company in the ſervice of his native country. When peace was concluded in 1760, he went down to Edinburgh, and commenced ſtudent of phyſic. During his reſidence at that univerſity, he publiſhed his Clavis Anglica Linguæ Botanicæ; a book of ſingular utility to all ſtudents of botany. Having continued ſome years at Edinburgh, Mr. Berkenhout went to the univerſity of Leyden, and in 1765 took the degree of doctor of phyſic. Returning to England, he ſettled firſt at Iſleworth in Middleſex, afterwards at Wincheſter in Hampſhire; and ſoon after publiſhed his Pharmacopœia Medici, the third edition of which was printed in 1782. In 1778, he was ſent by government with the commiſſioners to America. Neither the commiſſioners nor their ſecretary were ſuffered by the congreſs to proceed farther than New-York. Dr. Berkenhout, however, found means to penetrate as far as Philadelphia, where the congreſs was then aſſembled. He appears to have remained in that city for ſome time without moleſtation; but at laſt they began to ſuſpect that he was ſent by lord North for the purpoſe of tampering with ſome of their leading members. The doctor was immediately ſeized and committed to priſon. For this temporary ſacrifice of the emoluments of his profeſſion, he obtained a penſion. Many years previous to this event, Dr. Berkenhout publiſhed his Outlines of the Natural Hiſtory of Great Britain and Ireland, in 3 vols. 12mo. a work which eſtabliſhed his reputation as a naturaliſt. He alſo wrote a pamphlet on the Bite of a Mad Dog, which deſerves to be univerſally read. In the year following Dr. Berkenhout publiſhed his Symptomatology; a book which is too univerſally known to require any recommendation. His laſt publication is intitled, Firſt Lines of the Theory and Practice of Philoſophical Chemiſtry. Theſe, we believe, except a learned preface to the tranſlation of Dr. Pomme's Treatiſe on Hyſteric Diſeaſes, are all Dr. Berkenhout's writings in the line of his profeſſion: but he is not leſs known as the author of other valuable works, particularly the Biographia Literaria, publiſhed by Dodſley. He died April 3, 1791, aged ſixty.

BERK'HAMPSTEAD, a market-town in Hertfordſhire, nine miles from St. Alban's, and twenty-ſix from London. It was anciently a Roman ſtation, and Roman coins have often been dug up here. It was called *Durobrivæ* by the Romans; and here are the ruins of an old caſtle which was very large and ſtrong, on the north ſide of the town, where the kings of Mercia reſided. The caſtle was encompaſſed by a moat that covers above four acres. The keep is on the north ſide of the moat, and the remains of the bridge are ſtill viſible. The caſtle was rebuilt by Moreton earl of Cornwall, brother to William I. but razed for rebellion in his ſon's time, and ſo, with the manor, fell to the crown. The caſtle was again rebuilt in the reign of king John; for the dauphin of France, in conjunction with the barons, beſieged it, and the garriſon ſurrendered not till they had the king's orders for it. When the caſtle was demoliſhed, a large houſe was built out of its ruins, which is beautifully ſituated. What now remains of it is but the third part, for the other two-thirds were deſtroyed by fire, in the reign of Charles I. In the time of the rebellion, colonel Axtel, a parliamentary officer, held it. At this place William the Conqueror ſwore to the nobility to preſerve the laws made by his predeceſſors. Henry II. kept his court here, and granted it all the laws and liberties it had enjoyed under Edward the Confeſſor, particularly that no market ſhould be within ſeven miles of it; that the inhabitants ſhould not be obliged to attend any aſſizes or ſeſſions; and that their merchandize ſhould paſs free of toll or cuſtom through England, Normandy, Aquitain, and Anjou. King James I. to whoſe children this place was a nurſery, made it a corporation, by the name of *bailiffs and burgeſſes of Berkhampſtead St. Peter*, the burgeſſes to be twelve, to chooſe a recorder and town-clerk, &c. but the corporation was ſo impoveriſhed by the civil wars in the next reign, that the government dropped, and has not been ſince renewed. Its market, which is on Monday, is much decayed, though the town is pretty large. The church of St. Peter is a handſome Gothic ſtructure, and has many chapels and oratories. Here is an alms-houſe for ſix poor widows, and 50l. a year for their maintenance. Beſides the charity-ſchool, here is a free grammar-ſchool, founded by dean Incent, of St. Paul's, and endowed with lands by Edward VI. to teach 144 boys. It has an alms-houſe endowed by Mr. John Sayer and his wife with 1300l. The chief trade is bowl-turning, ſhovel and ſpoon making, with a pretty large quantity of frauſe-lace made by women. Fairs on Shrove-Monday, Whit-Monday, and St. James's-day; and a ſtatute fair the day after Old Michaemas-day, for hiring of ſervants.

BER'KI, a town of Aſiatic Turkey, in the province of Natolia: thirty-ſix miles eaſt of Smyrna.

BERK'LEY, a county of Virginia, in the United States of North America, which furniſhed 1100 men to the militia before the year 1780.

BERKLEY, a town of the United States of America, in Maſſacuſets: twenty-four miles north of Boſton.

BERK'LEY SOUND, a bay of the North Pacific Ocean, on the weſt coaſt of North America: ſeventy miles ſouth-eaſt of Nootka Sound.

BERK'SHIRE, [of *berroc*, a wood, and *ſcire*, Sax. a ſhire.] An inland county of England, bounded on the north by the counties of Oxford and Buckingham, from both which it is divided by the river Thames, on the eaſt by Surry, on the ſouth by Hampſhire, and on the weſt by Wiltſhire. The ſhape is very irregular, eſpecially towards the north, yielding every where to the winding of the Thames, which from Oxford to Reading takes a courſe about ſouth-ſouth-eaſt, making the county at the latter town very narrow. After the Thames has paſſed by Reading it trends northerly, but ſtill the eaſtern part of the county is much narrower than the weſtern. From eaſt to weſt its length is about fifty miles; from north to ſouth, in its wideſt part, twenty-five, in its narroweſt, little more than five. The number of ſquare miles is computed to be 682, and the number of acres 438,977. It is divided into twenty hundreds, in which are twelve market-towns, and about 200 villages, and the number of inhabitants 115,000. This county contained the whole of that Britiſh principality inhabited by the Atrebatii, who are ſuppoſed to have been originally from Gaul. When Conſtantine divided the iſland into Roman provinces in 310, this principality was included in Britannia Prima, the firſt diviſion, whoſe boundaries were the Engliſh channel on the ſouth, and the Thames and Severn on the north. On the Romans quitting the iſland, and civil diſſentions enabling the Saxons to eſtabliſh the Heptarchy, this part of the country was included in the kingdom of the Weſt Saxons, which commenced in 519, and continued till 828, when it became the only remaining ſovereignty, having conquered all the others, and they were incorporated by the name of England, under Egbert; whoſe grandſon, Alfred, a native of Wantage, in 889, divided his kingdom into counties, hundreds, and pariſhes, and at that time this diviſion firſt received its appellation of *Berkſhire* or *Berocſhire*. It is in the Oxford circuit, the province of Canterbury, and dioceſe of Saliſbury. Near Lambourne, is the rude figure of an horſe, which takes up near an acre of ground on the ſide of a green hill, ſaid to have been made by Alfred in the reign of his brother Ethelred, as a monument to perpetuate a victory over the Danes in 871, at Aſhdown, now Aſhbury Park.

The Roman Watling-ſtreet, from Dunſtable, enters Berkſhire at the village of Streatly, between Wallingford and Reading, and croſſing this county proceeds to Marlborough. Another Roman road from Hampſhire enters this county, leads to Reading and Newbury, the Spinæ of Cambden, where it divides: one branch extends to Marlborough in Wilts, and the other to Cirenceſter in Glouceſterſhire. A branch from the Icknield-ſtreet proceeds from Wallingford to Wantage. There is a Roman camp near Wantage on the brow of a hill, of a quadrangular form; there are other remains of encampments at Eaſt Hampſtead, near Oakingham, near White-horſe-hill, near Puſey, and upon Sinodun-hill, near Wallingford. At Lawrence Waltham is a Roman fort, and near Denchworth is Cherbury caſtle, a fortreſs of Canute. Uffington caſtle, near White-horſe-hill, is ſuppoſed to be Daniſh; near it is Dragon-hill, ſuppoſed to be the burying-place of Uter Pendragon, a Britiſh prince. Near White-horſe-hill are the remains of a funeral monument of a Daniſh chief ſlain at Aſhdown by Alfred. In this county the following antiquities are worthy the notice of travellers: Abingdon church and abbey; Aldworth caſtle, near Eaſt Iſley; Byſham monaſtery; Dunnington caſtle; Lambourne church; Reading abbey; Sunning chapel; Wallingford church and caſtle; Windſor caſtle, the moſt perfect Norman Gothic ſtructure of its kind in England. Berkſhire is an earldom belonging to a branch of the Howard family, the repreſentative being earl of Suffolk and Berkſhire. The ſoil of this county is in general loamy, in ſome parts mixed with gravel, in others with ſand. The weſtern part contains ſome land of a rich deep ſoil, particularly in the Vale of White Horſe, equal to the beſt parts of England. Of the quantities of land 170,000 acres are ſuppoſed to be contained in incloſed lands, parks, and woods; 220,000 in common fields and downs; 40,000 in foreſts, waſtes, and commons; and 8,977 in roads. The market-towns are Abingdon, Farringdon, Hungerford, Ilſley, Lambourn, Maidenhead, Newbury, Reading, Wallingford, Wantage, Windſor, and Wokingham. The principal rivers are the Thames, Iſis, Kennet, Ocke, Lambourne, and Loddon. It produces a great deal of corn, and great quantities of meal and malt are ſent in barges by the river Thames to London. This county returns nine members to the Britiſh parliament, viz. two for the county, one for the borough of Abingdon, and for Reading, Wallingford, and Windſor, two each.

BERKSHIRE, a county of Pennſylvania, in the United States of North America, in which coal mines are found: Reading is the chief town.

BERKSHIRE, a county of the State of Maſſachuſets, in North America, which, in the year 1784, contained 24,544 inhabitants, and 87,028 acres of land in cultivation, 234,497 acres unimproved, and 4,909 men able to bear arms. Lenox is the chief town.

BERKUS'SA, a town of Croatia, on the river Kulpa: eleven miles weſt of Petrenta.

BER'LAI, a town of Croatia, on the river Korana: eight miles ſouth of Sluin.

BERLAMONT', a town of France, in the department of the north, and chief place of a canton, in the diſtrict of le Queſnoy: two leagues and a quarter eaſt-ſouth-eaſt of le Queſnoy, and two and a quarter north-weſt of Aveſnes.

BERLASREUT', a town of Germany, in the circle of Bavaria: twelve miles north of Paſſau.

BER'LEBURG, a town of Germany, in the circle of the Upper Rhine: twenty-eight miles north-weſt of Marburg, and fifty-ſix eaſt of Cologne.

BERLEU'X, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Péronne: three miles ſouth-weſt of Péronne.

BER'LICUM, a town of Brabant: one league eaſt of Bois le Duc.

BERLIN', a city of Germany, capital of the electorate of Brandenburg, and of the whole Pruſſian dominions. This city is the largeſt, beſt built, and beſt governed, of any in Germany. The ſtreets are large, ſtraight, clean, and well paved, and ſome of them very long and elegant. There are alſo ſeveral large and beautiful ſquares, with pleaſant walks. It is ſituated on the banks of the Spree, which is here divided into three branches. On the ſouth it is defended by a wall, on the north only by palliſades; it has fifteen gates; the ſtreets are ſtraight, wide, and long. In the year 1645, it had only 1236 houſes; in 1747, it had 5513, and in 1779, 6437. In the year 1774 the number of inhabitants were 104,874; of theſe 5381 were French, 1162 Bohemians, and 3958 Jews; the garriſon, reckoning their attendants, amounted to 29,540 ſouls, which may be added to the number of inhabitants. There are twenty-five churches, two houſes for invalids, an academy for ſciences, another for painting, ſculpture, and architecture, a college of medicine, a military academy, four colleges, four gymnaſia, many public ſchools, libraries, and manufactories. It is compoſed of five ſeparate towns, under the ſame magiſtrate. *Berlin*, properly ſo called, was built in the 12th century, by a colony from the Netherlands, brought thither in the reign of Albert the Bear. *Cologne*, or *Cœln*, is joined to Berlin by a bridge over the Spree, which ſurrounds it, and forms it into an iſland; it was built at the ſame time as Berlin, and by the ſame people. *Frederickſwerder* is alſo built on an iſland in the Spree, by the elector Frederic William, and contains nineteen ſtreets. *Dorotheeſtadt*, or *Neuſtadt*, was built by the elector Frederic William, and ſo named after his conſort. *Frederickſtadt*, which is the largeſt of the five towns, was built by the elector Frederic III. On the new bridge, which is of ſtone, over the Spree, is an equeſtrian ſtatue of William the Great, which is eſteemed an exquiſite piece of workmanſhip. The elector is repreſented in a Roman habit, and his horſe ſtands on a pedeſtal of white marble adorned with baſſo relievos, and four ſlaves bound to the baſe. After paſſing the bridge, the king's palace appears, which is a grand and ſuperb edifice; it is four ſtories high, and the apartments are extremely magnificent. No palace in Europe has ſuch a quantity of ſilver tables, ſtands, luſtres, branched candleſticks, &c. In the knights hall there is a buffet, which takes up all one ſide, where there are baſons and ciſterns of gilt ſilver, of extraordinary magnitude. The furniture of the great apartment is extremely rich; and there is a very handſome gallery, adorned with paintings, repreſenting the principal actions of Frederic I. Formerly there were noble gardens to the palace, but they are now turned into a place of arms. The king's ſtables are large, and very magnificent: the mangers are of ſtone, and the pillars that divide the ſtalls are of iron, adorned with the king's cipher, gilt; over the racks are pictures repreſenting the fineſt horſes which the king's ſtud has produced. Over the ſtables are large rooms containing all ſorts of horſe-furniture, particularly the horſe-equipage of Frederic I. all the metallic part of which is gold, ſet with diamonds. Beſides theſe, there are handſome lodgings for the officers of the ſtables.

The arſenal conſiſts of four grand buildings, that form a court in the middle, like a college; each front has three large porticos. On the principal gate is a medallion of Frederic II. in bronze; and the four cardinal virtues, of a coloſſal ſtature, placed on pedeſtals on each ſide of the portico, ſeem to look at the portrait of the king, which is ſupported by Fame and Victory. The Corinthian order is prevalent in the firſt ſtage, and is managed with a great deal of art. The whole edifice is ſurrounded in the upper part with a balluſtrade, adorned with ſtatues, among which is Mars ſeated on a trophy of ſeveral ſorts of arms. This altogether forms a noble and majeſtic decoration. It is bounded with iron in the ſhape of cannon, which are placed at proper diſtances, and ſupport iron chains that hang like feſtoons, to prevent paſſengers from approaching the windows below. The lower rooms are filled with a great number of braſs cannon; the walls and pillars which ſuſtain the floor are ſet off with cuiraſſes and helmets. The upper ſtory contains ſeveral rooms filled with arms, which are diſpoſed in a curious order. Behind the arſenal is the houſe of the general of the artillery, which includes the foundery, where they are continually at work.

The opera-houſe is an elegant modern edifice. The front has a noble portico ſupported by Corinthian columns, and a pediment adorned with baſſo relievos and ſtatues. The columns that ſupport the roof throw the whole into a grand ſaloon. It has three galleries, and is ſaid to be capable of containing 2000 perſons. There are ſeven great alleys or walks, which divide Neuſtadt into two parts. The middle walk is broader than the reſt, and is ſurrounded with balluſtrades, having a graſs-plat in the middle; this is for perſons that take the air on foot. The alleys on each ſide are paved, and ſerve for thoſe that come abroad in coaches. Theſe alleys, which are about three miles in length, are terminated with a bar, that leads towards the park. The alleys with trees are bounded by rows of houſes. In one of theſe is a building, formerly called the *leſſer ſtables*, and now made into lodgings for the guards. The apartments above theſe are occupied by the academy of painting and the academy of arts and ſciences. Behind theſe is the obſervatory, where there is a great number of aſtronomical and mathematical inſtruments. There are other things worthy of obſervation, ſuch as the cabinet of medals, and of the antiquities belonging to the king; that of natural curioſities; the chemical laboratory, and its furnaces and medals, of a new invention: the theatre for anatomical demonſtrations; the royal library, which is one of the completeſt in Germany, and has many ſcarce books and manuſcripts.

The city was taken in 1760 by an army of Ruſſians, Auſtrians, Saxons, &c. who entered it on the 9th of Oct. They totally deſtroyed the magazines, arſenals, and founderies, ſeized an immenſe quantity of military ſtores, and a number of cannon and arms; called firſt for the immediate payment of 800,000 guilders, and then laid on a contribution of 1,900,000 German crowns: not ſatisfied with this, many irregularities were committed by the ſoldiery; but on the whole, a far better diſcipline was obſerved than could have been expected on ſuch an occaſion, where there was every incentive which could work upon the licentiouſneſs of a conquering army. But, though their behaviour was decent with regard to the private inhabitants, there was ſomething ſhocking in their treatment of the king's palaces. The apartments of the royal caſtle of Charlottenburgh were entirely plundered, the furniture ſpoiled, the pictures defaced, without even ſparing the antique ſtatues collected by cardinal Polignac, which had been purchaſed by the houſe of Brandenburgh. The caſtle of Schonhauſen, belonging to the queen, and that of Fredericsfield, belonging to the margrave Charles, were alſo plundered. The palace of Potſdam, the famous Sans Souci, had a better fate; prince Eſterhaſi commanded there, and it was preſerved from the ſmalleſt violation. The prince, on viewing the palace, only aſked what picture of the king reſembled him moſt; and, being informed, deſired that he might have leave to take it, together with two German flutes, which the king uſed, to keep them, he ſaid, in memory of his majeſty. This was a ſort of taking very different from pillage. They ſtaid in the city four days: but hearing that the king, apprehenſive of this ſtroke, was moving to the relief of his capital, they quitted it on the 13th of October; and having waſted the country round for a vaſt extent, and driven away all the cattle and horſes they could find, retreated by different routes out of Brandenburgh. All religions are tolerated at Berlin; the Roman Catholics, the Lutherans, Calviniſts, and Jews, have free exerciſe of their religion. By means of canals there is a free communication between the Spree and the Oder, and the Spree and the Elbe. Lat. 52. 33. N. lon. 31. 8. E. Ferro.

BERLIN, *ſ.* [from *Berlin*, a city of Germany; though ſome attribute the invention of it to the Italians, and derive the word from *berlina*, a name given by them to a ſort of ſtage, whereon perſons are expoſed to public ſhame.] A ſort of vehicle, of the chariot kind. It is a very convenient machine to travel in, being lighter, and leſs apt to be overturned, than a chariot. The body of it is hung high, on ſhafts, by leathern braces; there being a kind of ſtirrup, or foot-ſtool, for the conveniency of getting into it: inſtead of ſide-windows, ſome have ſcreens to let down in bad, and draw up in good, weather.

BERLIN'CHEN, a town of Germany, in the circle of Upper Saxony, and New Mark of Brandenburg: eighty miles eaſt-north-eaſt of Berlin, and thirty-ſix north-north-eaſt of Kuſtrin.

BERLINEC'Z, a town of Poland, in the palatinate of Braclaw; fifty-two miles weſt of Braclaw.

BERLOCH', a town of Bohemia, in the circle of Czazlau: nine miles north-eaſt of Czazlau.

BER'ME, *ſ.* in fortification, a ſpace of ground left at the foot of the rampart, on the ſide next the country, deſigned to receive the ruins of the rampart, and prevent their filling up the foſſe. It is ſometimes palliſadoed, for the greater ſecurity; and in Holland it is generally planted with a quickſet hedge. It is alſo called *liziere*, *relais*, *forcland*, *retrait*, *pais de ſouris*, *&c.*

BERME'O, or VERMEO, a ſeaport town of Spain, in the province of Biſcay, near cape Machicaca: five leagues north-weſt of Bilbao.

BERME'JO, an iſland and ſeaport in the Pacific Ocean, near the coaſt of Peru, a little to the weſt of Lima.

BER'MONDSEY, [of *Bermunds Ea*, Sax. i. e. Bermund's Iſle.] A pariſh in Southwark, formerly famous for an abbey erected by Bermund, either lord or abbot of that place.

BERMU'DAS, or SOMER'S ISLANDS, a cluſter of ſmall iſlands, ſituated on the Atlantic ocean. They are in number 400 or more; but not one eighth part is inhabited. The moſt conſiderable of theſe iſlands are St. George, St. David, Cooper, Ireland, Somerſet, Long Iſland, Bird Iſland, and Noneſuch. The firſt has a handſome town, which is the capital, called *George-town*, the two following ſome villages, the others only farms diſperſed. It is uncertain who were the firſt diſcoverers of theſe iſlands. John Bermudas, a Spaniard, is commonly ſaid to have diſcovered them in 1527; but this is diſputed, and the diſcovery attributed to Henry May an Engliſhman. As the iſlands were without the reach of the Indian navigation, the Bermudas were abſolutely uninhabited when firſt diſcovered by the Europeans. May was ſhipwrecked upon St. George's; and with the cedar which they felled there, aſſiſted by the wreck of their own ſhip, he and his companions built another which carried them to Europe, where they publiſhed their accounts of the iſlands. When lord Delawar was governor of Virginia, Sir Thomas Gates, Sir George Somers, and captain Newport, were appointed his deputy-governors; but their ſhip, being ſeparated by a ſtorm from the reſt of the ſquadron, was, in 1609, wrecked on the Bermudas; and the governors, diſagreeing among themſelves, built each of them a new ſhip of the cedar they found there, in which they ſeverally ſailed to Virginia. On their arrival there, the colony was in ſuch diſtreſs, that lord Delawar, upon the report which his deputy-governors made him of the plenty they found at the Bermudas, diſpatched Sir George Somers to bring proviſions from thence to Virginia in the ſame ſhip which brought him, and which had not an ounce of iron about her except one bolt in the keel. Sir George, after a tedious voyage, reached the place of his deſtination, where, ſoon after his arrival, he died, leaving his name to the iſlands, and his orders to the crew to return with black hogs to the colony of Virginia. This part of his will, however, the ſailors did not chooſe to execute; but ſetting ſail in their cedar ſhip for England, landed ſafely at Whitchurch in Dorſetſhire.

Notwithſtanding this dereliction of the iſland, it was not without Engliſh inhabitants. Two ſailors, Carter and Waters, being apprehenſive of puniſhment for their crimes, had ſecreted themſelves from their fellows when Sir George was firſt wrecked, and had ever ſince lived upon the natural productions of the ſoil. Upon the ſecond arrival of Sir George, they enticed one Chard to remain with them; but, differing about the ſovereignty of the iſland, Chard and Waters were on the point of cutting one another's throats, when they were prevented by the prudence of Carter. Soon after, they had the good fortune to find a large piece of ambergris, weighing about eighty pounds, beſides other pieces, which in thoſe days were ſufficient, if properly diſpoſed of, to have made their fortunes. Where they were, this ambergris was uſeleſs; and therefore they came to the deſperate reſolution of venturing in an open boat to Virginia or Newfoundland, where they hoped to diſpoſe of their treaſure. In the mean time, however, the Virginia company claimed the property of the Bermudas iſlands; and accordingly ſold it to 120 perſons of their own ſociety, who obtained a charter from king James for poſſeſſing it. This New Bermudas Company, as it was called, fitted out a ſhip with ſixty planters on board to ſettle on the Bermudas, under the command of Mr. Richard Moor, a carpenter. The new colony arrived upon the iſland juſt at the time the three ſailors were about to depart with their ambergris; which Moor having diſcovered, he immediately ſeized and diſpoſed of it for the benefit of the company. So valuable a booty gave ſpirit to the new company; and the adventurers ſettled upon St. George's iſland, where they raiſed cabins. Moor was indefatigable in his duty, and carried on the fortifying and planting the iſland with incredible diligence; for he not only built eight or nine forts, or blockhouſes, but inured the ſettlers to martial diſcipline. He alſo received a ſupply of proviſions and planters from England, and planned the town of St. George as it now ſtands. The fame of this ſettlement ſoon awakened the jealouſy of the Spaniards, who appeared off St. George's with ſome veſſels; but, being fired upon by the forts, they ſheered off, though the Engliſh had ſcarce a barrel of gunpowder on the iſland. During Moor's government the Bermudas were infeſted with rats, which had been imported into them by the

Engliſh ſhips. This vermin multiplied ſo faſt in St. George's iſland, that they even covered the ground, and had neſts in the trees. They deſtroyed all the fruits and corn within doors; nay, they increaſed to ſuch a degree, that St. George's iſland was unable to maintain them, and they ſwam over to the neighbouring iſlands, where they made as great havock. This calamity laſted five years, and at laſt ceaſed all of a ſudden.

On the expiration of Moor's government, he was ſucceeded by captain Tucker, who particularly encouraged the culture of tobacco. Being a ſevere diſciplinarian, he held all under him ſo rigidly to duty, that five of his ſubjects planned as bold an enterpriſe for liberty as was perhaps ever put in execution. Their names were Barker, a gentleman; another Barker, a joiner; Goodwin, a ſhip-carpenter; Paet, a ſailor; and Saunders, who planned the enterpriſe. Their management was as artful as their deſign was bold. Underſtanding that the governor was deterred from fiſhing in an open boat, on account of the dangers attending it, they propoſed to build him one of a particular conſtruction, which accordingly they did in a ſecret part of the iſland; but, when the governor went to view his boat, he found that the builders had put to ſea in it. Having provided themſelves with a few neceſſaries, they ſailed for England; and notwithſtanding the ſtorms they encountered, their being plundered by a French privateer, and the incredible hardſhips they underwent, they landed in forty-two days at Corke, in Ireland, where they were generouſly relieved and entertained by the earl of Thomond.

In 1619, Tucker reſigned his government to captain Butler. By this time the high character which the iſlands bore in England rendered it faſhionable for men of the higheſt rank to encourage their ſettlement; and ſeveral of the firſt nobility of England had purchaſed plantations among them. Captain Butler brought over with him 500 paſſengers, who became planters on the iſlands, and raiſed a monument to the memory of Sir George Somers. No fewer than 3000 Engliſh were now ſettled in the place, and ſeveral perſons of diſtinction had curioſity enough to viſit it from England. Among theſe was Waller the poet, who ſpent ſeveral months in the Somer-iſlands, which he has celebrated in one of his poems as the moſt delightful place in the world. The air is ſo healthy, that ſick people from the continent of America frequently go thither for the recovery of their health. The winter is hardly perceptible, it may be ſaid to be perpetually ſpring, the trees never loſe their verdure, and the leaves only fall when new ones begin to appear; birds ſing and breed without intermiſſion; but theſe advantages are counterbalanced by frightful ſtorms, accompanied by formidable thunders, which are announced by a circle round the moon. Some fertile plains are ſeen, but in general the country is mountainous. The ſoil is of divers colours, brown, white, and red, of which the former is the beſt; although light and ſtony, it is in general rich and fertile; the water is in general ſalt, having but little freſh, except rain-water preſerved in ciſterns. The inhabitants gather two harveſts of Indian corn in a year, one in July, the other in December: this forms the principal food of the inhabitants. They likewiſe cultivate tobacco, legumes, and fruit ſufficient for their wants. Their trees are principally the cedar and palmetto, the former is much eſteemed for its fragrance, its durability, and beauty, and for the facility with which it is wrought. Of this wood they build their ſhips, their houſes, and churches. The palmetto, a ſpecies of wild palm, is not leſs common, nor leſs uſeful; the fruit reſembles a plumb in its colour, form, and ſize; the wood ſerves for building, and the leaves, which are of an amazing length, are uſed to cover houſes. Beſides theſe, they have orange-trees, olive, laurels, pear-trees, &c. The red wood is peculiar to theſe iſlands, its coloured fruit feeds worms, which change to flies a little larger than cochineal, inſtead of which they are uſed. Another plant peculiar to them is a kind or creeping darnel, whoſe root is moſt powerfully emetic. Here are a great variety of birds, both of land and water; fiſh likewiſe abound upon the coaſt. Among the inſects the ſpider is remarkable for its large ſize, but its beautiful colours diminiſh the diſguſt it inſpires; its web is in colour and ſubſtance a perfect raw ſilk, and, running from tree to tree, ſmall birds are ſometimes ſo entangled as hardly to be able to eſcape. There are no venomous reptiles in the iſland. In 1765, a ſociety of the principal inhabitants engaged to form a library of all books of economics in every language; to employ all healthy perſons of both ſexes, according to their talents and their character, and to reward thoſe who ſtrike out any new art, or improve one already known; to provide for the honeſt workman, who is become old or paſt labour; and to indemnify any individual who ſhould, from any circumſtance, be oppreſſed. Building of ſhips and ſloops for the Americans, is the principal trade of the inhabitants. Theſe iſlands extend from north-eaſt to ſouth-weſt about fifteen leagues: the whole ſhore is ſurrounded with rocks, moſt of which are dry at low water, but covered at flood: 240 leagues ſouth-eaſt from cape Fear in Virginia, and 280 eaſt from the continent of South Carolina. The north point of theſe iſlands lies lat. 32. 34. N. lon. 63. 28. W. Greenwich.

Bermudas Cedar, *ſ.* in botany. See Juniperus.

BERMUDIA'NA, *ſ.* in botany. See Sisyrinchium.

BER'NACLE, *ſ.* A ſpecies of gooſe. See Anas.

BERNA'DA, a town of Italy, in the kingdom of Naples, and province of Calabria Ultra: five miles weſt of St. Severina.

BERNAGUR', a town of Hindoſtan, in the country of Bengal: five miles north-weſt of Moorſhedabad.

BER'NARD, [either of *bearn*, Old Eng. a child, and *ard*, Dut. nature; or, as Verſtigan, q. d. *beorn-heart*, one of a ſtout heart.] A proper name of men.

Bernard (St.), one of the fathers of the church, born in 1091, at Fontaine, in Burgundy. In 1115, the monaſtery of Clairvaux was founded, and Bernard was made the firſt abbot of this religious houſe, where many famous men were bred up under his tuition. He acquired ſo much eſteem among the clergy, nobility, and common people, that no eccleſiaſtical affair or diſpute was carried on without having recourſe to his advice. It was owing to him, that Innocent II. was acknowledged ſovereign pontiff; and after the death of Peter Leonis, anti-pope, that Victor, who had been named ſucceſſor, made a voluntary abdication of his dignity. He convicted Abelard at the council of Sens, in 1140. He oppoſed the monk Raoul; he perſecuted the followers of Arnaud de Breſſe: and in 1148, he got Gilbert de la Porvice, biſhop of Poitiers, and Eon de l'Etoile, to be condemned in the council of Rheims. By ſuch zealous behaviour he verified, ſays Mr. Bayle, the interpretation of his mother's dream. She dreamt, when ſhe was with child of him, that ſhe ſhould bring forth a white dog, whoſe barking ſhould be very loud. Being aſtoniſhed at this dream, ſhe conſulted a monk, who ſaid to her, "Be of good courage; you ſhall have a ſon who ſhall guard the houſe of God, and bark loudly againſt the enemies of the faith." He died in 1153, after having founded 160 monaſteries, and wrought innumerable miracles, and was made one of the great ſaints of the Romiſh communion. He left many works; the beſt edition is that publiſhed in 1690, by father Mabillon, 2 vols. folio.

Bernard (Edward), a learned aſtronomer, critic, and linguiſt, was born at Perry St. Paul, near Towceſter, the 2d of May 1638, and educated at Merchant-Taylor's ſchool, and at St. John's college Oxford. Having laid in a fund of claſſical learning in the Greek and Latin languages, he applied himſelf very diligently at the univerſity to the ſtudy of hiſtory, the eaſtern languages, and mathematics, under the celebrated Dr. Wallis. In 1668 he went to Leyden to conſult ſome Oriental manuſcripts left to that univerſity by Joſeph Scaliger and Levin Warner, and eſpecially the 5th, 6th, and 7th, books of Apollonius's Conics, the Greek text to which is loſt, and this

Arabic verſion having been brought from the eaſt by the celebrated Golius, a tranſcript of which was thence taken by Bernard, and brought with him to Oxford, with intent to publiſh it with a Latin tranſlation; but he was obliged to drop that deſign for want of encouragement. This however was afterwards carried into effect by Dr. Halley, in 1710, with the addition of the 8th book, which he ſupplied by his own ingenuity and induſtry. At his return to Oxford, Bernard examined and collated the moſt valuable manuſcripts in the Bodlein library. In 1669, the celebrated Chriſtopher Wren, Savilian profeſſor of aſtronomy at Oxford, having been appointed ſurveyor-general of his majeſty's works, and being much detained at London by this employment, obtained leave to name a deputy at Oxford, and pitched upon Mr. Bernard, which engaged the latter in a more particular application to the ſtudy of aſtronomy. But in 1673 he was appointed to the profeſſorſhip himſelf, which Wren was obliged to reſign, as, by the ſtatutes of the founder, Sir Henry Saville, the profeſſors are not allowed to hold any other office either eccleſiaſtical or civil. About this time a ſcheme was ſet on foot at Oxford, of collecting and publiſhing the ancient mathematicians. Mr. Bernard, who had firſt formed the project, collected all the old books publiſhed on that ſubject ſince the invention of printing, and all the manuſcripts he could diſcover in the Bodleian and Savilian libraries, which he arranged in order of time, and according to the matter they contained; of this he drew up a ſynopſis or view; and as a ſpecimen he publiſhed a few ſheets of Euclid, containing the Greek text, and a Latin verſion, with Proculus's commentary in Greek and Latin, and learned ſcholia and corollaries. The ſynopſis itſelf was publiſhed by Dr. Smith, and at the end of his life of Bernard, under the title of Veterum Mathematicorum Græcorum, Latinorum, et Arabum, Synopſis. And at the end of it there is a catalogue of ſome Greek writers, whoſe works are ſuppoſed to be loſt in their own language, but are preſerved in the Syriac or Arabic tranſlations of them. Mr. Bernard undertook alſo an edition of the Parva Syntaxis Alexandrina; in which, beſides Euclid, are contained the ſmall treatiſes of Theodoſius, Menelaus, Ariſtarchus, and Hipſicles; but it never was publiſhed. In 1676 he was ſent to France, as tutor to the dukes of Grafton and Northumberland, ſons to Charles II. by the ducheſs of Cleveland, who then lived with their mother at Paris: but the ſimplicity of his manners not ſuiting the gaiety of the ducheſs's family, he returned about a year after to Oxford, and purſued his ſtudies; in which he made great proficiency, as appears by his many learned and critical works. In 1691, being preſented to the rectory of Brightwell in Berkſhire, he quitted his profeſſorſhip at Oxford, in which he was ſucceeded by David Gregory, profeſſor of mathematics at Edinburgh. Toward the latter end of his life he was much afflicted with the ſtone; yet, notwithſtanding his infirmities, he undertook a voyage to Holland, to attend the ſale of Golius's manuſcripts. On his return to England, he fell into a languiſhing conſumption, which put an end to his life the 12th of January 1696, in the 58th year of his age. Beſides the works before-mentioned, he compoſed tables of the longitudes, latitudes, right aſcenſions, &c. of the fixed ſtars: he wrote Obſervations on the Obliquity of the Ecliptic; and other pieces inſerted in the Philoſophical Tranſactions. He wrote alſo, 1. A Treatiſe of the Ancient Weights and Meaſures. 2. Chronologiæ Samaritanæ Synopſis, in two tables. 3. Teſtimonies of the Ancients concerning the Greek Verſion of the Old Teſtament by the Seventy. And ſeveral other learned works. Beſides a great number of valuable manuſcripts left at his death.

Bernard (James), profeſſor of philoſophy and mathematics, at Leyden, was born September the 1ſt, 1658, at Nions in Dauphine. Having ſtudied at Geneva, he returned to France in 1679, and was choſen miniſter of Venterol, a village in Dauphine; but ſome time after he was removed to the church of Vinſobres in the ſame province. To avoid the perſecutions againſt the Proteſtants in France, he went into Holland, where he was appointed one of the penſionary miniſters of Ganda. He here publiſhed ſeveral political and hiſtorical works; and in 1699 he began the Nouvelles de la Republique des Lettres, which continued till December 1710. In 1705 he was choſen miniſter of the Walloon church at Leyden; and about the ſame time, M. de Voler, profeſſor of philoſophy and mathematics at Leyden, having reſigned, Mr. Bernard was appointed his ſucceſſor; upon which occaſion the univerſity alſo preſented him with the degrees of doctor of philoſophy and maſter of arts. In 1716 he publiſhed a Supplement to Moreri's Dictionary in 2 vols. folio. The ſame year he reſumed his Nouvelles de la Republique des Lettres; which he continued till his death, which happened the 27th of April 1718, in the 60th year of his age.

Bernard (Catherine), of the academy of the Ricovrati of Padua, was born at Rouen, and died at Paris in 1712. Her works were ſeveral times crowned by the French academy, and that of the jeux floraux. Two of her tragedies were repreſented at the French theatre, Brutus (in 1691) and Lodamia. It is thought ſhe compoſed theſe pieces conjointly with Fontenelle, her friend and countryman. Of her are ſeveral other works in verſe, which are written with eaſe and delicacy. Some diſtinction is ſet upon her placet to Louis XIV. to aſk for the 200 crowns, the annual gratification given her by that prince; it is to ſeen in the Recueil de Vers choiſis du Pere Bouhours. Two romances are aſcribed to her: The Count d'Amboiſe, in 12mo. and Inès of Cordova, 12mo. Some of the journaliſts have attributed to mademoiſelle Bernard the account of the iſle of Borneo, and others to Fontenelle. "It may be doubted," ſays the abbé Trublet, "whether it be hers; and it is to be wiſhed that it is not."

Bernard (of Thuringia), a fanatical viſionary, who announced at the latter end of the 10th century that the end of the world was near at hand. He wore the habit of a hermit, and lived an auſtere life. He alarmed all minds; and an eclipſe of the ſun happening at that time, many people hid themſelves among rocks and caves; the return of light even did not calm their fears. It was neceſſary that Gerberge, wife of Lewis d'Outremer, ſhould engage the theologians to clear up this matter. Moſt of them had ſenſe enough to prove that the reign of Antichriſt was yet many years diſtant. The world ſubſiſted, and the reveries of the hermit Bernard were no more regarded. Some ignorant people have aſcribed the dreams of this enthuſiaſt to St. Bernard abbé of Cit.

Bernard, a celebrated painter of Bruſſels, known by his hunting-pieces, in which he introduced portraits of his patron the emperor Charles V. and the principal lords of his court. There is ſtill of his painting at Antwerp a repreſentation of the laſt judgment; of which he made the ground colour gold, that the luſtre of it might repreſent the glory of the heavens more naturally. He flouriſhed about the middle of the 16th century.

Bernard (Peter Joſeph), ſecrétaire-général des dragons, and librarian of the king's cabinet at the chateau de Choiſi-le-roi, was the ſon of a ſculptor at Grenoble in Dauphiné, and born in 1710. Being ſent to the college of Jeſuits at Lyons, he made rapid progreſs under maſters who were deſirous of attaching him to their body; but the young ſcholar, too fond of liberty and pleaſure, would not ſubmit to that confinement. Being drawn to Paris by the wiſh to make a figure by his talent for poetry, he was obliged to act as clerk to a notary. The light pieces of poetry he ſent abroad at intervals, of which the pretrieſt are the epiſtle to Claudine, and the ſong of the Roſe, relieved him from this diſagreeable employment. The marquis de Pezay took him to Italy. Bernard was at the battles of Parma and Guaſtalla; and, though a poet, behaved better than Horace. This was the criſis of his fortune. Preſented to the marechal de Coigni who commanded there, he was lucky enough to pleaſe him, by his wit and agreeable manners. The marechal took him to be his ſecretary, admitted him to his intimacy, and ſome time afterwards procured him the place of ſecretary-general of the dragoons. From gratitude he attached himſelf conſtantly to his Mæcenas, till 1756, when he was deprived of him by death. He was in great requeſt in all the ſelect companies of Paris, whom he delighted by that brilliant wit, by that ſeducing epicuriſm with which his verſes and his airs abound, and of which ſome are worthy of Anacreon. In 1771 the ſudden loſs of his memory put an end to his happpineſs. Thenceforward he endured, in imbecility of mind, a ſhade of life far worſe than death. He died in this unhappy ſtate, November 1, 1775. Beſides his lighter pieces, which got him the appellation of *le gentil Bernard*, ſeveral operas added to his reputation.

BERNARD (Francis), chief phyſician to James II. He was a man of learning, and well verſed in literature. His own private collection of books, which were ſcarce and curious, ſold for upwards of 1600l. in 1698: a large ſum at that time, when the paſſion for rare books was much more moderate than now. He died February 9, 1697, aged ſixty-nine. Mr. Charles Bernard, brother to Francis, and ſurgeon to the princeſs Anne, daughter of king James, had alſo a curious library, which was ſold by auction in 1711. The Spaccio della Beſtia triomfante, by Jordano Bruno, an Italian atheiſt, which is ſaid in No. 389 of the Spectator to have ſold for 30l. was in this ſale. Mr. Ames informs us that this book was printed in England by Thomas Vautrollier in 1584. An Engliſh edition of it was printed in 1713.

BERNARD (Richard), rector of Batecombe in Somerſetſhire, was author of Theſaurus Biblicus, a laborious work formerly much uſed by way of concordance. He was alſo author of an Abſtract and Epitome of the Bible. In 1627 he publiſhed A Guide to Grand Jurymen with reſpect to Witches, the country where he lived being, if we may believe Glanville, formerly much infeſted with them. He died in 1641.

BERNARD the GREAT (St.), a mountain in Savoy and Swiſſerland, between Valais and the valley of Aouſt, at the ſource of the rivers Drance and Doria. The top is always covered with ſnow: and there is a great monaſtery ſeated thereon, where the monks always entertain travellers without diſtinction of religion for three days.

BERNAR'DI (John), born at Caſtel-Bologneze, died at Faënza in 1555. This artiſt employed himſelf chiefly in cutting grand ſubjects in cryſtals, which were afterwards ſet in goldſmiths' work. His productions have been thought comparable with the beſt performances of the ancients in this way. He was patronized by ſeveral princes, and particularly by the cardinal Alexander Farneſe. He excelled likewiſe in architecture.

BERNAR'DIA, *ſ.* in botany. See ADELIA.

BER'NARDINE (St.) was born at Maſſa in Tuſcany, in 1380. In 1404 he entered into a Franciſcan monaſtery near Sienna, where he became an eminent preacher; and was afterwards ſent to Jeruſalem, as commiſſary of the Holy Land. On his return to Italy, he viſited ſeveral cities, where he preached with ſuch applauſe, that the cities of Ferrara, Sienna, and Urbino, deſired pope Eugenius IV. to appoint him their biſhop: but Bernardine refuſed the honour, accepting only the office of vicar-general of the friers of the obſervance for all Italy. He repaired and founded above 300 monaſteries in that country; died in 1444; was canonized in 1450 by pope Eugenius; and his works were publiſhed at Venice in 1591, in 4 vols. 4to.

BER'NARDINES, an order of monks, founded by Robert abbot of Moleme, and reformed by St. Bernard. They wear a white robe with a black ſcapulary; and when they officiate they are clothed with a large gown, which is all white, and hath great ſleeves, with a hood of the ſame colour. The Bernardines differ very little from the Ciſtercians. They had their origin toward the beginning of the 12th century.

BERNAU', a town of Germany, in the archduchy of Auſtria: five miles ſouth of Wels.

BERNAU, a town of Germany, in the archduchy of Auſtria: one mile eaſt of Wels.

BERNAU, a town of Germany, in the circle of Bavaria and Upper Palatinate, on the borders of Bohemia: twenty-eight miles north-eaſt of Amberg.

BERNAU, a town of Germany, in the circle of Upper Saxony, and Middle Mark of Brandenburg, ſurrounded with walls, ramparts, and ditches, containing three churches; the principal commerce is beer, of which large quantities are brewed in this town: fourteen miles north-north-eaſt of Berlin, and forty-one weſt of Kuſtrin.

BERNAVIL'LE, a town of France, in the department of the Somme, and chief place of a canton, in the diſtrict of Dourlens: two leagues and a half ſouth-weſt of Dourlens.

BERNAY', a town of France, and principal place of a diſtrict, in the department of the Eure: ſeven leagues and a half weſt of Evreux, and five weſt Liſieux. Lat. 49. 6. N. lon. 18. 16. E. Ferro.

BERNAZZA'NO (of Milan), an excellent landſcape painter of the 16th century. It is ſaid, that, having painted ſome ſtrawberries in freſco upon a wall, the peacocks came ſo often to peck at them, that they broke the plaiſter.

BERN'BURG, a town of Germany, in the circle of Upper Saxony, the capital of Anhalt Bernburg, and the reſidence of the prince: ſituated on the Saale. It is divided into Old and New Town, which had each its own magiſtracy, till they were united in the year 1506. In 1644, it was taken by the Swedes. It is twenty miles weſt of Deſſau, and twenty-four ſouth of Magdeburg. Lat. 51. 46. N. lon. 29. 22. E. Ferro.

BERN'CASTEL, a town of Germany, in the circle of the Lower Rhine, and electorate of Treves, ſituated on the Moſelle: it owes its municipal privileges to the emperor Rodolphus I. eighteen miles eaſt-north-eaſt of Treves, and three weſt-ſouth-weſt of Traarback. Lat. 50. 1. N. lon. 24. 22. E. Ferro.

BERNE, one of the thirteen ancient cantons of Swiſſerland, bounded on the eaſt by Uri, Unterwalden, Lucerne, and the county of Baden; on the north by the Auſtrian foreſt-towns, and the diſtricts of Bâle and Soleure; on the weſt by the county of Bienne, and a part of France; and on the ſouth by the lake of Geneva, the Valais, and the duchy of Savoy. The country is well cultivated, and very populous; its length is about ſixty leagues, and its breadth thirty. It is far the largeſt of all the ancient cantons, and comprehends one-third of all Swiſſerland. The plains are fertile in corn and fruit, the lofty Alps afford abundance of excellent paſturage, and ſupport numerous flocks, from whoſe milk they make butter and excellent cheeſe. The moſt beautiful and moſt fertile ſpots are on the ſides of the lakes of Geneva and Neuſchatel; here grow the moſt delicious fruits, and here they make the moſt excellent wines. Near Berne they find a white clay, farther on red, white, black, and blue. Near Grandſon is a blue clay, uſed for pottery; in other places are found ſtone of different ſorts, plaſter of Paris, cryſtal, ſalt-ſprings, coal, ſulphur, mines of iron, copper, lead, and ſilver, and medicinal baths. They count thirty-nine towns, great and ſmall, and 1300 villages. The number of inhabitants is eſtimated according to ſome at 340,000, according to others 400,000. In ſome parts of the country they ſpeak French, but German is the moſt general dialect. Horſes, cheeſe, linen cloth, coarſe cloth made of hemp, cloth of cotton, and woollen ſtuffs, are the principal articles of exportation. They export annually 10,000 pieces of linen, the principal part of which goes to Lyons. At Berne they have alſo manufactures of ſilk, chiefly ſtuffs and coloured ſtockings. In the weſtern part of the mountains the principal employment is clock-making and poliſhing falſe ſtones. The principal rivers are the Aar, the Emmet, the Wigger, the Aaa, the Ruſz, the Limmat, the

Sanen, the Senſen, and the Kandel. The principal lakes are thoſe of Geneva, Neufchatel, Biel, Murte, Thun, Brien, and Halwyl, which all abound in fiſh, particularly that of Geneva. In that of Biel, called alſo the *Nydau-lake*, are two ſmall iſlands, one of which is very beautiful. This lake is about three leagues in length, and one in breadth. Along the whole weſt and north-weſt ſides runs that chain of mountains called by the general name of *Jura*; but the ſeveral mountains of which it is compoſed have all their particular names. The eſtabliſhed religion is Calviniſm, the ſame as in Holland; nor is any other tolerated, except in the common bailiages, and the vale of Frick. For the civil and military government of Berne, ſee SWISSERLAND.

BERNE, [derived, it is ſaid from taking a *bear* on the day on which the foundation of the city was laid; hence it is often in Latin called *Arctopolis*, i. e. 'the city of the bear,' and has a bear for its coat of arms.] A city of Swiſſerland, and capital of the territory above deſcribed. It is ſituated on the Aar, which waſhes three ſides, and forms a peninſula; on the weſt it is fortified with ramparts, walls, and ditches. It is ſaid to have been built in 1190, by Berthold, duke of Zering; and it was made a free city by the emperor Frederic Barbaroſſa. The houſes are moſtly built of white free-ſtone, and, in the principal ſtreets, have piazzas or arches under them, for the conveniency of walking dry in wet weather. The city is large, and contains ſeveral churches, of which one, called the *Great Church*, founded in 1421, is eſteemed a moſt beautiful ſpecimen of the Norman Gothic architecture. In this city is a college with eight profeſſors, a large public library and a muſeum; a ſtately granary, in which a great quantity of corn is always kept; a guildhall; an arſenal; and ſeveral hoſpitals. In the arſenal is a ſtatue of the famous Tell, which repreſents him taking aim at the apple placed on the head of his ſon. In the Dominican church, a hole in the wall is always ſhewn to ſtrangers, by means of which, it having a communication with the cell of a monk in an adjoining monaſtery, the pious fraud of making an image of the Virgin appear to ſpeak was once carried on, which for a while anſwered the purpoſes of the monks; but they were at laſt detected and puniſhed. On the eaſt ſide of the city is a handſome ſtone bridge: and near the great church is a fine platform ſome hundred feet in height, which affords a moſt delightful walk, commanding a charming proſpect of the mountains of the Griſons, which are covered with ſnow in the middle of the ſummer. In 1654 a ſtudent of the college being on horſeback, and in liquor, leaped from this terrace, without receiving any other hurt than breaking a leg, and lived many years after; but the horſe was killed. In the upper part of the city are always kept a number of bears in two incloſures, with fir-trees for them to climb up and play upon. The city of Berne was taken by the French revolutionary army, on the 5th of March, 1798, by capitulation. It is forty-five miles ſouth of Bâle, and ſeventy-eight north-eaſt of Geneva. Lat. 46. 59. N. lon. 26. 59. E. Ferro.

BERNE-MACHINE, *ſ.* The name of an engine for rooting up trees, invented by Peter Sommer, a native of Berne. It is compounded of a ſingle pulley, with a lever of the firſt and ſecond order; and, as the puſh of the engine is given in an oblique direction, it exerts a greater or leſs force againſt the horizontal roots of the tree, in proportion to the angle formed by the machine with the plane of the horizon.

BERNECK', a town of Germany, in the circle of Franconia, and principality of Bayreuth.

BERNE'COURT, a town of France, in the department of the Meurte, and chief place of a canton, in the diſtrict of Pont-a-Mouſſon, three leagues ſouth-weſt of Pont-a-Mouſſon, and three and a quarter north of Toul.

BERNE'RA, or BISHOP'S ISLAND, one of the weſtern iſlands of Scotland, about a mile long, and three quarters broad; fifteen miles ſouth of Barra.

BERNERA, a town of Scotland, in the county of Inverneſs, in which are barracks: thirty-two miles north-weſt of Fort William.

BERNES'SO, a town of Piedmont, in the diſtrict of Coni: four miles and a half weſt-north-weſt of Coni.

BERNEVIL'LE, a town of France, in the department of the Straits of Calais, and chief place of a canton, in the diſtrict of Arras: four miles ſouth-weſt of Arras.

BER'NEX, a town of Savoy: two miles and a half north-north-eaſt of St. Julien.

BERN'HARTS, a town of Germany, in the archduchy of Auſtria: ſeven miles eaſt-ſouth-eaſt of Feldſburg.

BER'NIA, or BERNI (Francis), canon of Florence, born at Lamporechio in Tuſcany, of a noble family, originally from Florence, was brought up under the care of Julio de Medicis, afterwards pope Clement XII. He was made ſecretary to Giberti biſhop of Verona, and obtained a canonicate of Florence, where he died in 1543. He has given his name to a ſpecies of burleſque which in Italy is called *bernieſque*. He was the Scarron of the Italians. He had, beſides, the dangerous talent of ſatire. Some authors have put him at the head of the Italian burleſque poets. In 1548 a collection was made of his Italian pieces of poetry, together with thoſe of Varchi, of Moro, of Dolce, &c. in 8vo. 2 vols. reprinted at London, 1721 and 1724, after the edition of Venice. This collection is in great requeſt.

BER'NICLE, *ſ.* A ſpecies of lepas. See LEPAS.

BERNIER' (Nicholas), an eminent muſician and compoſer, was born at Mante on the Seine, in 1664. By his merit in his profeſſion he attained to be conductor of the muſic in the chapel of the king. The regent duke of Orleans admired his works, and patronized their author. This muſician died at Paris in 1734. His five books of Cantatas and Songs for one and two voices, the words of which were written by Rouſſeau and Fuſeler, have procured him great reputation. There are beſides of his compoſition Les Nuits de Sceaux, and many motets, which are ſtill in great eſteem.

BERNIER (Francis), ſurnamed the *Mogul*, on account of his travels and reſidence in that country, was born at Angers in France; and after he had taken his degree of doctor of phyſic at Montpellier, left his country in 1654, went to Egypt, to the Holy Land, and to the kingdom of Mogul, where he was phyſician to that monarch, attended him in his journeys, and ſtayed there twelve years. Upon his return to France, he publiſhed the hiſtory of the countries he had viſited; and ſpent the remainder of his life in compoſing various other works, particularly an Abridgement of the Philoſophy of Gaſſendus, in 8 vols. 12mo. He died Sept. 22, 1688.

BERNIER (John), a phyſician at Blois, his native place, and afterwards at Paris, he had the title of phyſician to Madame. He wrote, 1. A Hiſtory of Blois. Paris, 1682, 4to. very inaccurate in the opinion of Dr. Liron. 2. Medical Eſſays, 1689, 4to. 3. Anti-Menagiana, 1693, 12mo. 4. Critique on the works of Rabelais. Paris 1697, 12mo. full of verboſity and falſe wit. His rank of phyſician to Madame did not reſcue him from poverty. His diſappointments gave him a ſtrong tincture of melancholy, which is manifeſt in all his writings. His erudition was extremely ſuperficial, and he is called by Ménage, *vir levis armaturæ*. He died at an advanced age in 1668.

BERNIN', a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Grenoble: eight miles north of Grenoble.

BERNI'NI (John Laurence), commonly called *Cavaliero Bernin*, a Neapolitan, famous for his ſkill in painting, ſculpture, architecture, and mechanics. He firſt began to be known under the pontificate of Paul V. Rome is indebted to this artiſt for ſome of its greateſt ornaments; and there are in the church of St. Peter no leſs than fifteen different works of his hand. He died at Rome in 1680.

BERNI'NO, a mountain of Swiſſerland, in the country of the Griſons: ſeventeen miles north-eaſt of Chiavenna.

BER'NO, abbot of Richenon, in the dioceſe of Conſtance, who flouriſhed about the year 1008, is celebrated as a poet, muſician, philoſopher, and divine. He was the author of ſeveral treatiſes on muſic, particularly De Inſtrumentis Muſicalibus, which he dedicated to Arrabon archbiſhop of Mentz. He alſo wrote De Menſura Monochordi. But the moſt celebrated of his works is a treatiſe De Muſica ſeu Tonis. This tract is part of the Baliol manuſcript, and follows the Enchiridion of Odo: it contains a ſummary of the doctrines delivered by Boetius, an explanation of the eccleſiaſtical tones, intermixed with frequent exhortations to piety, and the application of muſic to religious purpoſes. He was highly favoured by the emperor Henry II. for his great learning and piety; and died in 1048.

BERNON', a town of France, in the department of the Aube, and chief place of a canton, in the diſtrict of Ervy: four miles ſouth-eaſt of Ervy.

BERNOUL'LI (James), a celebrated mathematician, born at Baſil, Dec. 27, 1654. Having taken his degrees in that univerſity, he applied himſelf to divinity at the deſire of his father, but againſt his own inclination, which led him to aſtronomy and mathematics. He gave very early proofs of his genius for theſe ſciences, and ſoon became a geometrician, without a preceptor, and almoſt without books; for, if one by chance fell into his hands, he was obliged to conceal it to avoid the diſpleaſure of his father, who deſigned him for other ſtudies. This ſituation induced him to chooſe for his device, Phaeton driving the chariot of the ſun, with theſe words, *Invito patre ſidera verſo*, "I traverſe the ſtars againſt my father's will:" alluding particularly to aſtronomy, to which he then chiefly applied himſelf. In 1676 he began his travels. When he was at Geneva, he fell upon a method to teach a young girl to write who had been blind from two months old. At Bourdeaux he compoſed univerſal gnomonic tables; but they were never publiſhed. He returned from France to his own country in 1680. About this time there appeared a comet, the return of which he foretold; and wrote a ſmall treatiſe upon it. Soon after this he went into Holland, where he applied himſelf to the ſtudy of the new philoſophy. Having viſited Flanders and Brabant, he paſſed over to England; where he formed an acquaintance with the moſt eminent men in the ſciences, and attended their philoſophical meetings. He returned to his native country in 1682; and exhibited at Baſil a courſe of experiments in natural philoſophy and mechanics, which conſiſted of a variety of new diſcoveries. The ſame year he publiſhed his Eſſay on new Syſtem of Comets; and the year following, his Diſſertation on the Weight of the Air. About this time Leibnitz having publiſhed, in the Acta Eruditorum at Leipſic, ſome eſſays on his new *Calculus Differentialis*; but, concealing the art and method of it, Mr. Bernoulli and his brother John diſcovered, by the little which they ſaw, the beauty and extent of it: this induced them to endeavour to unravel the ſecret; which they did with ſuch ſucceſs, that Leibnitz declared that the invention belonged to them as much as to himſelf. In 1687 James Bernoulli ſucceeded to the profeſſorſhip of mathematics at Baſil; a truſt which he diſcharged with great applauſe. In 1699 he was admitted a foreign member of the academy of ſciences of Paris; and in 1701 the ſame honour was conferred upon him by the academy of Berlin: in both of which he publiſhed ſeveral ingenious compoſitions, about the years 1702, 3, and 4. He wrote alſo ſeveral pieces in the Acta Eruditorum of Leipſic, and in the Journal des Sçavans. His intenſe application to ſtudy brought upon him the gout, and by degrees a ſlow fever, which put a period to his life the 16th of Auguſt 1705, in the 51ſt year of his age. Archimedes, having found out the proportion of a ſphere and its circumſcribing cylinder, ordered them to be engraven on his monument: in imitation of him, Bernoulli appointed that a logarithmic ſpiral curve ſhould be inſcribed on his tomb, with theſe words, *Eadem mutata reſurgo*; in alluſion to the hopes of the reſurrection, which are in ſome meaſure repreſented by the properties of that curve, which he had the honour of diſcovering. He was eminently ſkilled in all the branches of the mathematics, and contributed much to the promoting the new analyſis, infinite ſeries, &c. He carried to a great height the theory of the quadrature of the parabola; the geometry of curve lines, of ſpirals, of cycloids and epicycloids. His works, that had been publiſhed, were collected, and printed in 2 vols. 4to. at Geneva in 1744. At the time of his death he was occupied on a great work entitled De Arte Conjectandi, which was publiſhed in 4to. in 1713. It contains one of the beſt and moſt elegant introductions to Infinite Series, &c.

BERNOULLI (John), the brother of James above-mentioned, and a celebrated mathematician, was born at Baſil the 7th of Auguſt 1667. His father intended him for trade; but at the firſt his own inclination led him to the Belles-Lettres, which however, like his brother, he left for mathematics. He was the firſt, with Huygens and Leibnitz, who gave the ſolution of the problem propoſed by James Bernoulli, concerning the catenary, or curve formed by a chain ſuſpended by its two extremities. He had the degree of doctor of phyſic at Baſil, and two years afterward was named profeſſor of mathematics in the univerſity of Groningen. It was here that he diſcovered the mercurial phoſphorus or luminous barometer; and where he reſolved the problem propoſed by his brother concerning Iſoperimetricals. On the death of his brother James, the profeſſor at Baſil, the Academic Senate appointed him to ſucceed his brother, without aſſembling competitors, and contrary to the eſtabliſhed practice: an appointment which he held during his whole life. In 1714 was publiſhed his treatiſe on the Management of Ships; and in 1730, his memoir on the Elliptical Figure of the Planets gained the prize of the Academy of Sciences. The ſame academy alſo divided the prize, for their queſtion concerning the inclination of the planetary orbits, between him and his ſon Daniel. John Bernoulli was a member of moſt of the academies of Europe, and received as a foreign aſſociate of that of Paris in 1699. After a long life ſpent in conſtant ſtudy and improvement of all the branches of the mathematics, he died full of honours the 1ſt of January 1748, in the 81ſt year of his age. Of five ſons which he had, three purſued the ſame ſciences with himſelf. One of theſe died before him; the two others, Nicholas and Daniel, he lived to ſee become eminent and much reſpected. The writings of this great man were diſperſed through the periodical memoirs of ſeveral academies, as well as in many ſeparate treatiſes. And the whole of them were carefully collected and publiſhed at Lauſanne and Geneva, 1742, in 4 vols. 4to.

BERNOULLI (Daniel), a celebrated phyſician and philoſopher, and ſon of John Bernoulli above-mentioned, was born at Groningen Feb. 9, 1700. He paſſed ſome time in Italy; and at twenty-four years of age he declined the honour offered him of becoming preſident of an academy intended to have been eſtabliſhed at Genoa. He ſpent ſeveral years with great reputation at Peterſburgh; and in 1733 returned to Baſil, where his father was then profeſſor of mathematics; and here he ſucceſſively filled the chair of phyſic, of natural and of ſpeculative philoſophy. In his work Exercitationes Mathematicæ, 1724, he took the only title he then had, viz. "Son of John Bernoulli," and never would ſuffer any other to be added to it. This work was publiſhed in Italy, while he was on his travels; and it claſſed him in the rank of inventors. In his work, Hydrodynamica, publiſhed in 4to. at Argentoratum or Straſbourg, in 1738, to the ſame title was alſo added that of Med. Prof. Baſil. He alſo wrote a multitude of other pieces, which have been publiſhed in the Mem. Acad. of Sciences at Paris, and in thoſe of other academies. He gained and divided ten prizes from the Academy of Sciences, which were contended for by the moſt illuſtrious mathematicians in Europe. The only perſon who had ſimilar ſucceſs, is Euler, his countryman, diſciple, rival, and friend. His firſt prize he gained at twenty-four years of age. In 1734 he divided one with his father, which hurt the family union; for the father conſidered the conteſt itſelf as a want of reſpect; and the ſon did not ſufficiently conceal that he thought (which was really the caſe) his own piece better than his father's. And beſides, he declared for Newton, againſt whom his father had contended all his life. In 1740, he divided the prize, "On the Tides of the Sea," with Euler and Maclaurin. In 1748, Daniel Bernoulli ſucceeded his father John in the Academy of Sciences, who had ſucceeded his brother James; this place, ſince its firſt erection in 1699, having never been without a Bernoulli to fill it. He died March 17, 1782, in the eighty-third year of his age.

BERNOVITZ'KOE, a town of Ruſſia, in the government of Smolenſko: forty miles north of Smolenſk.

BERN'STADT, a town of Sileſia, in the principality of Oels, on the river Weyda.

BERN'STEIN, a town of Germany, in the circle of Upper Saxony, and New Mark of Brandenburgh: four miles north-eaſt of Berlinchen.

BERNSTEIN, a town and caſtle of Germany, in the circle of Bavaria: two miles weſt-ſouth-weſt of Gravenau.

BERN'STORFF (Count de) was born in 1735. He was the repreſentative of a very ancient family, originally ſettled in the electorate of Hanover, whence it had migrated into Denmark in ſearch of fortune and diſtinctions. His uncle, the old count de Bernſtorff, had occupied a diſtinguiſhed ſituation in the cabinet of that country, whence he was excluded by the influence of the count de Struenſee, a man of conſiderable talents and ambition, who, not content with being the lover of the queen, aſpired to be the miniſter of the nation. An ignominious death, inflicted by the hand of a common executioner, put an end to the life and projects of this aſpiring ſtateſman. No ſooner was he removed from the ſtage, but the plenipotentiary of the empreſs of Ruſſia ſtepped forward, and, knowing that the elder Bernſtorff had always been devoted to Ruſſia, procured the appointment of his nephew to the office of prime-miniſter.

The young count Bernſtorff was every way worthy of this honour. He was diſtinguiſhed above all his cotemporaries by his politeneſs, his modeſty, the juſtneſs of his ideas, and the perſuaſiveneſs of his eloquence. The ſtudy of politics was his favourite purſuit, and he had nothing of the courtier about him; for he was faithful to his word, ſimple in his manners, and frank in his converſation. He was ambitious, however, of glory, and zealous to diſtinguiſh himſelf as a patriot miniſter. The nominee of the crown, even in a government uſually conſidered as arbitrary, he dared to contemplate himſelf as a truſtee for the people. Such was the man whom the court of Peterſburgh fondly hoped would receive its commands with implicit ſubmiſſion; but he ſoon proved by his conduct, that he was more attached to Denmark than to Ruſſia; to the country which gave him birth, than to that which had exalted him to power. No ſooner was he inveſted with the inſignia of office, than he manifeſted the moſt earneſt deſire to render himſelf worthy of his employments. Diligent and indefatigable, he was conſtantly occupied about public affairs. Acceſſible to every one, there was ſcarcely a perſon of property, and not a ſingle man of any celebrity, in Denmark, who was not known to the miniſter. The enemy of flattery, no one ever acquired either his favour or confidence by ſounding his praiſes; indifferent as to what are uſually termed pleaſures, he was neither the dupe of the fair ſex nor the ſlave of wine. Poſſeſſing an even flow of animal ſpirits, he was never rendered haughty by ſucceſs, nor diſpirited by misfortune. The moment, therefore, that he was intruſted with the reins of government, Bernſtorff prepared to atchieve ſomething highly advantageous to his country. Denmark had been long kept in the moſt degrading dependence on Ruſſia, on account of certain claims maintained by the latter, relative to the German dominions of the former. The ſubject of conteſt conſiſted of the fertile territory of Schleſwig, itſelf a ſovereign duchy, and rendered peculiarly intereſting to the court of Copenhagen, by its local ſituation, being bounded on the eaſt by the Baltic, and on the ſouth by the Holſtein, which alſo had given riſe to certain diſputes. Both the uncle and nephew were equally anxious to obtain a complete recognition of the rights of Denmark, and conſequently an entire dereliction of thoſe of Ruſſia. But how was it poſſible to obtain this? Catherine was the moſt tenacious of ſovereigns, and, inſtead of relinquiſhing old claims, was perpetually enforcing new ones. Her favourites too, of all men, were the leaſt likely to countenance ſuch a meaſure, as the territory in queſtion had been the fruitful ſource of preſents and compenſations. What the moraliſt bluſhes to countenance, the moſt ſcrupulous ſtateſman often achieves without a pang. It was ſo in the preſent inſtance: the pride of the empreſs was continually ſuggeſting ideas of aggrandiſement: an appeal to this very pride confirmed the German dominions of Denmark to their ancient maſters. To Catherine it was accordingly repreſented as unworthy the dignity of ſo great a princeſs to poſſeſs a petty territory, which would neceſſarily render her dependent on the empire of Germany. Of the members of the then cabinet, the aſſent of ſome was gained, the ſilence of others was purchaſed, and the acquieſcence of all ſo ſecured, that a final treaty was actually concluded at Kiel, on the 16th of November, 1773. This event was celebrated by public feſtivals throughout Denmark, and occaſioned the greateſt joy at Copenhagen in particular. It was otherwiſe at Peterſburgh. Her Imperial majeſty ſoon perceived, that notwithſtanding her great talents for negociating, ſhe had on this occaſion been fairly outwitted by the new miniſter Bernſtorff; and Saldern, on whom the weight of her indignation fell, was actually diſgraced. Being unwilling, however, to revoke her ſignature, ſhe conſoled herſelf with the aſſurance that this conceſſion had ſecured her a faithful ally in Denmark, who would be always ready to check the hoſtile deſigns of Sweden, and here ſhe was not miſtaken.

Another object, equally worthy of Bernſtorff, ſoon excited and engroſſed his whole attention. At a period when the flame of liberty was nearly extinct throughout Europe, it all of a ſudden became the faſhion for arbitrary power, in the plenitude of its indulgence, to concede ſome of its pretenſions, and actually buſy itſelf about the welfare of its ſlaves! We accordingly find that three of the greateſt deſpots on the continent conceived the idea of becoming legiſlators. Theſe were Catherine of Ruſſia, Frederic of Pruſſia, and Joſeph of Auſtria; and their reſpective codes, excellent in theory, but unattainable in practice, ſtill exiſt in the libraries of the curious. It was in 1775 that the empreſs ordered her new laws to be printed at Peterſburgh, and adopted proviſionally, and by way of trial, throughout the governments of Smolenſkoe and Tver. It cannot be denied that the regulations for the ſhortening of law-ſuits were excellent; the expences of litigation were leſſened; the provincial tribunals were empowered to determine in the firſt inſtance; an appeal indeed was allowed, but, if the former decree happened to be confirmed, the appellant was ſubjected to coſts of ſuit, and a fine.

Bernſtorff, on his part, was not inattentive to this ſpecies of reform. It was his opinion, that it was far better to prevent law-ſuits than to regulate them, and eaſier to render them unneceſſary than expenſive; he thus ſtruck at the root of the evil, while his imperial and royal colleagues only aimed random ſtrokes at the branches. He knew that conteſts of this kind uſually originated in miſcomprehenſion; he accordingly enjoined a meeting of the parties. He was aware that deciſions often aroſe out of influence, and ſometimes out of corruption; he therefore introduced the trial by jury, a godlike inſtitution, congenial in ſome meaſure to the ſoil, as it is ſuppoſed to have originated among the free nations that formerly inhabited the neighbourhood of the hyperborean regions. The number of jurymen, however, was reſtricted to two, but then each of the parties had a right to nominate a perſon on whoſe integrity he he could rely; and, in caſe of diſagreement as to the verdict, an umpire was finally to determine.

The next important object that engaged the attention of this miniſter, occurred in 1780: the American war enriched the ſubjects of thoſe powers who were wiſe enough to maintain a rigorous and productive neutrality. The Dutch navigated the Baltic under the Daniſh flag, and a ſingle merchant of Copenhagen, Mr. Kœnig, was the nominal proprietor of between five and ſix hundred ſail of merchantmen. The neutrality of Denmark, however, was at times but little reſpected, and that of the petty free towns of Hamburgh, Bremen, and Lubec, ſtill leſs. The empreſs, who was applied to by the courts of Copenhagen and Stockholm, found her ambition flattered with the idea of becoming protectreſs of the north. She accordingly placed herſelf at the head of an armed neutrality; and, as the meaſure proved ſucceſsful, always affected to conſider it as her own plan. But it is now well known that this ſcheme was firſt broached by the artful Vergennes; that the court of Denmark was intereſted, and the king of Sweden influenced, to procure its ſucceſs, and that ſome artful objections, made purpoſely by the latter, rendered the empreſs more eager for its adoption. Pruſſia, Auſtria, Portugal, and moſt of the nations of Europe, acceded to a treaty, which acquired popularity by having the freedom of the ſeas for its avowed object. Denmark alone, however, reaped advantage from it; and the miniſter of that country, readily anticipating the conſequences, preceded all the other powers, in ordering the plenipotentiary at the court of Ruſſia to affix his ſignature to it, which was accordingly accompliſhed on the 19th of July, 1780.

No ſooner had this object been attained, than another of far greater conſequence to the cauſe of ſuffering humanity was undertaken and achieved. The degrading ſtate of the villeins (a body that compoſed the great majority of the people of Europe during the middle age) is known to every one. They exiſted in a ſtate of bondage, but a degree removed from the ſituation of domeſtic animals, either in condition or talent; they did not poſſeſs any rights, for they were not conſidered as citizens; they were not allowed to acquire any property, for they were ſlaves. The countries on the borders of the Baltic were ſtill retained in this horrid thraldom, when the empreſs Catherine, wiſhing to conceal an atrocious action beneath a blaze of glory, convoked deputies from all the provinces of her extenſive empire, in Moſcow, its ancient capital, in 1767. The affranchiſement of the peaſants was one of the ſubjects debated on at this novel aſſembly; but the boyars, or nobles, clothing the dread of the diminution of their wealth with the pretext of an inſurrection of their ſerfs, threatened to poinard the firſt who ſhould make "ſo unjuſtifiable a propoſition;" and this put an end to the ſitting of the Ruſſian ſtates-general. This failure on the part of the empreſs, inſtead of decreaſing, added to the zeal of the elder Bernſtorff; for that great miniſter had already conceived the plan of liberating the Daniſh peaſantry out of bondage. The experiment was firſt tried on the domains of the crown; the example of the prince was ſoon followed by the nobles; in fine, what a ſentiment of virtue could never perhaps have effected was produced in a ſhort time by a ſort of faſhionable humanity, and ſoon after confirmed by a poſitive law: a column, erected in the vicinity of Copenhagen, atteſts at the ſame time the gratitude of the liberated peaſantry and the glory of Bernſtorff. The nephew of this great man, not content with the enfranchiſement of his own countrymen, turned his eyes towards the colonies of Denmark, and reſolved to ameliorate the lot of the negroes. The traffic in the fleſh and blood of our fellow-creatures he was determined to reform; and he accordingly preſcribed a day, beyond which the ſale of an African ſhould be deemed unlawful; and in 1804 this abominable traffic in that country is to ceaſe. After this ſhort account of the adminiſtration of a great miniſter and a great man, it is painful to add, that he was ſnatched ſuddenly away, and died at Copenhagen, on the 21ſt of June, 1797. In his perſon, the count de Bernſtorff was about the middle ſize: his figure was noble and prepoſſeſſing: his language was choice, fluent, and he may be ſaid to have poſſeſſed a natural eloquence, for it can be acquired only in a free country. He was modeſt, polite, frank, and, although a ſtateſman, was never known to forfeit his promiſe. He poſſeſſed neither the coldneſs nor the faithleſſneſs of a politician; his heart was replete with ſenſibility, and, although accuſtomed to ſit beneath the canopy of a throne, he never once forgot that he was a man.

BERNU'LPH, [*bearn*, iſſue, and *ulph*, help, Sax. one that provideth for his children.] A king of the Mercians.

BER'NUS, a mountain of European Turkey, in Macedonia: ten miles ſouth-eaſt of Saloniki.

BER'NY, a town of France: two leagues S. of Paris.

To BEROB', *v. a.* [from *rob*.] To rob; to plunder; to wrong any, by taking away ſomething from him by ſtealth or violence. *Not uſed:*

She ſaid, Ah, deareſt lord! what evil ſtar
On you hath frown'd, and pour'd his influence bad,
That of yourſelf you thus *berobbed* are? *Spenſer.*

BEROE'A, anciently a city of Macedonia, to the ſouth of Edeſſa, or Ægæ, and ſouth-eaſt of Cyrtus. The people are commended in ſcripture for their reception of the goſpel on a fair and impartial examination.—Another *Berœa* of Syria, called alſo *Beroe*, and by the inhabitants *Beroëa*. It was the tradition for ſome ages, that it is the modern Aleppo; called *Chalep* in Nicetas, Nicephorus, and Zonaras; from which it is ſuppoſed the preſent appellation *Aleppo* is derived.

BE'ROLHEIM, a town of Germany, in the circle of Franconia, and principality of Anſpach, ſituated on the Altmuhl, with two churches: five miles weſt of Weiſſenburgh.

BEROOT', or BAIROUT, a town of Phœnicia, a province of Syria, in Turkey in Aſia. It is the ancient Berytus; but there are now no remains of its former beauty, except its ſituation. It ſtands in a plain, which from the foot of Lebanon runs out into the ſea, narrowing to a point, about two leagues from the ordinary line of the ſhore, and on the north ſide forms a long road, which receives the river of Nahr-el-Salib, called alſo *Nahr-Bairout*.

BERO'SUS, a native of Babylon, prieſt to Belus. He paſſed into Greece, and remained a long time at Athens. He compoſed an hiſtory of Chaldæa, and ſignalized himſelf by his aſtronomical predictions, and was rewarded for his learning with a ſtatue in the gymnaſium at Athens. The age in which he lived is not preciſely known, though ſome fix it in the reign of Alexander, or 268 years B. C. Some fragments of his Chaldæan hiſtory are preſerved by Joſephus, *contra Appian.* & *in Antiq. Jud.* 105. The book that is now extant under his name, and ſpeaks of kings who never exiſted, is a ſuppoſititious fabrication.

BERQUIN' (Lewis de), a gentleman of Artois, who was burnt for being a proteſtant, at Paris, 1529. He was lord of a village, whence he took his name, and for ſome time made a conſiderable figure at the court of France, where he was honoured with the title of king's counſellor. Eraſmus ſays, that his great crime was openly profeſſing to hate the monks; and from thence aroſe his warm conteſt with William Quernus, one of the moſt violent inquiſitors of his time. A charge of hereſy was brought againſt him, and the articles of his accuſation were drawn out of a book which he had publiſhed. The cauſe being tried, ſentence was paſſed againſt him; viz. that his books be committed to the flames; that he retract his errors, and make a proper ſubmiſſion; and, if he refuſe to comply, that he be burnt. Being a man of an undaunted ſpirit, he would ſubmit to nothing; and, being therefore condemned as an obſtinate heretic, he was ſtrangled on the Greve, and afterwards burnt. He ſuffered death with great conſtancy and reſolution, being then about forty years of age.

BER'RE, a town of France, in the department of the Mouths of the Rhone, and chief place of a canton, in the diſtrict of Aix, ſituated at the mouth of a river, running into the lake of Martigues, otherwiſe called the *Lake of Berre*, in an unhealthy climate. It was formerly one of the ſtrongeſt towns of Provence: Charles Emanuel, duke of Savoy, took it after a long ſiege, in 1591, during the wars of the league; and, although all the reſt of the province ſubmitted to Henry IV. he could not drive the Savoyards from Berre, till it was given up in the year 1598, in conſequence of the peace of Vervins: four leagues and a half ſouth-weſt of Aix, and nine ſouth of Apt.

BERRETO'NI (Nicolo), hiſtory-painter, was born at Macerata in 1617, and was a diſciple of Carlo Maratti, with whom he ſtudied deſign and colouring for ſome years, and attained ſuch excellence, that he excited the jealouſy and envy of his maſter, who ſeemed to be apprehenſive of finding a powerful competitor and rival in his pupil. His early works, after he quitted the ſchool of Maratti, were in the ſtyle and taſte of Guido; and they could not poſſibly have a more high encomium or recommendation. He died in 1682.

BER'RIMAN (William), was born Sept. 24, 1688. He had his grammar learning at Banbury in Oxfordſhire, and at Merchant-Taylors ſchool. At ſeventeen years of age he was entered a commoner of Oriel college, Oxford, where he took his degree of D. D. He was curate and lecturer of Allhallows, Thames-ſtreet, and lecturer of St. Michael's, Queenhithe. He was appointed domeſtic chaplain to Dr. Robinſon, biſhop of London, in 1720, and ſoon after collated by him to the living of St. Andrew Underſhaft. In 1727 he was elected fellow of Eton college by the intereſt of Dr. Godolphin, the provoſt, without any ſolicitation. Here he chiefly reſided in the ſummer, and in his parſonage-houſe in the winter, where he died Feb. 5, 1750, in the ſixty-ſecond year of his age. His writings are, 1. A ſeaſonable Review of Mr. Whiſton's Account of primitive Doxologies, 1719. 2. An hiſtorical Account of the Trinitarian Controverſy, in eight Sermons, at Lady Moyer's Lecture, 1725. 3. A Defence of ſome Paſſages in the hiſtorical Account, 1731. 4. Brief Remarks on Mr. Chandler's Introduction to the Hiſtory of the Inquiſition, 1733. 5. A Review of the Remarks. 6. Sermons at Boyle's Lectures, 1733, in two vols. 8vo. Beſides theſe he publiſhed many occaſional ſermons in his life-time; and after his death were publiſhed by his brother John Berriman, M. A. from his original manuſcript, "Chriſtian Doctrines and Duties explained and recommended," two vols. 8vo.

BERRUYER' (Joſeph Iſaac), a celebrated French writer, born at Rouen in Normandy, Nov. 6, 1682. He was deſigned for the pulpit; but, the weakneſs of his frame not allowing him to declaim, he gave himſelf up to the quiet but ſevere ſtudies of the cloſet, and produced ſome critical works of importance, which his countrymen thought fit to ſuppreſs: and the reading of his *Hiſtoire du Peuple de Dieu* was forbid by the archbiſhop of Paris, which the Sorbonne were ſix years reviewing. The firſt part of this work made its appearance in 8 vols. 4to, with a ſupplement, 1728, reprinted in 1733, 8 vols. 4to, and 10 vols. 12mo; this ends with the times of the Meſſiah: the ſecond part came out in 1753, in 4 vols. 4to, and 8 vols. 12mo; and the third part in 2 vols. 4to, or 5 vols. 12mo, containing a literal paraphraſe of the epiſtles, was printed in 1758, notwithſtanding it was cenſured and condemned by the pope and clergy, as containing abominable errors. He died at Paris, Feb. 18, 1758.

BER'RY (Sir John), a Britiſh naval commander, ſucceſsful againſt the buccaneers who infeſted the Atlantic ocean, diſtinguiſhed himſelf at the famous battle of Southwould-bay, for which he was knighted. In 1682 he commanded the Glouceſter frigate, on-board of which the duke of York embarked for Scotland; but, by the careleſſneſs of the pilot, the veſſel was loſt at the mouth of the Humber. In the midſt of this confuſion, Sir John retained that preſence of mind for which he was always remarkable, and by that means preſerved the duke, and as many of his retinue as the long-boat would carry. Soon after he was promoted to a flag; and commanded as vice-admiral under lord Dartmouth, at the demolition of Tangier, and on his return was made a commiſſioner in the navy; which poſt he enjoyed till his death. He was in great favour with James II. who made choice of him to command under lord Dartmouth, when the prince of Orange landed in England. After the revolution Sir John continued in his poſts, and was frequently conſulted by king William, who entertained a high opinion of his abilities in naval affairs; but he was poiſoned in February 1691, on-board one of his majeſty's ſhips at Portſmouth, while he was paying her off, in the fifty-ſixth year of his age. His body was brought to London, and interred at Stepney.

BERRY, *ſ.* [*berig*, Sax. from *beran*, to bear.] Any ſmall fruit, with many ſeeds, or ſmall ſtones:

The ſtrawberry grows underneath the nettle,
And wholeſome *berries* thrive and ripen beſt
Neighbour'd by fruit of baſeſt quality. *Shakeſpeare.*

To BERRY, *v. n.* To bear berries.

BERRY, a province of France before the revolution, of which Bourges was the capital; bounded on the eaſt by Nivernois, on the ſouth by Bourbonnois and Marche, on the weſt by Poitou, and on the north by Orleannois. Berry is fertile in corn, fruit, wine, and paſturage; and contains ſome mines of ſilver, iron, and ochre.

BERRY-BEARING ALDER, ſee RHAMNUS FRANGULA.

BERSABE', anciently a town of the tribe of Simeon, (Joſhua;) the ſouth boundary not only of its own tribe, but of the whole land of Iſrael, as appears from the common expreſſion, "from Dan to Berſabe." In our tranſlation it is *Beer-ſheba.* It was the reſidence of the patriarchs; firſt of Abraham, from whom it took its name, and of Iſaac. It ſignifies the well or fountain of the oath; dug by Abraham, and claimed as his property by covenant and the religion of an oath, againſt the inſults of, the Philiſtines. Euſebius and Jerome ſay, that there was a citadel and large village of that name in their time. It was called *Beerſheba of Judah* in 1 Kings, xix. 3. not to diſtinguiſh it from the Beerſheba of Galilee, which probably did not then exiſt, but to aſcertain the limits of the king of Judah. In the lower age called *Caſtrum Verſabini.*

BERSA'RII, in writers of the middle age, a kind of hunters or ſportſmen, who purſued wild beaſts in foreſts and chaces. The word ſeems derived from the barbarous Latin *berſare*, to ſhoot with a bow; on which principle it ſhould properly denote archers, or bowmen. Or it might be derived from *berſa*, the fence or pales of a park; in which view it ſhould primarily import thoſe who hunt or poach in parks or foreſts. Hincmar ſpeaks of a kind of inferior officers in the court of Charlemagne, under the denomination of *berſarii*, *veltrarii*, and *beverarii.* Spelman takes the firſt to denote thoſe who hunted the wolf; the the ſecond, thoſe who had the ſuperintendency of the hounds; and the third, thoſe who hunted the beaver.

BERSA'TRIX, *ſ.* [of *berceau*, Fr. a cradle, and the Latin termination *trix*, of a female ſignification.] A rocker of young children in a cradle.

BERSEL'LO, or BRISELLO, a town of Italy, in the duchy of Modena, on the Po. It was taken by the Imperial troops in 1702, and by the duke of Vendome the year following. The emperor Otho died here, after being defeated by the army of Vitellius. The town is ſmall, but ſtrong, and defended with a caſtle: ten miles north-eaſt of Parma, and twenty-ſeven north-weſt of Modena.

BER'SKOI, a town of Siberia: twenty miles north-eaſt of Kolivan.

BERT, is the ſame with our *bright*; in the Latin, *illuſtris* and *clarus.* So *Egbert*, *eternally famous* or *bright*; *Sigbert*, *famous conqueror.* And ſhe, who was termed by the Germans *Bertha*, was by the Greeks called *Eudoxia*, as is obſerved by Lintprandus. Of the ſame ſort were theſe, Phædrus, Epiphanius, Photius, Lampridius, Fulgentius, Illuſtris. *Gibſon's Camden.*

BERT, a river of England. See BRIT.

BER'THA, [*beorht*, Sax. brave, famous.] The name of a woman.

BERTHIER' (Guillaume François), born at Iſſoudun en Berri in 1704, entered himſelf among the Jeſuits in 1722. In 1745 he had the management of the Journal de Trevoux, which he conducted for ſeventeen years, to the ſatisfaction of the learned and the public in general. This employment procured him a high reputation, by the care and exactitude evident in the analyſis of the works that came before him, and by the ſtyle of a maſterly, impartial, and intrepid, critic. But this exact impartiality was diſpleaſing to ſeveral writers, and eſpecially to Voltaire. When that poet publiſhed, without his name, his panegyric on Louis XV. Berthier ſaw it in no other light than as the attempt of a young man who was hunting after antitheſes, though not deſtitute of ingenuity, and ſhewed ſome diſpoſition towards writing well. So humiliating a critique was ſenſibly felt by Voltaire, who made no heſitation to declare himſelf the author of the work. His mortification was increaſed when Berthier having given an account of a publication, wherein the poet was characteriſed under the title of "the worthy rival of Homer and Sophocles," the journaliſt put coldly in a note: "We are not acquainted with him." But what raiſed the choler of Voltaire to its utmoſt pitch, was a very juſt cenſure of ſeveral reprehenſible paſſages in his Eſſay on General Hiſtory. The irritated poet declared openly, in 1759, againſt the Jeſuit, in a ſort of diatribe, which he placed after his Ode on the Death of the Margravine of Bareith. The Jeſuit repelled his ſhafts with a liberal and manly ſpirit, in the Journal de Trevoux. Upon this, the poet changed his battery. Inſtead of a ſerious anſwer, he brought out, in 1760, a piece of humour, intituled, An Account of the Sickneſs, Confeſſion, and Death, of the Jeſuit Berthier. The learned Jeſuit did not think proper to make any reply to an adverſary who ſubſtituted jokes for argument, and continued the Journal de Trevoux till the diſſolution of the ſociety in France. He then quitted his literary occupations, and at the cloſe of 1762 the dauphin appointed him keeper of the royal library, and adjunct in the education of Louis XVI. and of monſieur. But, eighteen months afterwards, ſome circumſtances relative to the ſociety obliged him to leave the court. He went and ſettled at Offembourg, five leagues from Straſbourg, and there compoſed the book intituled, The Pſalms, tranſlated into French, with Notes and Reflections, Paris, 1785, 8 vols. 12mo. After remaining ten years in that town, he returned to France, where he devoted his time to ſtudy and the exerciſes of religion. He died of a fall, at Bourges, Dec. 15, 1782, aged ſeventy-eight years and nine months. The chapter of the metropolitan church gave him diſtinguiſhed honours at his interment; a teſtimony due to a man of ſuch eminent piety, extenſive erudition, and excellent judgment.

BERT'HOLZ, a town of Germany, in the archduchy of Auſtria: five miles weſt-north-weſt of Zwelt.

BERTHONCEL'LES, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of Belleſme: thirteen miles north-eaſt of Belleſme.

BER'TI (John Lawrence), a famous Auguſtine monk, born May 28, 1696, at Serravezza, a ſmall village in Tuſcany, was called to Rome by his ſuperiors, and obtained the title of aſſiſtant-general of Italy, and the place of prefect of the Bibliothèque Angélique. His great proficiency in theological ſtudies appears to advantage in his grand work, De Diſciplinis Theologis, printed at Rome, in 8 vols. 4to. After this, Berti brought out ſeveral others, the principal of which is, An Eccleſiaſtical Hiſtory in Latin, in 7 vols. 4to. He wrote alſo, diſſertations, dialogues, panegyrics, academical diſcourſes, and ſome Italian poems. An edition in ſolio of all his works has been printed at Venice. He died at the age of ſeventy, May 26, 1766, at Piſa, whither he had been called by Francis I. grand duke of Tuſcany.

BER'TIE, a county of North Carolina, in the United States of South America.

BERTIER' (Joſeph Stephen), born at Aix in Provence, died Nov. 15, 1783, at a pretty advanced age, is known by two works, which at the time made ſome noiſe among the naturaliſts; one is intituled, Phyſique des Comètes, 1760, 12mo; the other, Phyſique des Corps Animés, 1755, 12mo. The author had cultivated the ſciences with ſucceſs; and in perſon had a ſtriking reſemblance with pere Malebranche.

BERTIE'RA, *ſ.* [ſo named by Aublet, from M. Bertier, a Frenchman.] In botany, a genus of the claſs pentandria, order monogynia, natural order contortæ. The generic characters are—Calyx: perianthium turbinate, five-toothed. Corolla: one-petalled; tube ſhort; mouth villoſe; border five-cleft; clefts ovate, acute, ſpreading. Stamina: filaments five, very ſhort, inſerted into the tube beneath the orifice; antheræ linear, erect. Piſtillum: germ roundiſh, inferior, crowned by a gland; ſtyle filiform; ſtigma two-plated. Pericarpium: berry globoſe, crowned by the teeth of the calyx, two-celled. Seeds: very many, roundiſh, affixed to the diſſepiment.—*Eſſential Character.* Calyx, turbinate, five-toothed. Corolla, tube ſhort, with a villoſe mouth. Berry globoſe, inferior, two-celled, many-ſeeded.

There is only one ſpecies, named Bertiera Guianenſis. It is a ſhrub ſix or ſeven feet in height, the thickneſs of the human arm; branches oppoſite, knotty, tomentoſe; leaves oppoſite, ovate, acuminate, tomentoſe underneath. Found by Ablet, in the wood of Aroura in Guiana, flowering and fruiting in the month of June.

BER'TIN (Nicholas), painter, and diſciple of Jouvenet and De Boullogne the elder, was born at Paris in 1664. His father was a ſculptor. The academy of painting decreed him the firſt prize at the age of eighteen, and admitted him afterwards of their number. During his ſtay at Rome he completed his ſtudies. On his return to France he was appointed director of the Roman ſchool; but an affair of gallantry, which would have brought on bad conſequences if he had returned to Rome, prevented him from accepting that place. Louis XIV. the electors of Mentz and Bavaria, employed him ſucceſſively in various works. His manner was vigorous and graceful, and his excellence lay in ſmall pictures. At Paris there are ſeveral works of his in the church of St. Luke, the abbey of St. Germain des Prés, and in the halls of the academy. He died at Paris in 1736.

BERTINO'RO, a town of Italy, in the ſtate of the church, the ſee of a biſhop, ſuffragan of Ravenna; it is ſituated on a hill, and defended by a citadel: five miles eaſt of Forli, and fifteen ſouth of Ravenna.

BER'TONCOURT, a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Bourlay: ten miles north-eaſt of Metz.

BER'TRAM (Cornelius Bonaventure), miniſter, and profeſſor of Hebrew at Geneva, at Frankenthal, and at Lauſanne, was born at Thouars in Poitou, in 1531, of a family allied to the houſe of La Trimouille, and died at Lauſanne in 1594. He gave to the world, 1. A Diſſertation on the Republic of the Hebrews, Geneva, 1580; again at Leyden in 1641, 8vo, written with preciſion and method. 2. A Reviſion of the French Bible of Geneva, according to the Hebrew Text, Geneva, 1588. He corrected that verſion (by Calvin and Olivetan) in a great number of places. It is the bible ſtill in uſe among the Calviniſts. 3. A new edition of the Theſaurus Linguæ Sanctæ of Pagninus. 4. A Parallel of the Hebrew Tongue with the Arabic. 5. Lucubrationes Frankendalenſes, 1685.

BERTRIMOUTIER', a town of France, in the department of the Voſges, and chief place of a canton, in the diſtrict of St. Diey: four miles eaſt of St. Diey.

BERVI'E, a ſea-port town of Scotland, in the county of Kincardine, ſituated on a river of the ſame name, near the mouth, which forms a bay in the German Ocean, called

Bervie Bay: nine miles north of Montroſe, and twenty-three ſouth-ſouth-weſt of Aberdeen. Lat. 56. 44. N. lon. 2. 4. W. Greenwich.

BERVI'NE, a river of the Netherlands, which paſſes by Dalem, and runs into the Meuſe, near Viſet.

BERUL'LE (Peter), born in 1575, at the chateau de Serilli, near Troyes in Champagne, of a noble family, embraced the eccleſiaſtical ſtate, and diſtinguiſhed himſelf early in life by his piety and his learning. He got great repute in the famous conference of Fontainbleau, where Du Perron contended with Du Pleſſis-Mornay, called the pope of the Huguenots. He was ſent by Henry IV. to whom he was chaplain, into Spain, for the purpoſe of bringing ſome Carmelites to Paris. It was by his means that this order flouriſhed ſo much in France. Urban VIII. rewarded the merit of Berulle by a cardinal's hat. This pious man died, as the late excellent Mr. Granger died, while he was celebrating the ſacrament. The cardinal fell down dead (Oct. 2, 1629,) upon the ſteps of the altar, at the moment of conſecration, as he was pronouncing the words "*hanc igitur oblationem.*" This occaſioned the following diſtich:

Cœpta ſub extremis nequeo dum ſacra ſacerdos
Perficare, at ſaltem victima perficiam.

In vain the rev'rend pontiff tries
To terminate the ſacrifice;
Himſelf within the holy walls
The heav'n-devoted victim falls!

Cardinal Berulle came over with Henrietta Maria, queen of Charles I. to England, as her confeſſor, to the court of which he endeared himſelf by the ſanctity of his morals, and the extreme propriety of his behaviour. Like the late learned and excellent Dr. Balguy, he poſſeſſed the *nolo epiſcopari* in the extremeſt purity of intention; for when his ſovereign, Louis XIII. of France, preſſed him to take the biſhopric of Leon, he refuſed; and, on that monarch's telling him that he ſhould employ the ſolicitation of a more powerful advocate than himſelf (meaning the pope) to prevail upon him to accept of it, he ſaid, "that, if his majeſty continued to preſs him, he ſhould be obliged to quit his kingdom." He eſtabliſhed the venerable order of the Fathers of the Oratory in France, founded by San Philippo Neri, and was a man of ſuch eminent goodneſs, that pope Leo XI. ſaid of him, when he ſaw him at Rome as a ſimple friar, "Father Berulle is not a man; he is an angel." St. Francis de Sales, Cæſar de Bus, cardinal Bentivoglio, &c. were among his friends and the admirer of his virtues. An edition of his controverſial and ſpiritual works, publiſhed in 1644, folio, was re-printed in 1657 by the pp. Bourgoing and Gibieuf.

BE'RUS, a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Sar-Louis: four miles ſouth-ſouth-weſt of Sar-Louis, and two eaſt of Bouzonville.

BER'WENT FELLS, [of *Berwent*, the river, and *feltz*, Teut. a rock or cliff.] Mountains in Cumberland, through which the river Berwent runs.

BERWICK (duke of), was a natural ſon of James II. by Mrs. Arabella Churchill, ſiſter to the great duke of Marlborough. He followed the fate of his father, and went into France after the revolution. He was created marſhal of France, knight of the Holy Ghoſt, duke and peer of France, grandee of Spain, commander in chief of the French armies; in all which ſtations his behaviour was ſuch, that few equalled, perhaps none ſurpaſſed, him. He lived in an age when the renowned prince of Orange and many other of the greateſt men commanded againſt him. His courage was cool and ſteady; always poſſeſſing himſelf; not raſhly, or wantonly, throwing away the lives of his ſoldiers. He kept up on all occaſions a very ſtrict diſcipline; yet was uniformly the ſoldier's friend. He was killed by a cannon-ball, at the ſiege of Philipſburgh, in 1738.

BERWICK, a river of New Hampſhire, in North America.

BERWICK-UPON-TWEED, a town ſituated on the north or Scotch ſide of the Tweed, and a county of itſelf, regularly fortified with walls, baſtions, and ditches. The town is of much leſs extent than formerly; the old caſtle, now gone to decay, lies at ſome diſtance from the ramparts. The barracks are large and convenient. There is a fine bridge over the Tweed, built by queen Elizabeth; a noble ſtately work, conſiſting of fifteen arches, and joining, as may be ſaid, the two kingdoms. From a hill, on the Engliſh ſide of the river, is a very fine view of the town, the bridge, the Tweed, and the ſea. The length of the bridge is 947 feet. Great quantities of wool is exported from this town: eggs in vaſt abundance, collected through all the country almoſt as far as Carliſle; they are packed up in boxes, with the thick end downwards, and are ſent to London for the uſe of ſugar-refiners. The ſalmon fiſheries here are very conſiderable, and likewiſe bring vaſt ſums; they lie on each ſide the river, and are all private property, except what belongs to the dean and chapter of Durham, which in rent and tythe of fiſh brings in 450l. per annum; for all the other fiſheries are liable to tythe. The common rents are 50l. a-year, for which tenants have as much ſhore as ſerves to launch out and draw their nets on; the limits of each are ſtaked: one man goes off in a ſmall flat-bottomed boat, ſquare at one end, and, taking as large a circuit as his net admits, brings it on-ſhore at the extremity of his boundary, where others aſſiſt in landing it. The beſt fiſhery is on the ſouth ſide; very fine ſalmon-trout are often taken, which come up to ſpawn from the ſea, and return in the ſame manner as the ſalmon do. The chief import is timber from Norway and the Baltic. It is governed by a mayor, recorder, town-clerk, and four bailiffs, and ſends two members to the Britiſh parliament.

This place belonged formerly to Scotland, was the capital of Berwickſhire, and one of the four towns where the royal boroughs of Scotland held their convention. It was long the bone of contention between England and Scotland, and often poſſeſſed by each. Edward I. firſt took it from the Scots, but it was afterwards ſeveral times taken and retaken, till Thomas lord Stanley reduced it to the obedience of Edward IV. from which time it was poſſeſſed by the Engliſh. The following ſtory is related by the Scottiſh hiſtorians on occaſion of the ſiege it underwent in 1332, by Edward II. in perſon:—When the king came before the town, where Sir Alexander Seton was then governor, he ſummoned him to ſurrender, and threatened to hang his two ſons, whom he had among his hoſtages, if he delayed. Accordingly a gallows was erected near the town wall, and the young men were led forth. Tenderneſs for his children began to move the governor, when his lady (of the name of Cheyne) came and told him, "He and ſhe were both young enough to have more children; but, if he ſurrendered, he could never retrieve his honour." Upon this, he refuſed, and the tyrant cruelly murdered the young gentlemen; but the lady was rewarded with two ſons afterwards. It was incorporated as early as the reign of Edward I. and its charter was confirmed by Edward III. with ſome additions; particularly that it ſhould be governed by the laws and uſages which it enjoyed during the time of king Alexander, that is, before its reduction by Edward I. But, tho' it hath ſome local peculiarities, derived from the ancient laws of Scotland, yet it is clearly part of the realm of England, being repreſented by burgeſſes in the houſe of commons, and bound by all acts in the Britiſh parliament, whether ſpecially named or otherwiſe. And therefore it was perhaps ſuperfluouſly declared by 20 Geo. II. c. 42. that where England only is mentioned, in any act of parliament, the ſame notwithſtanding hath been, and ſhall be, deemed to comprehend, the dominion of Wales, and town of Berwick-upon-Tweed. And though certain of the king's writs or proceſſes of the courts of Weſtminſter do not uſually run into Berwick, any more than into Wales, yet it hath been ſolemnly adjudged, that all prerogative writs (as thoſe of mandamus, prohibition, habeas corpus, certiorari, &c.) may iſſue to

Berwick, as well as to every other of the dominions of the crown of England; and that indictments and other local matters ariſing in the town of Berwick, may be tried by a jury of the county of Northumberland. The town was always conſidered as the key of Scotland; it is populous, and has a conſiderable manufacture of fine ſtockings. The harbour is but mean, and not navigable very far within it; for the bridge is within one mile and a half of the bar, at the mouth of the river, though the tide flows four miles above the town. The bar is alſo too high for any ſhips that draw above twelve feet water, nor is there any good riding in the offings near it. Its fair is in Trinity-week; markets Wedneſday and Saturday. It is 54 miles ſouth of Edinburgh, and 335 and a half north of London.

Advancing from Berwick into Scotland, we have the ſea on the right hand, and the river Tweed on the left. The river Annan has its ſource at Arrick-ſtone, near thoſe of the Clyde and the Tweed. It is very remarkable, that though theſe three rivers riſe as it were together, they run into different ſeas; the Tweed into the German ocean, the Clyde into the Iriſh ſea, and the Annan into the Solway Firth, after paſſing through the ſtewartry of Annandale, to which it gives name. Near Berwick is Mornington, a village, which gives the title of lord to a branch of the noble family of Douglas. About three miles farther eaſt is a ſmall harbour, with a town called Aymouth, where a fort was formerly raiſed to curb the garriſon of Berwick. This town gave title of baron to John the great duke of Marlborough; but, the patent being granted only to him and the heirs male of his own body, the honour was extinguiſhed with him.

BERWICK (North), a town of Scotland, in the county of Haddington, on the coaſt of the German ocean, at the ſouth ſide of the entrance into the Frith of Forth. It is a royal borough, and aſſiſts, with four other places, to return one member to the Britiſh parliament: nine miles north of Haddington.

BER'WICKSHIRE, or MERS, a county of Scotland, bounded on the north-eaſt by the German ſea, on the ſouth-eaſt by Northumberland and Roxburghſhire, on the ſouth-weſt by Roxburghſhire and Edinburghſhire, and on the north-weſt by Haddingtonſhire; twenty-three miles long, and fifteen broad. It obtained the name of Mers, or March, becauſe it was one of the borders towards England. The river Tweed marks its boundary on the ſide of Northumberland; the country is level towards the ſouth; but northward it is diſtinguiſhed by a range of hills. It is fertile in corn and paſture, feeding a great number of ſheep and cattle. It contains ſeveral towns and thirty-five pariſhes. The principal towns are Dunſe, Coldſtream, Lauder, and Aymouth. The ſhire of Berwick is generally divided into three diſtricts, viz. Mers, Lawermuir, and Lauderdale. The Mers is low, pleaſant, and fruitful in corn. Lawermuir is a hilly country, abounding with game, and yielding paſture for ſheep and black cattle. Lauderdale is a tract of land lying on each ſide of the river Lauder, agreeably varied with hill, dale, and foreſt, producing good ſtore of corn and paſturage, and giving the title of earl to the family of Maitland.

BE'RY, or BURY, *ſ.* The vill or ſeat of habitation of a nobleman, a dwelling or manſion houſe, being the chief of a manor; from the Saxon *beorg*, which ſignifies a hill or caſtle; for heretofore noblemen's ſeats were caſtles ſituated on hills, of which we have ſtill ſome remains; as in Herefordſhire there are the *beries* of Stockton, Hope, &c. It was anciently taken for a ſanctuary. See BERIA.

BE'RYL, *ſ.* [ϐηρυλλος, Gr. from בורלא Chald. called by lapidaries *aqua marina*,] is a pellucid gem of a bluiſh green colour, found in the Eaſt Indies, and about the gold mines of Peru: we have alſo ſome from Sileſia, but what are brought from thence are oftener coloured cryſtals than real beryls; and, when they are genuine, they are greatly inferior both in hardneſs and luſtre to the oriental and Peruvian kinds. The beryl, like moſt other gems, is met with both in the pebble and columnar form, but in the latter moſt frequently. In the pebble form it uſually appears of a roundiſh but flatted figure, and commonly full of ſmall flat faces, irregularly diſpoſed. In the columnar or cryſtalline form it always conſiſts of hexangular columns, terminated by hexangular pyramids. It never receives any admixture of colour into it, nor loſes the blue and green, but has its genuine tinge in the degrees from a very deep and duſky to the paleſt imaginable of the hue of ſea-water. Cronſtedt calls the lighter-coloured ſtone *aqua marina*, and the darker, the beryl. In its perfect ſtate, it approaches to the hardneſs of the garnet, but is often ſofter; and its ſize is from that of a ſmall tare to that of a horſe-bean, or even a walnut. It may be imitated by adding to twenty pounds of cryſtal-glaſs made without magneſia, ſix ounces of calcined braſs or copper, and a quarter of an ounce of prepared zaffre. The properties of the beryl were very wonderful in the opinion of the ancient naturaliſts: it kept people from falling into ambuſcades of enemies, excited courage in the fearful, and cured diſeaſes of the eyes and ſtomach. It does none of theſe things now; becauſe theſe are not the days of ſuperſtition.

BERYL-CRYSTAL, *ſ.* A ſpecies of what Dr. Hill calls *ellipomacroſtyla*, or imperfect cryſtals, is of an extreme pure, clear, and equal, texture, and ſcarcely ever ſubject to the ſlighteſt films or blemiſhes. It is ever conſtant to the peculiarity of its figure, which is that of a long and ſlender column, remarkably tapering towards the top, and very irregularly hexangular. It is of a fine tranſparence, and naturally of a pale brown; and carries ſuch evident marks of diſtinction from all brown cryſtals, that our lapidaries call it, by way of eminence, the *beryl-cryſtal*, or ſimply the *beryl*.

BERY'TUS, anciently a ſea-port town of Phœnicia on the Mediterranean, thought to have been built by Saturn. It was deſtroyed by Tryphon, but rebuilt by the Romans. Agrippa placed here two legions, whence it became a colony. It enjoyed the *jus Italicum*, and had an excellent ſchool for the ſtudy of the law in Juſtinian's time. Now BEROOT.

BER'ZOWITZ, a town of Hungary; twelve miles north-north-eaſt of Leutſch.

BES, or BESSIS, in Roman antiquity, two-thirds of the *as*, or Roman pound.

BESA'GNO, a river of Italy, which riſes in the Apennines, and runs into the ſea at Genoa.

BESAI'LE, or BESAYLE, *ſ.* [*béſayeul*, Fr. *proavus*, Lat.] The father of the grandfather; and in the common law it ſignifies a writ that lies where the great grandfather was ſeiſed, the day that he died, of any lands or tenements in fee-ſimple; and after his death a ſtranger entereth the ſame day upon him, and keeps out the heir. *F. N. B.* 222. See tit. *Mort d'Anceſtor.*

BESALU', a town of Spain, in Catalonia, at the foot of the Pyrenees. It had anciently its particular counts. Pope Benedict VIII. erected it into an archbiſhopric, which was afterwards ſuppreſſed: ſeven leagues from the Mediterranean, and five north from Gerona.

BESANCON, a city of France, and capital of the department of the Doubs; before the revolution it was the capital of Franche Comté, and the ſee of an archbiſhop. Beſançon is ſituated in a bottom between mountains, on the Doubs, whoſe waters almoſt ſurround and divide it into Upper and Lower town, joined by a handſome bridge. It has ſix gates, three to the upper and three to the lower town. It is ſtrong both by art and nature, being defended by a wall flanked with eight towers like baſtions; the citadel is a long ſquare built on a ſharp rock; under the Romans it was one of the moſt magnificent places which they had in Gaul, and many remains of their ſuperb buildings are yet viſible: after the death of Julian, it was nearly deſtroyed by the Germans, and a ſecond time by Attila. It afterwards became an imperial city, till the time of Louis XIV. who, in the year 1674, made himſelf maſter of it, and united it to France. The univerſity is an ancient and celebrated foundation, and in 1752 a literary and military ſociety was inſtituted there. It contains eight pariſhes, and the number of inhabitants is computed at twenty thouſand. It is twenty-ſix poſts ſouth-ſouth-weſt of Straſburg, eleven eaſt of Dijon, and forty-eight eaſt-ſouth-eaſt of Paris. Lat. 47. 14. N. lon. 23. 40. E. Ferro.

BE'SANT, or Be'zant, *ſ.* a gold coin of an uncertain value, ſtruck at Byzantium in the time of the Chriſtian emperors: hence the gold offered by the king at the altar is called *beſant*, or *biſant*.

BESA'RABA, a town of European Turkey, in the province of Bulgaria, forty-eight miles north of Ternova.

BES'BOROUGH, an iſland in Norton Sound, on the weſt coaſt of North America. Lat. 64. 10. N. lon. 161. 15. W. Greenwich.

To BESCREE'N, *v. a.* [from *ſcreen.*] To cover with a ſcreen; to ſhelter; to conceal:

What man art thou, that thus *beſcreen'd* in night,
So ſtumbleſt on my counſel? *Shakeſpeare.*

To BESEE'CH, *v a.* pret. I *beſought*, I have *beſought*, [from *ſecan*, Sax. *verſocken*, Dut.] To entreat; to ſupplicate; to implore: ſometimes before a perſon.—I *beſeech* you, ſir, pardon me; it is only a letter from my brother. *Shakeſpeare.*—To beg; to aſk: before a thing.—Before I come to them, I *beſeech* your patience, whilſt I ſpeak ſomething to ourſelves here preſent. *Spratt.*

To BESEE'M, *v. n.* [*beziemen*, Dut.] To become; to be fit; to be decent for.—What form of ſpeech, or behaviour, *beſeemeth* us in our prayers to Almighty God. *Hooker.*

BESEE'N, *particip.* [from *beſie*, *Skinner.*] Adapted; adjuſted; becoming:

Forth came that ancient lord and aged queen,
  Armed in antique robes down to the ground,
And ſad habiliments right well *beſeen.* *Spenſer.*

BE'SERG HEN'LU, a town of Aſiatic Turkey, in the province of Caramania, twenty-four miles north Akſerai.

To BESET', *v. a.* pret. I *beſet*; I have *beſet*, [*beſittan*, Sax.] To beſiege; to hem in; to incloſe; as with a ſiege:

I know thou look'ſt on me as on a wretch
Beſet with ills, and cover'd with misfortunes. *Addiſon.*

To waylay; to ſurround.—True fortitude I take to be the quiet poſſeſſion of a man's ſelf, and an undiſturbed doing his duty, whatever evil *beſets*, or danger lies in his way. *Locke.*—To embarraſs; to perplex; to entangle without any means of eſcape.—We be in this world *beſet* with ſundry uneaſineſſes, diſtracted with different deſires. *Locke.* To fall upon; to haraſs. *Not uſed.*

But they him ſpying, both with greedy force
At once upon him ran, and him *beſet*
With ſtrokes of mortal ſteel. *Spenſer.*

To BESHREW', *v. a.* [The original of this word is ſomewhat obſcure: as it evidently implies *to wiſh ill*, ſome derive it from *heſchryen*, Ger. to enchant. Topſel, in his Book of Animals, deduces it from the *ſhrew mouſe*, an animal, ſays he, ſo poiſonous, that its bite is a ſevere curſe. A *ſhrew* likewiſe ſignifies a ſcolding woman; but its origin is not known.] To wiſh a curſe to. To happen ill to:

Beſhrew thee, couſin, which did'ſt lead me forth
Of that ſweet way I was in to deſpair. *Shakeſpeare.*

BESI'DE, or Besides, *prep.* [from *be* and *ſide.*] At the ſide of another; near:

Fair is the kingcup that in meadow blows;
Fair is the daiſy that *beſide* her grows.

Over and above.—In brutes, *beſides* the exerciſe of ſenſitive perception and imagination, there are lodged inſtincts antecedent to their imaginative faculty. *Hale.*—Not according to, though not contrary; as we ſay, ſome things are *beſide* nature, ſome are *contrary* to nature.—Providence often diſpoſes of things by a method *beſide*, and above, the diſcoveries of man's reaſon. *South.*—Out of; in a ſtate of deviating from.—Theſe may ſerve as landmarks to ſhew what lies in the direct way of truth, or is quite *beſides* it. *Locke.*—Before a reciprocal pronoun, out of; as, *beſide himſelf*; out of the order of rational beings; out of his wits.—Feſtus ſaid with a loud voice, Paul, thou art *beſide thyſelf*, much learning doth make thee mad. *Acts.*

Beside, or Besides, *adv.* More than that; over and above.—That man that doth not know thoſe things, which are of neceſſity for him to know, is but an ignorant man, whatever he may know *beſides*. *Tillotſon.*—Not in this number; out of this claſs; not included here.—The men ſaid unto Lot, Haſt thou here any *beſides?* *Geneſis.*

All that we feel of it, begins and ends
In the ſmall circle of our foes or friends;
To all *beſide* as much an empty ſhade,
An Eugene living, as a Cæſar dead. *Pope.*

To BESIE'GE, *v. a.* [from *ſiege.*] To beleaguer; to lay ſiege to; to beſet with armed forces; to endeavour to win a town or fortreſs, by ſurrounding it with an army, and forcing the defendants either by violence or famine, to give admiſſion.—And he ſhall *beſiege* thee in all thy gates, until thy high and fenced walls come down. *Deut.*

BESIE'GER, *ſ.* [from *beſiege.*] One employed in a ſiege.—There is hardly a town taken, in the common forms, where the *beſiegers* have not the worſt of the bargain.

BESIS'TANS, or Bersteins, *ſ.* ſtands, or ſhops, of the merchants at Conſtantinople, Adrianople, and other towns in the grand ſignior's dominions Each ſort of merchants have their particular beſiſtan, which muſt alſo be underſtood of the workmen, all thoſe of the ſame trade working in the ſame place. Theſe beſiſtans are commonly large galleries vaulted over, whoſe gates are ſhut every night.

BES'LER (Baſil), apothecary of Nuremberg, born in 1561, preſented to the public, 1. Hortus Eyſtettenſis, 1613, folio, with plates; the reimpreſſion of 1640 is leſs elegant: that of 1750 ſtill worſe. It contains 366 ſpecimens. 2. Icones Florum et Herbarum, 1616, 4to. and the continuation 1622, folio. The Gazophylacium Rerum Naturalium, Nuremb. 1642, folio, is by Michael Rupert Beſler, ſon of Baſil, died doctor of phyſic, in 1661. This book was reprinted in 1716, but leſs eſteemed of this edition than the former. Lockner gave the deſcription of the cabinet of Baſil and of M. R. Beſler, 1716, which is in great requeſt.

BESLE'RIA, *ſ.* [ſo named in honour of *Baſil Beſler*, above-mentioned.] In botany, a genus of the claſs didynamia, order angioſpermia, natural order perſonatæ. The generic characters are—Calyx: perianthium one-leafed, five-parted, acuminate, erect, looſe, with reflected tops. Corolla: monopetalous, ringent; tube the length of the calyx, roundiſh, gibbous on one ſide at the baſe, and at the top; border five-cleft; diviſions roundiſh; the lowermoſt largeſt; the two upper leſs divided. Stamina: filaments four, within the tube of the corolla, of which two are a little ſhorter; antheræ oblong, twin, hanging down on each ſide. Piſtillum: germ globular, ſitting on a glandular body which embraces it and is permanent, cordate where the corolla is gibbous; ſtyle ſubulate, erect; ſtigma bifid, obtuſe. Pericarpium: berry ſubglobular, one-celled; partition, two oppoſite ſemiovate laminas, not cohering. Seeds: numerous, round, very ſmall, neſtling, fixed to the inner ſurface of the berry.—*Eſſential Character.* Calyx five-parted; berry ſubglobular, many ſeeded.

Species. 1. Beſleria melittifolia: peduncles branching, leaves ovate. This has a ſmooth woody ſtalk which is jointed; at each joint are placed two ovate leaves oppoſite; the flowers come out from the wings of the leaves, upon ſhort branching foot-ſtalks, each ſuſtaining ſix or eight flowers, which ſtand each upon a ſeparate ſmaller foot-ſtalk. It is a native of South America.

2. Beſleria lutea: peduncles ſimple crowded, leaves lanceolate. This ſort riſes with a ligneous ſtem ſix or ſeven feet high, dividing toward the top into many irregular branches, with ſpear-ſhaped ſerrate leaves, which have many tranſverſe veins; the flowers come out at the wings of the leaves, in large cluſters, each having a ſeparate foot-

foot-ſtalk; theſe are ſmall, tubulous, and of a pale yellow colour. Native of Martinico, Jamaica, &c.

3. Beſleria criſtata: peduncles ſimple, ſolitary, calyxes ſerrate-creſted. This ſhrubby plant, very different in its habit from the foregoing, climbs up trees, to which it adheres by means of roots thrown out from the joints. Native of Martinico, &c. in moiſt mountainous woods.

4. Beſleria bivalvis: calyxes bivalve torn. Stem herbaceous, very long, weak, creeping, hairy, round. Leaves oppoſite, petioled, veined, hairy, nerved, a hand's breadth in length. Peduncles lateral, oppoſite, ſhorter than the leaves, two from each axil, one flowered. Berry oval, with a hard two-celled nucleus. It reſembles the third ſpecies much in the leaves and calyx, but is very different in the fruit, and in the defect of the five-leaved perianthium. It was obſerved at Surinam by Dahlberg.

5. Beſleria biflora: peduncles two-flowered involucre caducous inflated, leaves ovate quite entire. Native of the iſland of Otaheite.

6. Beſleria cymoſa: peduncles cymed, pedicels with little bractes, leaves ovate crenate. Native of the iſland of Tanna.

Propagation and Culture. Theſe plants grow naturally in the warm parts of America. The ſeeds ſhould be ſown on a hot-bed early in the ſpring; and, when the plants are come up half an inch high, they ſhould be each tranſplanted into a ſmall pot filled with light freſh earth, and plunged into a hot bed of tanner's bark, obſerving to water and ſhade them until they have taken root; after which time they ſhould have air and water in proportion to the warmth of the ſeaſon, and the heat of the bed in which they are placed. When the plants have filled theſe ſmall pots with their roots, they ſhould be ſhaken out of them, and their roots trimmed, and put into larger pots filled with light freſh earth, and plunged into the hot-bed again; where they ſhould have a large ſhare of air in warm weather, and muſt be frequently watered. With this management the plants will thrive very well in ſummer, but in winter they muſt be removed into the ſtove, where they muſt be placed in a temperate warmth, and ſhould be often, but ſparingly, watered. The ſecond year theſe plants will flower, and ſometimes they will perfect their ſeeds in this country; but they muſt be conſtantly preſerved in the ſtove, for they will not live in the open air.

To BESLUB'BER, *v. a.* [from *ſlubber.*] To daub; to ſmear.—He perſuaded us to tickle our noſes with ſpeargraſs, and make them bleed; and then *beſlubber* our garments with it, and ſwear it was the blood of true men. *Shakeſpeare.*

BES'LY (John), king's advocate at Fontenoy-le-Comte in Poitou, born at Coulongnes-les-Royaux, died in 1644, at ſeventy-two years old. There is by him, 1. A Hiſtory of Poitou, Paris, 1647, folio, eſteemed. 3. The Biſhops of Poitiers, 1647, 4to. He was a man well verſed in the antiquities of France; an incorrect writer, but an accurate and profound hiſtorian.

To BESME'AR, *v. a.* [from *ſmear.*] To bedaub; to overſpread with ſomething that ſticks on. To ſoil; to foul:

Firſt Moloch, horrid king! *beſmear'd* with blood
Of human ſacrifice, and parents' tears. *Milton.*

To BESMIR'CH, *v. a.* To ſoil; to diſcolour. *Not in uſe:*

Our gayneſs and our gilt are all *beſmirch'd*
With rainy marching in the painful field. *Shakeſpeare.*

To BESMO'KE, *v. a.* [from *ſmoke.*] To foul with ſmoke. To harden or dry in ſmoke.

To BESMUT', *v. a.* [from *ſmut.*] To blacken with ſmoke or ſoot.

BE'SOM, *ſ.* [*beſm*, *beſma*, Sax.] An inſtrument to ſweep with.—I will ſweep it with the *beſom* of deſtruction, ſaith the Lord of hoſts. *Iſaiah*, xiv. 22.

BESORCH', *ſ.* a coin of tin, current at Ormus, in the Perſian gulph, at the rate of $\frac{7}{49}$ parts of a farthing ſterling.

To BESORT', *v. a.* [from *ſort.*] To ſuit; to fit; to become:

Such men as may *beſort* your age,
And know themſelves and you. *Shakeſpeare.*

BESORT, *ſ.* [from the verb.] Company; attendance; train:

I crave fit diſpoſition for my wife,
With ſuch accommodation and *beſort*
As levels with her breeding. *Shakeſpeare.*

To BESOT', *v. a.* [from *ſot.*] To infatuate; to ſtupify; to dull; to take away the ſenſes:

Swiniſh gluttony
Ne'er looks to heav'n amidſt his gorgeous feaſt,
But, with *beſotted* baſe ingratitude,
Crams and blaſphemes his feeder. *Milton.*

To make to doat, with *on.* *Not much uſed:*

Truſt not thy beauty; but reſtore the prize
Which he, *beſotted on* that face and eyes,
Would rend from us. *Dryden.*

BESOUGHT', [*preterite* and *part paſſive* of *beſeech.*]

Haſten to appeaſe
Th' incenſed Father, and the incenſed Son,
While pardon may be found, in time *beſought.* *Milton.*

BESOZ'ZI, or BEZUTIUS, (Ambrogio), a painter of conſiderable eminence, was born at Milan in 1648. He worked ſome time under Gioſeffo Danedi, called *Montalti:* he afterwards went to Rome, where he ſtudied from the antiques and the pictures of the greateſt maſters; and at laſt perfected himſelf in the ſchool of Ciro Ferri. His great excellency conſiſted in painting architecture, friezes, imitations of baſs-relievos, and other decorations. He died at Milan in 1706, aged fifty-eight years.

To BESPAN'GLE, *v. a.* [from *ſpangle.*] To adorn with ſpangles; to beſprinkle with ſomething ſhining:

Not Berenice's locks firſt roſe ſo bright,
The heav'ns *beſpangling* with diſhevell'd light. *Pope.*

To BESPAT'TER, *v. a.* [from *ſpatter.*] To ſoil by throwing filth; to ſpot or ſprinkle with dirt or water. To aſperſe with reproach.—Thoſe who will not take vice into their boſoms, ſhall yet have it *beſpatter* their faces. *Government of the Tongue.*

To BESPAW'L, *v. a.* [from *ſpawl.*] To daub with ſpittle.

To BESPEAK', *v. a.* *beſpoke*, or *beſpake*; I have *beſpoke*, or *beſpoken.* [from *ſpeak.*] To order, to entreat any thing beforehand; or againſt a future time. To make way by a previous apology. To forbode; to tell ſomething beforehand.—They ſtarted fears, *beſpoke* dangers, and formed ominous prognoſtics, in order to ſcare the allies. *Swift.*—To ſpeak to; to addreſs. This ſenſe is chiefly poetical:

Then ſtaring on her with a ghaſtly look,
And hollow voice, he thus the queen *beſpoke.* *Dryden.*

To betoken; to ſhew.—When the abbot of St. Martin was born, he had ſo little of the figure of a man, that it *beſpoke* him rather a monſter. *Locke.*

BESPEAK'ER, *ſ.* He that beſpeaks any thing.—They mean not with love to the *beſpeaker* of the work, but delight in the work itſelf. *Wotton.*

To BESPEC'KLE, *v. a.* [from *ſpeckle.*] To mark with ſpeckles, or ſpots.

To BESPEW', *v. a.* [from *ſpew.*] To dawb with ſpew or vomit.

To BESPI'CE, *v. a.* [from *ſpice.*] To ſeaſon with ſpices.

To BESPIT', *v. a.* I *beſpat*, or *beſpit*; I have *beſpit*, or *beſpitten*; [from *ſpit.*] To daub with ſpittle.

BESPLAS' (Joſeph Mary Anne Gros de), doctor of the Sorbonne, abbot of l'Epau, born at Caſtelnaudari in Languedoc in 1734, died at Paris in 1783, at firſt diſcharged with not leſs fortitude than charity the painful office of accompanying and exhorting the criminals ſentenced to die. Afterwards, devoting his talents to the pulpit, he preached with applauſe at Verſailles and at Paris. His ſermon on the laſt ſupper preſented a piece of eloquence ſo affecting on the ſad condition of the priſoners in the ſeveral gaols, that the immediate regulation of them, as to accommodations and health, with the eſtabliſhment of the Hôtel de Force, were among the happy effects of it. The abbé de Beſplas was ſerviceable to humanity, not only by his diſcourſes, but by his works. We have by him a treatiſe, Of the Cauſes of Public Happineſs, 1778, 2 vols. 12mo. replete with excellent ſuggeſtions, political and moral, enriched with great and noble ideas, to which nothing is wanting but a more methodical arrangement. The ſame cenſure might be paſſed upon his Eſſay on the Eloquence of the Pulpit; a production of his youth, of which the ſecond edition of 1778 was carefully retouched. The abbé de Beſplas was beneficent as much from inclination as from principle; he had the art of uniting vivacity with gentleneſs, of pleaſing without affording room for ſcandal, of being inſtructive without pedantry, and tolerant without indifference; in his whole figure and deportment was ſeen that ſerenity, that gentle gaiety, which ever accompanies an honeſt and contented heart.

BESPO'KE, *irreg. particip.* from *beſpeak*; which ſee.

To BESPOT', *v. a.* [from *ſpot.*] To mark with ſpots.—Mildew reſts on the wheat, *beſpotting* the ſtalks with a different colour from the natural. *Mortimer.*

To BESPREAD', *v. a.* preter. *beſpread*; part. paſſ. *beſpread*; [from *ſpread.*] To ſpread over; to cover over.—The globe is equally *beſpread*; ſo that no place wants proper inhabitants. *Derham.*

To BESPRIN'KLE, *v. a.* [from *ſprinkle.*] To ſprinkle over; to ſcatter over.—Herodotus imitating the father poet, whoſe life he had written, hath *beſprinkled* his work with many fabuloſities. *Brown.*

To BESPUT'TER, *v. a.* [from *ſputter.*] To ſputter over ſomething; to dawb any thing by ſputtering, or throwing out ſpittle upon it.

BESSARA'BIA, or BUDZIAC TARTARY, a ſmall territory of Europe, bounded on the weſt by Moldavia, on the ſouth by the Danube, on the eaſt by the Black Sea, and on the north by Ruſſia. The inhabitants are the Budziac Tartars. It was of old inhabited by the Arpii, a people of Lower Mæſia, and their country was called the *Deſert of the Getæ.* It became afterwards part of the kingdom of Hungary, then of Moldavia, of which it is ſtill by ſome conſidered as a part. The country is partly marſhy, and partly mountainous. The chief towns are Bender, Akerman, Kilia, and Iſmail.

BESSA'RION, titular patriarch of Conſtantinople and archbiſhop of Nice, and one of thoſe illuſtrious perſons who contributed to the reſurrection of letters in the 15th century, was born at Trebiſond. He was zealous to reunite the Greek with the Latin church, and engaged the emperor John Paleologus to intereſt himſelf in bringing this great work about. He paſſed into Italy, appeared at the council of Florence, harangued the fathers, and made himſelf admired, as well by his modeſty as by his uncommon abilities. The Greek ſchiſmatics conceived ſo mortal an averſion to him, that he was obliged to remain in Italy; where pope Eugenius IV. honoured him with the purple in 1439. He fixed his abode at Rome, and would have been raiſed to the papal chair, if cardinal Alain had not oppoſed it, as injurious to the Latin church, to chooſe a Greek, however illuſtrious. He was employed in ſeveral embaſſies, but that to France proved fatal to him. When legate at this court, he happened to viſit the duke of Burgundy before he ſaw Louis XI. which ſo diſconcerted the capricious haughty monarch, as to occaſion him a very ungracious reception. Nay, the king even took the cardinal legate by his moſt magnificent beard, ſaying in his fine Latin, *Barbara Græca genus retinent quod habere ſolebant*; and this affront ſo chagrined the cardinal as to occaſion his death, at Ravenna, upon his return in 1472. Beſſarion loved the literati and protected them. Argyropilus, Theodore of Gaza, Poggius, Laurentius Valla, &c. formed a kind of academy in his houſe. His library was large and curious; and the ſenate of Venice, to whom he gave it, preſerve it to this day with attention and regard. He left ſome works, which rank among thoſe that helped to revive letters; as, Defenſio Doctrinæ Platonicæ, &c. Tranſlations of ſome pieces of Ariſtotle; Orations, Epiſtles, &c.

BESSAY', a town of France, in the department of the Allier, and chief place of a canton, in the diſtrict of Moulins: eight miles ſouth of Moulins.

BESSE, *ſ.* A copper coin at Ormus, four coſbegs, in value one penny three farthings ſterling.

BESSE, a town of France, and principal place of a diſtrict, in the department of Puy de Dôme: ſix leagues ſouth of Clermont, and four and a half weſt of Iſſoire. Lat. 45. 31. N. lon. 20. 38. E. Ferro.

BESSE, a town of France, in the department of the Var, and chief place of a canton, in the diſtrict of Brignols: ſix miles ſouth-eaſt of Brignols.

BESSE, a town of France, in the department of the Sarte, and chief place of a canton, in the diſtrict of St. Calais, on the river Braye: five miles ſouth of St. Calais.

BES'SENAY, a town of France, in the department of the Rhone and Loire, and chief place of a canton, in the diſtrict of Camp-de-Lyon: four leagues weſt of Lyons.

BES'SENBACH, a town of Germany, in the circle of the Lower Rhine and archbiſhopric of Mentz: ſix miles eaſt of Aſchaffenburg.

BESSER'NE, a ſmall iſland of Denmark: two miles ſouth-eaſt of Veyeroe.

BES'SET (Henry de), ſieur de la Chapelle-Milon, inſpector of the fine arts under the marquis de Villacerf, and comptroller of the public works, when the great Colbert was appointed in 1683 ſuperintendant of them. He was at the ſame time ſecretary to the academy of inſcriptions and medals. His account of the campaigns of Rocroi and Fribourg, in 1644 and 1645, 12mo. written with an elegant ſimplicity, is a comple model in that ſpecies of compoſition. He died in 1693.

BES'SICA, a diſtrict of Thrace towards mount Hæmus, to the ſouth of the Hebrus. It was inhabited by a fierce and barbarous people noted for their robberies. Their chief city Uſcudama is now Adrianople. They lived under their own king till the conſulate of M. Licinius Lucullus and C. Caſſius Varus; when the conſul Lucullus invaded their country, and, having gained a great victory over them, took their metropolis, and ſubjected the whole nation to the Roman laws. The Romans, notwithſtanding they had ſubdued them by force of arms, ſtill ſuffered them to live under their own kings; for Piſo, while he governed Macedon in quality of proconſul, having treacherouſly ſeized Rabocentus, whom Suetonius calls *prince of the Beſſi*, cauſed him to be publicly beheaded. This affront ſo exaſperated the whole nation, that they revolted; but were overthrown by Octavius the father of Auguſtus. During the civil wars of Rome they attempted to recover their liberty, but were again defeated by the famous M. Brutus.

BESSIE'RES, a town of France, in the department of the Upper Garonne: five leagues north-eaſt of Toulouſe.

BES'SIGHEIM, a town of Germany, in the circle of Swabia, and duchy of Wurtemburgh, near the conflux of the Ens and Neckar: eight miles ſouth of Heilbron, and thirteen north of Stuttgart.

BES'SIN, before the revolution, a ſmall country of France, in Lower Normandy, near the ſea coaſt.

BESSI'NES, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diſtrict of Bellac: ſix leagues north of Limoges.

BES'SONIE (La), a town of France, in the department of the Tarn, and chief place of a canton, in the diſtrict of Caſtres: three leagues north-north-eaſt of Caſtres, and five ſouth-ſouth-eaſt of Alby.

BES'SUS, a governor of Bactriana, who after the battle of Arbela ſeized Darius, his ſovereign, and put him to death. After this murder, he aſſumed the title of *king*, and was ſome time after brought before Alexander, who gave him to Oxatres, the brother of Darius. The prince ordered his hands and ears to be cut off, and his body to be expoſed on a croſs, and ſhot at by the ſoldiers. *Juſtin.*

BES'SY BELL, a mountain of Ireland, in the county of Tyrone: ten miles ſouth of Strabane.

BEST, *adj.* the *ſuperlative* from *good*; [*bet*, *betera*, *betſt*, Sax. good, better, beſt.] Moſt good; that which has good qualities in the higheſt degree.—I think it is a good argument to ſay the infinitely wiſe God hath made it ſo, and therefore it is *beſt*. *Locke.*

The BEST. The utmoſt power; the ſtrongeſt endeavour; the moſt; the higheſt perfection.—Let each man do his *beſt*. *Shakeſpeare.*

To make the BEST. To carry to its greateſt perfection; to improve to the utmoſt.

BEST, *adv.* [from *well.*] In the higheſt degree of goodneſs.—He ſhall dwell in that place which he ſhall chooſe, in one of thy gates, where it liketh him *beſt*. *Deut.* xxiii. 16.

BEST is ſometimes uſed in compoſition.—By this law of loving even our enemies, the Chriſtian religion diſcovers itſelf to be the moſt generous and *beſt-natured* inſtitution that ever was in the world. *Tillotſon.*

BESTA'AD, a town of Norway: thirty-ſix miles north-north-eaſt of Drontheim.

BESTA'GNO, a town of Italy, in the duchy of Montſerrat, on the Bormida: eighteen miles eaſt of Alba.

BES'TAIL, *ſ.* [*bétail*, Fr.] in ancient ſtatutes, all kinds of beaſts or cattle, eſpecially thoſe purveyed for the king's proviſion.

To BESTAIN', *v. a.* [from *ſtain.*] To mark with ſtains; to ſpot.

To BESTEAD', *v. a.* I *beſted*; I have *beſted*; [from *ſtead.*] To profit:

Hence, vain deluding joys!
 The brood of folly, without father bred;
 How little you *beſtead*,
Or fill the fixed mind with all your toys! *Milton.*

To treat; to accommodate. This ſhould rather be *beſted*.—They ſhall paſs through it hardly *beſtead*, and hungry. *Iſ.*

BES'TIAL, *adj.* [from *beaſt.*] Belonging to a beaſt, or to the claſs of beaſts. Having the qualities of beaſts; brutal; below the dignity of reaſon or humanity; carnal.—I have loſt the immortal part of myſelf, and what remains is *beſtial*. *Shakeſpeare.*

BESTIAL SIGNS, *ſ.* in aſtrology, are ſigns of the zodiac, called *Aries*, *Leo*, *Taurus*, *Capricornus*, *and Sagittarius*; becauſe they are in globes repreſented by four-footed beaſts.

BESTIA'LITY, *ſ.* The quality of beaſts; degeneracy from human nature; libidinous contact with brutes.—What can be a greater abſurdity, than to affirm *beſtiality* to be the eſſence of humanity, and darkneſs the centre of light? *Arbuthnot.*

BES'TIALLY, *adv.* Brutally; in a manner below humanity.

BESTIA'RII, *ſ.* in Roman antiquity, ſuch as fought againſt beaſts, or thoſe who were expoſed to them by ſentence of the law. There were four kinds of beſtiarii: the firſt were thoſe who made a trade of it, and fought for money; the ſecond were ſuch young men as, to ſhew their ſtrength and dexterity in managing their arms, fought againſt beaſts; the third was, where ſeveral beſtiarii were let looſe at once, well armed, againſt a number of beaſts; and the fourth kind were thoſe condemned to the beaſts, conſiſting either of enemies taken in war, or as being ſlaves, and guilty of ſome enormous crime; thoſe were all expoſed naked, and without defence.

To BESTICK', *v. a.* preter. I *beſtuck*, I have *beſtuck*; [from *ſtick.*] To ſtick over with any thing; to mark any thing by infixing points or ſpots here and there.

To BESTIR', *v. a.* [from *ſtir.*] To put into vigorous action. It is ſeldom uſed otherwiſe than with the reciprocal pronoun:

 As when men wont to watch
On duty, ſleeping found by whom they dread,
Rouze and *beſtir themſelves* ere well awake. *Milton.*

It is uſed by Shakeſpeare with a common word.—I am ſcarce in breath, my lord. No marvel you have ſo *beſtirred* your valour. *Shakeſpeare.*

BESTOROZIN', or BESZERMENY, a town of Hungary; eight miles north-north-weſt of Debreczin.

To BESTOW', *v. a.* [*biſteden*, Dutch.] To give; to confer upon: commonly with upon.—All the dedicated things of the houſe of the Lord did they *beſtow upon* Baalim. 2 *Chronicles*, xxiv. 7.—Sometimes with *to*.—Sir Julius Cæſar had, in his office, the diſpoſition of the ſix clerks places; which he had *beſtowed to* ſuch perſons as he thought fit. *Clarendon.*—To give, as charity or bounty.—Our Saviour doth plainly witneſs, that there ſhould not be as much as a cup of cold water *beſtowed* for his ſake, without reward. *Hooker.*—To give in marriage.—I could have *beſtowed* her upon a fine gentleman, who extremely admired her. *Tatler.*—To give as a preſent:

Pure oil and incenſe on the fire they throw,
And fat of victims which his friends *beſtow*. *Dryden.*

To apply.—The ſea was not the duke of Marlborough's element; otherwiſe the whole force of the war would infallibly have been *beſtowed* there. *Swift.*—To lay out upon.—And thou ſhalt *beſtow* that money for whatſoever thy ſoul luſteth after, for oxen, ſheep, or for wine. *Deut.* xiv. 26.—To lay up; to ſtow; to place.—And when he came to the Tower, he took them from their hand, and *beſtowed* them in the houſe. 2 *Kings*, v. 24.

BESTOW'ER, *ſ.* Giver; he that confers any thing; diſpoſer.

BESTRAU'GHT, *particip.* [Of this *participle* we have not found the *verb*; by analogy we may derive it from *beſtract*; perhaps it is corrupted from *diſtraught.*] Diſtracted; mad; out of one's ſenſes; out of one's wits.—Aſk Marian, the fat alewife, if ſhe knew me not. What! I am not *beſtraught*. *Shakeſpeare.*

To BESTREW', *v. a.* particip. paſſ. *beſtrewed*, or *beſtrown*. [from *ſtrew.*] To ſprinkle over:

 So thick *beſtrown*,
Abject and loſt lay theſe, covering tbe flood. *Milton.*

To BESTRIDE', *v. a.* I *beſtrid*; I have *beſtrid*; or *beſtridden*, [from *ſtride.*] To ſtride over any thing; to have any thing between one's legs. To ſtep over.

 That I ſee thee here,
Thou noble thing! more dances my rapt heart,
Than when I firſt my wedded miſtreſs ſaw
Beſtride my threſhold. *Shakeſpeare.*

It is often uſed, in the conſequential ſenſe, for to ride on.

The bounding ſteed you pompouſly *beſtride*
Shares with his lord the pleaſure and the pride. *Pope.*

It is uſed ſometimes of a man ſtanding over ſomething which he defends: the preſent mode of war has put this ſenſe out of uſe:

 He *beſtrid*
An o'erpreſs'd Roman, and i' th' conſul's view
Slew three oppoſers; Tarquin's ſelf he met,
And ſtruck him on his knees. *Shakeſpeare.*

To BESTUD', *v. a.* [from *ſtud.*] To adorn with *ſtuds*, or ſhining prominences.

BET, *ſ.* [*weddian*, to wager; *wed*, a wager, Sax. from which the etymologiſts derive *bet*. Johnſon rather imagines it to come from the word *betan*, to mend, increaſe, or *better*, as a *bet* increaſes the original wager.] A wager; ſomething laid to be won upon certain conditions:

The hoary fool, who many days
 Has ſtruggled with continu'd ſorrow,
Renews his hope, and blindly lays
 The deſp'rate *bet* upon to-morrow. *Prior.*

To BET, *v. a.* [from the noun.] To wager; to ſtake at a wager.—He drew a good bow: and dead? John of Gaunt loved him well, and *betted* much upon his head. *Shakeſpeare.*

Bet, the old *preterite* of *beat*.—He ſtaid for a better hour, till the hammer had wrought and *bet* the party more pliant. *Bacon.*

BE'TA, *ſ.* [from the form of the letter *beta* ϐ, which it has when it ſwells with ſeed.] In botany, a genus of the claſs pentandria, order digynia, natural order holoraceæ. Generic characters are—Calyx: perianthium five-leaved, concave, permanent; diviſions ovate-oblong, obtuſe. Corolla: none. Stamina: filaments five, ſubulate, oppoſite to the leaves of the calyx, and of the ſame length with them; antheræ roundiſh. Piſtillum: germ in a manner below the receptacle; ſtyles two, very ſhort, erect; ſtigmas acute. Pericarpium: capſule within the bottom of the calyx, one-celled, deciduous. Seeds: ſingle, kidney-form, compreſſed, involved in the calyx.—*Eſſential Character.* Calyx five-leaved; corolla none; ſeed kidney-form, within the ſubſtance of the baſe of the calyx.

Species. 1. Beta vulgaris, or red garden beet: flowers heaped; leaflets of the calyx toothed at the baſe. Garden red beet has large, thick, ſucculent, leaves, which are for the moſt part of a dark red or purple colour. The roots are large and deep red, and on theſe circumſtances their goodneſs depends; for the larger they grow the more tender they will be, and the deeper their colour the more they are eſteemed. It is a native of the ſea-coaſt of the ſouthern parts of Europe. Of this ſpecies there are many ſeminal varieties; for the beet is very ſubject to change, and to degenerate, at leaſt in our climate. The roots of red beet are boiled, ſliced, and eaten cold, by themſelves, or in ſallads; are uſed as garniſh to diſhes, and as a pickle. The green-leaved variety is moſt eſteemed; the roots being the largeſt and moſt tender. Martial has juſtly marked the beet for its fatuity. It is ſaid to be prejudicial to the ſtomach, and to afford little nouriſhment. Taken in quantity, it tends to looſen the belly. The juice both of the roots and leaves is ſaid to be a powerful errhine, occaſioning a copious diſcharge of mucus without provoking ſneezing. A good ſugar may be obtained from the juice of the freſh roots. It was cultivated in 1656, by Mr. John Tradeſcant, jun.

2. Beta cycla, or white garden beet: flowers threefold; leaflets of the calyx unarmed at the baſe. The root of this ſort ſeldom grows larger than a man's thumb; the ſtalks grow erect, and have oblong ſpear-ſhaped leaves, growing cloſe to the ſtalk: the ſpikes of flowers are axillary, long, and have narrow leaves placed between the flowers. The lower leaves are thick and ſucculent, and their foot-ſtalks are broad. For theſe it is cultivated; the leaves being boiled as ſpinach, or put into ſoups, and the ſtalks and midrib of the leaf being ſtewed and eaten as aſparagus.

A large variety of this has lately been introduced from abroad, under the titles of *racine de diſette*, *root of ſcarcity*, and *mangel wurzel*. It is much cultivated in many parts of the continent, not only in gardens, but in the fields; being much more in eſteem, and perhaps really better, than with us, where it ſeems to degenerate. Its qualities, and the quantity of its produce, have been much magnified, in common with moſt other things newly introduced. The leaf and root are ſaid to be excellent food for man and beaſt: it is affirmed not to be liable to deſtruction by inſects; nor to be affected by drought, &c. The leaves are recommended as equal in quality to ſpinach: and being from thirty to forty inches long, and from twenty-two to twenty-five broad, exceed it greatly in quantity. They may alſo be gathered every twelve or fifteen days during the ſeaſon. The roots have an earthy taſte; and are mawkiſhly ſweet, either boiled, fried, or in ſalad. They weigh ten or twelve pounds when tranſplanted; but when left in the ground where they were ſown have weighed as high as twenty-four pounds. The ancients called the white beet *Cycla*, or rather *Sicla*, by contraction from *Sicula*, Sicilian beet, as we call the Savoy cabbages *Savoys*. Miller mentions three varieties of this: the white, the green, and the Swiſs or Chard, beet: by the laſt of theſe he probably intended the ſame as the modern mangel wurzel, or racine de diſette. He affirms, that they vary from one to another in culture, as he has often experienced, but that they never alter to the firſt or third. An anonymous writer in the Gentleman's Magazine (v. 58. 2. p. 872.) informs us, that three varieties appeared from ſeeds procured from Dr. Lettſom. 1. With leaves and ſtem dark green; which was the moſt common. 2. With ſtem and leaves of a lighter colour; which he takes to be the white beet. 3. With ſtem and veins of the leaves red; which he ſays is the red beet. All of them have flowers in cluſters from two to three; piſtillums from two to five; a leaf growing from the baſe of the flowers; the ſegments of the calyx equal, hunched, and membranaceous at the edge. Few plants flowering the firſt year, he concludes it to be biennial; as indeed all the garden ſorts are, if not the wild ſea beet alſo, although Linneus ſets it down as annual and Ray as perennial. Dr. Lettſom, who took much pains to introduce the mangel wurzel, informs us, that on his own land, which was not favourable to its growth, the roots upon an average, weighed full ten pounds, and, if the leaves were calculated at half that weight, the whole product would be fifteen pounds of nutritious aliment upon every ſquare of eighteen inches.

3. Beta maritima, or ſea-beet: flowers double or twin; leaflets of the calyx even, not toothed. This differs from the others, according to Linnæus, in flowering the firſt year; in having oblique or vertical leaves; and in the leaflets of the calyx being equal, not toothed: according to Ray, in having a perennial root. This is probably the original parent of all the garden beets: Miller however affirms, that he has brought the ſeeds from the places where they grow naturally, many times, and has cultivated the plants with care, but could never find any of them to vary from the parent plant in the characters. It is a native of Holland and Great Britain on the ſea coaſt and in ſalt marſhes; it is alſo found plentifully about Nottingham.

4. Beta patula, or ſpreading beet: flowers heaped, all the leaves linear-lanceolate, branches divaricated. Stem ſhort, hardly a foot high, very branching; branches long, divaricate. It flowers in Auguſt. Native of the iſland of Madeira.

Propagation and Culture. The red beet is frequently ſown with carrots, parſnips, or onions, by the kitchen-gardeners near London, who draw up their carrots or onions when they are young, whereby the beets will have room to grow, when the other crops are gathered; but, where the crops are not timely removed from them, it will be a better method to ſow them ſeparately. This ſort requires a deep light ſoil, for, as their roots run deep in the ground, ſo in ſhallow ground they will be ſhort and ſtringy. The ſeeds ſhould be ſown in March, and muſt be treated in the ſame manner as the former ſort; but the plants ſhould not be left nearer than a foot diſtance, or in good land a foot and a half, for the leaves will cover the ground at that diſtance. The roots will be fit for uſe in the autumn, and continue good all the winter; but in the ſpring, when they begin to ſhoot, they will be hard and ſtringy. A few roots may be left for ſeed, or ſome of the faireſt roots tranſplanted to a ſheltered ſpot of ground, where they may be defended from ſtrong winds, which frequently break down their ſtalks, if they are not well ſupported, eſpecially when the ſeeds are formed; which, becoming heavy as it increaſes in bulk, is apt to weigh down the ſlender ſtalks, upon which they grow. The ſeed will ripen in September, when the ſtalks ſhould be cut off, and ſpread on mats to dry, and afterwards threſhed out and cleared, and put up in bags for uſe.

The ſecond ſort, which is cultivated in gardens for its leaves, is commonly ſown by itſelf, and not mixed with other crops. This is ſown the beginning of March, upon an open ſpot of ground, not too moiſt; the ſeeds ſhould be ſown thinly, becauſe the plants require room to ſpread; for when they are too cloſe, the leaves, being ſmall and full of fibres, will be unfit for the purpoſes deſigned.

When the plants have put out four leaves, the ground ſhould be hoed, as is practiſed for carrots, carefully cutting up all the weeds, and alſo the plants where they are too near each other, leaving them at leaſt four inches aſunder: if this is performed in dry weather, all the preſent weeds will be deſtroyed; but, as young weeds will ſoon appear, in three weeks or a month's time the ground ſhould be a ſecond time hoed over, to cut up the weeds, and thin the plants to a greater diſtance; for by this time they will be paſt danger, and ſhould not be left nearer than ſix inches, if regard is had to the goodneſs of their leaves: and, if it is of the Swiſs kind, with broad leaves, the plants muſt not be nearer than nine or ten inches. If the ſecond hoeing is well performed, and in dry weather, the ground will remain clean a month longer, when it ſhould be hoed over a third time; which, if properly done, will deſtroy all the weeds; ſo that after this, the plants will ſpread and prevent the weeds from growing, therefore will want but little cleaning for a conſiderable time, and the leaves will ſoon be fit for uſe, when the outer large leaves ſhould be firſt gathered, leaving the ſmall inner leaves to grow larger; ſo that a ſmall ſpot of ground will ſupply a moderate family, and will furniſh a new ſupply of leaves for two years, provided the plants are not permitted to run up to ſeed, for after that their leaves will not be good: therefore thoſe who are curious in their herbs muſt ſow a freſh ſpot of ground annually, becauſe theſe plants naturally run up the ſecond year; and although the roots may be continued longer, by cutting off the ſtalks when they begin to ſhoot, yet the leaves will not be ſo large or tender upon theſe roots as upon the young plants.

The mangel wurzel is recommended to be ſown on good ground in March or April, and, as ſoon as the plants are the ſize of a gooſe-quill, to be tranſplanted in rows eighteen inches diſtant, and eighteen inches apart in the rows. Sow very thin, and cover the ſeed an inch only: it will continue in the ground about a month. In tranſplanting, the root is not to be ſhortened, but the leaves cut at the top: then ſet the plant with a dibber, ſo that the upper part of the root ſhall appear half an inch out of the ground. After once hoeing, they will take care of themſelves, and ſuffocate every kind of weed. Some ſeed may be ſown every month, till the beginning of July, for a ſucceſſion. The roots however will be larger, and the leaves more abundant, if the plants are permitted to ſtand where the ſeed is ſown. It is better therefore to treat this plant as Mr. Miller has directed for the Swiſs beet, allowing it ſufficient room to ſpread, and therefore ſetting out the plants, at the laſt hoeing, from a foot to eighteen inches aſunder.

To BETA'KE, *v. a.* preter. I *betook*; part. paſſ. *betaken.* [from *take.*] To take; to ſeize: *an obſolete ſenſe.* To have recourſe to: with the reciprocal pronoun.—The adverſe party *betaking itſelf* to ſuch practices as men embrace, when they behold things brought to deſperate extremities. *Hooker.*—To apply: with the reciprocal pronoun:

With eaſe ſuch fond chimeras we purſue,
As fancy frames for fancy to ſubdue:
But, when *ourſelves* to action we *betake*,
It ſhuns the mint, like gold that chemiſts make. *Dryden.*

To move; to remove:

Soft ſhe withdrew; and, like a wood nymph light,
Oread or Dryad, or of Delia's train,
Betook her to the groves. *Milton.*

BETAN'ZOS, or BETANÇOS, a town of Spain, in Galicia: three leagues from Corunna, and nine from Compoſtella.

To BETEE'M, *v. a.* [from *teem.*] To bring forth; to beſtow; to give:

So would I, ſaid th' enchanter, glad and fain
Beteem to you his ſword, you to defend;
But that this weapon's pow'r I well have kenn'd,
To be contrary to the work that ye intend. *Spenſer.*

BE'TEL, or BETLE, *ſ.* in botany. See PIPER.

BETELGEU'SE, a fixed ſtar of the firſt magnitude in the right ſhoulder of Orion.

BETESKO'E, a town of Siberia, on the weſt ſide of the Irtiſch: 230 miles ſouth-eaſt of Tobolſk.

BETHABA'RA, *ſ.* a term denoting a paſſage; and therefore by many referred to the paſſage at Jericho, where the Iſraelites paſſed over dry-ſhod; by Lightfoot, to the paſſage at Scythopolis; but Cellarius refers it to the midway between both; becauſe there were doubtleſs ſeveral paſſages or fords, on the Jordan. Here John is ſaid to have baptiſed on the other ſide Jordan, (Evangeliſts).

BETHA'GLO, or BETH-HAGLA, a town of the tribe of Benjamin, (Joſhua xviii. 21.) In Jerome's time there was a village called *Agla*, ten miles from Eleutheropolis, towards Gaza, ſuppoſed to be Bethaglo.

BE'THAM (Edward, B. D.) received his education at Eton, of which ſeminary he was a diſtinguiſhed ornament; was elected from thence to King's college, Cambridge, in 1728, of which he became a fellow in 1731; was ſome time burſar, and by the provoſt and fellows, when ſenior fellow, was preſented to the living of Greenford in Middleſex. In 1771 the provoſt and fellows of Eton elected him to a vacant fellowſhip in that ſociety. So unexceptionable was his life, that he may truly be ſaid to have made no enemy in the progreſs of it. His fortune was not large, yet his liberality kept more than equal pace with it. In his life-time he gave 2000l. for the better maintaining the botanical garden at Cambridge, thereby encouraging a ſtudy which did peculiar honour to his taſte, and materially benefited mankind. So humane was his diſpoſition, that he founded and endowed a charity ſchool in his own pariſh. As in his life he indicated the moſt extenſive liberality, ſo at his death he exhibited a laſting record of his gratitude. Impreſſed with the higheſt ſenſe of the munificence of the royal founder of Eton, within whoſe walls he had imbibed the firſt ſeeds of education, he by his will directed a ſtatue of marble, in honour of Henry VI. to be erected at the expence of 600l. And, in order infallibly to carry his purpoſe into execution, he contracted with Mr. Bacon to execute it a few months before his death.

BETH'ANY, a village at the foot of mount Olivet, about two miles to the eaſt of Jeruſalem, where Lazarus dwelt, and was raiſed from the dead, and where happened the aſcenſion of our Saviour.

BETHARAMPH'THA, a town of Galilee, (Ptolomy;) of the Peræa, (Joſephus;) which, being walled round by Herod Antipas, was called *Julius*, after Julia the daughter of Auguſtus, and conſort of Tiberius: it ſtood to the north of the lake of Genneſareth, at the influx of the Jordan, where Dr. Wells places Bethſaida.

BETHA'RAN, a town of the Peræa, or on the other ſide Jordan, ſaid to be called *Livias*, or *Libias*, by Herod in honour of Livia; and of the ſame latitude almoſt with Jeruſalem, (Ptolomy;) called *Julias* by Joſephus.

BETHA'VEN, a town in the tribe of Ephraim, and a name given Bethel by Hoſea, after the eſtabliſhment of the idolatry of Jeroboam there; meaning it to have become the houſe of iniquity, from being the houſe of God.

BE'THEL, a city of Samaria, on the borders of the tribe of Benjamin, anciently called *Luz.* Bethel was properly the place of Jacob's viſion; and Luz, an adjoining town, afterwards called *Bethel*, the former name being loſt in that of *Bethel.* It was twelve miles to the north-eaſt of Jeruſalem, and called *Bethaven*, (Hoſea.)

BETHES'DA, *ſ.* [called in the Greek, κολυμβηθρα προβατικη; in the Vulgate *Piſcina Probatica*, becauſe the ſheep were waſhed in it, which were appointed for ſacrifices.] A pool, or public bath, of great celebrity among the Hebrews. This bath, for its ſingular uſefulneſs was called *Betheſda*, בית הסדה *Beth Chezda*, or the *Houſe of Mercy*, becauſe the erecting of baths in hot countries, where labouring people require frequent waſhing and bathing, was always conſidered as an act of benevolence and mercy. However, ſome will have the word Betheſda to be בית אשרה

or the *ſink-houſe*, or *drain*, becauſe the waters which came from the temple, and the place where the victims were waſhed, flowed thither. From the Greek word κολυμβηθρα being uſed by Joſephus to denote the baths at Jericho, Mr. Macknight, in his Harmony of the Goſpel, concludes that their opinion ſeems to be without foundation, who affirm, that this pool ſerved for waſhing the ſheep deſigned for ſacrifice before they were driven into the temple, and for waſhing the entrails of the beaſts ſacrificed there: beſides, he thinks it inconſiſtent with the ſituation of Betheſda *near the ſheep-gate* (or *market*, as our Engliſh tranſlators have rendered the Greek επι τη προβατικη κολυμβηθρα, though ſome copies have it, Εν τῃ, &c.) in the ſouth-eaſt wall of the city; or, according to the compilers of the Univerſal Hiſtory, in that which was on the north-eaſt, a great way from the temple. However this may be, we are told (John v. 2, 3, &c.) that in the porticoes of this bath, at the time of a certain feaſt (which is generally ſuppoſed to have been the paſſover), there lay a multitude of lame, blind, halt, and withered, waiting for the moving of the water: for an angel went down at a certain ſeaſon into the pool, and troubled the water; that is, moved it in a ſenſible manner. Whoſoever then firſt, after the troubling of the water, ſtepped into it, was made whole of whatever diſeaſe he had. Grotius thinks, that the angel is ſaid to have deſcended, not becauſe he was ever ſeen to do ſo, but becauſe the Jews were perſuaded that God brought ſuch things to paſs by the miniſtration of angels; ſo that from that violent motion of the water, and the cure following it, the preſence of an angel was with reaſon ſuppoſed. Dr. Hammond imagines, that the waters became medicinal by being impregnated with a healing warmth from the blood and entrails of the ſacrificed beaſts that were waſhed there; and that the αγγελος, *angel*, or *meſſenger*, in the text, is not to be underſtood of thoſe celeſtial beings that are uſually diſtinguiſhed by that name, but only of a common meſſenger, viz. an officer or ſervant of the prieſt, who at a proper ſeaſon was ſent by him to ſtir the pool.

To BETHI'NK, *v. a.* I *bethought*; I have *bethought*; [from *think*.] To recal to reflection; to bring back to conſideration, or recollection. It is generally uſed with the reciprocal pronoun, and *of* before the ſubject of thought.

I have *bethought me of* another fault. *Shakeſpeare.*

BETH'LEHEM, [בית־לחם Heb. i. e. the houſe of bread.] A town of Paleſtine, famous for the birth of our Saviour. It was once a flouriſhing city, but is now only a poor village. It is ſituated about five miles ſouth-eaſt from Jeruſalem, on an eminence, and is under the dominion of the Turks; though the Chriſtian religion is tolerated, and here are about one hundred Latin Chriſtians, who have a vicar dependent on the great convent of Jeruſalem. The church was built by St. Helena, in the form of a croſs, and is very large. Both ſides of the nave are ſupported by two rows of marble pillars, each made of one piece, and eleven in a row, inſomuch that they make as it were five naves. On the wall over the pillars is a very beautiful Moſaic work, on a gold ground. The walls were formerly overlaid with fine marble, but the Turks have taken it to adorn their moſques. Cloſe to the church is the monaſtery of the Franciſcans; which is large, but indifferently built. Through this there is a paſſage to a ſquare cave, where they ſay the Innocents were buried. Here are likewiſe the tombs of St. Jerom, St. Paula, Euſtochium, and Euſebius of Cremona. Beyond theſe there is a grot or cell, which they ſay was the lodging-place of St. Jerom when he tranſlated the bible. Another entrance leads to a chapel, twelve feet wide, and forty long, whoſe floor is paved, and ſides lined with white marble, and the roof is adorned with Moſaic work. At the end of this there is an altar, with a picture of the nativity, and under it a vault, the middle of which is a ſtar made with ſtones of various colours, to mark the place where our Saviour was born; and near this is the manger where they ſay he was laid; it is hewn out of a rock, and is now caſed with white marble.

BETHLEHEM, a town of North America, in the ſtate of Pennſylvania, firſt ſettled by German Moravians, in the year 1741, ſituated on a branch of the river Delaware, called Lehigh: the manners and dreſs of the people, who are a mixture of Germans and Engliſh, are ſimple, and peculiar to themſelves; divine ſervice is performed both in Engliſh and in German: 53 miles north of Philadelphia.

BETHLEHEM, *ſ.* an hoſpital for lunatics. See BEDLAM.

BETH'LEHEMITE, *ſ.* a lunatic; an inhabitant of a madhouſe. See BEDLAMITE.

BETHLEHEMITES, or BETHLEMITES, a ſort of monks introduced into England in 1257, habited like the Dominicans, except that, on their breaſt, they wore a ſtar with five rays, in memory of the ſtar or comet which appeared over Bethlehem at the nativity of our Saviour. They were celled at Cambridge, and had only one houſe in England. There is alſo an order of Bethlehemites ſtill ſubſiſting in Peru, who have convents at Lima; one called of the Incurables, the other of our Lady of mount Carmel. Theſe Bethlehemites came originally from the city of Guatimala in Mexico, where they were inſtituted by the venerable Peter Joſeph of Betaneur, for the ſervice of the poor. Innocent XI. in 1687, approved the inſtitute. They have already nine convents in Peru.

BETHO'RON, anciently a town of Samaria; Upper and Nether, and both in the tribe of Ephraim, built by Shera grand-daughter of Ephraim, 1 Chron. viii. 24. both which were reſtored by Solomon, after falling to decay, 1 Kings ix. 17. Their diſtance was almoſt the whole breadth of the tribe of Ephraim, the Upper being in the north, the Nether in the ſouth, of that tribe. We know more of the Nether than of the Upper; it was ſituate on a mountain, and therefore Joſephus and Jerome mention going up or aſcending; and it ſtood on the public road to Lidda and Cæſarea, diſtant one hundred ſtadia, or twelve miles, from Jeruſalem.

BETHOUGHT', *particip.* from *bethink*; which ſee.

BETH-PE'OR, a town of the Reubenites, on the other ſide Jordan, at mount Fogor, over againſt Jericho, ſix miles above Livias. It had a temple ſacred to the idol Baal-Peor, called *Beel-Phegor*, by the Vulgate, interpreted *Priapus* by Jerome.

BETH'PHAGE, a place at the weſt deſcent or declivity of mount Olivet, Matthew xxi. 1. From which it may be gathered, that the whole of that declivity, with a part of the valley, and the extreme ſkirts of the city, went under the common name of Bethphage.

To BETHRAL', *v. a.* To enſlave; to conquer; to bring into ſubjection.

BETH'SAN, or BETHSEAN, anciently a town of Samaria, in the half tribe of Manaſſeh, on the borders of Galilee, about half a league from Jordan, on this ſide, having half of its territory in the Peræa: it was afterwards called *Scythopolis*: it was diſtant from Tiberias, on the lake Genneſareth, 120 ſtadia, or fifteen miles, to the ſouth; and from Jeruſalem, to the north, 600 ſtadia, or 75 miles. As to the origin of the appellation Scythopolis, there ſcarcely appears any thing in hiſtory that has a relation to it, but the irruption of the Scythians in the time of the Medes, when they over-ran all Aſia. It is called *Bæſon* by Stephanus.

To BETHUMP', *v. a.* To beat; to lay blows upon: a ludicrous word.

BETHU'NE (Maximilian de), duke of Sully, grand maſter of the artillery, and marſhal of France, ſovereign prince of Enrichemont and Bois-Bell, marquis of Roſny, and one of the ableſt and moſt upright miniſters France ever had, was deſcended from an illuſtrious houſe, and was born in 1560. He entered very young into the ſervice of Henry of Bourbon, then king of Navarre, afterwards Henry IV. of France, who was ſeven years his elder. They were both bred in the reformed religion; and Sully continued in the profeſſion of it till his death; though from political motives he adviſed his maſter to abjure it, as the only method of putting an end to the murmurs and diviſions among the people concerning the Huguenots. Soon after Sully had paſſed his twelfth year, he went to Paris to apply himſelf to his ſtudies, and lived with a governor and valet in the vicinity of the colleges, until the ſhocking maſſacre of St. Bartholomew's-day, when he had a very narrow eſcape. "I was in bed," ſays he, "and awaked from ſleep three hours after midnight by the ſound of all the bells and the confuſed cries of the populace. My governor, St. Julian, with my valet de chambre, went haſtily out to know the cauſe; and I never afterwards heard more of theſe men, who, without doubt, were among the firſt that were ſacrificed to the public fury. I continued alone in my chamber dreſſing myſelf, when in a few moments I ſaw my landlord enter, pale, and in the utmoſt conſternation. He was of the reformed religion; and, having learned what the matter was, had conſented to go to maſs, to preſerve his life, and his houſe from being pillaged. He came to perſuade me to do the ſame, and to take me with him: I did not think proper to follow him, but reſolved to try if I could gain the college of Burgundy, where I had ſtudied; though the diſtance between the houſe where I then was, and the college, made the attempt very dangerous. Having diſguiſed myſelf in a ſcholar's gown, I put a large prayer-book under my arm, and went into the ſtreet. I was ſeized with horror inexpreſſible at the ſight of the furious murders; who, running from all parts, forced open the houſes, and cried aloud *Kill! kill! maſſacre the Huguenots!* The blood which I ſaw ſhed before my eyes, redoubled my terror. I fell into the midſt of a body of guards; they ſtopped me, queſtioned me, and were beginning to uſe me ill, when, happily for me, the book that I carried was perceived, and ſerved me for a paſſport. Twice after this I fell into the ſame danger, from which I extricated myſelf with the ſame good fortune. At laſt I arrived at the college of Burgundy, where a danger ſtill greater than any I had yet met with awaited me. The porter having twice refuſed me entrance, I continued ſtanding in the midſt of the ſtreet, at the mercy of the furious murderers, whoſe numbers increaſed every moment, and who were evidently ſeeking for their prey; when it came into my mind to aſk for la Faye, the principal of this college, a good man, by whom I was tenderly beloved. The porter, prevailed upon by ſome ſmall pieces of money which I put into his hand, admitted me; and my friend carried me to his apartment, where two inhuman prieſts, whom I heard mention Sicilian veſpers, wanted to force me from him, that they might cut me in pieces; ſaying, the order was, not to ſpare even infants at the breaſt. All the good man could do was to conduct me privately to a diſtant chamber, where he locked me up; and here I was confined three days, uncertain of my deſtiny, ſeeing no one but a ſervant of my friend, who came from time to time to bring me proviſion." See the article BARTHOLOMEW'S-DAY.

After Henry had gained poſſeſſion of the crown of France, nothing could eſtrange him from the councils of his favourite Sully, who performed all the duties of a great and good miniſter, while his maſter exerciſed all the offices of a great and good king. He had been at the battles of Coutras, Arques, and Ivry; at the ſieges of Paris, Noyon, Rouen, and Laon; and ſignalized himſelf on every important occaſion. In 1597 he was made chief overſeer of the highways of France; and the following year was raiſed to the poſt of ſuperintendant of the finances. Though he was then but forty years of age, and had hitherto ſignalized himſelf only in the army, he put the king's finances in ſuch order, that he paid his debts, which amounted to two hundred millions of livres, and laid up great ſums in the royal treaſury. But in ſpite of the ſuperiority of his talents, and the purity of his intentions, this great miniſter was ever harraſſed by calumnies and miſrepreſentations. Many of them were ſtudiouſly related to Henry, who occaſionally mentioned them to him, and heard in what manner he defended himſelf. Once, after a converſation of three hours on ſubjects like theſe, he embraced Sully at coming out of his antichamber before all his court, and ſaid, "I eſteem you as the beſt and the moſt innocent man that ever was, as well as the moſt loyal and the moſt uſeful ſervant I ever poſſeſſed." Then turning round to ſome of Sully's enemies who were preſent, he added, "I wiſh earneſtly to let you all know, that I love Sully better than ever, and that death alone can diſſolve my eſteem for him."

Sully, in conformity with the principles of commerce that obtained in his time, wiſhed his ſovereign to iſſue an edict to prohibit the uſe of ſilk; looking upon it as a luxury imported from a foreign country, that would take away money out of the kingdom of France. Henry replied to him, "Why, my good Roſny, I had rather fight the king of Spain in three pitched battles, than engage with all thoſe gentry of police, of finance, of the cuſtoms, and eſpecially with their wives and daughters, that you will ſet upon me by your whimſical regulation." At another time, madame d'Entragues, Henry's favourite miſtreſs, was extremely angry with Sully, becauſe he did not immediately pay to her brother ſome gratuity which that monarch had ordered him. "The king," ſaid ſhe to him, "would act very ſingularly indeed, if he were to diſpleaſe perſons of quality merely to give into your notions. And pray, ſir, to whom ſhould a king be kind, if not to his relations, his courtiers, and his miſtreſſes?" "That might be very well, madam," replied Sully, "if the king took the money out of his own purſe; but in general he takes it out of thoſe of ſhop-keepers, artizans, labourers, and farmers. Theſe perſons enable him to live. One maſter is enough for us, and we have no occaſion for ſuch a number of courtiers, of princes, and of king's miſtreſſes."

Sully was one of the moſt laborious miniſters that ever exiſted. He roſe at four o'clock in the morning. The firſt two hours after he got up were employed in reading and in expediting the papers that lay upon his table; this he called *nettoyer le tapis.* At ſeven o'clock he attended council, and the reſt of the morning was ſpent with his ſovereign in tranſacting the different buſineſs with which he was entruſted. At twelve o'clock he dined with ſome ſelect gueſts. After dinner he gave an audience, where every body was admitted: firſt the eccleſiaſtics, both Catholics and Huguenots: then the farmers, and the perſons of meaner rank; and perſons of quality ſucceeded to them. After his audience, he returned to his cloſet, where he read and wrote till ſupper-time, when he ordered his doors to be ſhut, and gave himſelf up to the pleaſures of ſociety with a few friends; and at ten o'clock he went to bed.

In 1601 he was made grand-maſter of the artillery, the next year governor of the Baſtile, and afterwards ſuperintendant of the fortifications. He was then ſent into England as ambaſſador extraordinary; and had, at his return, the government of Poictou. At laſt Henry IV. in 1606, erected in his favour the territory of Sully on the Loire into a duchy and peerage, and made him grand-maſter of the ports and havens. But after the horrid aſſaſſination of Henry IV. he withdrew himſelf from public affairs, and lived in retirement thirty years at his palace of Villebon, ſeldom or never coming to court. Louis XIII. however, wiſhing to have his opinion upon ſome matters of conſequence, ſent for him to Paris, when the good old man obeyed his ſummons, but not with the greateſt alacrity. The gay courtiers, on ſeeing a man dreſt ſo unlike themſelves, and of grave and ſerious manners totally different from their own, turned Sully into ridicule, and took him off to his face. Sully, perceiving this, ſaid coolly to the king, "Sire, when your father, of glorious memory, did me the honour to conſult me on any matter of importance, he firſt ſent away all the buffoons of his court."

Sully kept up always at his table at Villebon the frugality to which he had been accuſtomed in early life in the army.

His table conſiſted of ten diſhes, dreſt in the plaineſt and moſt ſimple manner. The courtiers reproached him often with the ſimplicity of his table. He uſed to reply in the words of an ancient, "If the gueſts are men of ſenſe, there is ſufficient for them; if they are not, I can very well diſpenſe with their company." Sully dined at the upper end of the hall with the perſons of his own age, at a table apart. The young people were ſerved at a table by themſelves. Sully gave as a reaſon for this arrangement, that the perſons of different ages might not be mutually tireſome to each other. The pope having written a letter to M. de Sully upon his becoming miniſter, which ended with his holineſs's wiſhes that he might enter into the right way; Sully anſwered, that on his part he never ceaſed to pray for the converſion of his holineſs. A cotemporary writer thus deſcribes this great miniſter: "He was," ſays he, "a man of order, exact, frugal, a man of his word, and had no fooliſh expences either of play or of any thing elſe that was unſuitable to the dignity of his character. He was vigilant, laborious, and expedited buſineſs. He ſpent his whole time in his employments, and gave none of it to his pleaſures. With all theſe qualifications, he had the talent of diving to the bottom of every thing that was ſubmitted to him, and of diſcovering every entanglement and difficulty with which financiers, when they are not honeſt men, endeavour to conceal their tricks and their rogueries."

Henry IV. told Sully, after the conſpiracy of Biron againſt him was diſcovered, "I ſee that many of the great men about my court are mentioned in the depoſitions that have been taken. Gueſs who they are." "God forbid, ſire," replied Sully nobly, "that I ſhould pretend to gueſs at any man of quality who is a traitor." He alſo gave Sully one day the contract of marriage into which he had entered with mademoiſelle d'Entragues, to read; to which he ſaid, after having read it, "Sire, will you promiſe me not to be angry?" Henry replied, "Yes, Sully, I promiſe you that I will not be angry." Sully tore the contract in pieces immediately, ſaying, "Sire, this is the uſe you ought to make of it." Sully died in his caſtle of Villebon on the 21ſt of December 1641, aged eighty-two. But, though he lived to this great age, yet no life could be more frequently expoſed to perils and danger. One of theſe was of a very extraordinary kind, and deſerves to be particularly mentioned. It was at the taking of a town in Cambray, in 1581, when, to defend the women from the brutality of the ſoldiers, the churches, with guards about them, were given them for aſylums; nevertheleſs, a beautiful young girl ſuddenly threw herſelf into his arms, as he was walking in the ſtreets, and, holding him faſt, conjured him to guard her from ſome ſoldiers, who, ſhe ſaid, had concealed themſelves as ſoon as they ſaw him. Sully endeavoured to calm her fears, and offered to conduct her to the next church; but ſhe told him ſhe had been there, and had aſked for admittance, which they refuſed, becauſe they knew ſhe had the plague. Sully thruſt her from him with the utmoſt horror, and expected every moment to be ſeized with the plague, which, however, by good fortune did not happen. His Memoirs are ranked among the beſt books of French hiſtory: they contain a moſt particular account of whatever paſſed from the peace of 1570 to the death of Henry IV. in 1610: and acquire additional value from the many curious perſonal anecdotes preſerved in them. They were tranſlated into Engliſh by Mrs. Lenox in 1757.

Bethune, a town of France, and principal place of a diſtrict, in the department of the Straits of Calais. It formerly belonged to the counts of Flanders; but being taken by Gaſton, duke of Orleans, uncle to Louis XIV. it was united to France by the peace of the Pyrenées, when the fortifications were augmented and repaired under the direction of M. Vauban. In 1710, after the taking of Douay, the allied army, under prince Eugene and duke of Marlborough, inveſted this town, and carried it after a ſiege of ſix weeks; allowing the garriſon, with two pieces of cannon, and other honours of war, to retire to St. Omer. M. de Puy Vauban, nephew to the marechal, commanded the garriſon, which conſiſted of nine battalions, four ſquadrons, and a detachment of artillery. It was reſtored to France in 1713, at the peace of Utrecht: three poſts and a half north of Arras, ten ſouth-eaſt of Calais, and twenty-five and three quarters north of Paris.

To BETI'DE, *v. n.* pret. *it betided*, or *betid*, part. paſſ. *betid*; [from *tid*, Sax.] To happen to; to befal; to bechance, whether good or bad: with the perſon:

But ſay, if our deliverer up to heav'n
Muſt re-aſcend, what will *betide* the few,
His faithful, left among th' unfaithful herd,
The enemies of truth? *Milton.*

Sometimes it has *to*:

Neither know I
What is *betid to* Cloten. *Shakeſpeare.*

To come to paſs; to fall out; to happen: without the perſon:

In winter's tedious nights, ſit by the fire
With good old folks, and let them tell thee tales
Of woeful ages, long ago *betid.* *Shakeſpeare.*

To become; to be the fate: with *of*.—If he were dead, what would *betide of* thee? *Shakeſpeare.*

BETIGO'LA, a town of Poland, in Samogitia: ten miles ſouth-ſouth-eaſt of Roſienne.

BE'TIME, or Betimes, *adv.* [from *by* and *time*; that is, by proper time.] Seaſonably; early; before it is late:

To meaſure life learn thou *betimes*, and know
Toward ſolid good what leads the neareſt way. *Milton.*

Soon; before long time has paſſed.—He tires *betimes*, that ſpurs too faſt *betimes.* *Shakeſpeare.*—Early in the day.—They roſe *betimes* in the morning, and offered ſacrifice. 1 *Macc.* iv. 52.

BE'TIS, governor of Gaza under Darius, famous for his valour and loyalty; he defended a place of conſequence with a few men againſt Alexander, who was there ſhot through the ſhoulder. Betis, thinking him ſlain, returned triumphantly to the city; but in a ſecond aſſault he was wounded and brought to Alexander, who cruelly ordered him to be put to death.

BETIQUA', a town of Africa, in the kingdom of Congo.

BETIT'LO, a town of European Turkey, in the Morea: twenty-two miles ſouth of Miſiſtra.

BET'LEY, a market-town in Staffordſhire, ſituate on the borders of Cheſhire, 156 miles from London, and five north-weſt of Newcaſtle-under-Line. The ſoil is ſandy, and abounds with capital gardens, which ſupply the greateſt part of Newcaſtle and the potteries with early cabbage, peaſe, beans, potatoes, &c. during the ſeaſon. Here is a large fair for cattle and merchandize on the 31ſt of July. The market is on Tueſday. Near the town is Betley-hall, the ſeat of Charles Follet, Eſq. alſo that of Mrs. Fenton, a noble manſion-houſe, with beautiful gardens.

BET'LIS, a town of Aſia, and capital of Curdiſtan, ſituated between two high mountains, about a cannon-ſhot diſtance from each other, the reſidence of a bey, who is neither ſubject to the king of Perſia or the Turkiſh emperor, and commands an army of twenty or twenty-five thouſand horſemen, beſides infantry: 110 miles eaſt of Diarbek, and 100 north of Moſul. Lat. 37. 20. N. lon. 60. 10. E. Ferro.

To BETO'KEN, *v. a.* [from *token.*] To ſignify; to mark; to repreſent:

A dewy cloud, and in the cloud a bow
Conſpicuous with three liſted colours gay,
Betoken peace from God. *Milton.*

To foreſhew; to preſignify:

The kindling azure, and the mountain's brow
Illum'd with fluid gold, his near approach
Betoken glad. *Thompſon.*

BE'TOLA, a town of Italy, in the Plaiſantin: ſixteen miles ſouth of Piacenza.

BE'TON, *ſ.* A kind of mortar uſed in France for raiſing the foundations of maſonry under water. It conſiſts of twelve parts of pozzolans or Dutch tarras, ſix of good ſand, nine of unſlaked lime, thirteen of ſtone ſplinters, and three of tile-duſt or cinders, or ſcales of iron out of a forge; theſe being well worked together, the compoſt is left to ſtand for twenty-four hours. It becomes ſo hard as not to be ſeparated without a pick-axe.

BETO'NICA, *ſ.* [Corrupted from *Vettonica*, which is derived from the *Vettones*, an ancient people of Spain.] BETONY. In botany, a genus of the claſs didynamia, order gymnoſpermia, natural order verticillatæ, or labiatæ. The generic characters are—Calyx: perianthium one-leafed, tubular, cylindric, five-toothed, awned, permanent. Corolla: monopetalous, ringent; tube bent in, cylindric; upper lip roundiſh, entire, flat, erect; lower trifid; middle diviſion broader, roundiſh, emarginate. Stamina: filaments four, ſubulate, the length of the throat; two ſhorter, inclined to the upper lip; antheræ roundiſh. Piſtillum: germ four-parted; ſtyle form, ſituation and ſize of the ſtamens; ſtigma bifid. Pericarpium: none; calyx foſtering the ſeeds in its boſom. Seeds: four, ovate. —*Eſſential Character.* Calyx awned; corolla upper lip aſcending, flattiſh; tube cylindric.

Species. 1. Betonica officinalis, or wood betony: ſpike interrupted; helmet of the corolla entire; middle diviſion of the lower lip emarginate; calyxes ſmoothiſh. Common wood betony has an upright ſtem, a foot high or more, not branched or but very little in the wild ſtate, hairy, channelled, the corners rounded. Native of woods, heaths, and paſtures, among buſhes; flowering from the beginning of July to September. Betony, ſays Linnæus, was formerly much uſed in medicine, but it is diſcarded from modern practice. When freſh it intoxicates. The leaves when dry excite ſneezing. Sheep eat it, but goats refuſe it. The leaves and flowers, according to Lewis, have an herbaceous, roughiſh, and ſomewhat bitteriſh, taſte, with a weak aromatic flavour. An infuſion or light decoction of them may be drunk as tea; or a ſaturated tincture in rectified ſpirit may be given in laxity and debility of the viſcera. The ſneezing quality of the dried leaves ſeems to be owing only to the rough hairs on them. The roots are bitter and very nauſeous: in a ſmall doſe they vomit and purge violently. This plant dyes wool of a very fine dark yellow colour. It is not uncommon with a white flower, in ſubalpine paſtures. Gerard remarked it near Hampſtead; and Miller ſays, he often found it in Kent. There is alſo a ſmall mountainous variety not unfrequent, with a ſpike nearly globular; the leaves and flowers are ſmaller; but all theſe differences are owing to ſituation.

2. Betonica orientalis, or oriental betony: ſpike entire, middle diviſion of the lip of the corolla quite entire. Leaves very long, narrow, hairy; flowers in very cloſe thick ſpikes at the top of the ſtalks, larger and of a lighter purple than thoſe of the common ſort. It was firſt diſcovered by Tournefort in the Levant: and was cultivated by Miller in 1739.

3. Betonica alopecuros, or fox-tail betony: ſpike leafy at the baſe, helmet of the corolla bifid. This has the appearance of common betony, but the leaves are heart-ſhaped; the ſtem is a foot high, and has two or three pairs of leaves; thoſe immediately under the whorls are entire, broad, with the ends bent down. The flowers ſmell like elder. Scopoli will not allow this to be a betony, becauſe the germs are covered with a crown of villoſe hairs. It is a native of the mountains of Savoy, Piedmont, Auſtria, Carniola, Sileſia, and Provence: and was cultivated in 1759 by Miller.

4. Betonica hirſuta, or hairy betony: ſpike leafy at the baſe, helmet of the corolla entire. This reſembles the foregoing, but is more ſtout, luſty, and hairy. Ray, who cultivated it ſome years in his garden at Cambridge, ſays that it differs from the firſt ſort, in having leaves twice or thrice as large; a ſtronger ſmell approaching to a ſtink; a firmer and loftier ſtem; thicker and longer ſpikes of purple flowers. Miller affirms, that it ſeldom riſes more than four inches high in the wild ſtate, and when cultivated in a garden not above ſeven or eight; that the leaves are much broader at the baſe than thoſe of the common ſort, and very different in ſhape, being triangular, and blunt at the end; the ſpikes are very ſhort and cloſe, and theſe differences are conſtant. Native of the Alps, Apennines, and Pyrenées; and cultivated by Miller in 1739.

5. Betonica heraclea: ſpike with woolly calyxes, teeth filiform; leaves lanceolate, naked. Stem and leaves almoſt ſmooth. Native of the Levant.

6. Betonica ſtricta, or Daniſh betony: ſpike oblong; helmet of the corolla entire; middle diviſion of the lower lip notch-waved; calyxes hairy. This differs greatly from our common ſort, the lower leaves being much broader and heart-ſhaped; thoſe upon the ſtalks are ſpear-ſhaped, and rounded at the end; the ſtalks are larger, ſtand upright, and are terminated by thicker ſpikes of flowers. Native of Denmark.

7. Betonica incana, or hoary betony: ſpike interrupted; helmet of the corolla bifid, middle diviſion of the lower lip notched; tube tomentoſe; bent in. The leaves of this ſort are broader, and not ſo long as thoſe of the common ſort, and are hoary; the ſtalks are ſhorter and much thicker, as are alſo the ſpikes of flowers, than thoſe of the common betony; the flowers are larger and fleſh-coloured. Native of Italy.

Propagation and Culture. All the ſorts may be propagated by ſeeds, or parting the roots. They require a ſhady ſituation and a moiſt ſtiff ſoil, in which they will thrive better than in rich ground. The beſt time to tranſplant and ſeparate the roots is in the autumn, but the ſeeds ſhould be ſown in the ſpring upon a ſhady border, and when the plants come up they will require no other care but to keep them clean from weeds, and to thin them where they are too cloſe. Theſe all of them flower in May and June, and the ſeeds ripen in Auguſt.

BETONICA AQUATICA. See SCROPHULARIA.

BETONICA PAULI. See VERONICA.

BETOOK', *irreg. prep.* from *betake*; which ſee.

BE'TO-POU'LO, a ſmall iſland in the Grecian Archipelago. Lat. 37. 2. N. lon. 41. 19. E. Ferro.

To BETOSS', *v. a.* [from *toſs.*] To diſturb; to agitate: to put into violent motion:

What ſaid my man, when my *betoſſed* ſoul
Did not attend him as we rode? *Shakeſpeare.*

BETOW'KY, a town of Poland, in Samogitia: ſixteen miles weſt of Roſienne.

To BETRAY', *v. a.* [*trahir*, Fr.] To give into the hands of enemies by treachery, or breach of truſt: with *to* before the perſon, otherwiſe *into*.—If ye be come to *betray* me *to* mine enemies, ſeeing there is no wrong in mine hands, the God of our fathers look thereon, and rebuke it. 1 *Chron.*—Jeſus ſaid unto them, The Son of man ſhall be *betrayed into* the hands of man. *Matt.*—He was not to be won, either by promiſe or reward, *to betray* the city. *Knolles.* —To diſcover that which has been entruſted to ſecrecy. To expoſe to evil by revealing ſomething entruſted. To make known ſomething that were better concealed.—Be ſwift to hear, but be cautious of your tongue, leſt you *betray* your ignorance. *Watts.*—To make liable to fall into ſomething inconvenient.—The bright genius is ready to be ſo forward, as often *betrays* itſelf *into* greater errors in judgment. *Watts.*—To ſhew; to diſcover:

The Veian and the Gabian tow'rs ſhall fall,
And one promiſcuous ruin cover all;
Nor, after length of years, a ſtone *betray*
The place where once the very ruins lay. *Addiſon.*

BETRAY'ER, *ſ.* He that betrays; a traitor.

To BETRIM', *v. a.* [from *trim.*] To deck; to dreſs; to grace; to adorn; to embelliſh; to beautify; to decorate.

To BETROTH', *v. a.* [from *troth*; *betrowen*, Dutch.] To contract to any one, in order to marriage; to affiance: uſed either of men or women. To have, as affianced by promiſe of marriage.—And what man is there that hath *betrothed* a wife, and hath not taken her? let him go and return into his houſe. *Deut.*—To nominate to a biſhopric, in order to conſecration.—If any perſon be conſecrated a biſhop to that church, whereunto he was not before *betrothed*, he ſhall not receive the habit of conſecration, as not being canonically promoted. *Ayliffe.*

To BETRUST', *v. a.* [from *truſt.*] To entruſt; to put into the power of another, in confidence of fidelity.—Whatever you would *betruſt* to your memory, let it be diſpoſed in a proper method. *Watts.*

BETSCH'KOW, a town of Bohemia, in the circle of Czaſlau: nine miles north-weſt of Czaſlau.

BET'TA, a town of Aſiatic Turkey: ſeventy miles ſouth-ſouth-weſt Erzerum.

BET'TENDORF, a town of the Netherlands, in the duchy of Luxemburg, ſituated on the Sour: four miles above Echternach.

BET'TER, *adj.* The *comparative* of *good*; [*bet*, good, *betera*, better, Sax.] Having good qualities in a greater degree than ſomething elſe.—He has a horſe *better* than the Neapolitan's; a *better* bad habit of frowning than the count palatine. *Shakeſpeare.*

The BETTER. The ſuperiority; the advantage: with the particle *of* before him, or that, over which the advantage is gained.—The voyage of Drake and Hawkins was unfortunate; yet, in ſuch ſort, as doth not break our preſcription, to have had *the better of* the Spaniards. *Bacon.*—Improvement; as, *for the better*, ſo as to improve it.—If I have altered him any where *for the better*, I muſt at the ſame time acknowledge, that I could have done nothing without him. *Dryden.*

BETTER, *adv.* [comparative of *well.*] Well, in a greater degree.—Then it was *better* with me than now. *Hoſea.*—He that would know the idea of infinity, cannot do *better*, than by conſidering to what infinity is attributed. *Locke.*

To BETTER, *v. a.* To improve; to meliorate.—The cauſe of his taking upon him our nature, was to *better* the quality, and to advance the condition thereof. *Hooker.*—To ſurpaſs; to exceed.—The works of nature do always aim at that which cannot be *bettered*. *Hooker.*—To advance; to ſupport.—The king thought his honour would ſuffer, during a treaty, to *better* a party. *Bacon.*

BETTER, *ſ.* Superior; one to whom precedence is to be given.—The courteſy of nations allows you my *better*, in that you are the firſt-born. *Shakeſpeare.*

"BETTER never begun than never ended." A thing begun and not accompliſhed, expoſes a man not only to needleſs expence, but to ridicule.

"BETTER hold at the brim, than hold at the bottom." It is better to be ſparing while we have ſomething, than to ſpend all prodigally and want afterwards. The Latins ſay, *Sera eſt in fundo parſimonia.*

"BETTER wiſe than wealthy;" or, "BETTER wit than wealth." Though very few can believe ſo: every man's endeavour is after wealth, but few in compariſon ſeek after wiſdom. There is another proverb, the reverſe of this: "BETTER be happy than wiſe;" uſed by thoſe who place happineſs in wealth.

"The BETTER day, the BETTER deed." *Bon jour, bon œuvre*, Fr. What the deſign of this proverb is, ſeems not very eaſy to conceive; no more than how a good day can juſtify an evil action.

"BETTER one word in time, than afterwards two." To know how to place our words right, is one of the grand purpoſes of education, which we cannot too much ſtudy the attainment of.

"BETTER one eye than quite blind." *Princeps luſcus inter cæcos*, Lat. Among the blind the one-eyed is a prince. Of a thing ſo precious as ſight, the very leaſt ſhare is infinitely preferable to none at all.

BET'TERTON (Thomas), a famous Engliſh actor, born in Tothill-ſtreet, Weſtminſter, in 1635; and, after having left ſchool, is ſaid to have been put apprentice to a bookſeller. The particulars, however, relating to the early part of his life, are very uncertain. It is generally thought that he made his firſt appearance on the ſtage in 1656, at the opera-houſe in Charter-houſe-yard, under the direction of Sir William Davenant. He continued to perform here till the reſtoration, when king Charles granted patents to two companies: the one was called the king's company, and the other the duke of York's. The former acted at the theatre-royal in Drury-lane, and the latter at the theatre in Lincoln's-inn-fields. Betterton went over to Paris, at the command of Charles II. to take a view of the French ſcenery, and at his return made ſuch improvements as added greatly to the luſtre of the Engliſh theatre; for upon this occaſion, it is generally ſuppoſed, that moving ſcenes were firſt introduced, in lieu of tapeſtry; and women were now, for the firſt time, introduced upon the Engliſh ſtage; all female characters heretofore having been performed by boys, or by young men of the moſt effeminate appearance. Under theſe improvements both companies acted with the higheſt applauſe, and the taſte for dramatic entertainments was never ſtronger than at this time. The two companies were however at length united; though the time of this union is not preciſely known, Gildon placing it in 1682, and Cibber in 1684. It was in this united company that Mr. Betterton firſt ſhone with the greateſt luſtre; for, having ſurvived the famous actors upon whoſe model he had formed himſelf, he was now at liberty to diſplay his genius in its full extent. His merit as an actor may perhaps exceed deſcription; but, if an idea can be obtained of it, it muſt be from the following paſſage in Cibber's Apology: "Betterton was an actor, as Shakeſpeare was an author, both without competitors, formed for the mutual aſſiſtance and illuſtration of each other's genius! How Shakeſpeare wrote, all men who have a taſte for nature may read and know; but with what higher rapture would he ſtill be read, could they conceive how Betterton played him! Then might they know the one was born alone to ſpeak, what the other only knew to write! Pity it is that the momentary beauties, flowing from an harmonious elocution, cannot, like thoſe of poetry, be their own record!—that the animated graces of the player can live no longer than the inſtant breath and motion that preſent them, or at beſt can but faintly glimmer through the memory or imperfect atteſtation of a few ſurviving ſpectators! He that feels not himſelf the paſſion and part he acts, will talk to a ſleeping audience. But this was never the fault of Betterton. A farther excellence in him was, that he could vary his ſpirit to the different characters he acted. Thoſe wild impatient ſtarts, that fierce and flaſhing fire which he threw into Hotſpur, never came from the unruffled temper of his Brutus. When the Betterton Brutus was provoked in his diſpute with Caſſius, his ſpirits flew out of his eyes; his ſteady looks alone ſupplied that terror which he diſdained an intemperance in his voice ſhould riſe to. Thus, with a ſettled dignity of contempt, like an unheeding rock, he repelled upon himſelf the foam of Caſſius; not but in ſome part of this ſcene, where he reproaches Caſſius, his temper is not under this ſuppreſſion, but opens into that warmth which becomes a man of virtue; yet this is that haſty ſpark of anger, which Brutus himſelf endeavours to excuſe. But with whatever ſtrength of nature we ſee the poet ſhew at once the philoſopher and the hero, yet the image of the actor's excellence will be ſtill imperfect, unleſs language could put colours in our words with which to paint the voice. The moſt that a Vandyck can arrive at is, to make his portraits of great perſons ſeem to think; a Shakeſpeare goes farther yet, and tells you what his pictures thought; a Betterton ſteps beyond them both, and calls them from the grave to breathe, and be themſelves again in feature, ſpeech, and motion, at once united; and gratifies at once the eye, the ear, and the underſtanding. From theſe various excellencies, Betterton had ſo full a poſſeſſion of the eſteem and regard of his auditors, that, upon his entrance into every ſcene, he ſeemed to ſeize upon the eyes and ears of the giddy and inadvertent; ſo that to have talked or looked another way, would have been thought inſenſibility or ignorance."

Endowed with ſuch excellencies, it is no wonder that Betterton attracted the notice of his ſovereign, the protection of the nobility, and the general reſpect of all ranks of people. The patentees however, as there was now only one theatre, began to conſider it as an inſtrument of accumulating wealth to themſelves by the labours of others; and this had ſuch an influence on their conduct, that the actors had many hardſhips impoſed upon them, and were oppreſſed in the moſt tyrannical manner. Betterton endeavoured to convince the managers of the injuſtice and abſurdity of ſuch a behaviour; which language not pleaſing them, they began to give away ſome of his capital parts to young actors, ſuppoſing this would abate his influence. This policy hurt the patentees, and proved of ſervice to Betterton; for the public reſented having plays ill acted, when they knew they might be acted better. The beſt players attached themſelves wholly to Betterton, urging him to turn his thoughts on ſome method of procuring himſelf and them juſtice. Having a general acquaintance with people of faſhion, he repreſented the affair in ſuch a manner, that at length, by the interceſſion of the earl of Dorſet, he procured a patent for building a new play-houſe in Lincoln's-inn-fields, which he did by ſubſcription. The new theatre was opened in 1695. Mr. Congreve accepted a ſhare with this company, and the firſt play they acted was his comedy of Love for Love. The king honoured it with his preſence; when Betterton ſpoke a prologue, and Mrs. Bracegirdle an epilogue, on the occaſion. But, notwithſtanding all the advantages this company enjoyed, and the favourable reception they at firſt met with, they were unable to keep up their run of ſucceſs above two or three ſeaſons. Vanbrugh and Cibber, who wrote for the other houſe, were expeditious in their productions; and the frequency of new pieces gave ſuch a turn in their favour, that Betterton's company, with all their merit, muſt have been undone, had not the Mourning Bride and the Way of the World come to their relief, and ſaved them at the laſt extremity. In a few years, however, it appearing that they could not maintain their independence without ſome new ſupport from their friends, the patrons of Betterton opened a ſubſcription for building a theatre in the Haymarket, which was finiſhed in 1706. Betterton being grown old, and his health much impaired by conſtant application, declined the management of this houſe, reſigning it entirely to Sir John Vanbrugh and Mr. Congreve; but, from the decay of Betterton, many of the old players dying, and other accidents, a re-union of the companies ſeemed neceſſary, and accordingly took place ſoon after.

When Betterton had reached ſeventy, his infirmities increaſed to a great degree, and his fits of the gout were extremely ſevere. His circumſtances alſo grew daily worſe, yet he kept up a remarkable ſerenity of mind, and acted when his health would permit. The public, remembering the pleaſure he had given them, would not allow ſo deſerving a man, after fifty years ſervice, to withdraw without ſome marks of their bounty. In the ſpring of 1709, a benefit, which was then a very uncommon favour, was granted to him, and the play of Love for Love was acted for this purpoſe. He performed Valentine; Mrs. Bracegirdle and Mrs. Barry, though they had quitted the ſtage, appeared on this occaſion; the former in the character of Angelica, and Mrs. Barry in that of Frail. After the play was over, theſe two actreſſes appeared leading on Betterton; and Mrs. Barry ſpoke an epilogue, written by Mr. Rowe. Betterton got by this benefit 500l. and a promiſe was given him, that the favour ſhould be annually repeated as long as he lived. In the ſucceeding winter, he performed the part of Hamlet with great vivacity. This activity kept off the gout longer than uſual, but the fit returned upon him in the ſpring with greater violence, and it was the more unlucky, as this was the time of his benefit. The play he fixed upon was, the Maid's Tragedy, in which he acted the part of Melanthus; and notice was given thereof by his friend the Tatler. But the fit intervening, that he might not diſappoint the town, he was obliged to ſubmit to external applications, to reduce the ſwelling of his feet, which enabled him to appear on the ſtage, though he was obliged to uſe a ſlipper. He was obſerved that day to have a more than an ordinary ſpirit, and met with ſuitable applauſe. Indeed, upon this occaſion, the curioſity of the public was ſo much excited, that many of the audience got into the playhouſe at nine o'clock in the morning, and carried with them proviſions for the day. But the unhappy conſequence of tampering with his diſtemper was, that the gout flew into his head, and killed him. He died April 28, 1710, and was interred in Weſtminſter-abbey. Sir Richard Steele attended the ceremony, and two days after publiſhed a paper in the Tatler to his memory. Mr. Booth, who knew him only in his decline, uſed to ſay, that he never ſaw him, off or on the ſtage, without learning ſomething from him; and frequently obſerved, that Betterton was no actor; that he put on his part with his clothes, and was the very man he undertook to be till the play was over, and nothing more. So exact was he in following nature, that the look of ſurpriſe he aſſumed in the character of Hamlet aſtoniſhed Booth (when he firſt perſonated the ghoſt) to ſuch a degree, that he was unable to proceed in his part for ſome moments. As an author, Mr. Betterton had a conſiderable degree of merit. His dramatic works are, 1. Amorous Widow, a comedy. 2. Diocleſian, a dramatic opera. 3. Maſque in the opera of the Propheteſs. 4. Revenge, a comedy. 5. Unjuſt Judge, a tragedy. 6. Woman made a Juſtice, a comedy.

BET'TINGEN, a town of Germany, in the circle of Weſtphalia, and county of Blankenheim: three miles N. of Geroldſtein.

BET'TON, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diſtrict of Rennes: one league and a half north of Rennes.

BET'TOR, ſ. One that lays bets or wagers.

BET'TY, [*beatus*, Lat. bleſſed.] A woman's name.

BETTY, ſ. [probably a cant word, ſignifying an inſtrument which does what is too often done by a maid within.] An inſtrument to break open doors.—Record the ſtratagems, the arduous exploits, and the nocturnal ſcalades, of needy heroes, deſcribing the powerful *betty*, or the artful picklock. *Arbuthnot.*

BET'TYAR, a town of Hindoſtan, in the country of Bahar: eighty miles north-north-weſt of Patna, and 124 north-eaſt of Benares.

BE'TULA, ſ. [from *bitumen*, according to ſome; from *batuere*, i. e. *cædere*, q. *batula*, according to others.] BIRCH and ALDER. In botany, a genus of the claſs monoecia, order tetrandria, natural order amentaceæ. The generic characters are—I. Male flowers in a cylindric ament. Calyx: ament imbricate on every ſide, looſe, cylindric; conſiſting of three-flowered ſcales, in each of which are two very minute ſcales, placed at the ſides; three equal floſcules, fixed to the diſk of each ſcale of the calyx; perianthium in each one-leafed, ſmall, entire, three or four parted; diviſions ovate, obtuſe. Corolla: none. Stamina: filaments to each four (or three or two) very ſmall; antheræ twin. II. Female flowers in an ament of the ſame plant. Calyx: ament cylindric or roundiſh, imbricate; with two-flowered ſcales. Corolla: none. Piſtillum: germ proper, ovate, compreſſed, very ſmall, two-ſeeded; ſtyles two, ſetaceous; ſtigmas ſimple. Pericarpium: none. Ament under each ſcale cheriſhing the ſeeds of two florets. Seeds: ſolitary, ovate.—*Eſſential Character.* Male. Calyx, one-leafed, three-cleft, three-flowered. Corolla, four-parted. Female. Calyx, one-leafed, ſubtrifid, two-flowered. Seed, with a winged membrane on each ſide.

Species. 1. Betula alba, or common birch-tree: leaves ovate, acuminate, ſerrate. The common birch-tree is known at firſt ſight, by the ſilvery colour of its bark, or rather epidermis, or outer thin covering to the bark; the ſmallneſs of the leaves in compariſon with other timber trees; and the lightneſs and airineſs of the whole appearance. It is of a middling or rather inferior ſize among other foreſt trees. Branches alternate, ſubdivided, very pliant and flexible, covered with a reddiſh brown or ruſſet ſmooth bark, generally dotted with white. Leaves alternate, bright green, ſmooth, ſhining beneath, with the veins croſſing like the meſhes of a net. Native of Europe, from Lapland to the ſubalpine parts of Italy; and of Aſia, chiefly in mountainous ſituations; flowering with us in April and May.

There is a remarkable variety mentioned in the ſupplement of the younger Linnæus, to be found in Dalecarlia; deſcribed to have leaves almoſt palmate, with the ſegments toothed. Other varieties, of a trifling nature, being chiefly ſlight differences in the ſhape of the leaves, are given by Linnæus, in his Flora Suecica, from Linder. The moſt common names of the birch-tree are, in Latin, *betula* or *betulla*; in German, *birke*; in Dutch, *berk*; in Daniſh and Scotch, *birk*; in Swediſh, *biörk* or *börk*; in French, *bouleau*; in Italian, *betulla, maio,* or *maiella*; in Spaniſh, *el abedul, la betulla*; in Portugueſe, *betula, betulla*; in Ruſſian, *bereſa*; in Poliſh, *brzoza*.

The wood of our birch is very white; women's ſhoe-heels and pattens, and packing-caſes, are made of it. It is planted along with haſel, to make charcoal for forges. In the northern parts of Lancaſhire they make a great quantity of beſoms with the twigs for exportation. The bark is of great uſe in dying wool yellow, and particularly in fixing fugacious colours. For this purpoſe it is beſt to uſe it dry, and to diſbark trees of eighteen or twenty years growth, at the time when the ſap is flowing. The trees ſhould ſtand, and be cut down the following winter.* The black American birch may be applied equally well to the ſame purpoſe. The highlanders of Scotland uſe the bark for tanning leather, and for making ropes; and ſometimes they burn the outer rind inſtead of candles. With the fragments dexterouſly braided, the Laplanders make themſelves ſhoes and baſkets; they uſe large thick pieces ſet out, with a hole in the middle to fit the neck, for a ſurtout to keep off the rain. The Ruſſians, Poles, and Norwegians, cover their houſes with it, laying turf three or four inches thick over. In Kamtſchatka they make hats and drinking-cups of it. The wood was formerly uſed by the Scotch highlanders for their arrows; but now, by the wheelwright, and for moſt ruſtic implements; by the turner, for trenchers, bowls, ladles, &c. and when of a proper ſize it will make tolerable gates, rails, &c. In France it is generally uſed for wooden ſhoes. It affords good fuel, ſome of the beſt charcoal; and the ſoot is a good lampblack for printer's ink. The ſmall branches ſerve the highlanders for hurdles, and ſide fences to their houſes. Moxa is made of the yellow fungous excreſcences of the wood, which ſometimes ſwell out from the fiſſures. The leaves afford good fodder to horſes, kine, ſheep, and goats. The ſeeds are the favourite food of the ſiſkin or aberdevine; and this tree furniſhes food to a variety of inſects. The vernal ſap of the birch-tree is well known to have a ſaccharine quality, and to make a wholeſome diuretic wine. In the beginning of March, while the ſap is riſing, and before the leaves ſhoot out, bore holes in the bodies of the larger trees, and put foſſets therein made of elder-ſticks with the pith taken out, ſetting veſſels under to receive the liquor. If the tree be large, you may tap it in four or five places at a time; and thus from ſeveral trees you may draw ſeveral gallons of juice in a day. If you do not get enough in one day, bottle up cloſe what you have, till you get ſufficient for your purpoſe, but the ſooner it is boiled the better. Boil the ſap as long as any ſcum riſes, ſkimming it all the time. To every gallon of liquor put four pounds of ſugar, and boil it afterwards half an hour, ſkimming it well; then put it into an open tub to cool, and when cold tun it into the caſk; when it has done working, bung it up cloſe, and keep it three months; then either bottle it off, or draw it out of the caſk when it is a year old.

"The birch," ſays our ancient Gerard, "ſerveth well to the decking up of houſes and banquetting-rooms, and for beautifying of ſtreets in the croſſe or gangweek, and ſuch like." If this tree ſerves ſuch purpoſes no longer, it deſerves however to be planted in parks and ornamental woods, to increaſe the variety; and its fragrant ſmell after rain juſtly entitles it to a place in the wilderneſs. The ſtem being ſtraight, the bark ſmooth and white, and the foliage neat, the birch has a pictureſque appearance when properly placed in ornamental plantations; either in the openings here and there, to ſhew the foliage and hanging down of the twigs, or within to diſplay its ſilvery bark through the gloom. But from what has been ſaid, the birch, though in the loweſt eſteem as a timber-tree, may yet deſerve to be cultivated, not merely as an ornament, but for its various uſes; eſpecially ſince it will grow to advantage upon barren land, where better trees will not thrive: it will flouriſh in moiſt ſpringy land, or in dry gravel and ſand, where there is little ſurface: upon ground which produced nothing but moſs, theſe trees have ſucceeded ſo well as to be fit to cut in ten years after planting, when they have been ſold for near ten pounds the acre ſtanding, and the after-produce has been conſiderably increaſed; and, as the woods near London have been grubbed up, the value of theſe plantations has advanced in proportion: therefore thoſe perſons who are poſſeſſed of ſuch poor land cannot employ it better than by planting it with theſe trees, eſpecially as the expence of doing it is not great.

2. Betula nigra, or black Virginia birch-tree: leaves rhomb-ovate, acute, doubly ſerrate, pubeſcent underneath, entire at the baſe; ſcales of the ſtrobiles villoſe, ſegments linear, equal. The black Virginia birch has the larger ſerratures of the leaves deeper and more remote, and beſides theſe it has very fine, ſmall, crowded, ones; the baſe from an obtuſe angle is quite entire; the leaves alſo are broader, and grow on longer petioles. It arrives at a much greater ſize, for it grows upwards of ſixty feet in height, and is equally hardy with the European white birch. It has been hitherto propagated chiefly for ornamental plantations; but it is to be hoped that it will be admitted alſo among our foreſt trees. There are ſeveral varieties of this ſpecies, as, 1. Broad-leaved Virginian birch. 2. Poplar-leaved Virginian birch. 3. Paper birch. 4. Brown birch, &c.

3. Betula lenta, or Canada birch: leaves cordate, oblong, acuminate, ſerrate. The leaves of the Canada birch are ſmooth, very finely and ſharply ſerrate. The female catkins are ovate, ſeſſile, with acuminate, entire, ſcales. It grows ſixty feet and more in height. The liquor flowing from its wounds is uſed by the inhabitants of Kamtſchatka without previous fermentation; with the wood they build ſledges and canoes; and they convert the bark into food by ſtripping it off when green, and cutting it into long narrow pieces, like vermicelli, drying it, and ſtewing it with their caviar. Of this there are ſeveral varieties.

4. Betula nana, or ſmooth dwarf birch: leaves orbiculate, crenate. The European dwarf birch is an upright ſhrub, ſeldom above two or three feet high. Trunk hard and ſtiff, with a roughiſh bark like that of the elm, of a ruſſet or blackiſh purple colour. Branches ſlender, ſpreading, ſtraight, ſcattered, tapering, woolly, ſomewhat gummy at the ends. Leaves commonly three from each bud, but frequently ſingle and alternate, rather more in breadth than length, having from ten to fourteen notches about the edge, entire at the baſe, ſmooth, gloſſy, veined on both ſides. Native of the northern parts of Europe; flowering in May. Miller ſays, it is preſerved in ſome curious gardens for the ſake of variety, but it is of no uſe here. It is however of ſignal uſe in the œconomy of the Laplanders. The branches furniſh them with their bed and their chief fuel; and the ſeeds are the food of the ptarmigan, which makes a conſiderable part of their ſuſtenance. The moxa

alſo is prepared from it, which they conſider as an efficacious remedy in all painful diſeaſes. The leaves, according to Linnæus, dye a better yellow than the common birch.

5. Betula pumila, or American or hairy dwarf birch: leaves obovate, crenate. This reſembles the foregoing, but ſeems diſtinct in having leaves not orbiculate but obovate, and more deeply notched. Native of North America.

6. Betula alnus, or common alder: peduncles branched; leaves roundiſh-wedge-form, very obtuſe, glutinous; axils of the veins villoſe underneath. The common alder appears generally as a ſhrub; it will however grow to a conſiderable tree, thirty-five or forty feet in height. The bark is blackiſh, in old trees full of clefts. The wood is red and brittle. The leaves are of a dark green colour, and a roundiſh figure, reſembling thoſe of the haſel, crenate, ſmooth, in the common ſort viſcid to the touch; the nerves on the under ſide have ſpongy balls at the angles of their ramifications, as in the leaves of the lime-tree. Many botaniſts, and among others Linnæus himſelf, have ſeparated the alder from the birch; but Linnæus, in his later works, has joined them in the ſame genus; convinced, as he ſays, by the ſecond and third ſpecies, that nature has placed no limits between them. Gærtner however keeps them diſtinct, and ſays that they differ not only in the fruit, but in the flower. Native of Europe from Lapland to Gibraltar, and of Aſia from the White Sea to mount Caucaſus, in wet and boggy grounds, and on the banks of rivers; flowering with us in March and April. Mr. Miller, probably intending to remove the article *alnus* to that of *betula*, has entirely omitted the former in the eighth folio edition of his dictionary. In the ſeventh edition he makes three ſpecies of the alder. There is alſo a long-leaved alder from America, which grows to thirty feet in height, and merits a place in all plantations. The branches are ſlender, ſmooth, numerous, and dark brown or purple. The leaves are long, and free from the clammineſs of the common ſort; they ſometimes continue on the tree even in December, and it has then the appearance of an evergreen. The moſt common names of the alder are, in Latin, *alnus*; in German, *erle, erlenbaum*, or *eller*; in Dutch, *els, elzeboom*; in Daniſh, *ell, elle, elletræe, eln*; in Swediſh, *al, ahl*; in Engliſh, *alder, aller, oller, owler*; in Scotch, *eller*; in Italian, *ontano, alno*; in Spaniſh, *aliſo, alamo negro, negrillo*; in Portugueſe, *alemo*; in Ruſſian, *olcha*; in Poliſh, *olſza*.

The wood of the alder is valuable for piles, pipes, pumps, ſluices, and in general for all works intended to be conſtantly under water. It is ſaid to have been uſed under the Rialto at Venice; and we are told that the moraſſes about Ravenna were piled with it, in order to lay the foundations for building upon. In Flanders and Holland it is raiſed in abundance for this purpoſe. It ſerves alſo many domeſtic and rural uſes, as for cart-wheels, ſpinning-wheels, milk-veſſels, bowls, ſpoons, ſmall trays, trenchers, and other turnery ware, troughs, handles of tools, clogs, pattens, wooden heels. The roots and knots furniſh a beautiful veined wood for cabinets. The Scotch highlanders often make chairs of it, which are very handſome, and the colour of mahogany. The wood which has lain in bogs is black like ebony. It is very generally planted for coppice wood, to be cut down every ninth or tenth year for poles. And the branches make good charcoal. The bark is uſed by dyers, tanners, and leather-dreſſers; alſo by fiſhermen for their nets. Both this and the young ſhoots dye yellow, and with a little copperas a yellowiſh grey, very uſeful in the demi-tints and ſhadows of fleſh in tapeſtry. The ſhoots cut in March will dye a cinnamon colour; and a fine tawny, if they be dried and powdered. The freſh wood yields a dye the colour of rappee ſnuff. The catkins dye green. The bark is uſed as a baſis for blacks; an ounce of it dried and powdered, boiled in three quarters of a pint of water, with an equal quantity of logwood, with a ſolution of copper, tin, and biſmuth, ſix grains of each, and two drops of ſolution of iron vitriol, will dye a ſtrong deep boue-de-Paris. The leaves have been ſometimes employed in tanning leather. The Laplanders chew the bark, and dye their leathern garments red with their ſaliva. The whole tree is very aſtringent. The alder makes good hedges by the ſides of ſtreams and ditches, and in all wet moraſſy ſoils, and ſerves to keep up the banks: but, if it be planted in a low meadow, it is ſaid that the ground ſurrounding it will become boggy; whereas, if aſh be planted, the roots of which penetrate a great way, and run near the ſurface, the ground will become firm and dry. The ſhade of alder ſeems to be no material impediment to the growth of graſs. The boughs cut in ſummer, ſpread over the land, and, left during the winter to rot, are found to anſwer as a manure, clearing the ground in March of the undecayed parts, and then ploughing it. The freſh-gathered leaves are covered with a glutinous liquor, in which fleas are ſaid to entangle themſelves, as birds do in birdlime. Linnæus ſays, that horſes, cows, ſheep, and goats, eat it; but that ſwine refuſe it. The tongues of horſes feeding upon it are turned black; and it is ſuppoſed by ſome perſons not to be wholeſome for them.

7. Betula incana, or hoary alder: peduncles branched; leaves roundiſh, elliptic, acute, pubeſcent underneath; axils of the veins naked; ſtipules lanceolate. The hoary or ſilver-leaved alder is totally diſtinct from the common ſort, both in the ſtructure of its parts, and its œconomical uſes. It never attains the ſize of that, and is commonly ſhrubby; the trunk is ſcarcely thicker than the human arm; the wood is white, and of a cloſer texture. Branches and twigs even, teſtaceous, hoary, diverging at half a right angle. Leaves not round, but ovate, drawn out at the end. Native of the alpine and ſubalpine parts of Switzerland, Dauphiné, in eaſtern Siberia, in the iſlands beyond Kamtſchatka, &c. It was introduced here in 1780, by Mr. John Buſh.

8. Betula populifolia, or poplar-leaved birch: leaves deltoid, drawn out to a long point, unequally ſerrate, very ſmooth; the ſcales of the ſtrobiles having roundiſh ſide lobes; petioles ſmooth. 9. Betula papyracea, or paper birch: leaves ovate, acuminate, doubly ſerrate; veins hirſute underneath. 10. Betula excelſa, or tall birch: leaves ovate, acute, ſerrate; ſcales of the ſtrobiles having the ſide lobes rounded; petioles pubeſcent, ſhorter than the peduncle. Natives of North America.

11. Betula oblongata, or Turkey alder: peduncles branched; leaves oval, obtuſiſh, glutinous; the axils of the veins naked underneath. The leaves are longer, narrower, and not ſo glutinous as the common ſort; they are alſo not ſo rough, and are of a thinner conſiſtence. It is very common in Auſtria and Hungary.

12. Betula ſerrulata, or notch-leaved alder: peduncles branched; leaves obovate, acute; veins and their axils villoſe underneath; ſtipules oval, obtuſe. Native of Pennſylvania.

13. Betula criſpa, or curled-leaved alder: peduncles branched; leaves ovate, acute, ſomewhat waved; veins hairy underneath; axils naked; ſtipules roundiſh, ovate. Native of Newfoundland and Hudſon's Bay.

14. Betula daurica: leaves ovate, acuminate, ſerrate, hairy on the nerve. This ſpecies, when young, is ſcarcely to be diſtinguiſhed from our common birch, but by the leaves. It does not grow ſo tall, and the trunk does not exceed a foot in diameter. The leaves are harder, and commonly ſmaller. The wood is uſed for making charcoal. Native of Dauria.

15. Betula fruticoſa: leaves rhomboid-ovate, equally ſerrate, ſmooth. This is always ſhrubby, riſing with ſeveral ſtems from the ſame root, in boggy places not an inch thick, nor higher than a man; but on mountains it attains the thickneſs of the human arm, and grows to a much loftier ſtature; it is however much branched from top to bottom, and of a very different habit from the common birch. It is found abundantly in marſhes and on rocky mountains, and in the cold ſubalpine regions of eaſtern Siberia, eſpecially towards the lake Baikal.

Propagation and Culture. The beſt method to cultivate the birch-tree, is to furniſh yourſelf with young plants from the woods where they naturally grow, and are generally found there in great plenty; but, in places where there are no young plants to be procured near, they may be raiſed from ſeeds, which ſhould be gathered in the autumn, as ſoon as the ſcales under which they are lodged begin to open, otherwiſe they will ſoon fall out and be loſt: the ſeeds, being ſmall, ſhould not be buried deep in the ground; a quarter of an inch is ſufficient. Mr. Miller recommends autumn as the beſt ſeaſon for ſowing them; but Mr. Boutcher directs, that, having ſpread the ſeeds thin on a loft floor till dry, they ſhould be mixed with looſe ſand, and kept in an airy place till the beginning of March; when they ſhould be ſown on freſh light land, trenched or dug the preceding autumn, made very looſe, raked fine, and divided into beds three feet and a half wide. No earth ſhould be thrown over them, but they ſhould be clapped in with the back of a ſpade. If the weather be dry and froſty, a little peaſe-haulm may be thrown over the beds for three or four weeks, till the ſeeds begin to vegetate. Then, the ground being kept clean, three or four gentle waterings may be given at noon in April, which may be repeated to the middle of June in mild evenings. The following March they may be removed into the nurſery, in rows two feet and a half diſtant, and ten or twelve inches aſunder, to ſtand there two years, or three, if they have made little progreſs. In which caſe, after the ſecond year's growth, cut ſuch as are leaſt thriving or crooked cloſe to the ground in March. The ground where they are to be planted will require no preparation; all that is neceſſary to be done, is to looſen it with a ſpade or mattock, in the places where the plants are to ſtand, making holes to receive their roots, covering them again when the plants are placed, and cloſing the earth hard to the roots. If the plants are young, and have not much top, they will require no pruning; but, where they have buſhy heads, they ſhould be ſhortened, to prevent their being ſhaken and diſplaced by the wind. When the plants have taken root, they will require no other care, but to cut down the great weeds which would over-hang the plants, which may be done with a ſickle, being careful not to cut or injure the young trees. This need not be repeated oftener than two or three times in a ſummer the two firſt years, after which time the plants will be ſtrong enough to keep down the weeds, or at leaſt be out of danger from them. If the plants take kindly to the ground, they will be fit to cut in about ten years; and afterwards they may be cut every ſeventh or eighth year, if they are deſigned for the broom-makers only; but, where they are intended for hoops, they ſhould not be cut oftener than every twelfth year. The expence of making theſe plantations, in places where the young plants can be eaſily procured, will not exceed forty ſhillings per acre, and the after-expence of cleaning about twenty ſhillings a-year more; ſo that the whole will not be more than three pounds, and, if the land ſo planted be of little value, the proprietor cannot make better uſe of his money; for, when the wood is cut, it will repay the expence with intereſt, and a perpetual ſtock upon the ground. The broom-makers are conſtant cuſtomers for birch, in all places within twenty miles of London, or where it is near water-carriage; in other parts the hoop-benders are the purchaſers; but the larger trees are often bought by the turners, and the wood is uſed for making ox-yokes, and other implements of huſbandry. The American ſorts may be propagated by ſeeds in the ſame manner as the firſt, and are equally hardy. As theſe grow more vigorouſly than the common ſort, and thrive on the moſt barren ground, they may be cultivated to great advantage in England. The varieties of the different ſpecies may be continued by layers. Cuttings alſo, ſet in a moiſt ſhady border the beginning of October, will frequently grow; but this not being a ſure method, and the other an eaſy one, it ſcarcely deſerves to be put in practice.

The alder, delighting in a very moiſt ſoil, where few other trees will thrive, is a great improvement to ſuch lands. It is propagated by layers, cuttings, or truncheons, about three feet in length. The beſt time for planting truncheons is in February or the beginning of March; they ſhould be ſharpened at one end, and the ground muſt be looſened with an iron crow before they are thruſt into it, that the bark may not be torn off. They muſt be planted at leaſt two feet deep, to prevent their being blown out of the ground by ſtrong winds, after they have made their ſhoots. The plantations ſhould be cleared at firſt of tall weeds; but, when the trees have made good heads, they will require no farther care. If you raiſe them by layers, this operation muſt be performed in October, and by the October following they will have taken root ſufficiently to be tranſplanted. They ſhould be ſet at leaſt a foot and half deep in the ground; and their tops muſt be cut off to about nine inches above the ſurface, which will occaſion them to ſhoot out many branches. In other countries the alder is raiſed from ſeeds, but we do not know that it is practiſed in England. The diſtance theſe trees ſhould be placed, if deſigned for a coppice, is ſix feet ſquare; or they may be planted at firſt a yard ſquare, and at ſeven years end, when they are felled for poles, every other ſtool may be taken away; and, if the ſmall lateral ſhoots be taken off in the ſpring, it will very much ſtrengthen the upright poles, provided a few ſmall ſhoots be left at certain diſtances upon the body to detain the ſap, for the increaſe of its bulk. Theſe trees will alſo thrive exceedingly on the ſides of brooks; and may be cut for poles every fifth or ſixth year. They may alſo be planted for hedges, in moiſt ground, where they thrive very faſt, and may be trained into very thick cloſe hedges, to the height of twenty feet and upwards. They may alſo be uſed for ſecuring the banks of rivers, by planting truncheons very cloſe, or croſſwiſe. The leaves being large, and of a deep green, have a good effect, and the trees make a much better figure than moſt other aquatic trees; ſo that, where the beauty of ſuch plantations is conſidered, theſe ſhould be preferred to other trees uſually planted in ſwampy grounds.

The hoary alder, growing naturally in dry ſandy ſoils, may perhaps be cultivated with the birch, where land is of little value, as an underwood, and may be propagated either by layers or cuttings, as well as by ſeeds, where they can be obtained.

BETULA AMERICANA. See BURSERA.

GENERAL INDEX.

ARABIA.

ABDALLA Ebn Zobeir, eſcapes from Yezid, and raiſes an army, 14; aſpires to the khalifate, 15; his imprudence, 16; taken priſoner, and releaſed, ibid. his heroic death, 18.

Abdalmalec, khalif of the Moſlem empire, 16; marches againſt Muſab, 17; becomes ſole maſter of the empire, 18; his death, ibid.

Abu Becr, elected khalif on the death of Mahomet, 7; troubles attending his acceſſion, ibid. marches againſt the Greek emperor, 8; his ſucceſſes and death, ibid.

Abu Obeidah made chief commander in Syria by Omar, 8; attacks Aleppo, 9; inveſts the citadel, ibid. takes the place at laſt by an extraordinary manœuvre, 10; takes Antioch, ibid. dies of the plague, 11.

Africa Propria taken by the Arabs, 18.

Aleppo attacked by the Arabs, 9; taken by ſtratagem, 10.

Al Hejaj, a general under the khalif Abdalmalec, 17; made governor of Medina, &c. 18; his death and character, 19.

Ali, ſon-in-law to Mahomet, choſen khalif after the death of Othman, 12; party formed againſt him by Ayeſha, one of Mahomet's widows, whom he defeats and takes priſoner, 13; marches againſt Moawiyah into Syria, ibid. depoſed by arbitration, ibid. defeats the Kharejites, and is himſelf ſoon after murdered, 14.

Al Manſur, khalif, removes the ſeat of the Moſlem empire to Bagdat, 21.

Amru Ebn al As, ſent to reduce ſome places in Paleſtine, 10; takes Cæſarea, 11; undertakes an expedition againſt Egypt, and reduces Tarma, Meſr, Alexandria, &c. ibid. joins in a conſpiracy againſt Ali, 13.

Arabia Deſerta, boundaries and extent, 1.

Arabia Felix, boundaries and extent, 1; uncertain when firſt peopled, 2.

Arabia Petræa, ancient boundaries, 1.

Ayeſha, Mahomet's widow; forms a party againſt Othman, whom ſhe cauſes to be murdered, 12; cauſes more diſturbances on the acceſſion of Ali, ibid. takes the field, and reduces Baſra, 13; taken priſoner, ibid. her death, 14.

Azarakites, a ſect of Mahometans, 17.

Boundaries and extent of Arabia, 1; preſent boundaries, 25.

Deſert of Sinai deſcribed, 25.

Diviſion of the Arabs into two claſſes, 2.

Etymology of the word Arabia, 1.

France, incurſions into by the Arabs, 19.

Ghaſſan, kingdom of, 3.

Hegira, Mahomer's flight, the era from which the Mahometans compute their time, 4, 5.

Hejaz, kingdom of, 3.

Hira, kingdom of, its riſe and fall, 3, 7.

Jeruſalem taken by the Arabs. 9.

Judda or Jodda, a place of great trade in the Red Sea, 26.

Kahtan, or Joktan, the firſt crowned king of Yaman, 2.

Khaled, made general by Abu Becr, 7; puts an end to the kingdom of Hira, ibid. diſplaced by Omar, and his behaviour thereupon, 8; preferred by Abu Obeidah on his gaining the victory of Yarmouk, ibid. various other ſucceſſes, 10.

Mahomet, his birth and family, 3; avows his deſign of introducing a new religion, 4; fruitleſs plots to deſtroy him, 4, 6; propagates his faith hy the ſword, 5; takes poſſeſſion of Mecca, 6; his death, 7; principles of his religion, 24; his moſque at Mecca, and his tomb at Medina, deſcribed, 26.

Martel, Charles, ſtops the incurſions of the Arabs, and drives them out of France, 19.

Mecca, the capital of Arabia Deſerta, taken by Mahomet, 6; deſcription of it, 26.

Medina, city of, a great plague there, 41; taken by ſtorm, and pillaged, 51; deſcription of Mahomet's tomb, 26.

Merwan Ebn al Hakem, proclaimed khalif at Damaſcus, 16; his death, ibid.

Merwan Ebn Mahomet, khalf, 19; inſurrections againſt him quieted, 20; defeated and killed, ibid.

Moawiyah, proclaimed khalif in Syria on the death of Othman, 13; contrives to get Ali depoſed, ibid. becomes maſter of the Moſlem empire on the murder of Ali, 14; his death, ibid.

Mocha, the capital of Arabia Felix, 25.

Money firſt coined in Arabia, and on what occaſion, 18.

Old loſt Arabians, account of them, 2; their high antiquity, 24.

Omar, ſucceeds Abu Becr in the khalifate, 8; his viſit to Jeruſalem, 9; his diviſion of Syria, and return to Medina, ibid. great ſucceſs of his generals in various quarters, 9-11; his death, 11.

Othman, khalif after Omar, 11; murdered, 12.

Preſent Arabians, their riſe and progreſſive hiſtory, 2; their hiſtory under Mahomet, 3-7; under Mahomet's ſucceſſors in the khalifate, 7-21; remarks on their independence, 21; retroſpect of their manners, religion, &c. previous to the time of Mahomet, 23; the ſcriptures fulfilled in their preſent mode of living, 25; their government at this time, 26.

Spain, eruption into by the Arabs, 19.

Suez, the Arſinoe of the ancients, a ſhort account of it, 26.

Table of Solomon, 19.

Yaman, kingdom of, its firſt eſtabliſhment, 2; reduced by the king of Ethiopia, 3.

Yezid, ſucceeds to the khalifate, 14; his death, 15.

Youkinna, governor of Aleppo, 9; his cruelty, ibid. turns Mahometan, 10; gains Antioch for Omar, ibid. and Tripoli and Tyre, 11.

ARCHERY.

ARBALIST, or croſs-bow, its inventors uncertain, 53; in uſe among the ancients, ibid. in England and France, ibid. how formed, 53, 54; capable of being managed with more dexterity than the long-bow, 54.

Arrow, formed of reeds, cane, or wood, 51; fifteen ſorts of wood of which arrows were made in England, ibid. arrows ſo contrived as to drive out ſhot and balls, 51, 52; poiſoned arrows, 52; fiery arrows, ibid. arrows for conveying intelligence, 53; arrows for croſs-bows, 54.

Arrow-heads, originally formed of ſtones, 51; then of the horns of animals, ibid. made of braſs or copper in the time of Homer, ibid. curious cup made of arrow-heads, ibid. modes of pointing arrows at preſent, ibid. arrows pointed with iron, 54.

After and Menelaus, two ſkilful archers of antiquity, 54.

Bow, how firſt formed, 48; of Perſia, Tartary, Otaheite, Lapland, &c. 48; metallic bows, ibid. modern bows in England, ibid. Grecian bow, 49: Scythian bow, ibid. modern Tartar bow, ibid. Dacian bows, ibid. Roman how, ibid. Amazonian bow, ibid. Carducian and Ethiopian bows, ibid. different modes of drawing the bow, 50; dexterity of the emperors Domitian and Commodus in the uſe of the bow, 54; bow of Ulyſſes, 55; uſed in France under Charlemagne, 58.

Bowmen, how placed in a battle, and their principal uſes, 58,

Bow-ſtrings, originally of leather, 50; ſometimes of the ſinews of beaſts, then of cat-gut, and at preſent of hemp, ibid. proverb of "Two ſtrings to your bow," 50, 51.

Butts, or targets, different kinds of, 53.

Cretan archers, very famous, 50.

Engliſh archery, eminent formerly above all other, 48, 55, 56, &c. firſt mentioned by Speed, 53; croſs-bow-men common in the reign of Henry III. ibid. law made by Henry VIII. which made the croſs-bow decline, ibid. Echard ſuppoſes the Engliſh unacquainted with archery at the conqueſt, which however ſeems very improbable, 56; during the Saxon heptarchy, ibid. at the battle of Creſſy and Poictiers, and during the time of Edward III. 56, 57; the victory

of Agincourt owing to the Engliſh archers, 57; a faſhionable amuſement in the time of Henry VIII. which is encouraged by ſeveral acts of parliament, and even enforced from the pulpit, 57, 58; inſtitution of the Artillery Company, 58; names of the principal eſtabliſhments for the practice of archery as an amuſement in England, 59; concluding eulogy on Britiſh archery, ibid.
Henry VIII. his various laws for the encouragement of archery, 57, 58; inſtitutes the Artillery Company, 58.
Muſical notes diſcovered by the twanging of the bow-ſtring, 50.
Perſian archery, as deſcribed by Chardin, 49, 50, 55; on horſeback, deſcribed by Chardin and Tavernier, 55.
Popinjay, the mark for arbaliſters to ſhoot at, 54.
Quarrels or bolts, the names given to arrows ſhot from croſs-bows, 54.
Quiver, coryto, or corytus, 53.
Romans contemned archery, 49.
Strength and addreſs required in the management of the bow, 50; addreſs beyond ſtrength in that exerciſe, exemplified in an anecdote of Mr. Topham, a remarkably ſtrong man, ibid.
Stringing of bows, 51.
Turkiſh archery, 55.
Welch archers, two very extraordinary anecdotes, 54.
Xenophon's account of the Carducian archers, 49.

ARCHITECTURE.

ABACUS, its original intent, 65.
Alaric, king of the Goths, 78.
Amphyproſtyle, 72.
Ancient architecture, 64-78; of the Egyptians, Perſians, Aſſyrians, and Babylonians, 65; of the Chineſe and Indians, 66; of the Greeks and Romans, 67; of the Etruſcans, ibid. ſacred buildings of the ancients, 72; not always confined to the rules of Vitruvius, 74; houſes of the ancients, 76; Pliny's villa, 77.
Antis, a temple ſo called, 72.
Aquatic buildings, 122.
Arch, 85-88; pointed, ſemicircular, and horſe-ſhoe, 85; to determine the joints, 87; particular uſe of arcades, and their proportions, 105.
Architrave, 65.
Areoſtyle, mode of building, 73; by a modern contrivance is introduced into porticos and periſtyles, 105.
Aſſyrians and Babylonians ignorant of the conſtruction of arches, 65.
Aſtragals, 65.
Attics, their origin, 71.
Balluſtrades, 106; their proportions, &c. 107.
Barbarian, meaning of the word, 78.
Baſe of a column, 71.
Baſements, their proportions and ornaments, 106.
Beams and rafters, uſeful remarks on, 78.
Bridges, to conſtruct and execute, 122; their proportional dimenſions, 124; Weſtminſter-bridge in London, and Eſſex-bridge in Dublin, 125; wooden bridges, 126; London-bridge, ibid.
Capital, whence its idea firſt derived, 64.
Caryatides, ornaments ſo called, 72.
Caſtle Trodden, an ancient building in Scotland, 80.
Caſtles, built in the time of William the Conqueror, 83; architecture and general ſituation of caſtles, 93; mode of attack and defence, 94; Scottiſh caſtles, ibid. caſtle of Old Sarum, ibid.
Cathedral-church of Saliſbury, the moſt complete ſpecimen of the Norman Gothic architecture in England, 92; of St. Paul, 120, 121.
Ceilings, 108; coved, 109.
Chimneys and chimney-pieces, their ornaments, proportions, and ſituation, 107.
Churches, 91; Saliſbury cathedral, 92; St. Paul's, 120.
Civil architecture, 64.
Columns, their appearance how varied, 71; rules for diminiſhing, 71, 73, 100; Vitruvius's rules for their diſpoſition, 73; firſt invented by Hermogenes, ibid. of intercolumnations, 105.
Compoſite order, its proportions, 70; its deſtination, 99; to draw, or ſet off, 104.
Corinthian order, 69; proportions adapted to this order by the moderns, 70; its peculiar beauty, 99; to draw or project, 104.
Cornices, &c. 65.
Coventry, Walter of, an ancient Engliſh architect, 83.
Croyland abbey, 80, 81.
Denteles, 65; properly belong to the Ionic cornice, 69.
Diaſtyle mode of diſpoſing columns, 73.
Dipteral, a ſort of ancient building, 72.
Domes or cupolas not in uſe among the ancients, 88; cupola of the church of Santa Maria de Fiore, of St. Geneviève, and of Santa Sophia, ibid.
Doors, 90; difference between the Gothic doors and thoſe of the ancients, ibid. their general proportions, 107; their ornaments, 108.
Doric order, 68; its modern proportions, 69; its peculiar characters, 99; manner of projecting, or ſetting off, 104.
Drains and ſewers, 117.
Egyptian architecture, 65-67; pyramids, labyrinth, and palace, 65; proportions in building, according to Vitruvius, ibid. Egyptian column, 66; Greek architecture derived from the Egyptian, 67.
England, progreſs of architecture in, 79; introduction of Greek and Roman architecture, 82, 83.
Euſtyle manner of building, 73.
Fillets, 65.
Floors, need not be ornamented, 118.
Foundations, how to chooſe, 116; directions for working, 117.
Flutings of columns, 71; how to project flutes and fillets, 101.
Frize, 65.
Gates and piers, 116.
Gluing up the baſe, ſhaft, and capital, 99; the Ionic capital, 100.
Gothic architecture, 78; roſe on the ruin of the Roman empire, 79; obtains a footing in Britain, 79; gives place to the Greek and Roman, 82; two ſorts of Gothic architecture, 83; Warburton's account of Gothic architecture, 84; remains of the Saxon Gothic, ibid. of the Norman-Gothic, ibid. beauty of the Gothic cathedrals, 85; method of conſtruction, 93.
Goths, an account of them, 78, 79.
Greek architecture derived from the Egyptian, 67; declined after the overthrow of the Roman empire, 79; brought into uſe in England by Inigo Jones, 82.
Groins of brick and plaſter, 112.
Hermogenes, his improvements in architecture, 73.
Houſes, or private buildings, of the ancients, 76-78; of the Greeks and Romans, 76; Vitruvius's rules, 77; Pliny's villa at Laurentinum, 77, 78; private houſes in England previous to James I. 82; method of arranging at preſent, 96; hints for their improvement, 97.
Hypæthral edifices, 72.
Indian architecture, 66; pagodas deſcribed, 66, 67.
Jones, Inigo, brings Roman and Greek architecture into uſe in England, 82, 83.
Ionic order, 69; its delicacy, 99; to deſcribe the Ionic volute, 102, 104.
Manſion-houſe, directions for erecting, 118.
Military architecture, 64.
Modern or practical architecture, 94; firſt introduced by Inigo Jones and Sir Chriſtopher Wren, 95; proportions of rooms, &c. ibid. external proportion, 96.
Modillion, 65.
Monopteral round temples, 72.
Murphy, Mr. his account of arches, 86.
Niches, little uſed in ancient churches, 91; their proportions, 107, 111.
Norman-Gothic architecture, 84; pillar, 85.
Orders upon orders, 106.
Ornaments for mouldings, 70; for pedeſtals, 71; for gates, 116.
Palace of Verſailles, Sir Chriſtopher Wren's account of it, 97.
Pedeſtals, general rules reſpecting them, 71.
Pediments, their form and uſe, 106; to deſcribe, 111.
Peripteral, a ſort of ſacred edifice, 72; round temples thus called, ibid.
Perſepolis, ruins of, 65.
Perſians, ornaments ſo called, 72.
Pilaſters, how they differ from columns, 71; ſometimes employed in preference to columns, ibid.
Pillars, the Norman-Gothic, 85; deſtination of pillars in general, 97.
Plinth, its origin pointed out, 64.
Proſtyle, a ſort of temple, 72.
Pſeudodypteral, a ſort of ſacred edifice, 72, 73.
Pycnoſtyle, a mode of placing columns, 73.
Quays or harbours, how to conſtruct, 129.
Roman architecture, 67.
Roofs, their proportions, 114, 118; timbers to be uſed, 115; coverings for roofs, 116.
Rules for working the five orders, 98.
St. Paul's cathedral deſcribed, 120; its dimenſions, 121.
Saxons introduced the Gothic architecture into England, 83; remains of the Saxon-Gothic in this kingdom, 84.
Scottiſh architecture, 80.
Sens, William de, a great architect of old time, 83.
Ship-building, 64.
Situation, to be ſtudied by an architect, 96.
Sky-lights, their proportions, &c. 113, 114.
Soffits, how to deſcribe in different ſituations, 110, 111.
Somerſet-houſe, remarks on that building, 97;

97 ; Reveley's objections anſwered, 98 ; a farther deſcription, 119.
Spires, 89 ; their origin among us, 90 ; and preſent appearance, ibid.
Staircaſes, 109 ; general rules for them, 110.
Statues and vaſes, how to be placed, 97 ; proper ſize for ſtatues in niches, 107.
Syſtyle mode of placing columns, 73.
Temples of different kinds, 72 ; by whom firſt erected doubtful, 73 ; their gradual progreſs from ſimplicity to magnificence, 74 ; difference between the Greek and Roman temples, 74 ; Temple of Minerva, 74.
Termini, ornaments of a peculiar kind, 72.
Torus, its probable origin, 64.
Triglyph, 65 ; rules for drawing the triglyphs and bells, 104.
Tuſcan architecture, 67 ; Tuſcan order, its proportions, 68 ; its uſual deſtination, 99 ; to project or ſet off the Tuſcan order, 103.
Volute, Ionic, to deſcribe, 102.
Wall, Chineſe, 66 ; walls of Babylon, ibid. conſtruction of walls in general, 118.
Wincheſter cathedral, a remain of the Gothic ſtyle of architecture, 84.
Windows, 90 ; piers between them, ibid. painted, 91 ; their number and ſize, 108 ; their proportions and ornaments, ibid.

ARITHMETIC.

ADDITION, ſimple, 166 ; compound, 167 ; of vulgar-fractions, 184 ; of decimals, 186.
Arbitration of exchange, ſimple, 180 ; compound, 181.
Archimedes' ſcale and notation, 163.
Barter, 176.
Binary arithmetic, 164.
Brokerage, 173.
Circulating or repeating decimals, 188 ; reduction of, ibid ; ſubtraction, multiplication, and diviſion, 189.
Commiſſion, 173.
Cube-root, 190 ; of a vulgar-fraction, 191.
Decimals, 164, 185 ; addition, ſubtraction, and multiplication, of, 186 ; diviſion and reduction, 187 ; circulating, 188.
Diſcount, 175.
Diviſion, 169 ; compound, 170 ; of vulgar-fractions, 185 ; of decimals, 187.
Duodecimals, 164, 181.
Equation of payments, 175.
Evolution, or extracting of roots, 189-191 ; extracting the ſquare-root, 190 ; the cube-root, ibid. the roots of all powers, 191.
Exchange, 177 ; with Ireland, America, and the Weſt Indies, ibid. with Holland, Flanders, and Germany, ibid. with France, and Spain, 178 ; with Portugal, Italy, Ruſſia, Denmark, and Norway, 179 ; with Riga, Turkey, &c. 180 ; arbitration of exchange, ibid.
Fellowſhip, ſingle, 175 ; double, 176.
Harmonical arithmetic, 164.
Infinites, arithmetic of, 164.
Inſtrumental arithmetic, 164.
Inſurance, 173.
Intereſt, ſimple, 172 ; compound, 174.
Involution, or raiſing of powers, 189.
Logarithms, 164.
Loſs and Gain, 176.
Multiplication, with the Table, 168 ; various methods of performing multiplication, 168, 169 ; compound, 169 ; of vulgar-fractions, 185 ; of decimals, 186.
Notation and Numeration, with the Table, 165.
Notation, Arabic, Greek, and Roman, 163.
Origin and invention of arithmetic, 163.
Political arithmetic, 164.
Practice, 171.
Proof of the four fundamental rules, 170.
Proportion, or the Rule of Three, 170 ; compound, or the Double Rule of Three, 171.
Reduction, 170 ; of vulgar-fractions, 182 ; of decimals, 187.
Sexageſimal arithmetic, 164.
Specious arithmetic, 165.
Square-root, to extract, 189 ; ſquare-root, application of the, 190 ; of a vulgar-fraction, 190.
Stocks, purchaſes in the, 173.
Subtraction, ſimple and compound, 167 ; of vulgar-fractions, 185 ; of decimals, 187.
Tables of Money, Weights, and Meaſures, 166, 167 ; of Aliquot Parts, 171 ; of Intereſt, 173, 174, 175.
Tabular arithmetic, 165.
Tare and Tret, 172.
Tetratic arithmetic, 165.
Theoretical, practical, and other different kinds of, arithmetic, 164, 165.
Univerſal arithmetic, or algebra, 164, 561.
Vulgar-Fractions, 182-185 ; Reduction of, 182 ; Addition of, 184 ; Subtraction, Multiplication, and Diviſion, 185.

ASTROLOGY.

ANTIQUITY and divine origin, 322.
Apology for the ſcience, 316, &c.
Aſclatarius, a famous aſtronomer, 322.
Aſpects, ancient, 309 ; modern, 310 ; their influence on human affairs, 315.
Domitian's fate, and his own, foretold by Aſclatarius, 323.
Empires, their riſe and fall foretold, 313.
Fixed ſtars, how they affect the weather, 312 ; and mundane affairs, 319.
Foreknowledge evident in brutes, 322.
Free agency reconciled to aſtrology, 317.
Horoſcope, how to project, 310, 315.
Houſes of heaven explained, 310.
Influence of the planets on human affairs, 314 ; on the weather, 318.
Judicial aſtrology, its riſe and progreſs, 309.
Nativities, how to calculate, 313 ; calculation of ſome extraordinary ones, 323.
Picus Mirandula, an extraordinary inſtance of the truth of this ſcience, 323.
Piſa, Abp. of, his deſtiny foretold, 323.
Planets, their influence on the weather, 311.
Reſemblance of children to father or mother accounted for on the principles of this ſcience, 324.
Scripture arguments in favour of this ſcience, 317.
Signs of the zodiac, 310.
Sun, the moſt powerful planet, 313.
Time and Chance, two grand agents in the fortunes of men, 316.
Weather, how to foretel, 311.

ASTRONOMY.

ABERRATION of light, 420 ; in the different planets, 422 ; to calculate, 440 ; in latitude or longitude, 441 ; in declination, 442 ; in right aſcenſion, 443.
Albategnius, an Arabian aſtronomer, 423.
Angle of poſition, to calculate, 433.
Anomaliſtic year, 372.
Arabian aſtronomers, 423.
Bailly, his conjectures on the origin of aſtronomy, 327.
Bayer's Uranometria, 424.
Bouillaud's ſyſtem of circular motion, 338.
Bradley's tables of refraction, 426.
Caille, de la, an eminent French aſtronomer, 426.
Calculation and meaſurement of inacceſſible objects, 430, &c. of the right aſcenſion, &c. of heavenly bodies, 431 ; of parallax, 432 ; of refraction, 437 ; of the moon's apogee, 438.
Characters uſed for the planets, and for the days of the week, 327.
Chineſe very early cultivated aſtronomy, 327 ; manner of dividing the zodiac, ibid.
Clock, &c. to regulate by a fixed ſtar, 455.
Cometarium, 430.
Comets, their periodic times calculated by ſir Iſaac Newton, 342 ; various opinions of the ancients concerning them, 400 ; ſir Iſaac Newton explains their real phenomena, 401 ; magnitudes and tails, 402 ; Dr. Hamilton's objection to Newton's hypotheſis, 402, 403 ; their motion, 403 ; returns, 403, 404 ; heat, 405 ; to determine their orbits, 452.
Conſtellations, or aſſemblages of ſtars, 413 ; new-formed conſtellations, 414.
Copernican ſyſtem, 333 ; examined, 334 ; objections againſt it, 335 ; intended to reſtore the old Pythagorean ſyſtem, 424.
Defects of the ancient ſyſtem, 329 ; endeavours to account for the unequal velocity of the different planets, 330.
Definitions, 325.
Des Cartes reconciles the rapid motion and natural inertneſs of the planets, 339 ; his ſyſtem of vortices, 339, 340 ; remarks on his ſyſtem, 341 ; opinion of comets, 401.
Dial, univerſal, 430.
Earth, figure of, 361 ; voyages round, 362 ; motion of, 363, 367 ; magnetiſm of, 365 ; magnitude, ibid. ſubdiviſions, 366 ; gravity or denſity, 367 ; diurnal motion, ibid. annual motion, 368 ; phenomena ariſing from its diurnal motion, 369 ; from its annual motion, 370.
Eclipſes in general, 395-403 ; of the moon, 395 ; ſun, 396 ; limits and periods of ſolar and lunar eclipſes, 398 ; eclipſe of the year 1748, 399 ; eclipſes firſt obſerved and calculated by Thales the Mileſian, 422 ; of the moon, to calculate, 443 ; of the ſun, 447.
Ecliptic, obliquity of, 374 ; to calculate, 375, 453.
Egyptians by ſome ſuppoſed the inventors of aſtronomy, 327.
Equinoxes, preceſſion or retrograde motion of, 372 ; cauſes of, 373.

Eudoxus introduces geometry into aſtronomy, 422.
Fire-balls, &c. to determine their height by the quadrant, 453.
Flamſteed's ſolar tables and theory of the moon, 425; his Britiſh catalogue of ſtars, 427; his mode of determining the right aſcenſion of a fixed ſtar, 431.
Galileo confirms the Copernican ſyſtem, 336; his teleſcopes, 425.
Georgian planet, diſcovered by Dr. Herſchel, and at firſt ſuſpected by Mr. Lexel to be a comet, 391; its ſatellites, 392; their diſtance from the planet, inclination of their orbits, &c. 393.
Globes, terreſtrial and celeſtial, 430.
Graham, a celebrated watch-maker, &c. 425.
Hadley's reflecting quadrant, 425.
Halley's diſcoveries in aſtronomy, 425.
Harveſt-monn, 382.
Herſchel diſcovers a new planet, 343; his remarks on the via lactæa, and nebulous part of the heavens, 344; his ſtar-gauge, for finding the ſun's place, 345; his conjectures on the internal ſtructure of the ſidereal heavens, 346; and on their figure, 347; his application of projectile forces, 348; account of nebulous ſtars, ibid. of planetary nebulæ, 349; obſervations on the ſolar ſpots, 351; on the atmoſphere of the ſun, 353; his meaſurement of the mountains in the moon, 380; diſcovers additional ſatellites to Saturn, 389; extracts from his catalogue of fixed ſtars, 409; method of obſerving changes in the fixed ſtars, 411; his remarks on their motions, 413; obſervations on parallax, 417; his improved teleſcopes, 426; farther obſervations on the arrangement of the fixed ſtars, 427; on their comparative brightneſs, 428.
Hevelius obſerves the ſpots and phaſes of the moon, 425; his catalogue of fixed ſtars, 427.
Hipparchus's opinion on the preceſſion of the equinoxes, 342; he was the firſt who ſtudied every part of aſtronomy, 422.
Hook, Dr. his inventions, 425.
Horizontal moon, 383.
Horrox, Mr. his curious diſcoveries, 425.
Inſtruments for aſtronomical reſearches, 429.
John de Sacro Boſco, or Halifax, 423.
Jupiter, 384; his axis, orbit, and ſatellites, 385; changes in his revolution, 390.
Kepler improves and corrects the Copernican ſyſtem, 337; finiſhes the tables of Tycho Brahe, &c. 424.
Latitudes and longitudes of heavenly bodies, to calculate, 432.
Lunarium, 430.
Magnetiſm of the earth, Knight's hypotheſis, 365.
Mars, deſcription of that planet, 384.
Maſkeline, Dr. his remarks on the fixed ſtars, 413; his obſervations at St. Helena, &c. 426.
Mercury, deſcription of that planet, 356.
Meridians, to reduce one to another, 454.
Micrometer for meaſuring diſtances, 529.
Month, ſynodical and periodical, 376; to calculate, 379.
Moon, her irregularities explained by ſir Iſaac Newton, 341; a ſatellite to the earth, and ſhines with light borrowed from the ſun, 375; her diameter, motions, &c. 376; changes her orbit, ibid. her irregularities accounted for, and computed, 377; denſity, ibid. plane of her orbit, ibid. acceleration, 387; phaſes and mean motion, 379; to find her age or change, 380; ſpots, mountains, &c. ibid. volcanos, 381; atmoſphere, ibid. harveſt-moon, 382; horizontal moon, 383; conſtruction of the moon, and whether inhabited, ibid. influence on the weather and on the human body, 384; to determine the place of her apogee, 438; to calculate her eclipſes, 443; partial eclipſe, 445; total, 446.
Napier, baron, invents logarithms, 426.
Newton's ſyſtem of gravitation, 341; diſcovers the real figure of the earth, 342; calculates the weights and denſities of the planets, 343; remarks on his ſyſtem, 343; his doctrine of comets, 401.
Orrery, Rowley's grand, 430.
Paradoxes formed from the figure of the earth, 365.
Parallax explained, 415; remarks of Bradley and Herſchel, 416; examples to illuſtrate, 417; to find by calculation, 433.
Pendulum clock for ſhowing equal time, 429.
Planetarium, or ſmall orrery, 430.
Planets, 350-395.
Practical Aſtronomy, its progreſs in different parts of the world, 422; its revival in Europe, 423.
Ptolemy's ſyſtem of eccentric ſpheres, 331; confuted by Copernicus, 333; his Almageſt, 423; publiſhes a catalogue of the fixed ſtars, 426.
Purbach, a celebrated aſtronomer, 423.
Pythagorean ſyſtem, 422; reſtored by Copernicus, 424.
Quadrant, Hadley's, 426; aſtronomical, 429.
Rays of the ſun, how they act upon the earth, 354.
Refraction, 417; to calculate the refraction of the heavenly bodies, 437.
Regiomontanus, his labours in practical aſtronomy, 423.
Saturn, 386; his ring, 387; his ſatellites, 388; a ſixth and ſeventh ſatellite diſcovered by Herſchel, 382; revolution, ibid.
Scripture reconciled to the phenomena of modern aſtronomy, 456.
Seaſons, cauſes of the change of, 370.
Sector, equatoreal, 429.
Secular motions of Jupiter and Saturn, 389.
Solar and ſidereal day, 371.
Stars, fixed, 407; diſtance and magnitudes, 408, 411; double, treble, &c. 409; number, 410; new ſtars, ibid. changes in them, 411; nature and uſe, ibid. motion and other phenomena, 412; catalogues of them by various aſtronomers, 426; new arrangement by Dr. Herſchel, 427; comparative brightneſs, 428; to calculate the right aſcenſion of a fixed ſtar, 431.
Sun ſuppoſed by Herſchel to be inhabited, 349; imperfect idea the ancients had of this luminary, 350; opinions on the ſubſtance of it, 350, 351; ſpots in the Sun, 351; atmoſphere, 352, 353; opaque body, 354; figure, ibid. motion, 355; magnitude, ibid. farther particulars relative to this planet from Newton, ibid. Sun's parallax determined by the tranſits of Venus and Mercury, 360; his apparent diameter greater in winter than ſummer, 371; direction of his rays towards the earth in winter and ſummer, ibid. difference between ſolar and ſidereal time, ibid. eclipſes of, 396; total eclipſe, 397; to calculate eclipſes of, 447.
Superior planets, phenomena peculiar to them, 393.
Syſtem of concentric ſpheres, 328; of eccentric ſpheres, 330; perfected by Ptolemy, 331; of Cleanthes and the ſtoics, 331; of Hipparchus, little attended to by philoſophers, 331; of Copernicus, 333; of Purbach, 335; Tycho Brahe, 336.
Tails of comets, Newtun, Rowning, Euler, and Hamilton's, opinion concerning them, 402; opinion of Halley and others, 403.
Teleſcopes invented and applied to aſtronomy, 424; greatly improved by Huygens and Fontana. Dolland, &c. 425; particularly by Herſchel, 426; refracting and reflecting, 429.
Tellurian, invented by Adams, 430.
Thales the Mileſian, his early labours in practical aſtronomy, 422.
Tranſit inſtrument, 429.
Tycho Brahe forms a new ſyſtem of aſtronomy, 336; firſt diſcovers the true nature of comets, 401; farther accounts of him, 424; his catalogue of fixed ſtars, 426.
Venus, 356; ſpots diſcovered on this planet, 357.
Venus and Mercury, peculiar phenomena of, 357; phaſes of, 359; tranſits, 360.
Werner, John, aſtronomer at Nuremberg, 423.
William IV. landgrave of Heſſe, 424.
Woollaſton's catalogue of ſtars, 427.
Wright, Edward, an eminent aſtronomer, 424.
Writers on aſtronomy, 429.
Year, aſtral, tropical, and anomaliſtic, 372.
Zodiacal light, 355, 406.
Zodiacal ſigns explained, 415.

ATTICA.

ÆGEUS, king of Attica, 798.
Alcibiades, firſt diſtinguiſhes himſelf in the war againſt the Potideans, 514; oppoſes peace with the Lacedemonians, 518; accuſed by the Athenians, eſcapes to Argos, and joins the Spartans, 519; flees to Sardis, 522; rejoins his countrymen the Athenians, 523; enters Athens in triumph, 524; ſets ſail againſt the Athenians, 524; once more diſgraced, 524; his death, 526.
Anaxagoras ſtarves himſelf to death, 516.
Archons, their tyranny, 526; depoſed, 527.
Ariſtides, 504; baniſhed by oſtraciſm, but recalled after three years, 506; commands the Athenian forces at the battle of Platea, 508; his extraordinary integrity in the management of the public money, 510; dies poor, 511.
Athenians change their kingly government into a republic on the death of Codrus, 500; Piſiſtratus makes himſelf abſolute, 502; gain the enmity of Perſia, 504; defeat the Perſians at Marathon, 505; forced by the Perſians to deſert their city, 507; a ſecond time, 508; rebuild it, 509; jealous of the Spartans, 512; their wars with them, 503, 512; make a peace with them for thirty years, 513; take part with the Mileſians againſt the Samians, and with the Corcyrians againſt the Corinthians, 514; defeat the Potideans, Corinthians, and Macedonians, 504; engage in the Peloponneſian war, 515; ſend propoſals of peace to Sparta, which are rejected, 515; ſend ſuccours to the Egiſtians, 519; their whole army captured at Syracuſe, 522; changes in their government, 523; condemn ſix generals to death for omitting the rites of burial to the ſlain, 525; defeated at Egoſpotamos, 525; are forced to accept very hard terms of peace, 526; reign of the thirty tyrants, ibid. the decemviri, 527; re-eſtabliſh the popular government, ibid. aſſiſt the Spartans a-

gainſt the Thebans, 531; concluſion of their hiſtory from Dr. Chandler, ibid; their character, 532; taſte for the arts, 533; love of liberty, 534; religion, ibid. different claſſes of citizens, 535; government, 536; courts of juſtice, 537.
Athens deſerted by its inhabitants on the approach of Xerxes, 507; again deſerted, and burnt by Mardonius, 508; rebuilt by the Athenians, 509; infeſted with the plague, 515, 517; ariſtocracy eſtabliſhed, but ſoon diſſolved, 523; its fortifications and walls deſtroyed, 526; rebuilt at the expence of the Perſians, 531; ruined by Alaric, 522.
Battle of Marathon, 505; Thermopylæ, 507; Salamis and Platea, 508; by ſea at Mycale in Aſia Minor, 509; by ſea and land near Eurymedon, 510; at Tangara in Bœotia, 512; at Cyprus and Cilicia, 513; before Syracuſe, 521; at Abydos and Cyzicus, 523; at Epheſus, 524; near Leſbos, 525; of Egoſpotamos, 525; of Cunaxa, 538.
Braſidas, a Spartan general, killed at Amphipolis, 517.
Callicratidas, a Spartan commander, 524; killed, 525.
Cecrops, firſt king of Attica, 498.
Cecrops II. the firſt who gathered the people into towns, 498.
Cimon, obtains leave to bury the body of his father Miltiades, 505; diſtinguiſhes himſelf in the ſea fight at Salamis, 508; defeats the Perſians by ſea and land, 510; fortifies and embelliſhes the city of Athens, 511; diſperſes the Helots in Laconia, ibid. baniſhed by oſtraciſm, 512; recalled, and dies, 513.
Cleomenes, king of Sparta, reduces Athens, 503; which he is forced to abandon, 504.
Cleon, general of the Athenians, killed, 517.
Codrus, devotes himſelf to death to ſave his people, 500.
Conon ſucceeds Alcibiades as commander of the Athenian forces, 524; commands a fleet againſt the Spartans, 530.
Corcyra, maſſacre at that place, 517.
Cylon attempts to ſeize the ſovereignty of Athens, 500.
Cynegyrus, his extraordinary valour, 505.
Cyrus the Younger made governor of Sardis, 524; ſupports the Lacedemonians, ibid. his cruelty, 525; plots againſt the life of his brother Artaxerxes king of Perſia, 527; death and character, 528.
Darius king of Perſia declares war againſt the Athenians, 504; defeated at Marathon, 505; makes great preparations for another expedition, in the midſt of which he dies, 506.
Demoſthenes takes Pylus in Meſſenia, 517; arrives to aſſiſt at the ſiege of Syracuſe, 521; taken with his whole force by the Syracuſans, and put to death, 522.
Draco, ſeverity of his laws, 500; his extraordinary death, ibid.
Egyptian expedition, unfortunate for the Athenians, 512.
Greeks under Cyrus, betrayed by the Perſians, 528; retreat of ten thouſand, 529.
Gylippus ſent to the relief of Syracuſe, 520; his exploits, 521; his diſhoneſty, 526.
Hamilcar invades Sicily, 506; defeated by Gelon, 507.
Helena, rape of by Theſeus, 489.
Helots in Laconia revolt from the Lacedemonians, but diſperſed by the aſſiſtance of the Athenians, 511; freſh revolt, after which they are expelled the Peloponneſe, 512; many of them decoyed to Sparta, and maſſacred, 518.
Hippias, ſole monarch of Athens after the death of his brother, 503; depoſed, ibid. joins the Perſians againſt his own country, 504; is killed at the battle of Marathon, 505.
Hippocrates, his ſkill and diſintereſtedneſs, 515.
Lacedemonians, their wars with the Athenians, 503, 512, &c. jealous of the Athenian power, 509; are aſſiſted by them in the reduction of the Helots, 511; wars between them, 512; conclude a peace for thirty years, 513; but ſoon proclaim war, 514; ſue for peace, but refuſe the conditions, 517; their cruelty to the Helots, 518; their ſucceſs in the Peloponneſian war, 525; and cruelty to the Athenians, 527; reduced to beg aſſiſtance of them, 531.
Laconia, earthquake there, and the revolt of the Helots, 511; ravaged by Conon, 531.
Lamachus, an Athenian general, killed at the ſiege of Syracuſe, 520.
Leonidas commands at the paſs of Thermopylæ, where he is killed, 507.
Lyſander, commander of the Lacedemonian fleet, defeats the Athenians in the harbour of Epheſus, 524; and at Egoſpotamos, 525; his vanity, 526; killed in battle, 530.
Marathon, battle of, 505.
Mardonius, chief commander of the Perſian army under Xerxes, 506; continues the command after the king's return into Perſia, and makes offers of peace to the Athenians, which are rejected, 508; defeated at Platea, 509.
Megacles, his ſeverity againſt Cylon's faction, 500; three hundred of his party baniſhed, 501; his party raiſe Piſiſtratus to the ſovereignty, 502; afterwards expel all that family, 503; but are again baniſhed in their turn, 504.
Megara firſt joined to Africa, 499; ſedition there, 517.
Miltiades, 504; inveſted with the chief command of the Athenian forces againſt the Perſians, 505; his victory, the ingratitude of his countrymen, and his own death, ibid.
Mitylene beſieged and taken by the Athenians, 516.
Mneſtheus ſucceeds Theſeus as king of Attica, 500.
Nicias reduces Cythera and Thyrea to the Athenian power, 517; endeavours to promote peace, in which he is oppoſed by Alcibiades, 518; beſieges Syracuſe, 519; ſends to Athens for ſuccours, &c. 520; his cautious counſels diſregarded, 521; raiſes the ſiege of Syracuſe, 522; his whole army captured, and himſelf put to death, ibid.
Pauſanias commands the Lacedemonian troops at Platea, 508; enters into a treaty with Xerxes to betray Sparta, 509; his death, 510.
Peloponneſian war, 514, 526.
Pericles aſpires to rule in Athens, 511; his eloquence and ſhining talents, 512; makes innovations in the form of government, 512, 513; his endeavours to obtain popularity, 513; obtains the baniſhment of Thucydides, 513; adviſes the Athenians to go to war with the Spartans, 514; explains the cauſe of an eclipſe, 515; falls into diſgrace, 515; his death and character, 516.
Perſians defeated at Marathon by the Athenians under Miltiades, 505; dreadfully ſlaughtered at Thermopylæ, 507; their fleet defeated on the ſame day, ibid. defeated at Platea, and another fleet deſtroyed, 509; expelled from Aſia Minor, ibid. defeated at ſea and land by Cimon, 510; deſtroy the Athenian fleet in the Nile, 512; defeated by ſea in two battles, 513; endeavour to keep up the rivalſhip between Athens and Sparta, 522; ſupport the Lacedemonians, 524; baſe conduct towards the Greeks who followed Cyrus, 528; now aſſiſt the Athenians, 530.
Piſiſtratus becomes tyrant of Athens, 502; depoſed, but reſtored in a moſt extraordinary manner, and depoſed again, ibid. recovers the ſovereignty once more, and dies, 503.
Platea, ſiege of, 515; part of the inhabitants eſcape, 516; melancholy fate of the reſt, 517.
Republic eſtabliſhed in Attica, 500.
Socrates diſtinguiſhes himſelf againſt the Potideans, 514; marries two wives, 515; his care in the inſtruction of Alcibiades, 518; prohibited from teaching, 516; accuſed of impiety, and put to death, 530.
Salamis taken by the Megarenſians, 500; retaken by a ſtratagem, 501; again taken by the Megarenſians, ibid. ſea-fight near that place, 508.
Sigæum, city of, occaſions a war between the Athenians and Mitylenians, 500.
Solon's legiſlation, 501; his travels, and the ſtate of things at his return, 502.
Sphacteria, fate of that place, 517.
Syracuſe, remarkable ſiege of, 522.
Thaſus ſuſtains a remarkable ſiege, 511.
Themiſtocles, 504; his ambition, 505; made commander in chief of the Athenians, 506; increaſes their navy, 507, 509; defeats the Perſian fleet, 508; his propoſal for deſtroying the fleet of the allies, 509; baniſhed, 510; his reception in Perſia, and death, 511.
Thermopylæ, famous battle of that paſs, 507.
Theramenes procures the condemnation of ſix generals, 525; his own unhappy fate, 526.
Theſeus, ſon of Ægeus, 498; his exploits, and he becomes king of Attica on the death of his father, 499; his wars and death, ibid.
Thraſybulus endeavours to recover the Athenians from the power of the Lacedemonians, 527.
Thucydides ſet up as a rival to Pericles, 513; baniſhed, 513; writes the hiſtory of the Peloponneſian war, 514; his deſcription of the plague, 515; baniſhed again, 517.
Wars of the Athenians with the Mitylenians and Megarenſians, 500; with the Lacedemonians, 503, 512, &c. with the Perſians, 504, &c. with the Samians and Corinthians, 514; Peloponneſian war, 514; war of Sicily, 517.
Xenophon conducts the retreat of the ten thouſand, 529.
Xerxes ſucceeds his father Darius in the Perſian empire, and enters Greece with an immenſe army, 506; arrives at Athens, which he takes and burns, 507; his fleet defeated in the ſtrait of Salamis, 508.

END OF THE SECOND VOLUME.

DIRECTIONS for placing the COPPER-PLATES to VOL. II.

1. FRONTISPIECE.—Architecture and Aſtronomy.—to face the Title.
2. ARANEA, Plate I. The Faſciata, or Barbary Spider, to face Page 32
3. ARANEA, Plate II. The Avicularia, Tarantula, and Aculeata Spiders 34
4. ARCHERY, Plate I. View of the Arbaliſt, and Bows of different Nations 54
5. ARCHERY, Plate II. View of Arrows, and Arrow-heads 53
6. ARCHITECTURE, Plate I. Primitive Huts 65
7. ARCHITECTURE, Plate II. View of the ſquare ſculptured Columns of a Pagoda or Temple in Hindooſtan
8. ARCHITECTURE, Plate III. View of the Corner Pillars of a Temple or Choultry in Hindooſtan—Theſe two Plates to face each other between 66 & 67
9. ARCHITECTURE, Plate IV. Tuſcan and Doric Orders 68
10. ARCHITECTURE, Plate V. Ancient and Modern Ionic 69
11. ARCHITECTURE, Plate VI. Corinthian and Compoſite Orders 70
12. ARCHITECTURE, Plate VII. Pedeſtal, Baſes, and Regular Mouldings 71
13. ARCHITECTURE, Plate VIII. Elevation of the Weſtern Portico of the Parthenon, or Temple of Minerva 74
14. ARCHITECTURE, Plate IX. Eaſt View of the Parthenon, or Temple of Minerva 76
15. ARCHITECTURE, Plate X. Plan and Elevation of a Roman Villa 78
16. ARCHITECTURE, Plate XI. Deſign for a Norman Gothic Column and Entablature 85
17. ARCHITECTURE, Plate XII. Deſign for a Norman Gothic Entablature enriched 86
18. ARCHITECTURE, Plate XIII. Plans of the different Arches 87
19. ARCHITECTURE, Plate XIV. Section of the Church of Bathalha 90
20. ARCHITECTURE, Plate XV. Elevation of the Chancel of the Church of Bathalha 91
21. ARCHITECTURE, Plate XVI. View of the Cathedral of New Sarum 92
22. ARCHITECTURE, Plate XVII. View of the Caſtle of Old Sarum 94
23. ARCHITECTURE, Plate XVIII. Comparative View of the Five Orders 99
24. ARCHITECTURE, Plate XIX. Method of Glewing up Columns 100
25. ARCHITECTURE, Plate XX. Method of diminiſhing and fluting Columns 101
26. ARCHITECTURE, Plate XXI. Method of deſcribing the Ionic Volutes 102
27. ARCHITECTURE, Plate XXII. Method of ſetting off the Tuſcan Order 103
28. ARCHITECTURE, Plate XXIII. Modern Profiles of the Doric, Ionic, and Corinthian, Orders 104
29. ARCHITECTURE, Plate XXIV. Deſign for an ornamented Ceiling 108
30. ARCHITECTURE, Plate XXV. Plans for Staircaſes 109
31. ARCHITECTURE, Plate XXVI. View of a Modern Staircaſe, with elliptical Well 110
32. ARCHITECTURE, Plate XXVII. Plans for Soffits and Niches 111
33. ARCHITECTURE, Plate XXVIII. Plans for Pediments and Groins 112
34. ARCHITECTURE, Plate XXIX. Deſign for an ornamented Ceiling of a Staircaſe, with elliptical Skylight 113
35. ARCHITECTURE, Plate XXX. Plans for different Roofs 114
36. ARCHITECTURE, Plate XXXI. Deſigns for Entrance Gates Page 116
37. ARCHITECTURE, Plate XXXII. Plan of a Deſign for a Manſion Houſe
38. ARCHITECTURE, Plate XXXIII. Elevation and Section of a Deſign for a Manſion Houſe
39. ARCHITECTURE, Plate XXXIV. Plan of a Deſign for a Chapel
40. ARCHITECTURE, Plate XXXV. Elevation and Section of the Deſign for a Chapel.—Theſe four plates are to face each other, in pairs, between pages 118 & 119
41. ARCHITECTURE, Plate XXXVI. Elevation of the Front of Somerſet-place, facing the Strand 120
42. ARCHITECTURE, Plate XXXVII. Geometrical Elevation of the Weſt Front of St. Paul's 122
43. ARCHITECTURE, Plate XXXVIII. View of Bridges 127
44. ARCTOMYS and ARNICA. Five ſpecies of Marmot, and the Mountain Arnica 129
45. ARDEA, the Balearic and Numidian Cranes 131
46. ARDEA, Plate II. The White Crane of Japan ibid.
47. ARDEA, Plate III. The Black Stork, and Red-ſhouldered Heron 132
48. ARDEA, Plate IV. The Stellated Bittern and Little Bittern 135
49. ARECA and ARGENTINA. The Betel-nut, and the Carolina Argentine 138
50. ARGEMONE, the Prickly Poppy 146
51. ARMOUR, a complete ſuit of Plate Armour, with the Lance and Spear 200
52. ARTHUR, King Arthur's round Table 226
53. ARTILLERY, Plate I. Ancient Artillery 229
54. ARTILLERY, Plate II. The Battering Ram, Cattus, &c. 231
55. ARTILLERY, Plate III. Petards, Partridges, Infernals, &c. 233
56. ARTILLERY, Plate IV. Original and curious Cannon 234
57. ARTOCARPUS, the Bread Fruit-Tree 238
58. ARUNDO, the Bamboo; ASCOBOLUS lignatilis; and four ſpecies of the ASILUS, or Hornet-fly 246
59. ASCARIDES, ſeveral curious ſpecies 251
60. ASCIDIA, curious ſpecies 255
61. Map of Ancient ASIA } to face each other between pages 262 & 263
62. Map of Modern ASIA }
63. ASTERIAS, Plate I. The Caput Meduſæ 301
64. ASTERIAS, Plate II. Star Fiſh 302
65. ASTRONOMY, Plate I. The Ptolemaic, Tychonic, and Copernican, Syſtems 344
66. ASTRONOMY, Plate II. The Univerſal Solar Syſtem 350
67. ASTRONOMY, Plate III. Phenomena of the Earth 369
68. ASTRONOMY, Plate IV. Phenomena of the Moon 379
69. ASTRONOMY, Plate V. Phenomena of Saturn's Ring, Eclipſes, and Comets 387
70. ATHERINA, the Marſeilles Smelt; ATROPA, the Mandrake and Deadly Nightſhade; ATTELABUS inſects 487
71. ATTERBURY, Biſhop of Rocheſter 495
72. PORTRAIT of Francis Lord BACON 606
73. BALÆNA, the Whale 637
74. BALISTES; the Aculeatus, and Black Baliſtes 651
75. BANKSIA ſerrata 694
76. BAROMETER. View of different Barometers 735
77. BASALTES. View of the Baſaltes Rocks of the Cyclops 769
78. BASTILE. Ground Plan, and View of the Baſtile 794
79. PORTRAIT of WILLIAM BECKFORD, Eſq. 842
80. MAP of BEDFORDSHIRE 847
81. MAP of BERKSHIRE 910

The following ſignatures are to be cancelled, and replaced by the ſheets given in Nos. 698, *& ſeq.* in order to deſcribe the Additional Plates: L l, M m, 3 S, 3 T, 3 U, 3 X, 11 G.

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